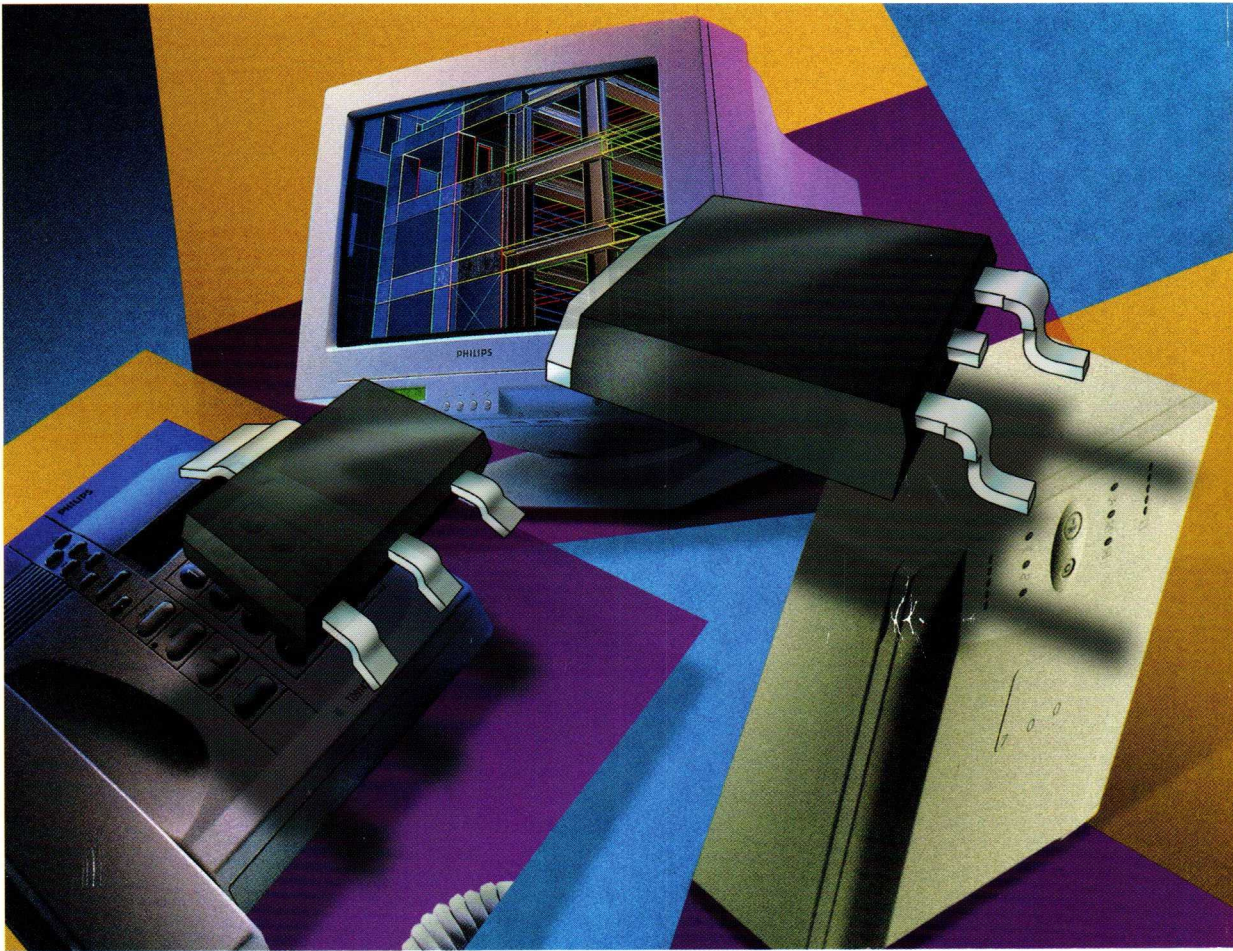


DISCRETE SEMICONDUCTORS

Power Diodes



1997

Data Handbook SC02

Philips
Semiconductors



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PHILIPS

QUALITY ASSURED

Our quality system focuses on the continuing high quality of our components and the best possible service for our customers. We have a three-sided quality strategy: we apply a system of total quality control and assurance; we operate customer-oriented dynamic improvement programmes; and we promote a partnering relationship with our customers and suppliers.

PRODUCT SAFETY

In striving for state-of-the-art perfection, we continuously improve components and processes with respect to environmental demands. Our components offer no hazard to the environment in normal use when operated or stored within the limits specified in the data sheet.

Some components unavoidably contain substances that, if exposed by accident or misuse, are potentially hazardous to health. Users of these components are informed of the danger by warning notices in the data sheets supporting the components. Where necessary the warning notices also indicate safety precautions to be taken and disposal instructions to be followed. Obviously users of these components, in general the set-making industry, assume responsibility towards the consumer with respect to safety matters and environmental demands.

All used or obsolete components should be disposed of according to the regulations applying at the disposal location. Depending on the location, electronic components are considered to be 'chemical', 'special' or sometimes 'industrial' waste. Disposal as domestic waste is usually not permitted.

Power Diodes

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DEFINITIONS

Data sheet status	
Objective specification	This data sheet contains target or goal specifications for product development.
Preliminary specification	This data sheet contains preliminary data; supplementary data may be published later.
Product specification	This data sheet contains final product specifications.
Limiting values	
Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of the specification is not implied. Exposure to limiting values for extended periods may affect device reliability.	
Application information	
Where application information is given, it is advisory and does not form part of the specification.	

LIFE SUPPORT APPLICATIONS

These products are not designed for use in life support appliances, devices, or systems where malfunction of these products can reasonably be expected to result in personal injury. Philips customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Philips for any damages resulting from such improper use or sale.

PREFACE

NEW PRODUCTS

Philips Semiconductors are working intensively on bringing new Power Diode products to the market. The products listed below appear for the first time in this data handbook.

25 V SCHOTTKY DIODES

A range of low voltage schottky diodes with a reverse voltage rating of 25 V, with extremely low forward voltage and ultra fast switching. These products are intended for use in switched mode power supplies with 3 V and 3.3 V outputs. They are also ideal for use as or-ing diodes in fault tolerant designs or current sharing configurations. Types: BYV116, PBYR225CT, PBYR1025, PBYR1525CT, PBYR2025CT, PBYR2525CT.

DEFLECTION DIODES

Further extensions to our range of high voltage, fast recovery diodes, designed for use in the horizontal deflection stages of multisync computer monitors with scan rates up to 82 kHz. These devices complement our range of high voltage bipolar deflection transistors and have fast forward recovery time, low forward recovery voltage and reverse voltage ratings up to 1700 V. Types: BY479X-1700, BY559-1500.

ISOLATED 45 V SCHOTTKY AND 200 V EPITAXIAL DIODES

A wide range of 45 V schottky diodes and 200 V ultrafast recovery epitaxial diodes in the SOT186A envelope. This package is an isolated version of TO220AB with 2500 Vrms isolation between leads and case. Types: BYV118X, BYV133X, BYV143X, PBYR745X, PBYR1045X, PBYR1545CTX, PBYR1645X, PBYR2045CTX, PBYR2545CTX, BYQ28X, BYQ28EX, BYW29EX, BYV32EX, BYV42EX,

SURFACE MOUNT POWER DIODES IN SOT404

A wide range of schottky and 200 V epitaxial diodes in a SOT404 envelope suitable for surface mounting. This package is a surface mounting version of TO220AB with the same thermal resistance and current rating. Types: BYV118B, BYV143B, PBYR745B, PBYR1045B, PBYR10100B, PBYR1545CTB, PBYR1645B, PBYR2045CTB, PBYR20100CTB, PBYR2545CTB, BYQ28EB, BYW29EB, BYV32EB, BYV42EB, BYV79EB.

SURFACE MOUNT BREAKOVER DIODES IN SOD106

The BR211 range of breakover diodes in a SOD106 surface mounting envelope. Used for transient overvoltage protection in line based telecommunications equipment. BR211SM series.

FORTHCOMING PRODUCTS

The products listed below are planned for release within the next 12 months, before the next edition of this data handbook. Contact your Philips Regional or National Sales office for further details.

SURFACE MOUNT POWER DIODES IN SOT428

Available towards the end of 1996, a range of schottky and 200 V epitaxial diodes in a SOT428 envelope suitable for surface mounting. The SOT428 envelope is slightly larger than our present subminiature surface mounting package, SOT223 and may be mounted on the same printed circuit pad layout. However, it has lower thermal resistance and can accommodate larger crystal sizes, thereby allowing higher current ratings to be achieved in a smaller package.

SCHOTTKY AND 200 V EPITAXIAL DIODES IN TO247

Available during the first quarter of 1997, a range of schottky and 200 V epitaxial diodes in a TO247 envelope suitable for high power applications, featuring low thermal resistance and output current ratings up to 60 Amps.

POWER FACTOR CORRECTION DIODES

Available during the first quarter of 1997, a range of ultrafast, 600 V epitaxial diodes specifically designed for power factor correction and other forced commutation applications. These diodes are designed to minimise switching losses both in the diode and in the switching transistor. Other applications include freewheeling diodes in full and half bridge switched mode power supplies, where they complement our new range of 400 V, 500 V and 600 V power mosfets.

APPLICATIONS

Application information for Power Diodes and other Philips power products is published in Philips Power Semiconductor Applications Handbook. (Order code: 9398-652-85011)

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Power Diodes

Selection Guide

Schottky Rectifiers

Schottky rectifiers are used in the output stages of switched mode power supplies, either as high speed rectifiers or as or-ing diodes, where two or more power supply outputs are connected in parallel and share a common load.

Schottky diodes have three advantages over other diode technologies which makes them ideal for modern switched mode power supply designs. These are:-

1. Lowest forward voltage of any type of rectifier.
2. Extremely fast switching with no reverse recovery losses.
3. Rugged, typically 1 Amp reverse surge capability.

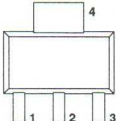
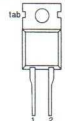
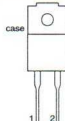
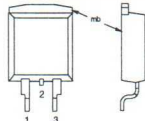
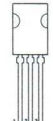
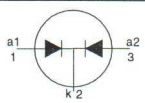
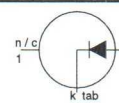
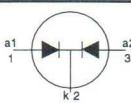
Philips range of schottky diodes are available in three basic voltage grades 25 V, 45 V and 100 V. They are available in a variety of packages including isolated and surface mounting types.

The 35 V/ 40 V/ 45 V range is the optimum choice for power supplies with 5 V outputs. The forward voltage is typically 0.5 V at rated current, at 125°C giving an efficiency of 90%. The reverse voltage rating is adequate for the range of duty cycles and input voltages found in most designs.

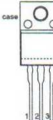
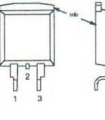
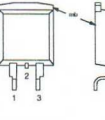
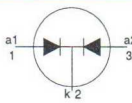
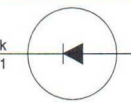
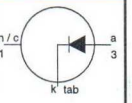
The trend towards lower supply voltages in computers and high speed logic circuits has produced a need for rectifiers with very low forward voltages. The 20 V/ 25 V range of power schottky diodes is intended for use in d.c. To d.c. converters and switched mode power supplies with 3 V or 3.3 V outputs. The typical forward voltage is 0.33 V at rated current at 125°C.

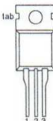
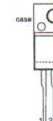
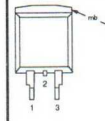
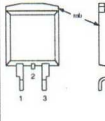
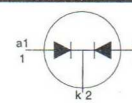
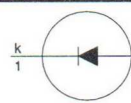
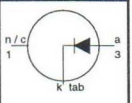
Low voltage 25 V schottky diodes may also be used as or-ing diodes in fault tolerant power supply systems or current sharing configurations, where they provide the optimum combination of low forward losses and good thermal stability.

The 60 V/ 80 V/ 100 V schottky diode range is suitable for power supply output voltages greater than 5 V, for example 12 V and 15 V. They are also suitable for 24 V and 28 V outputs in some designs although Philips range of 200 V epitaxial ultrafast diodes are more commonly used for this range of output voltages. Typical forward voltage is 0.7 V at rated current at 125°C.

$I_{O(AV)}$ Average rectified output current (Amps)						
2		7.5			10	
SOT223		TO220AC	SOD100	SOD113	SOT404	SOT82
						
						
20	PBYR220CT					
25	PBYR225CT					
35	PBYR235CT	PBYR735	PBYR735F	PBYR735X	PBYR735B	PBYR635CT
40	PBYR240CT	PBYR740	PBYR740F	PBYR740X	PBYR740B	PBYR640CT
45	PBYR245CT	PBYR745	PBYR745F	PBYR745X	PBYR745B	PBYR645CT

Schottky Rectifiers (Continued)

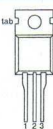
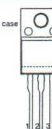
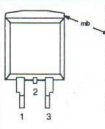
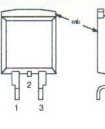
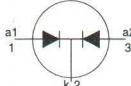
$I_{O(AV)}$ Average rectified output current (Amps)								
10								
	TO220AB	SOT186	SOT186A	SOT404	TO220AC	SOD100	SOD113	SOT404
								
V_{RRM} (V)								
20	BYV116-20				PBYR1020			
25	BYV116-25				PBYR1025			
35	BYV118-35	BYV118F-35	BYV118X-35	BYV118B-35	PBYR1035	PBYR1035F	PBYR1035X	PBYR1035B
40	BYV118-40	BYV118F-40	BYV118X-40	BYV118B-40	PBYR1040	PBYR1040F	PBYR1040X	PBYR1040B
45	BYV118-45	BYV118F-45	BYV118X-45	BYV118B-45	PBYR1045	PBYR1045F	PBYR1045X	PBYR1045B
60					PBYR1060			PBYR1060B
80					PBYR1080			PBYR1080B
100					PBYR10100			PBYR10100B

$I_{O(AV)}$ Average rectified output current (Amps)								
15					16			
	TO220AB	SOT186	SOT186A	SOT404	TO220AC	SOD100	SOD113	SOT404
								
V_{RRM} (V)								
20	PBYR1520CT							
25	PBYR1525CT							
35	PBYR1535CT	PBYR1535CTF	PBYR1535CTX	PBYR1535CTB	PBYR1635	PBYR1635F	PBYR1635X	PBYR1635B
40	PBYR1540CT	PBYR1540CTF	PBYR1540CTX	PBYR1540CTB	PBYR1640	PBYR1640F	PBYR1640X	PBYR1640B
45	PBYR1545CT	PBYR1545CTF	PBYR1545CTX	PBYR1545CTB	PBYR1645	PBYR1645F	PBYR1645X	PBYR1645B

Power Diodes

Selection Guide

Schottky Rectifiers (Continued)

	$I_{O(AV)}$ Average rectified output current (Amps)							
	20					30		
	TO220AB	SOT186	SOT186A	SOT404	SOT199	TO220AB	SOT404	SOT93
								
V_{RRM} (V)								
20	PBYR2020CT					PBYR2520CT		
25	PBYR2025CT					PBYR2525CT		
35	PBYR2035CT BYV133-35	PBYR2035CTF PBYR2535CTF BYV133F-35 BYV143F-35	PBYR2035CTX PBYR2535CTX BYV133X-35 BYV143X-35	PBYR2035CTB BYV143B-35	PBYR3035PTF	PBYR2535CT BYV143-35	PBYR2535CTB	PBYR3035PT
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60	PBYR2060CT			PBYR2060CTB				PBYR3060PT
80	PBYR2080CT			PBYR2080CTB				PBYR3080PT
100	PBYR20100CT			PBYR20100CTB				PBYR30100PT

Ultrafast Recovery Epitaxial Rectifiers

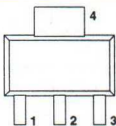
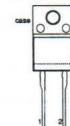
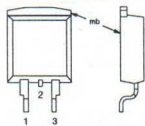
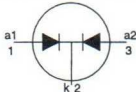
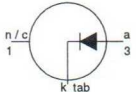
Ultrafast recovery epitaxial rectifiers are used in both the input and output stages of switched mode power supplies, inverters, d.c. to d.c. converters and motor controls.

The 100 V/ 150 V/ 200 V range is used for high frequency rectification in power supplies with higher output voltages, where the reverse voltage requirement precludes the use of schottky diodes. The main features of this range are as follows:-

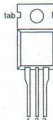
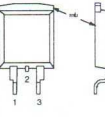
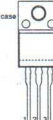
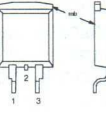
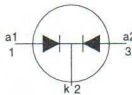
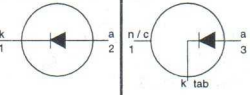
1. Low forward voltage drop, typically 0.8 V at rated current, 150°C
2. Ultrafast reverse recovery, typically 25 ns.
3. Soft reverse recovery characteristic.
4. Reverse surge and ESD capability for 'E' suffix types.

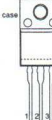
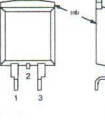
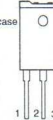
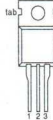
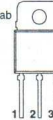
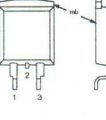
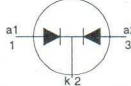
The other two ranges of ultrafast recovery epitaxial rectifier diodes are the 300 V/ 400 V/ 500 V range and the BYR29 and BYR29F types which are available in 500 V/600 V /700 V and 800 V grades. These devices are used as high voltage output rectifiers in television receivers and computer monitors. They are also used as freewheeling diodes in the power switching stage of switched mode power supplies, connected in parallel with the power transistor or MOSFET. The main features are as follows:-

1. Low forward voltage drop, typically 1.1 V at rated current, 150°C.
2. Ultrafast reverse recovery, 60 ns to 75 ns.
3. Soft reverse recovery characteristic.

$I_{O(AV)}$ Average rectified output current (Amps)					
1.5	8 - 9				
SOT223	TO220AC	SOD100	SOD113	SOT404	
					
					
100	BYV40-100 BYV40E-100	BYW29-100 BYW29E-100	BYW29F-100	BYW29EX-100	BYW29EB-100
150	BYV40-150 BYV40E-150	BYW29-150 BYW29E-150	BYW29F-150	BYW29EX-150	BYW29EB-150
200	BYV40-200 BYV40E-200	BYW29-200 BYW29E-200	BYW29F-200	BYW29EX-200	BYW29EB-200
300		BYV29-300	BYV29F-300		
400		BYV29-400	BYV29F-400		
500		BYV29-500 BYR29-500	BYV29F-500 BYR29F-500		
600		BYR29-600	BYR29F-600		
700		BYR29-700	BYR29F-700		
800		BYR29-800	BYR29F-800		

Ultrafast Recovery Epitaxial Rectifiers (Continued)

$I_{O(AV)}$ Average rectified output current (Amps)								
10					12		14	
TO220AB	SOT186	SOT186A	SOT404		SOT186	SOT186A	TO220AC	SOT404
								
								
100	BYQ28-100 BYQ28E-100	BYQ28F-100	BYQ28X-100 BYQ28EX-100	BYQ28EB-100	BYV32F-100	BYV32EX-100	BYV79-100 BYV79E-100	BYV79EB-100
150	BYQ28-150 BYQ28E-150	BYQ28F-150	BYQ28X-150 BYQ28EX-150	BYQ28EB-150	BYV32F-150	BYV32EX-150	BYV79-150 BYV79E-150	BYV79EB-150
200	BYQ28-200 BYQ28E-200	BYQ28F-200	BYQ28X-200 BYQ28EX-200	BYQ28EB-200	BYV32F-200	BYV32EX-200	BYV79-200 BYV79E-200	BYV79EB-200
300	BYT28-300						BYT79-300	
400	BYT28-400						BYT79-400	
500	BYT28-500						BYT79-500	

$I_{O(AV)}$ Average rectified output current (Amps)								
20					30			
TO220AB	SOT186	SOT186A	SOT404	SOT199	TO220AB	SOT93	SOT404	
								
								
100	BYV32-100 BYV32E-100	BYV42F-100	BYV42EX-100	BYV32EB-100	BYV72F-100 BYV72EF-100	BYV42-100 BYV42E-100	BYV72-100 BYV72E-100	BYV42EB-100
150	BYV32-150 BYV32E-150	BYV42F-150	BYV42EX-150	BYV32EB-150	BYV72F-150 BYV72EF-150	BYV42-150 BYV42E-150	BYV72-150 BYV72E-150	BYV42EB-150
200	BYV32-200 BYV32E-200	BYV42F-200	BYV42EX-200	BYV32EB-200	BYV72F-200 BYV72EF-200	BYV42-200 BYV42E-200	BYV72-200 BYV72E-200	BYV42EB-200
300	BYV34-300				BYV74F-300	BYV44-300	BYV74-300	
400	BYV34-400				BYV74F-400	BYV44-400	BYV74-400	
500	BYV34-500				BYV74F-500	BYV44-500	BYV74-500	

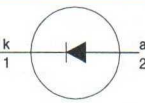
Fast Recovery and General Purpose, High Voltage Rectifiers

Fast recovery, high voltage rectifiers are used widely in the power supply and horizontal deflection stage of television receivers and computer monitors. The 1500 V and 1700 V devices are specifically designed for use as damper diodes in the horizontal deflection circuits of high resolution, multisync computer monitors.

These diodes are also suitable for use in a wide variety of other high voltage rectifier applications including inverters,

converters, snubbers, scr commutation and mains voltage input circuits. Their main features are as follows:-

1. Reverse voltage ratings up to 1700 V.
2. Low forward recovery voltage and fast forward recovery.
3. Fast reverse recovery (150 ns typ) with soft reverse recovery characteristic.

$I_{O(AV)}$ Average rectified output current (Amps)							
7	8		10			20	
TO220AC	TO220AC	SOD100	SOD113	TO220AC	SOD100	SOD113	TO220AC
							
V_{RRM} (V) 							
200		BY229-200	BY229F-200	BY229X-200			
300	BY249-300 ¹						
400		BY229-400	BY229F-400	BY229X-400			
600	BY249-600 ¹	BY229-600	BY229F-600	BY229X-600			
800		BY229-800	BY229F-800	BY229X-800			
1000		BY329-1000	BY329F-1000	BY329X-1000			
1200		BY329-1200	BY329F-1200	BY329X-1200			
1500					BY359-1500 BY459-1500	BY359F-1500 BY459F-1500	BY359X-1500 BY459X-1500
1700							BY559-1500 BY479X-1700

¹ General purpose rectifier diode.

Breakover Diodes

The Philips BreakOver Diode (BOD) is a two terminal, transient over-voltage suppressor which operates in either an 'off' (non-conducting) or an 'on' (conducting) state. The BOD will remain in the off-state until a transient voltage exceeding the maximum breakover voltage is applied across its terminals. Provided sufficient current is available to switch the device on, it will then switch to the on-state, and conduct with a low on-state voltage. It will remain in the on-state until the transient decays away and the current falls below the holding current.

The device is available in either a conventional leaded axial package or an axial surface mounted package.

The main area of application for breakover diodes is over-voltage protection in line based telecommunications equipment (telephones, faxes, modems, internet terminals etc) and also in telephone exchange line cards. Their main features are:-

1. 40 Amp surge capability, (10/700µs impulse).
2. Breakover voltages 140 V to 280 V.
3. Low on-state voltage ≤ 2.5 V.
4. Low leakage current in the off-state ≤ 10 µA.
5. High holding current ≥ 150 mA.

 Symbol			 XXX denotes voltage grade SOD84 Axial package		 SOD106 Surface mount package	
Avalanche voltage $I_o = 10\text{mA}$	Breakover voltage	Peak pulse current 10/700 μs pulse	Holding current	Switching current	Type number	
V_{BR} (V)	V_{BO} (V)	I_{TSM} (A)	I_H (mA)	I_S (A)		
MIN	MAX	MAX	MIN	MAX		
123	157	40	150	1	BR211-140	BR211SM-140
140	180	40	150	1	BR211-160	BR211SM-160
158	202	40	150	1	BR211-180	BR211SM-180
176	224	40	150	1	BR211-200	BR211SM-200
193	247	40	150	1	BR211-220	BR211SM-220
211	269	40	150	1	BR211-240	BR211SM-240
228	292	40	150	1	BR211-260	BR211SM-260
246	314	40	150	1	BR211-280	BR211SM-280

GENERAL

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General

Quality

QUALITY

Total Quality Management



Philips Semiconductors is committed to be a world class, customer driven, volume supplier of semiconductors.

To achieve this, we operate a Total Quality Management (TQM) system, based on Continuous Improvement and Quality Assurance in all our business activities, and Partnerships with our customers and suppliers.

The top priority throughout the company is Continuous Improvement.

To focus on this we will:

- Work closely with key customers, as our partners.
- Monitor progress, using customer-driven data, of our product and services.
- Benchmark against the best.

Furthermore, all parts of the organisation must always demonstrate:

- The presence of a strong, management-led improvement structure.
- Commitment and participation in all areas.
- Measurable progress towards our Quality Improvement goals.

Organisation

An organisation is in place which ensures that personnel with the necessary organisational freedom and authority can identify and solve quality problems, prevent occurrence of product non-conformity and protect the customer from non-conforming product.

Design control

A comprehensive design and development procedure is in place which ensures that the requirements of good design practice are met.

Particular emphasis is placed on ensuring that the initial specification is agreed by the Customer and the Marketing and Development functions.

There are regular formal reviews of design progress to ensure that the initial specification will be met by the design.

Detailed measurements are made on initial samples to ensure that the initial specification has been met.

Process control

All processes which directly affect quality are carried out under controlled conditions. Documented work instructions are available for all production processes and the appropriate environmental controls are in place to

ensure consistent processing. Monitoring of the product, processes and the environment takes place during production.

Approval exercises are run to ensure that new processes and new equipment perform at an acceptable level.

Written, photographic or visual standards are available at the appropriate points in the production processes.

Corrective action

Non-conforming product found in process is investigated and the root causes identified. Changes to product or process are then introduced to prevent recurrence of the problem.

Quality assurance

Based on ISO 9000 standards, customer standards such as Ford TQE. Our factories are certified to ISO 9000.

Partnerships with customers

These include: PPM co-operations, design-in agreements, ship-to-stock, just-in-time, self-qualification programmes and application support.

Partnerships with suppliers

In addition to ISO9000 audits and close monitoring of supplier delivery performance, we operate a Supplier Excellence Award scheme which requires suppliers and their sub-suppliers to use statistical process control, perform gauge studies and use failure mode and effect analysis (FMEA) techniques to identify and correct the root causes of quality and delivery problems.

Product reliability

With the increasing complexity of Original Equipment Manufacturer (OEM) equipment, component reliability must be extremely high. Our research laboratories and development departments study the failure mechanisms of semiconductors. Their studies result in design rules and process optimizations for the highest built-in product reliability. Highly accelerated tests are applied in order to evaluate the product reliability. Rejects from reliability tests and from customer complaints are submitted to failure analysis and the results applied to improve the product or process.

Customer responses

Our quality improvement depends on joint action with our customer. We need our customers inputs and we invite constructive comment on all aspects of our performance. Please contact your local sales representative.

Recognition

The high quality of our products and services is demonstrated by many Quality Awards granted by major customers and international organisations.

General

Rating systems

RATING SYSTEMS

The rating systems described are those recommended by the IEC in its publication number 134.

Definitions of terms used

ELECTRONIC DEVICE

An electronic tube or valve, transistor or other semiconductor device. This definition excludes inductors, capacitors, resistors and similar components.

CHARACTERISTIC

A characteristic is an inherent and measurable property of a device. Such a property may be electrical, mechanical, thermal, hydraulic, electro-magnetic or nuclear, and can be expressed as a value for stated or recognized conditions. A characteristic may also be a set of related values, usually shown in graphical form.

BOGEY ELECTRONIC DEVICE

An electronic device whose characteristics have the published nominal values for the type. A bogey electronic device for any particular application can be obtained by considering only those characteristics that are directly related to the application.

RATING

A value that establishes either a limiting capability or a limiting condition for an electronic device. It is determined for specified values of environment and operation, and may be stated in any suitable terms. Limiting conditions may be either maxima or minima.

RATING SYSTEM

The set of principles upon which ratings are established and which determine their interpretation. The rating system indicates the division of responsibility between the device manufacturer and the circuit designer, with the object of ensuring that the working conditions do not exceed the ratings.

Absolute maximum rating system

Absolute maximum ratings are limiting values of operating and environmental conditions applicable to any electronic device of a specified type, as defined by its published data, which should not be exceeded under the worst probable conditions.

These values are chosen by the device manufacturer to provide acceptable serviceability of the device, taking no responsibility for equipment variations, environmental variations, and the effects of changes in operating conditions due to variations in the characteristics of the device under consideration and of all other electronic devices in the equipment.

The equipment manufacturer should design so that, initially and throughout the life of the device, no absolute maximum value for the intended service is exceeded with any device, under the worst probable operating conditions with respect to supply voltage variation, equipment component variation, equipment control adjustment, load variations, signal variation, environmental conditions, and variations in characteristics of the device under consideration and of all other electronic devices in the equipment.

Design maximum rating system

Design maximum ratings are limiting values of operating and environmental conditions applicable to a bogey electronic device of a specified type as defined by its published data, and should not be exceeded under the worst probable conditions.

These values are chosen by the device manufacturer to provide acceptable serviceability of the device, taking responsibility for the effects of changes in operating conditions due to variations in the characteristics of the electronic device under consideration.

The equipment manufacturer should design so that, initially and throughout the life of the device, no design maximum value for the intended service is exceeded with a bogey electronic device, under the worst probable operating conditions with respect to supply voltage variation, equipment component variation, variation in characteristics of all other devices in the equipment, equipment control adjustment, load variation, signal variation and environmental conditions.

Design centre rating system

Design centre ratings are limiting values of operating and environmental conditions applicable to a bogey electronic device of a specified type as defined by its published data, and should not be exceeded under normal conditions.

General

Rating systems

These values are chosen by the device manufacturer to provide acceptable serviceability of the device in average applications, taking responsibility for normal changes in operating conditions due to rated supply voltage variation, equipment component variation, equipment control adjustment, load variation, signal variation, environmental conditions, and variations in the characteristics of all electronic devices.

The equipment manufacturer should design so that, initially, no design centre value for the intended service is exceeded with a bogey electronic device in equipment operating at the stated normal supply voltage.

General

Pro electron type numbering

PRO ELECTRON TYPE NUMBERING SYSTEM

Basic type number

This type designation code applies to **discrete semiconductor** devices (not integrated circuits), multiples of such devices, semiconductor chips and Darlington transistors.

FIRST LETTER

The first letter gives information about the material for the active part of the device.

- A Germanium or other material with a band gap of 0.6 to 1 eV
- B Silicon or other material with a band gap of 1 to 1.3 eV
- C Gallium arsenide (GaAs) or other material with a band gap of 1.3 eV or more
- R Compound materials, e.g. cadmium sulphide.

SECOND LETTER

The second letter indicates the function for which the device is primarily designed. The same letter can be used for multi-chip devices with similar elements.

In the following list low power types are defined by $R_{th(j-mb)} > 15 \text{ K/W}$ and power types by $R_{th(j-mb)} \leq 15 \text{ K/W}$.

- A Diode; signal, low power
- B Diode; variable capacitance
- C Transistor; low power, audio frequency
- D Transistor; power, audio frequency
- E Diode; tunnel
- F Transistor; low power, high frequency
- G Multiple of dissimilar devices/miscellaneous devices; e.g. oscillators. Also with special third letter; see under Section "Serial number/special third letter"
- H Diode; magnetic sensitive
- L Transistor; power, high frequency
- N Photocoupler
- P Radiation detector; e.g. high sensitivity photo-transistor; with special third letter
- Q Radiation generator; e.g. LED, laser; with special third letter
- R Control or switching device; e.g. thyristor, low power; with special third letter
- S Transistor; low power, switching

- T Control or switching device; e.g. thyristor, low power; with special third letter
- U Transistor; power, switching
- W Surface acoustic wave device
- X Diode; multiplier, e.g. varactor, step recovery
- Y Diode; rectifying, booster
- Z Diode; voltage reference or regulator, transient suppressor diode; with special third letter.

SERIAL NUMBER/SPECIAL THIRD LETTER

The number comprises three figures running from 100 to 999 for devices primarily intended for consumer equipment, or one letter (Z, Y, X, etc.) and two figures running from 10 to 99 for devices primarily intended for industrial or professional equipment⁽¹⁾. The letter has no fixed meaning, except in the following cases:

- A For triacs, after second letter 'R' or 'T'
- F For emitters and receivers in fibre-optic communication, after second letter 'G', 'P' or 'Q'. When the second letter is 'G', the first letter should be defined in accordance with the material of the main optical device.
- L For lasers in non-fibre-optic applications, after second letter 'G' or 'Q'. When the second letter is 'G', the first letter should be defined in accordance with the material of the main optical device.
- O For opto-triacs, after second letter 'R'
- T For 3-state bicolour LEDs, after second letter 'Q'
- W For transient voltage suppressor diodes, after second letter 'Z'.

Version letter(s)

One or two letters may be added to the basic type number to indicate minor electrical or mechanical variants of the basic type. The letters never have a fixed meaning, except that the letter 'R' indicates reverse polarity and the letter 'W' indicates a surface mounted device (SMD).

(1) When the supply of these serial numbers is exhausted, the serial number may be expanded to three figures for industrial types and four figures for consumer types.

General

Pro electron type numbering

Suffix

Sub-classification can be used for devices supplied in a wide range of variants, called associated types. The following sub-coding suffixes are in use:

VOLTAGE REFERENCE AND VOLTAGE REGULATOR DIODES

One letter and one number, preceded by a hyphen (-). The letter, if required, indicates the nominal tolerance of the Zener voltage.

- A 1%
- B 2%
- C 5%
- D 10%
- E 20%.

In the case of a 3% tolerance, the letter 'F' is used.

The number denotes the typical operating (Zener) voltage, related to the nominal current rating for the entire range. The letter 'V' is used in place of the decimal point.

Example: BZY74-C6V3 or -C10.

TRANSIENT VOLTAGE SUPPRESSOR DIODES

One number, preceded by a hyphen (-). The number indicates the maximum recommended continuous reversed (stand-off) voltage, V_R . The letter 'V' is used in place of the decimal point.

Example: BZW70-9V1 or -39.

The letter 'B' may be used immediately after the last number, to indicate a bidirectional suppressor diode.

Example: BZW10-15B.

CONVENTIONAL AND CONTROLLED AVALANCHE RECTIFIER DIODES AND THYRISTORS

One number, preceded by a hyphen (-). The number indicates the rated maximum repetitive peak reverse voltage, V_{RRM} , or the rated repetitive peak off-state voltage, V_{DRM} , whichever is the lower. Reversed polarity with respect to the case is indicated by the letter 'R' immediately after the number.

Example: BYT-100 or -100R.

RADIATION DETECTORS

One number, preceded by a hyphen (-). The number indicates the depletion layer in micrometres (μm). The resolution is indicated by a version letter.

Example: BPX10-2A.

ARRAY OF RADIATION DETECTORS AND GENERATORS

One number, preceded by a hyphen (-). The number indicates the number of basic devices assembled into the array.

Examples: BPW50-6, BPW50-9, BPW50-12.

HIGH FREQUENCY POWER TRANSISTORS

One number, preceded by a hyphen (-). The number indicates the supply voltage.

Example: BLU80-24.

Power Diodes

Introduction

POWER DIODE CHARACTERISTICS

Back diffused rectifier diodes

A single-diffused P-N diode with a two layer structure cannot combine a high forward current density with a high reverse blocking voltage.

A way out of this dilemma is provided by the three layer structure, the so-called P-I-N diode, where 'I' is a lightly doped (nearly intrinsic) layer. This layer, called the base, is sandwiched between the highly doped diffused P⁺ and N⁺ outer layers giving a P⁺-P-N⁺ or P⁺-N-N⁺ structure. Generally, the base gives the diode its high reverse voltage, and the two diffused regions give the high forward current rating.

Such a three layer diode can be realised using a 'back-diffused' structure. A lightly doped silicon wafer is given a very long N⁺ diffusion on one side, followed by a relatively shallow P⁺ diffusion on the opposite side. This asymmetric diffusion allows better control of the thickness of the base layer than the conventional double diffusion method, resulting in a better trade-off between low forward voltage and high reverse blocking voltage. Generally, for a given silicon area, the thicker the base layer the higher the V_R and the lower the I_F . Reverse switching characteristics also determine the base design. Fast recovery diodes usually have N-type base regions to give 'soft' recovery with a narrow base layer to give fast switching.

Ultra fast rectifier diodes

Ultra fast rectifier diodes, made by epitaxial technology, are intended for use in applications where low conduction and switching losses are of paramount importance and relatively low reverse blocking voltage ($V_{RWM} = 150V$) is required: e.g. Switched mode power supplies operating at frequencies of about 50 kHz.

The use of epitaxial technology means that there is very close control over the almost ideal diffusion profile and base width giving very high carrier injection efficiencies leading to lower conduction losses than conventional technology permits. The well defined diffusion profile also allows a tight control of stored minority carriers in the base region, so that very fast turn-off times (35 ns) can be achieved. The range of devices also has a soft reverse recovery and a low forward recovery voltage.

Schottky-barrier rectifier diodes

Schottky-barrier rectifiers find application in low-voltage switched-mode power supplies (e.g. a 5 V output) where they give an increase in efficiency due to the very low forward drop, and low switching losses. Power Schottky diodes are made by a metal-semiconductor barrier process to minimise forward voltage losses, and being majority carrier devices have no stored charge. They are therefore capable of operating at extremely high speeds. Electrical performance in forward and reverse conduction is uniquely defined by the device's metal-semiconductor

'barrier height'. Philips process minimises forward voltage drop, whilst maintaining reverse leakage current at full rated working voltage and T_{jmax} at an acceptable level.

Philips range of power schottky-barrier diodes can withstand reverse voltage transients and have guaranteed reverse surge capability.

Power diode ratings

A rating is a value that establishes either a limiting capability or a limiting condition for an electronic device. It is determined for specified values of environment and operation, and may be stated in any suitable terms. Limiting conditions may be either maxima or minima.

All limiting values quoted in this data handbook are Absolute Maximum Ratings - limiting values of operating and environmental conditions applicable to any device of a specified type, as defined by its published data, which should not be exceeded under the worst probable conditions.

VOLTAGE RATINGS

- V_{RSM} Non-repetitive peak reverse voltage. The maximum allowable instantaneous reverse voltage including all non-repetitive transients. duration ≤ 10 ms.
- V_{RRM} Repetitive peak reverse voltage. The maximum allowable instantaneous reverse voltage including transients which may occur every cycle, duration ≤ 10 ms, duty cycle ≤ 0.01 .
- V_{RWM} Crest working reverse voltage. The maximum allowable instantaneous reverse voltage including transients which may be applied every cycle excluding all repetitive and non-repetitive transients.
- V_R Continuous reverse voltage. The maximum allowable constant reverse voltage. Operation at rated V_R may be limited to junction temperatures below T_{jmax} in order to prevent thermal runaway.

CURRENT RATINGS

- $I_{F(AV)}$ Average forward current. Specified for either square or sinusoidal current waveforms at a maximum mounting base or heatsink temperature. The maximum average current which may be passed through the device without exceeding T_{jmax} .
- $I_{F(RMS)}$ Root mean square current. The rms value of a current waveform is the value which causes the same dissipation as the equivalent d.c. value.
- I_{FRM} Repetitive peak forward current. The maximum allowable peak forward current including transients which occur every cycle. The junction temperature should not exceed T_{jmax} during repetitive current transients.
- I_{FSM} Non-repetitive forward current. The maximum allowable peak forward current which may be applied no more than 100 times in the life of the device. Usually specified with reapplied V_{RWM} following the surge.

Power Diodes

Introduction

I_{RRM} Repetitive peak reverse current. The maximum allowable peak reverse current including transients which occur every cycle.

I_{RSM} Non-repetitive reverse current. The maximum allowable peak reverse current which may be applied no more than 100 times in the life of the device.

Forward current ratings

The forward voltage/current characteristic of a diode may be approximated by a piecewise linear model as shown in fig:1. where R_s is the slope of the line which passes through the rated current and V_o is the voltage axis intercept. The forward voltage is then $V_F = V_o + I_F \cdot R_s$, and the instantaneous dissipation is $P_F = V_o \cdot I_F + I_F^2 \cdot R_s$, where I_F is the instantaneous forward current.

It can be shown that the average forward dissipation for any current waveform is: $P_{F(AV)} = V_o \cdot I_{F(AV)} + I_{F(RMS)}^2 \cdot R_s$, where $I_{F(AV)}$ is the average forward current and $I_{F(RMS)}$ is the rms value of the forward current. Graphs in the published data show forward dissipation as a function of average current for square or sinusoidal waveforms over a range of duty cycles and form factors.

To ensure reliable operation, the maximum allowable junction temperature T_{jmax} should not be exceeded repetitively, either as a result of the average dissipation in the device or as a result of high peak currents

The average junction temperature rise is the average dissipation multiplied by the thermal resistance; $R_{th j-mb}$ or $R_{th j-hs}$. Subtracting the junction temperature rise from the maximum allowable junction temperature T_{jmax} , gives the maximum allowable mounting base or heatsink temperature.

The peak junction temperature rise for a rectangular current pulse may be found by multiplying the instantaneous power by the thermal impedance. Analysis methods for non-rectangular pulses are covered in the Power Semiconductor Applications handbook.

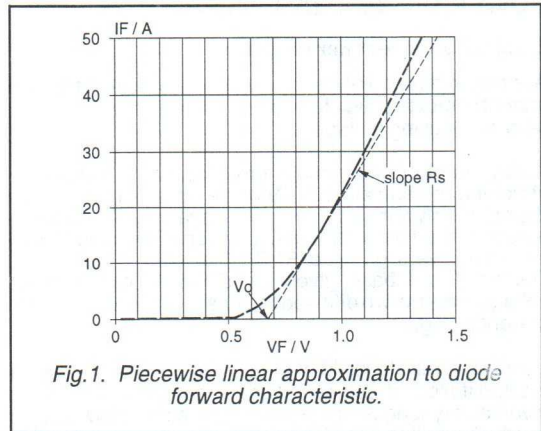


Fig.1. Piecewise linear approximation to diode forward characteristic.

Power diode characteristics

A characteristic is an inherent and measurable property of a device. Such a property may be expressed as a value for stated or recognized conditions. A characteristic may also be a set of related values, usually shown in graphical form.

REVERSE RECOVERY

When a semiconductor rectifier diode has been conducting in the forward direction sufficiently long to establish the steady state, there will be a charge due to minority carriers present. Before the device can block in the reverse direction this charge must be extracted. This extraction takes the form of a transient reverse current and this, together with the reverse bias voltage results in additional power dissipation which reduces the rectification efficiency. At sine-wave frequencies up to about 400Hz these effects can often be ignored, but at higher frequencies and for square waves the switching losses must be considered. The parameters of reverse recovery are defined in fig:2.

Stored charge

The area under the I_R versus time curve is known as the stored charge (Q_s) and is normally quoted in microcoulombs or nanocoulombs. Low stored charge devices are preferred for fast switching applications.

Reverse recovery time

Another parameter which can be used to determine the speed of the rectifier is the reverse recovery time (t_{rr}). This is measured from the instant the current passes through zero (from forward to reverse) to the instant the current recovers to either 10% or 25% of its peak reverse value. Low reverse recovery times are associated with low stored charge devices.

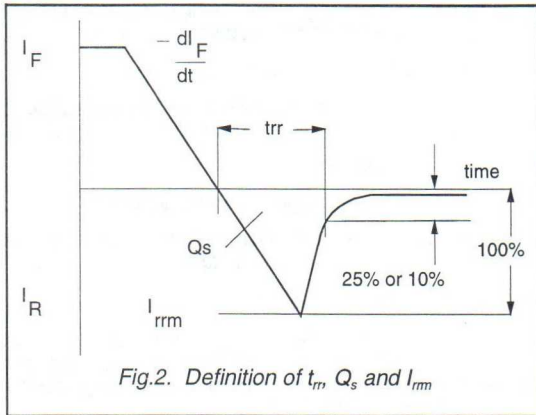
The conditions which need to be specified are:

- Steady-state forward current (I_F); high currents increase recovery time.

Power Diodes

Introduction

- Reverse bias voltage (V_R); low reverse voltage increases recovery time.
- Rate of fall of anode current (di_F/dt); high rates of fall reduce recovery time, but increase stored charge.
- Junction temperature (T_j); high temperatures increase both recovery time and stored charge.



Softness of recovery

In many switching circuits it is not just the magnitude but the shape of the reverse recovery characteristic that is important. If the positive-going edge of the characteristic has a fast rise time (as in a so-called 'snap-off' device) this edge may cause conducted or radiated radio frequency interference (rfi), or it may generate high voltages across inductors which may be in series with the rectifier. The maximum slope of the reverse recovery current (di_F/dt) is quoted as a measure of the 'softness' of the characteristic. Low values are less liable to give rfi problems. The measurement conditions which need to be specified are as above.

Reverse recovery current

The peak value of the reverse recovery current (I_{rrm}) is an important parameter in many switched mode power supply circuits. This is because the high transient current produced by a diode with a high I_{rrm} can be interpreted by the circuit as a short circuit fault, which may cause the power supply to shut down or have apparently poor load regulation. Like the stored charge and reverse recovery time, I_{rrm} increases with increasing temperature, so the effects sometimes only become apparent when the equipment gets hot. I_{rrm} correlates with stored charge Q_s . Thus choosing an Ultrafast diode with low Q_s usually avoids this problem.

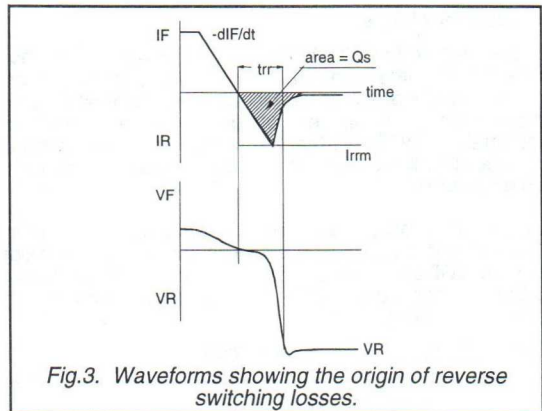
SWITCHING LOSSES

The product of the transient reverse current and the reverse voltage is power dissipation, most of which occurs whilst the reverse recovery current is decreasing from the peak value (I_{rrm}) to zero. In repetitive operation an average power can be calculated and added to the forward

dissipation to give the total power. The peak value of transient reverse current is known as I_{rrm} . The origin of reverse recovery losses is illustrated in fig.3.

The conditions which need to be specified are:

- Forward current (I_F); high currents increase switching losses.
- Rate of fall of anode current (di_F/dt); high rates of fall increase switching losses. This is particularly important in square-wave operation. Power losses in sine-wave operation for a given frequency are considerably less due to the much lower di_F/dt .
- Frequency (f); high frequency means high losses.
- Reverse bias voltage (V_R); high reverse bias means high losses.
- Junction temperature (T_j); high temperature means high losses.



FORWARD RECOVERY

At the instant a semiconductor rectifier diode is switched into forward conduction there are no carriers present at the junction, hence the forward voltage drop may be instantaneously of a high value. As the stored charge builds up, conductivity modulation takes place and the forward voltage rapidly falls to the steady state value. The peak value of forward voltage drop is known as the forward recovery voltage (V_{fr}). The time from the instant the current reaches 10% of its steady-state value to the time the forward voltage drops below a given value (usually 5V or 2V) is known as the forward recovery time (t_{fr}). The forward recovery parameters are defined in fig.4.

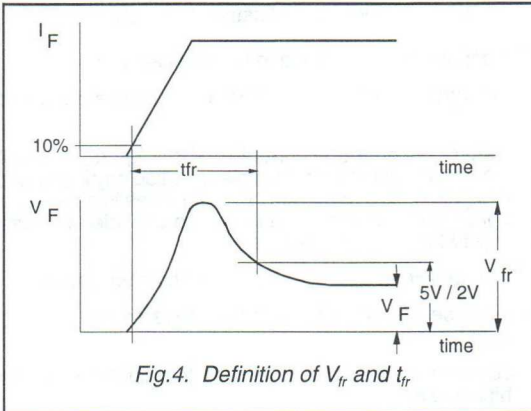
The conditions which need to be specified are:

- Forward current (I_F); high currents give high recovery voltages.
- Current pulse rise time (t_r); short rise times give high recovery voltages.

Power Diodes

Introduction

c. Junction temperature (T_j); The influence of temperature is slight.

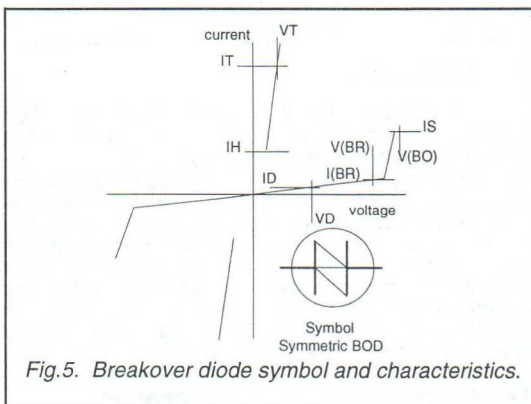


Breakover diodes

Breakover diodes (BOD's) are two terminal devices that operate in either an off (non-conducting) or an on (conducting) state. A BOD will remain in the off state until the maximum breakover voltage is applied across its terminals. A BOD will then conduct with a low on-state voltage until the current is reduced below the minimum holding current.

BOD's are available as Single Symmetric (operation in 1st and 3rd quadrants) in a hermetically sealed axial leaded SOD84 envelope, and also in a surface mount SOD106 package. BOD's are graded according to breakover voltage.

BREAKOVER DIODE CHARACTERISTICS



The main characteristics are illustrated in fig:5. These characteristics are:-

- $V_{(BO)}$ Breakover voltage, the maximum voltage appearing across the BOD before switching to the on-state.
- V_D Stand-off voltage, maximum normal operating voltage.
- I_D Off-state current, normally quoted at V_D .
- $V_{(BR)}$ Breakdown voltage, below which the BOD will not go into avalanche breakdown.
- $I_{(BR)}$ Breakdown current, with $V_{(BR)}$ applied.
- I_S Switching current, the avalanche current required to switch the BOD to the on-state.
- I_T On-state current.
- V_T On-state voltage, specified at a given I_T .
- I_H Holding current, the minimum current at which the BOD will remain in the on-state.

USE OF BREAKOVER DIODES

BOD's are primarily designed to protect electronic equipment connected to transmission lines against transient overvoltages. However, there are many uses for BOD's as breakover switches.

In designing BOD circuits the following must be considered:-

Off-state conditions

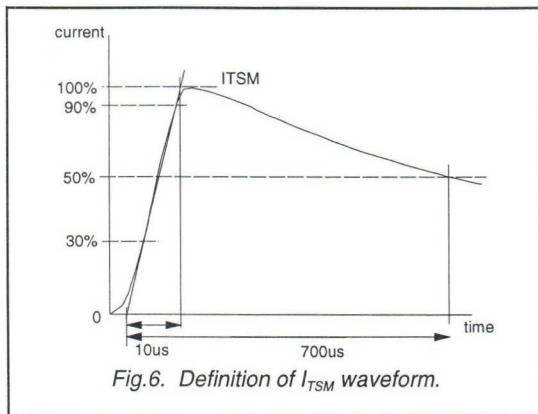
- V_D Must not be exceeded in normal off-state operation. In the off-state the BOD will not pass more current than I_D .
- dV_D/dt The rate of rise of voltage must not exceed that quoted for the device. If this is exceeded the BOD may switch to the on-state.
- $V_{(BR)}$ To ensure the BOD remains in the off-state, the voltage must remain below $V_{(BR) \min}$. If this is exceeded, the BOD will either clip the voltage or switch to the on-state.
- I_S If $V_{(BR)}$ is exceeded but the current limited to below I_S minimum, the BOD is prevented from switching to the on-state.
- C_i The off-state capacitance across the BOD. In transmission line protection applications this will be across the termination of the line.

Switching conditions

- $V_{(BO)}$ A transient voltage greater than $V_{(BO) \max}$ is required to switch the BOD. $V_{(BO)}$ may be greater than the voltage across the BOD when it is passing a current of $I_{S \max}$.
- I_S To enable the BOD to switch to the on-state a current greater than I_S maximum is required.

On-state conditions

- V_T The on-state voltage is quoted for a given I_T
- I_H To enable the BOD to switch to the off-state the current must fall below I_H minimum.
- I_{TSM} I_{TSM} specifies the rate of rise and duration of a transient peak on-state current. The waveshape is defined according to CCITT Rec. K17, illustrated in Fig.6. The waveform is referred to as 10/700 μ s waveform.

*Thermal conditions*

- R_{th} For extended on-state operation (> 0.1 ms) the steady-state thermal resistance should be considered. Total thermal resistance to ambient should be sufficiently low to dissipate the heat generated by the device.
- Z_{th} If the BOD is used only during transient overvoltages then the transient thermal impedance to ambient should be considered.

DEVICE DATA

in alphanumeric sequence

Breakover diodes

BR211 series

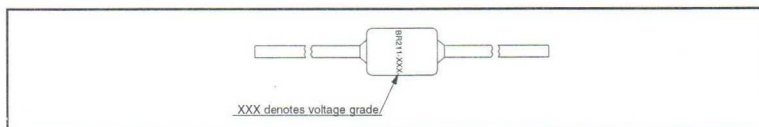
GENERAL DESCRIPTION

A range of bidirectional, breakover diodes in an axial, hermetically sealed, glass envelope. These devices feature controlled breakover voltage and high holding current together with high peak current handling capability. Typical applications include transient overvoltage protection in telecommunications equipment.

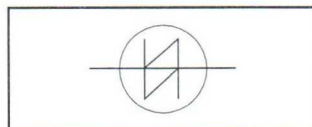
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MIN.	MAX.	UNIT
BR211-140 to 280				
$V_{(BO)}$	Breakover voltage	140	280	V
I_H	Holding current	150	-	mA
I_{TSM}	Non-repetitive peak current	-	40	A

OUTLINE - SOD84



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_D	Continuous voltage		-	75% of $V_{(BO)typ}$	V
I_{TSM1}	Non repetitive peak current	10/320 μ s impulse equivalent to 10/700 μ s, 1.6 kV voltage impulse (OCITT K17)	-	40	A
I_{TSM2}	Non repetitive on-state current	half sine wave; $t = 10$ ms; $T_j = 70^\circ\text{C}$ prior to surge	-	15	A
I^2t	I^2t for fusing	$t_p = 10$ ms	-	1.1	A ² s
di_T/dt	Rate of rise of on-state current after $V_{(BO)}$ turn-on	$t_p = 10$ μ s	-	50	A/ μ s
P_{tot}	Continuous dissipation	$T_a = 25^\circ\text{C}$	-	1.2	W
P_{TM}	Peak dissipation	$t_p = 1$ ms; $T_a = 25^\circ\text{C}$	-	50	W
T_{stg}	Storage temperature		-65	150	$^\circ\text{C}$
T_a	Operating ambient temperature	off-state	-	70	$^\circ\text{C}$
T_{vj}	Overload junction temperature	on-state	-	150	$^\circ\text{C}$

Breakover diodes

BR211 series

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-e}$	Thermal resistance junction to envelope		-	22	-	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	mounted as fig:12	-	105	-	K/W
$Z_{th\ j-a}$	Thermal impedance junction to ambient	$t_p = 1\text{ ms}$	-	2.62	-	K/W
$R_{th\ e-tp}$	Thermal resistance envelope to tie point	lead length = 5 mm	-	15	-	K/W
		lead length = 10 mm	-	30	-	K/W
$R_{th\ e-a}$	Thermal resistance envelope to ambient	lead length = 5 mm	-	440	-	K/W
		lead length = 10 mm	-	350	-	K/W
$R_{th\ tp-a}$	Thermal resistance tie point to ambient	mounted as fig:12	-	70	-	K/W
		mounted with 1 cm ² copper laminate per lead.	-	55	-	K/W
		mounted with 2.25 cm ² copper laminate per lead	-	45	-	K/W

STATIC CHARACTERISTICS

 $T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_{TM}^1	On-state voltage	$I_{TM} = 2\text{ A}$	-	-	2.5	V
$V_{(BR)}^2$	Avalanche voltage (min)	$I_{(BR)} = 10\text{ mA}$				
$V_{(BO)}^3$	Breakover voltage (max)	$I \leq I_S, t_p = 100\text{ }\mu\text{s}$				
		BR211-140	123	140	157	V
		BR211-160	140	160	180	V
		BR211-180	158	180	202	V
		BR211-200	176	200	224	V
		BR211-220	193	220	247	V
		BR211-240	211	240	269	V
		BR211-260	228	260	292	V
		BR211-280	246	280	314	V
						V
$S_{(pr)}^4$	Temperature coefficient of $V_{(BR)}$		-	+0.1	-	%/K
I_H^2	Holding current	$T_j = 25\text{ }^{\circ}\text{C}$	150	-	-	mA
		$T_j = 70\text{ }^{\circ}\text{C}$	100	-	-	mA
I_S^3	Switching current	$t_p = 100\text{ }\mu\text{s}$	10	200	1000	mA
I_D^4	Off-state current	$V_D = 85\% V_{(BR)min}, T_j = 70\text{ }^{\circ}\text{C}$	-	-	10	μA

1 Measured under pulsed conditions to avoid excessive dissipation

2 The minimum current at which the diode will remain in the on-state

3 The avalanche current required to switch the diode to the on-state

4 Measured at maximum recommended continuous voltage. Illuminance $\leq 500\text{ lux}$ (daylight); relative humidity $< 65\%$.

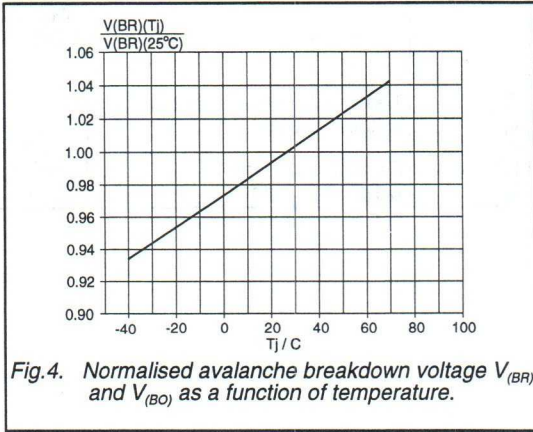
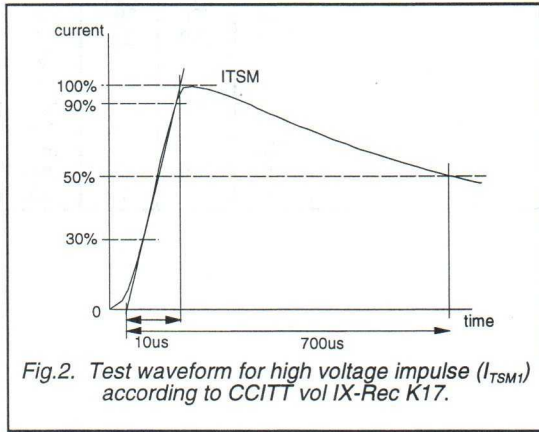
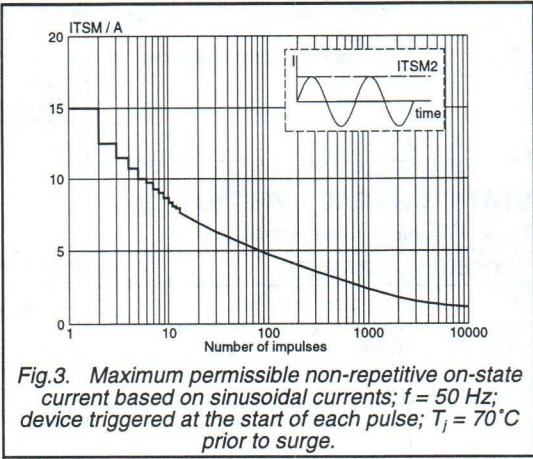
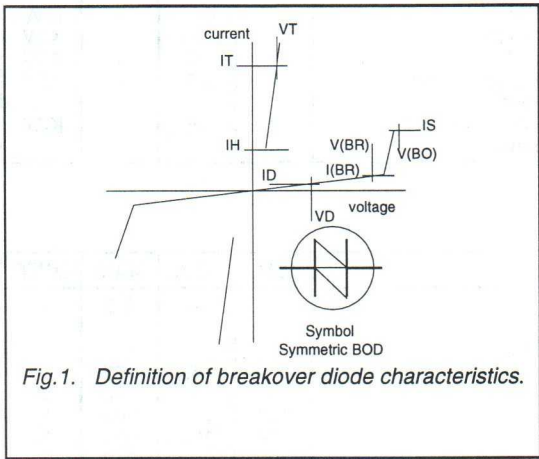
Breakover diodes

BR211 series

DYNAMIC CHARACTERISTICS

T_j = 25 °C unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
dV _D /dt	Linear rate of rise of off-state voltage that will not trigger any device	V _(DM) = 85% V _{(BR)min} ; T _j = 70 °C	-	-	2000	V/μs
C _i	Off-state capacitance	V _D = 0 V; f = 1 kHz to 1 MHz	-	-	100	pF



Breakover diodes

BR211 series

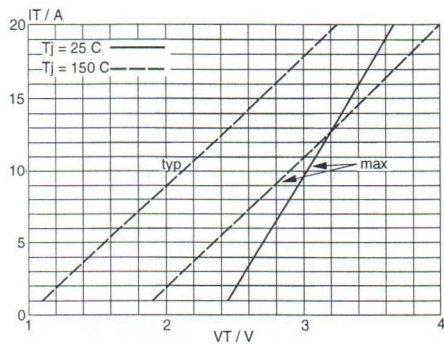


Fig.5. On-state current as a function of on-state voltage; $t_p = 200\ \mu\text{s}$ to avoid excessive dissipation.

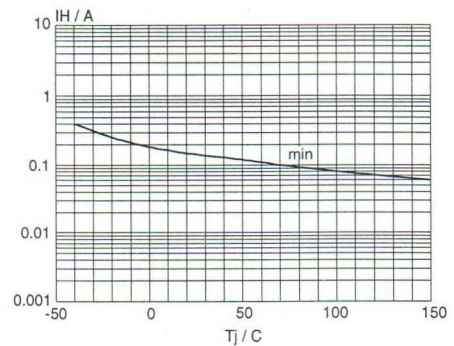


Fig.8. Minimum holding current as a function of temperature.

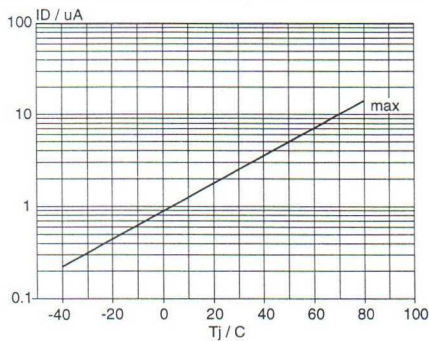


Fig.6. Maximum off-state current as a function of temperature.

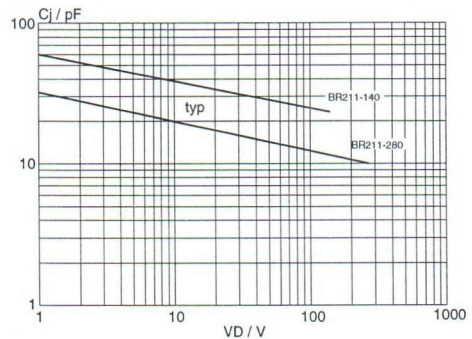


Fig.9. Typical junction capacitance as a function of off-state voltage, $f = 1\ \text{MHz}$; $T_J = 25^\circ\text{C}$.

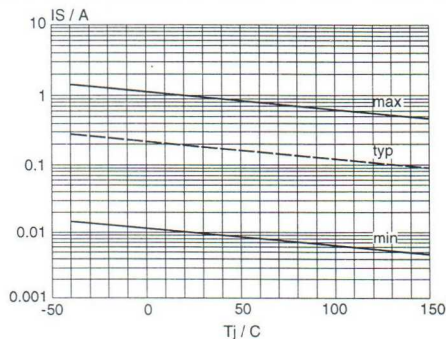


Fig.7. Switching current as a function of junction temperature.

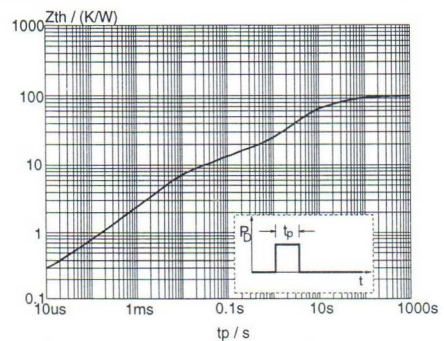
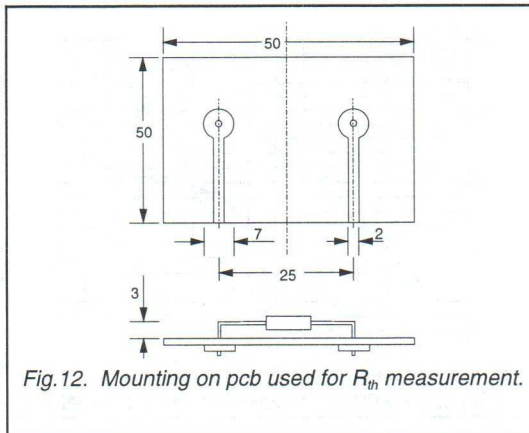
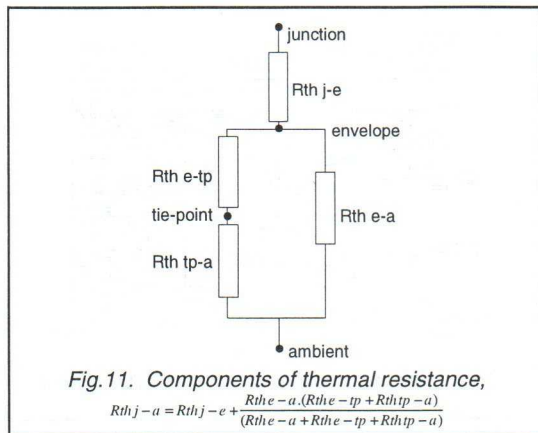


Fig.10. Transient thermal impedance. $Z_{th\ j-a} = f(t_p)$.

Breakover diodes

BR211 series



Breakover diodes

BR211SM series

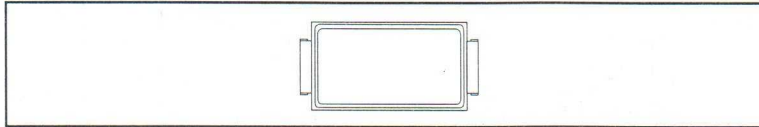
GENERAL DESCRIPTION

A range of bidirectional, breakover diodes in a two terminal, surface mounting, plastic envelope. These devices feature controlled breakover voltage and high holding current together with high peak current handling capability. Typical application is transient overvoltage protection in telecommunications equipment.

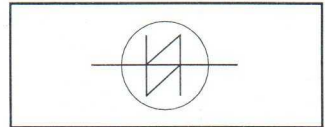
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MIN.	MAX.	UNIT
$V_{(BO)}$	BR211SM-140 to BR211SM-280 Breakover voltage	140	280	V
I_H	Holding current	150	-	mA
I_{TSM}	Non-repetitive peak current	-	40	A

OUTLINE - SOD106



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_D	Continuous voltage		-	75% of $V_{(BO)typ}$	V
I_{TSM1}	Non repetitive peak current	10/320 μ s impulse equivalent to 10/700 μ s, 1.6 kV voltage impulse (CCITT K17)	-	40	A
I_{TSM2}	Non repetitive on-state current	half sine wave; $t = 10$ ms; $T_j = 70^\circ\text{C}$ prior to surge	-	15	A
I^2t	I^2t for fusing	$t_p = 10$ ms	-	1.1	A ² s
dI_T/dt	Rate of rise of on-state current after $V_{(BO)}$ turn-on	$t_p = 10$ μ s	-	50	A/ μ s
P_{tot}	Continuous dissipation	$T_a = 25^\circ\text{C}$	-	1.2	W
P_{TM}	Peak dissipation	$t_p = 1$ ms; $T_a = 25^\circ\text{C}$	-	50	W
T_{stg}	Storage temperature		- 40	150	$^\circ\text{C}$
T_a	Operating ambient temperature	off-state	-	70	$^\circ\text{C}$
T_{vj}	Overload junction temperature	on-state	-	150	$^\circ\text{C}$

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-sp}$	Thermal resistance junction to solder point		-	-	12	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	pcb mounted; minimum footprint	-	100	-	K/W
$Z_{th\ j-a}$	Thermal impedance junction to ambient	$t_p = 1$ ms	-	2.62	-	K/W

STATIC CHARACTERISTICS

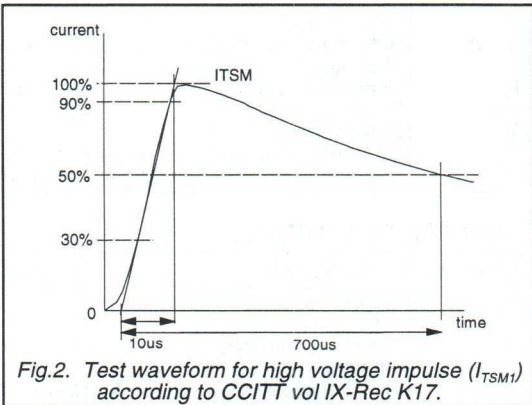
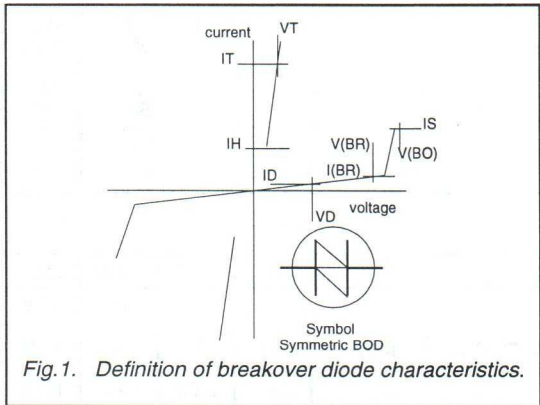
$T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_{TM}^1	On-state voltage	$I_{TM} = 2\text{ A}$	-	-	2.5	V
$V_{(BR)}^2$	Avalanche voltage (min)	$I_{(BR)} = 10\text{ mA}$				
$V_{(BO)}^3$	Breakover voltage (max)	$I \leq I_S, t_p = 100\text{ }\mu\text{s}$				
		BR211SM-140	123	140	157	V
		BR211SM-160	140	160	180	V
		BR211SM-180	158	180	202	V
		BR211SM-200	176	200	224	V
		BR211SM-220	193	220	247	V
		BR211SM-240	211	240	269	V
		BR211SM-260	228	260	292	V
		BR211SM-280	246	280	314	V
$S_{\frac{1}{2}(br)}$	Temperature coefficient of $V_{(BR)}$		-	+0.1	-	%/K
I_H^4	Holding current	$T_j = 25\text{ }^{\circ}\text{C}$	150	-	-	mA
		$T_j = 70\text{ }^{\circ}\text{C}$	100	-	-	mA
I_S^3	Switching current	$t_p = 100\text{ }\mu\text{s}$	10	200	1000	mA
I_D^4	Off-state current	$V_D = 85\% V_{(BR)min}, T_j = 70\text{ }^{\circ}\text{C}$	-	-	10	μA

DYNAMIC CHARACTERISTICS

$T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

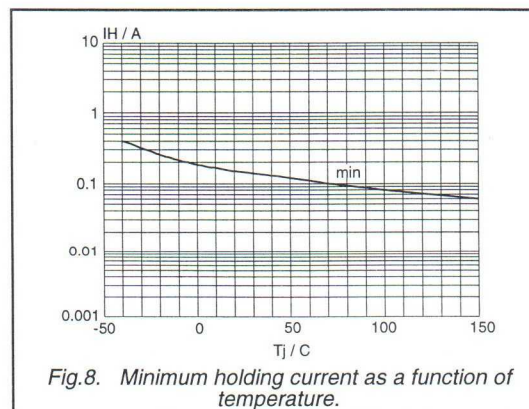
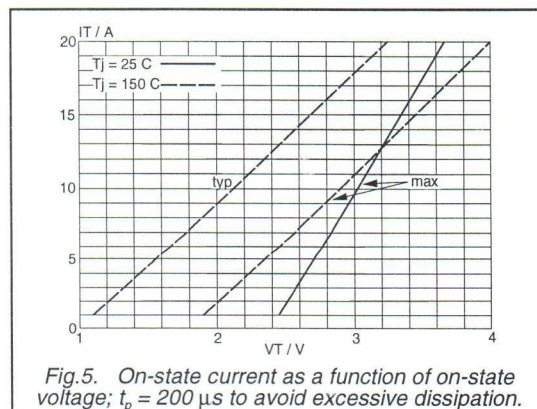
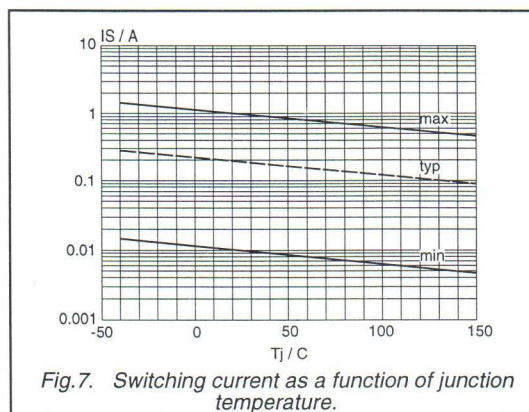
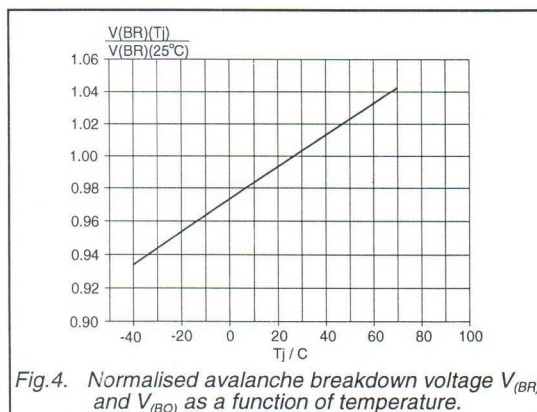
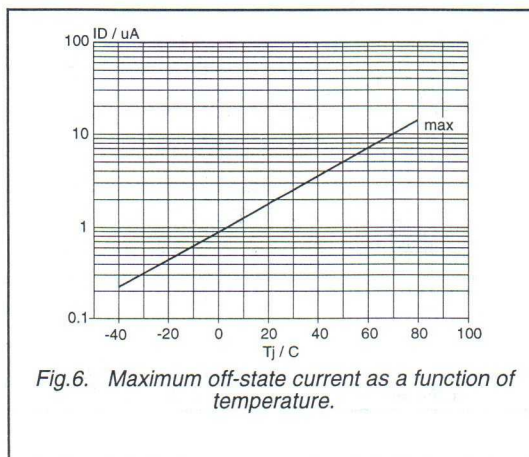
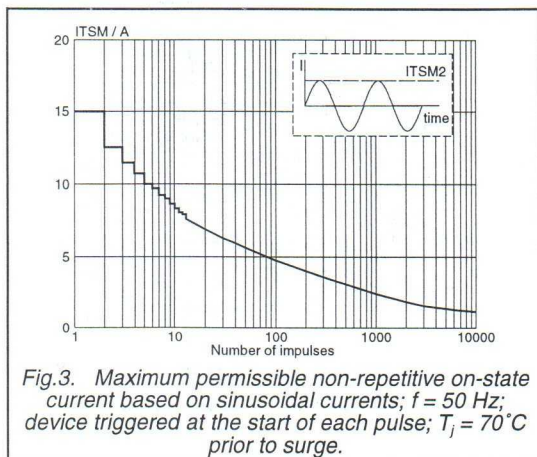
SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
dV_D/dt	Linear rate of rise of off-state voltage that will not trigger any device	$V_{(DM)} = 85\% V_{(BR)min}; T_j = 70\text{ }^{\circ}\text{C}$	-	-	2000	V/ μs
C_i	Off-state capacitance	$V_D = 0\text{ V}; f = 1\text{ kHz to }1\text{ MHz}$	-	-	100	pF



- 1 Measured under pulsed conditions to avoid excessive dissipation
- 2 The minimum current at which the diode will remain in the on-state
- 3 The avalanche current required to switch the diode to the on-state
- 4 Measured at maximum recommended continuous voltage. Relative humidity < 65%.

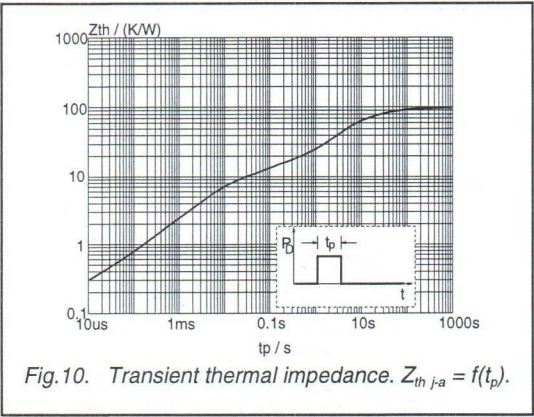
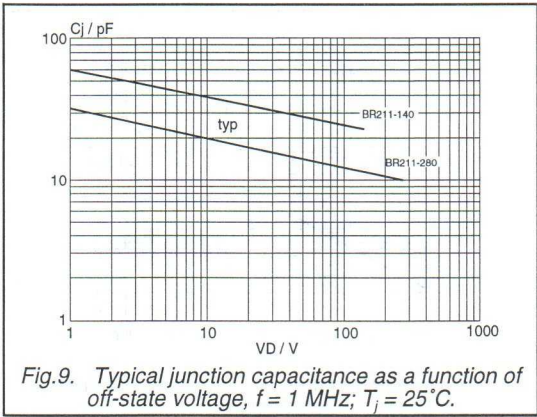
Breakover diodes

BR211SM series



Breakover diodes

BR211SM series



Rectifier diodes fast, soft-recovery

BY229 series

GENERAL DESCRIPTION

Glass-passivated double diffused rectifier diodes in a plastic envelope featuring low forward voltage drop, fast reverse recovery and soft recovery characteristic. The devices are intended for use in TV receivers, monitors and switched mode power supplies.

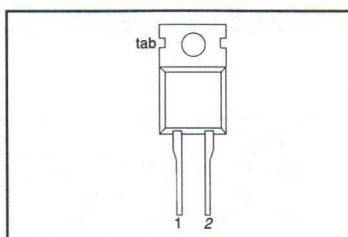
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	MAX.	UNIT
V_{RRM}	BY229 Repetitive peak reverse voltage	-200 200	-400 400	-600 600	-800 800	V
	Average forward current	8	8	8	8	A
$I_{F(AV)}$ I_{FSM}	Non-repetitive peak forward current	60	60	60	60	A
t_{rr}	Reverse recovery time	135	135	135	135	ns

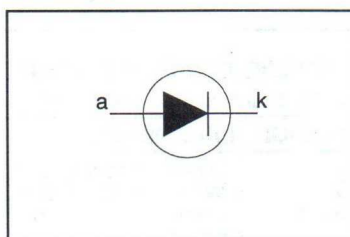
PINNING - TO220AC

PIN	DESCRIPTION
1	cathode (k)
2	anode (a)
tab	cathode (k)

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.				UNIT
V_{RSM}	Non-repetitive peak reverse voltage		-	-200 200	-400 400	-600 600	-800 800	V
V_{RRM}	Repetitive peak reverse voltage		-	200	400	600	800	V
V_{RWM}	Crest working reverse voltage		-	150	300	500	600	V
V_R	Continuous reverse voltage		-	150	300	500	600	V
$I_{F(AV)}$	Average forward current ¹	square wave; $\delta = 0.5$; $T_{mb} \leq 122\text{ }^{\circ}\text{C}$ sinusoidal; $a = 1.57$; $T_{mb} \leq 125\text{ }^{\circ}\text{C}$	-	8				A
$I_{F(RMS)}$	RMS forward current		-	11				A
I_{FRM}	Repetitive peak forward current	$t = 25\text{ }\mu\text{s}$; $\delta = 0.5$; $T_{mb} \leq 122\text{ }^{\circ}\text{C}$	-	16				A
I_{FSM}	Non-repetitive peak forward current.	$t = 10\text{ ms}$ $t = 8.3\text{ ms}$ sinusoidal; $T_j = 150\text{ }^{\circ}\text{C}$ prior to surge; with reapplied $V_{RWM(max)}$ $t = 10\text{ ms}$	-	60				A
I^2t	I^2t for fusing		-	18				A ² s
T_{stg}	Storage temperature		-40	150				$^{\circ}\text{C}$
T_j	Operating junction temperature		-	150				$^{\circ}\text{C}$

¹ Neglecting switching and reverse current losses.

Rectifier diodes fast, soft-recovery

BY229 series

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-mb}$	Thermal resistance junction to mounting base	in free air.	-	-	2.0	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient		-	60	-	K/W

STATIC CHARACTERISTICS

$T_j = 25\ ^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage	$I_F = 20\ \text{A}$	-	1.5	1.85	V
I_R	Reverse current	$V_R = V_{RWM}$; $T_j = 125\ ^\circ\text{C}$	-	0.1	0.4	mA

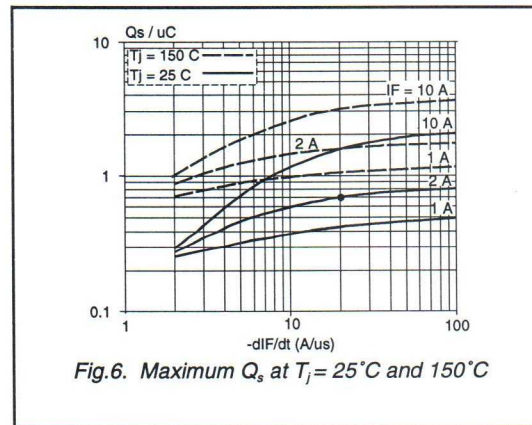
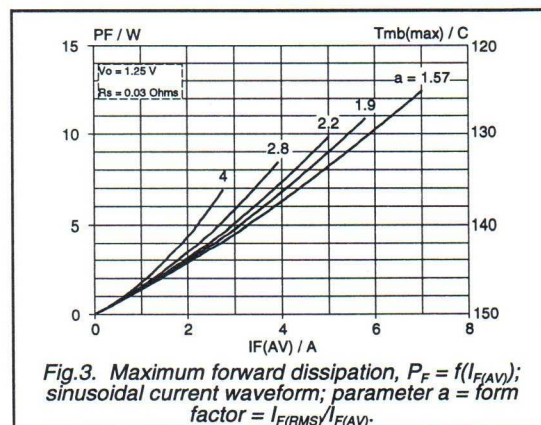
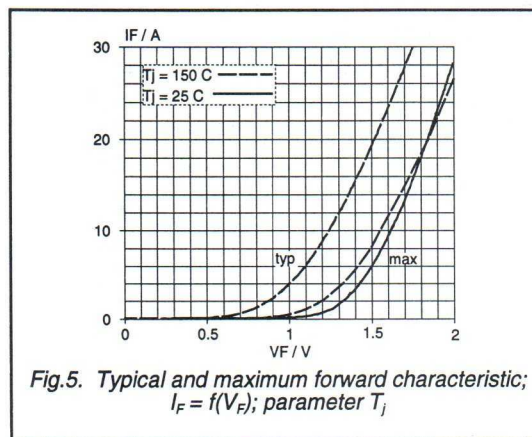
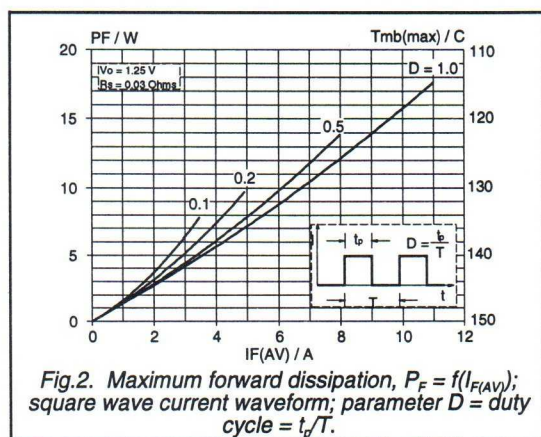
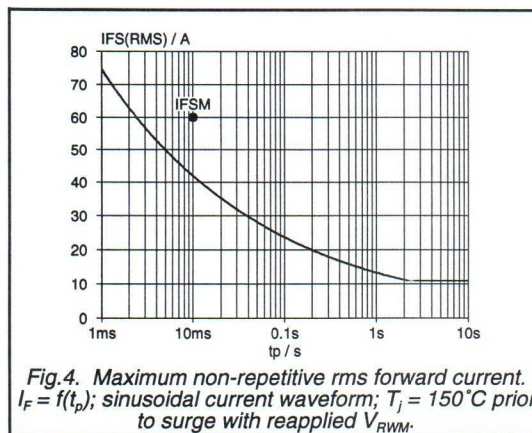
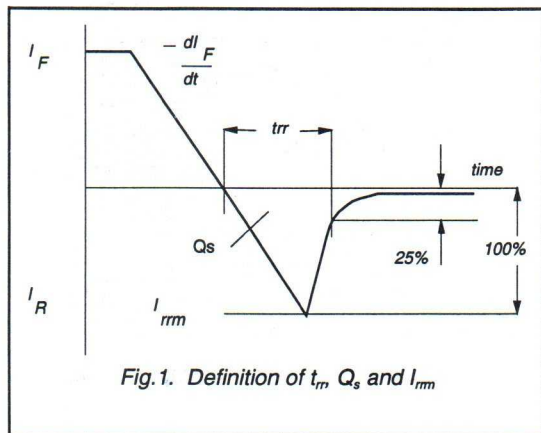
DYNAMIC CHARACTERISTICS

$T_j = 25\ ^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
t_{rr}	Reverse recovery time	$I_F = 1\ \text{A}$; $V_R \geq 30\ \text{V}$; $-di_F/dt = 50\ \text{A}/\mu\text{s}$	-	100	135	ns
Q_s	Reverse recovery charge	$I_F = 2\ \text{A}$; $V_R \geq 30\ \text{V}$; $-di_F/dt = 20\ \text{A}/\mu\text{s}$	-	0.5	0.7	μC
di_R/dt	Maximum slope of the reverse recovery current	$I_F = 2\ \text{A}$; $-di_F/dt = 20\ \text{A}/\mu\text{s}$	-	50	60	$\text{A}/\mu\text{s}$

Rectifier diodes fast, soft-recovery

BY229 series



Rectifier diodes fast, soft-recovery

BY229 series

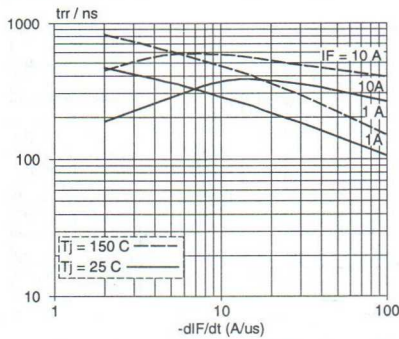


Fig.7. Maximum t_{rr} measured to 25% of I_{rmi} ; $T_j = 25^\circ\text{C}$ and 150°C

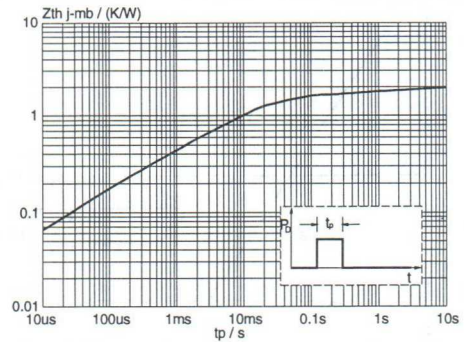


Fig.9. Transient thermal impedance $Z_{th} = f(t_p)$

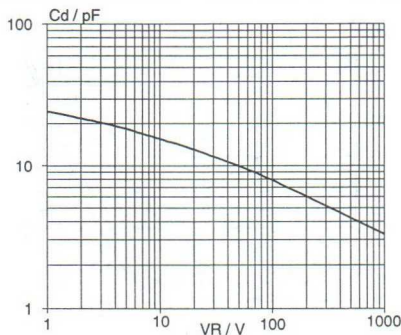


Fig.8. Typical junction capacitance C_d at $f = 1\text{ MHz}$, $T_j = 25^\circ\text{C}$

Rectifier diodes fast, soft-recovery

BY229F series

GENERAL DESCRIPTION

Glass-passivated double diffused rectifier diodes in a plastic full pack envelope featuring low forward voltage drop, fast reverse recovery and soft recovery characteristic. The devices are intended for use in TV receivers, monitors and switched mode power supplies.

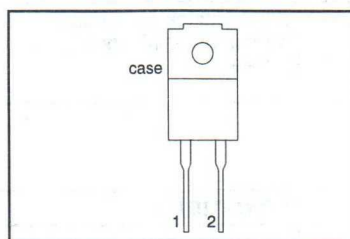
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	MAX.	UNIT
BY229F						
V_{RRM}	Repetitive peak reverse voltage	-200 200	-400 400	-600 600	-800 800	V
$I_{F(AV)}$	Average forward current	8	8	8	8	A
I_{FSM}	Non-repetitive peak forward current	60	60	60	60	A
t_{rr}	Reverse recovery time	135	135	135	135	ns

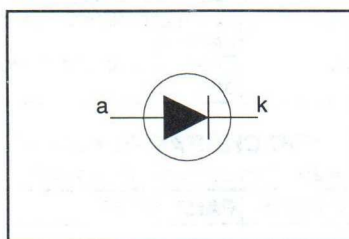
PINNING - SOD100

PIN	DESCRIPTION
1	cathode
2	anode
case	isolated

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.				UNIT
				-200	-400	-600	-800	
V_{RSM}	Non-repetitive peak reverse voltage		-	200	400	600	800	V
V_{RRM}	Repetitive peak reverse voltage		-	200	400	600	800	V
V_{RWM}	Crest working reverse voltage		-	150	300	500	600	V
V_R	Continuous reverse voltage		-	150	300	500	600	V
$I_{F(AV)}$	Average forward current ¹	square wave; $\delta = 0.5$; $T_{hs} \leq 83^\circ\text{C}$ sinusoidal; $a = 1.57$; $T_{hs} \leq 90^\circ\text{C}$	-	8				A
$I_{F(RMS)}$	RMS forward current		-	7				A
I_{FRM}	Repetitive peak forward current	$t = 25\ \mu\text{s}$; $\delta = 0.5$; $T_{hs} \leq 83^\circ\text{C}$	-	11				A
I_{FSM}	Non-repetitive peak forward current	$t = 10\ \text{ms}$ $t = 8.3\ \text{ms}$ sinusoidal; $T_j = 150^\circ\text{C}$ prior to surge; with reapplied $V_{RWM(max)}$ $t = 10\ \text{ms}$	-	60				A
I^2t	I^2t for fusing		-	18				A ² s
T_{stg}	Storage temperature		-40	150				$^\circ\text{C}$
T_j	Operating junction temperature		-	150				$^\circ\text{C}$

¹ Neglecting switching and reverse current losses.

Rectifier diodes fast, soft-recovery

BY229F series

ISOLATION

$T_{hs} = 25\text{ }^{\circ}\text{C}$ unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_{isol}	Repetitive peak voltage from both terminals to external heatsink	R.H. $\leq 65\%$; clean and dustfree	-	-	1500	V
C_{isol}	Capacitance from cathode to external heatsink	$f = 1\text{ MHz}$	-	12	-	pF

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-hs}$	Thermal resistance junction to heatsink	with heatsink compound	-	-	4.8	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	without heatsink compound in free air.	-	55	7.2	K/W
			-		-	K/W

STATIC CHARACTERISTICS

$T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage	$I_F = 20\text{ A}$	-	1.5	1.85	V
I_R	Reverse current	$V_R = V_{RWM}$, $T_j = 125\text{ }^{\circ}\text{C}$	-	0.1	0.4	mA

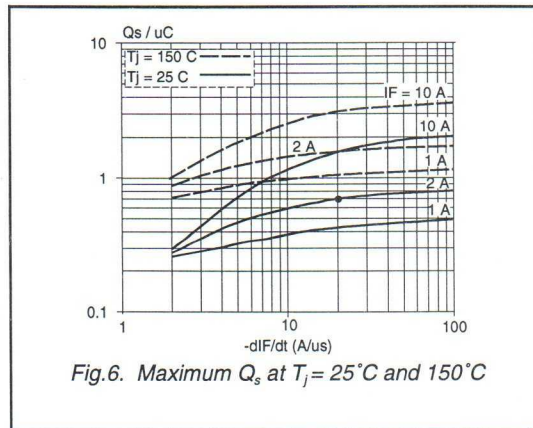
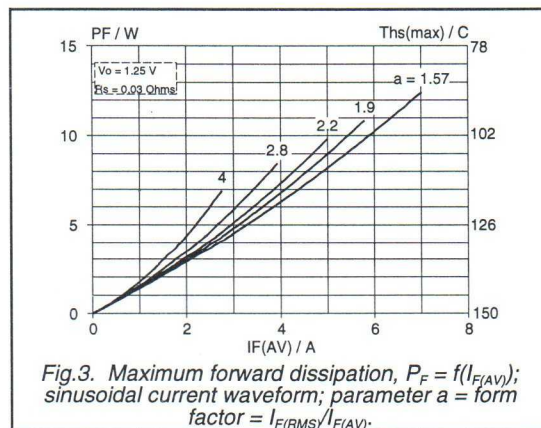
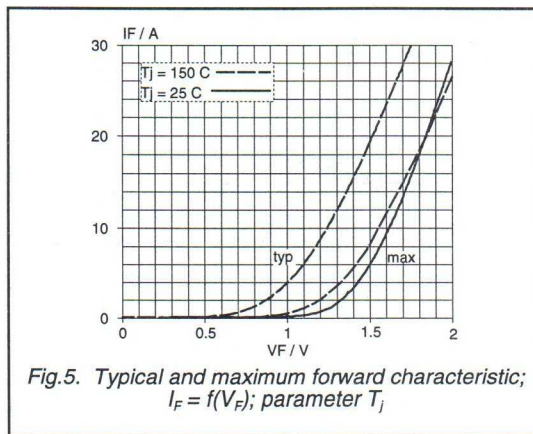
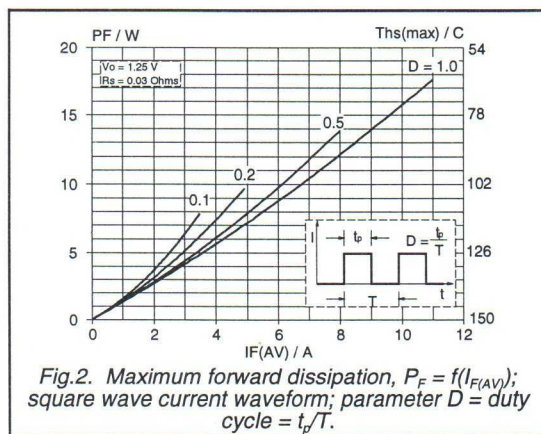
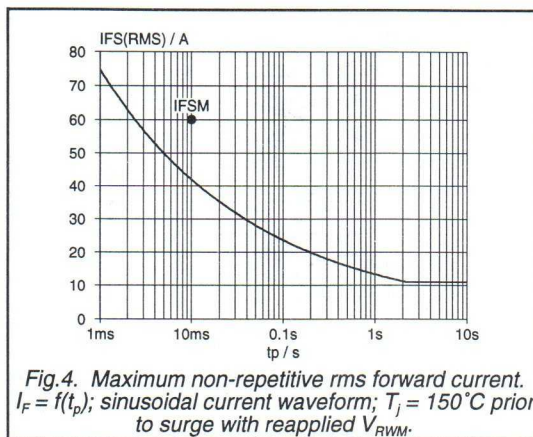
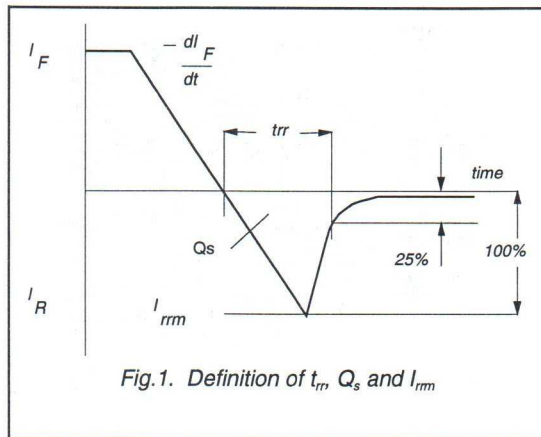
DYNAMIC CHARACTERISTICS

$T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
t_{rr}	Reverse recovery time	$I_F = 1\text{ A}$; $V_R \geq 30\text{ V}$; $-di_F/dt = 50\text{ A}/\mu\text{s}$	-	100	135	ns
Q_s	Reverse recovery charge	$I_F = 2\text{ A}$; $V_R \geq 30\text{ V}$; $-di_F/dt = 20\text{ A}/\mu\text{s}$	-	0.5	0.7	μC
di_R/dt	Maximum slope of the reverse recovery current	$I_F = 2\text{ A}$; $-di_F/dt = 20\text{ A}/\mu\text{s}$	-	50	60	$\text{A}/\mu\text{s}$

Rectifier diodes fast, soft-recovery

BY229F series



Rectifier diodes fast, soft-recovery

BY229F series

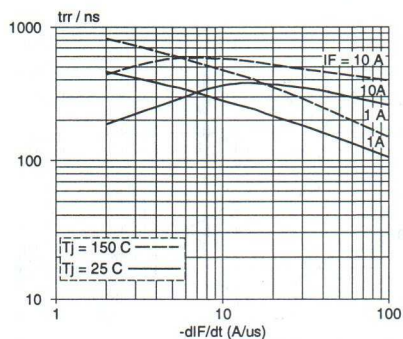


Fig.7. Maximum t_{rr} measured to 25% of I_{rm} ; $T_j = 25^\circ\text{C}$ and 150°C

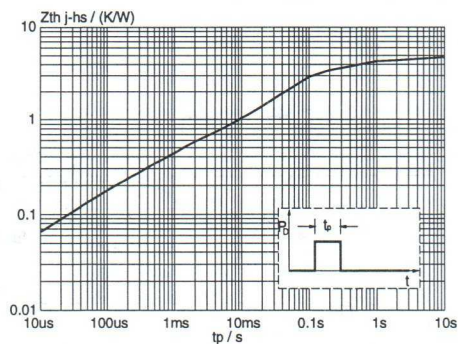


Fig.9. Transient thermal impedance $Z_{th} = f(t_p)$

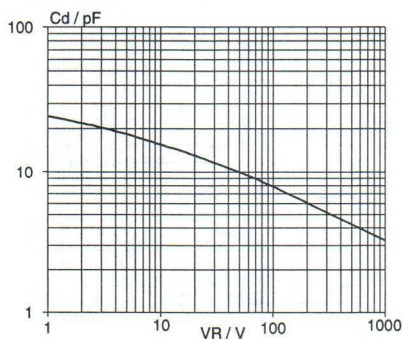


Fig.8. Typical junction capacitance C_d at $f = 1$ MHz; $T_j = 25^\circ\text{C}$

Rectifier diodes
fast, soft-recovery

BY229X series

GENERAL DESCRIPTION

Glass-passivated double diffused rectifier diodes in a plastic full pack envelope featuring low forward voltage drop, fast reverse recovery and soft recovery characteristic. The devices are intended for use in TV receivers, monitors and switched mode power supplies.

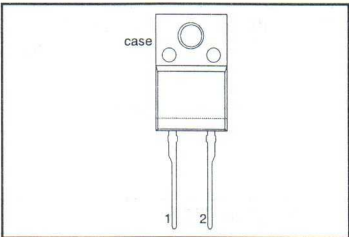
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	MAX.	UNIT
V_{RRM} $I_{F(AV)}$ I_{FSM} t_{rr}	BY229X Repetitive peak reverse voltage	-200 200	-400 400	-600 600	-800 800	V
	Average forward current	8	8	8	8	A
	Non-repetitive peak forward current	60	60	60	60	A
	Reverse recovery time	145	145	145	145	ns

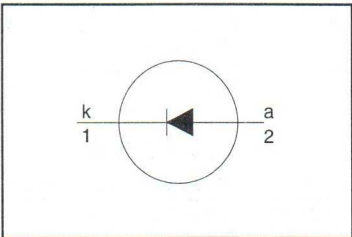
PINNING - SOD113

PIN	DESCRIPTION
1	cathode
2	anode
case	isolated

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.				UNIT
V_{RSM}	Non-repetitive peak reverse voltage		-	-200 200	-400 400	-600 600	-800 800	V
V_{RRM}	Repetitive peak reverse voltage		-	200	400	600	800	V
V_{RWM}	Crest working reverse voltage		-	150	300	500	600	V
V_R	Continuous reverse voltage		-	150	300	500	600	V
$I_{F(AV)}$	Average forward current ¹	square wave; $\delta = 0.5$; $T_{hs} \leq 83\text{ }^{\circ}\text{C}$ sinusoidal; $a = 1.57$; $T_{hs} \leq 90\text{ }^{\circ}\text{C}$	-	8				A
			-	7				A
$I_{F(RMS)}$	RMS forward current		-	11				A
I_{FRM}	Repetitive peak forward current	$t = 25\text{ }\mu\text{s}$; $\delta = 0.5$; $T_{hs} \leq 83\text{ }^{\circ}\text{C}$	-	16				A
I_{FSM}	Non-repetitive peak forward current.	$t = 10\text{ ms}$ $t = 8.3\text{ ms}$ sinusoidal; $T_j = 150\text{ }^{\circ}\text{C}$ prior to surge; with reapplied $V_{RWM(max)}$ $t = 10\text{ ms}$	-	60				A
			-	66				A
I^2t	I^2t for fusing		-	18				A ² s
T_{slg}	Storage temperature		-40	150				$^{\circ}\text{C}$
T_j	Operating junction temperature		-	150				$^{\circ}\text{C}$

1 Neglecting switching and reverse current losses.

Rectifier diodes
fast, soft-recovery

BY229X series

ISOLATION LIMITING VALUE & CHARACTERISTIC

$T_{hs} = 25\text{ }^{\circ}\text{C}$ unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_{isol}	R.M.S. isolation voltage from both terminals to external heatsink	$f = 50\text{-}60\text{ Hz}$; sinusoidal waveform; $R.H. \leq 65\%$; clean and dustfree	-		2500	V
C_{isol}	Capacitance from both terminals to external heatsink	$f = 1\text{ MHz}$	-	10	-	pF

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-hs}$	Thermal resistance junction to heatsink	with heatsink compound	-	-	4.8	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	without heatsink compound in free air.	-	55	7.2	K/W
			-		-	K/W

STATIC CHARACTERISTICS

$T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage	$I_F = 20\text{ A}$	-	1.5	1.85	V
I_R	Reverse current	$V_R = V_{RWM}$; $T_j = 125\text{ }^{\circ}\text{C}$	-	0.1	0.4	mA

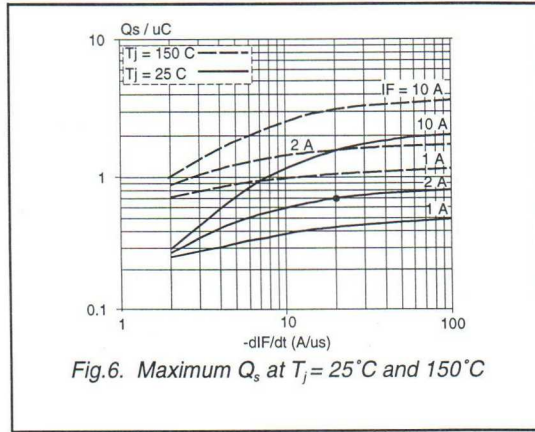
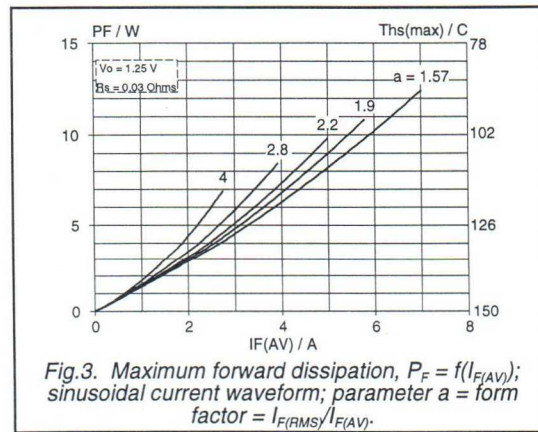
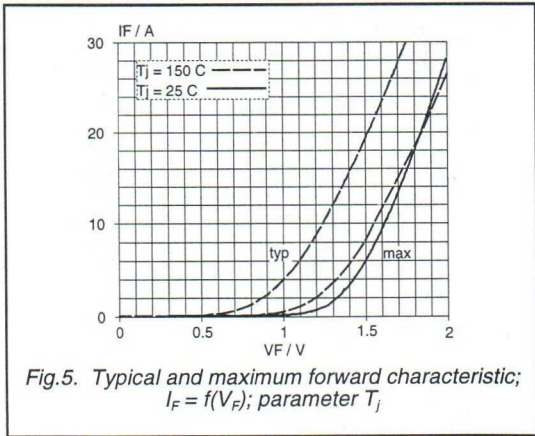
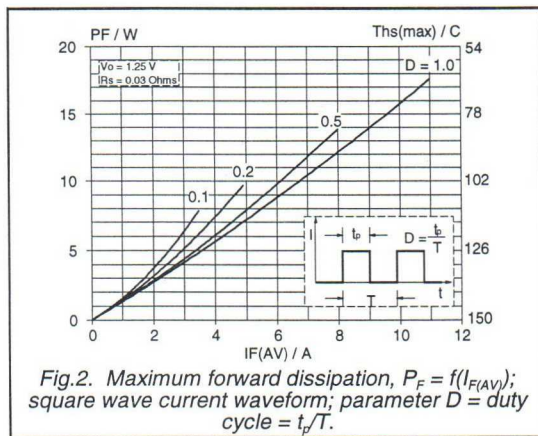
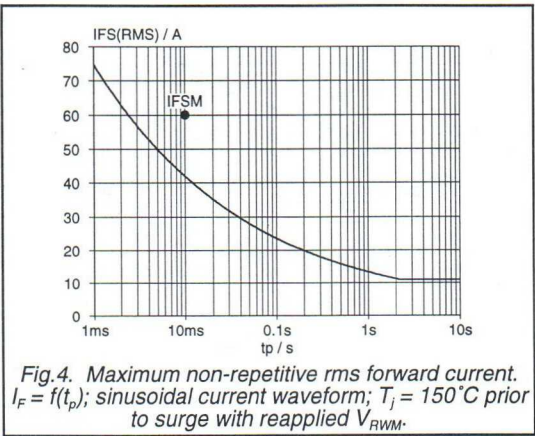
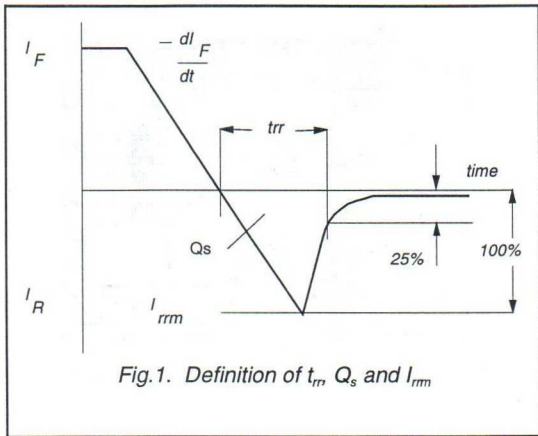
DYNAMIC CHARACTERISTICS

$T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
t_{rr}	Reverse recovery time	$I_F = 1\text{ A}$; $V_R \geq 30\text{ V}$; $-di_F/dt = 50\text{ A}/\mu\text{s}$	-	125	145	ns
Q_s	Reverse recovery charge	$I_F = 2\text{ A}$; $V_R \geq 30\text{ V}$; $-di_F/dt = 20\text{ A}/\mu\text{s}$	-	0.5	0.7	μC
di_R/dt	Maximum slope of the reverse recovery current	$I_F = 2\text{ A}$; $-di_F/dt = 20\text{ A}/\mu\text{s}$	-	50	60	$\text{A}/\mu\text{s}$

Rectifier diodes
fast, soft-recovery

BY229X series



Rectifier diodes
fast, soft-recovery

BY229X series

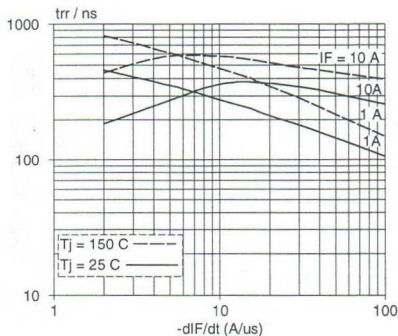


Fig.7. Maximum t_{rr} measured to 25% of I_{rm} ; $T_J = 25^\circ\text{C}$ and 150°C

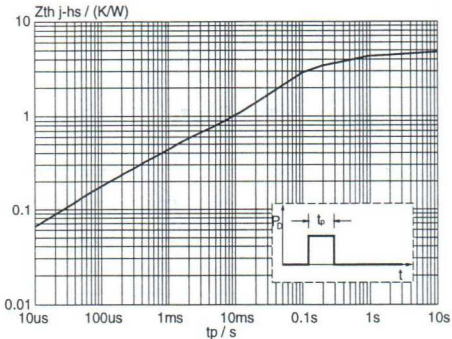


Fig.9. Transient thermal impedance $Z_{th} = f(t_p)$

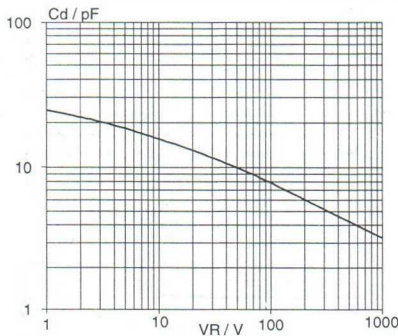


Fig.8. Typical junction capacitance C_d at $f = 1\text{ MHz}$, $T_J = 25^\circ\text{C}$

Rectifier diodes general purpose

BY249 series

GENERAL DESCRIPTION

Glass-passivated double diffused rectifier diodes in a plastic envelope. The devices are intended for low frequency power rectifier applications.

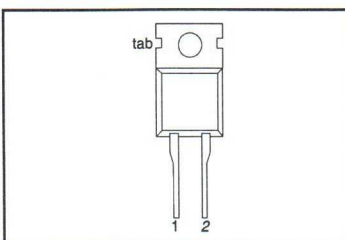
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	UNIT
	BY249	-300	-600	
V_{RRM}	Repetitive peak reverse voltage	300	600	V
$I_{F(AV)}$	Average forward current	7	7	A
I_{FSM}	Non-repetitive peak forward current	60	60	A

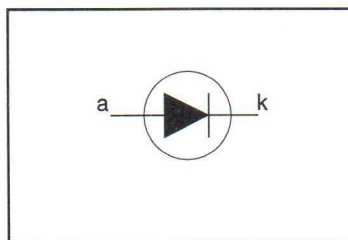
PINNING - TO220AC

PIN	DESCRIPTION
1	cathode (k)
2	anode (a)
tab	cathode (k)

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{RSM}	Non-repetitive peak reverse voltage		-	-300 300	V
V_{RRM}	Repetitive peak reverse voltage		-	300	V
V_{RWM}	Crest working reverse voltage		-	200	V
V_R	Continuous reverse voltage		-	200	V
$I_{F(AV)}$	Average forward current ¹	sinusoidal; $a = 1.57$; $T_{mb} \leq 131^\circ\text{C}$	-	7	A
$I_{F(RMS)}$	RMS forward current		-	11	A
I_{FRM}	Repetitive peak forward current	sinusoidal; $a = 1.57$; $t = 10\text{ ms}$	-	60	A
I_{FSM}	Non-repetitive peak forward current.	$t = 8.3\text{ ms}$ sinusoidal; $T_J = 150^\circ\text{C}$ prior to surge; with reapplied $V_{RWM(max)}$ $t = 10\text{ ms}$	-	60 66	A
I^2t	I^2t for fusing		-	18	A ² s
T_{stg}	Storage temperature		-40	150	$^\circ\text{C}$
T_J	Operating junction temperature		-	150	$^\circ\text{C}$

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-mb}$	Thermal resistance junction to mounting base		-	-	2.0	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	in free air.	-	60	-	K/W

¹ Neglecting switching and reverse current losses.

Rectifier diodes
general purpose

BY249 series

STATIC CHARACTERISTICS $T_j = 25\text{ °C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage	$I_F = 20\text{ A}$	-	1.2	1.6	V
		$I_F = 5\text{ A}; T_j = 100\text{ °C}$	-	0.9	1.05	V
I_R	Reverse current	$V_R = V_{RWM}; T_j = 125\text{ °C}$	-	0.1	0.4	mA

Rectifier diodes
general purpose

BY249 series

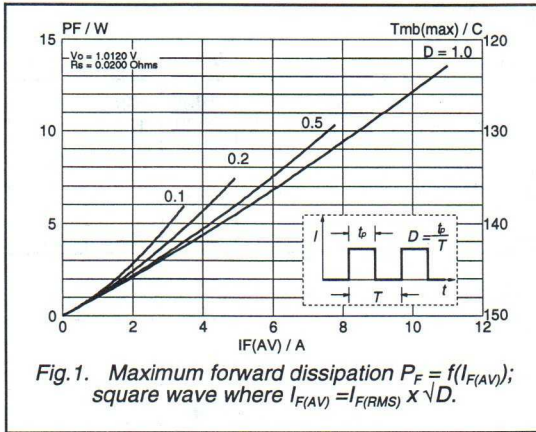


Fig. 1. Maximum forward dissipation $P_F = f(I_F(AV))$; square wave where $I_F(AV) = I_F(RMS) \times \sqrt{D}$.

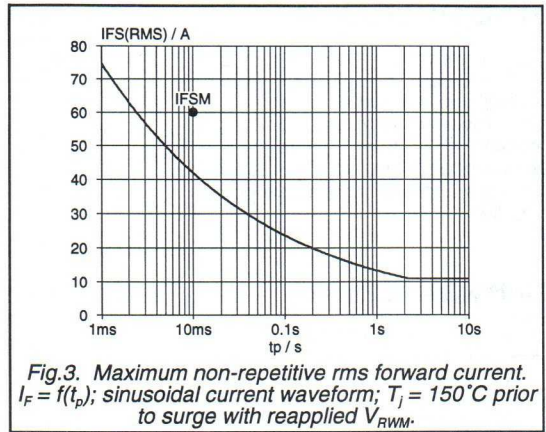


Fig. 3. Maximum non-repetitive rms forward current. $I_F = f(t_p)$; sinusoidal current waveform; $T_J = 150$ °C prior to surge with reapplied V_{RWM} .

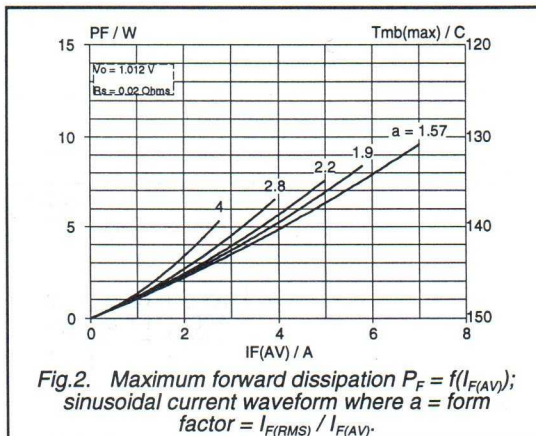


Fig. 2. Maximum forward dissipation $P_F = f(I_F(AV))$; sinusoidal current waveform where $a =$ form factor $= I_{F(RMS)} / I_{F(AV)}$.

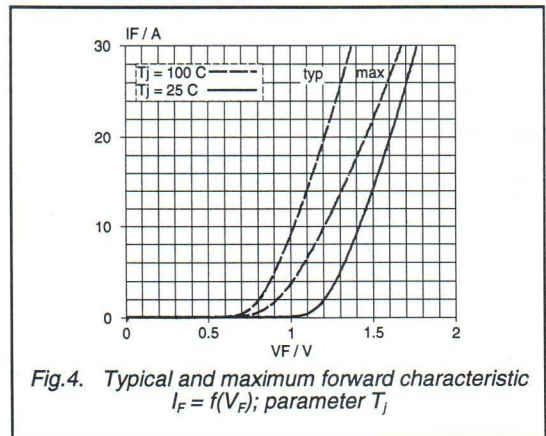


Fig. 4. Typical and maximum forward characteristic $I_F = f(V_F)$; parameter T_J

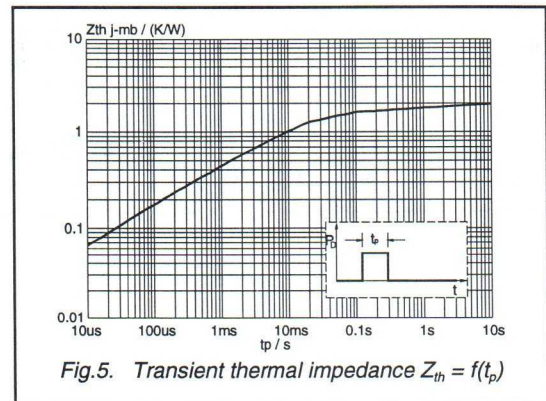


Fig. 5. Transient thermal impedance $Z_{th} = f(t_p)$

Rectifier diodes fast, soft-recovery

BY329 series

GENERAL DESCRIPTION

Glass-passivated double diffused rectifier diodes in a plastic envelope featuring low forward voltage drop, fast reverse recovery and soft recovery characteristic. The devices are intended for use in TV receivers, monitors and switched mode power supplies.

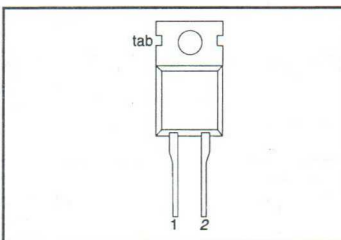
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
V_{RRM}	BY329 Repetitive peak reverse voltage	-800 800	-1000 1000	-1200 1200	V
$I_{F(AV)}$	Average forward current	8	8	8	A
I_{FSM}	Non-repetitive peak forward current	75	75	75	A
t_{rr}	Reverse recovery time	135	135	135	ns

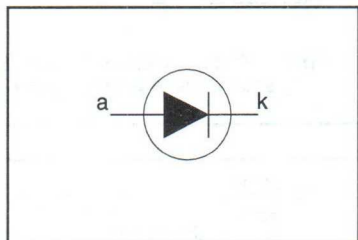
PINNING - TO220AC

PIN	DESCRIPTION
1	cathode (k)
2	anode (a)
tab	cathode (k)

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{RSM}	Non-repetitive peak reverse voltage		-	-800 800	-1000 1000	-1200 1200	V
V_{RRM}	Repetitive peak reverse voltage		-	800	1000	1200	V
V_{RWM}	Crest working reverse voltage		-	600	800	1000	V
$I_{F(AV)}$	Average forward current ¹	square wave; $\delta = 0.5$; $T_{mb} \leq 122^\circ\text{C}$	-	8			A
		sinusoidal; $a = 1.57$; $T_{mb} \leq 125^\circ\text{C}$	-	7			A
$I_{F(RMS)}$	RMS forward current		-	11			A
I_{FRM}	Repetitive peak forward current	$t = 25\ \mu\text{s}$; $\delta = 0.5$; $T_{mb} \leq 122^\circ\text{C}$	-	16			A
I_{FSM}	Non-repetitive peak forward current.	$t = 10\ \text{ms}$ $t = 8.3\ \text{ms}$ sinusoidal; $T_j = 150^\circ\text{C}$ prior to surge; with reapplied	-	75			A
		$V_{RWM(max)}$ $t = 10\ \text{ms}$	-	82			A
I^2t	I^2t for fusing		-	28			A ² s
T_{stg}	Storage temperature		-40	150			$^\circ\text{C}$
T_j	Operating junction temperature		-	150			$^\circ\text{C}$

¹ Neglecting switching and reverse current losses.

Rectifier diodes fast, soft-recovery

BY329 series

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-mb}$	Thermal resistance junction to mounting base	in free air.	-	-	2.0	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient		-	60	-	K/W

STATIC CHARACTERISTICS

 $T_j = 25\ ^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage	$I_F = 20\ \text{A}$	-	1.5	1.85	V
I_R	Reverse current	$V_R = V_{RWM}$; $T_j = 125\ ^\circ\text{C}$	-	0.1	1.0	mA

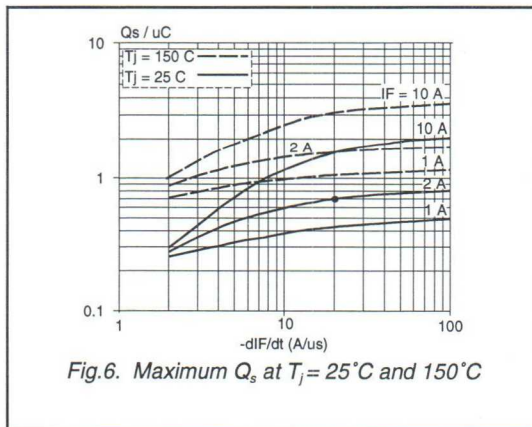
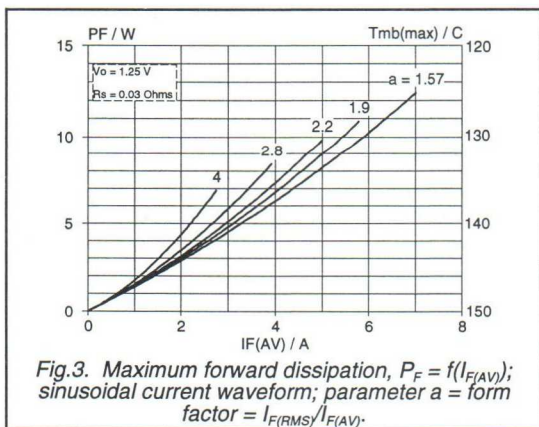
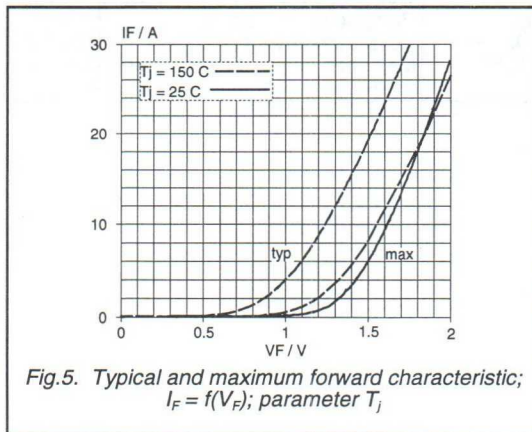
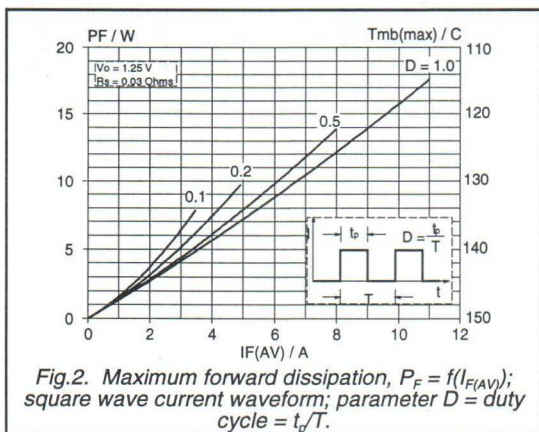
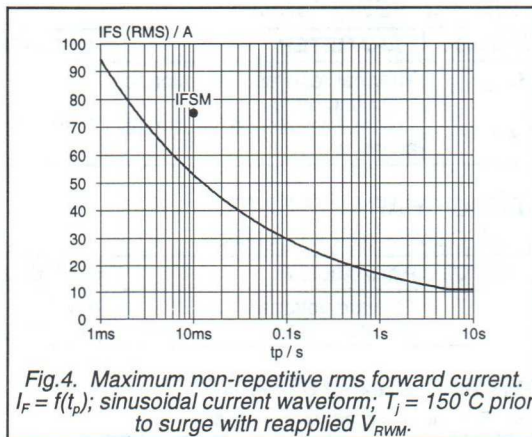
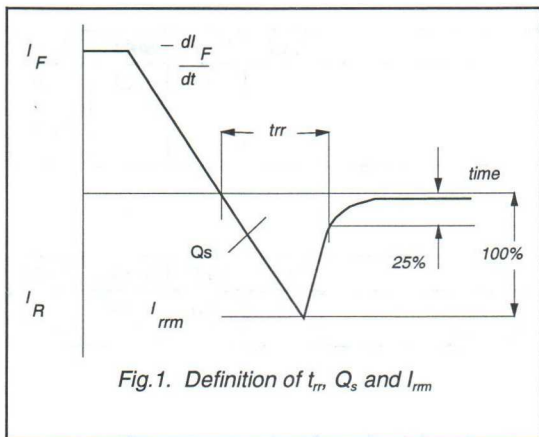
DYNAMIC CHARACTERISTICS

 $T_j = 25\ ^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
t_{rr}	Reverse recovery time	$I_F = 1\ \text{A}$; $V_R \geq 30\ \text{V}$; $-di_F/dt = 50\ \text{A}/\mu\text{s}$	-	100	135	ns
Q_s	Reverse recovery charge	$I_F = 2\ \text{A}$; $V_R \geq 30\ \text{V}$; $-di_F/dt = 20\ \text{A}/\mu\text{s}$	-	0.5	0.7	μC
di_R/dt	Maximum slope of the reverse recovery current	$I_F = 2\ \text{A}$; $-di_F/dt = 20\ \text{A}/\mu\text{s}$	-	50	60	$\text{A}/\mu\text{s}$

Rectifier diodes fast, soft-recovery

BY329 series



Rectifier diodes fast, soft-recovery

BY329 series

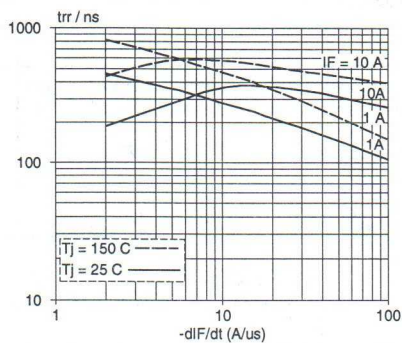


Fig.7. Maximum t_{rr} measured to 25% of I_{rm} ; $T_j = 25^\circ\text{C}$ and 150°C

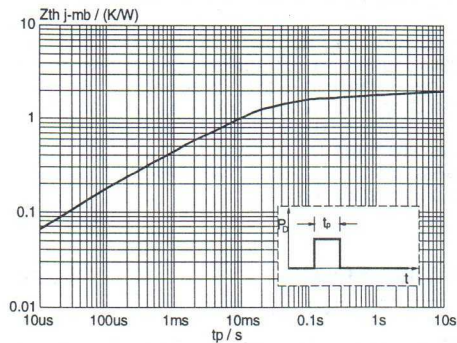


Fig.9. Transient thermal impedance $Z_{th} = f(t_p)$

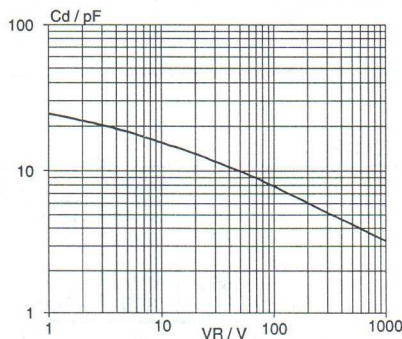


Fig.8. Typical junction capacitance C_d at $f = 1\text{ MHz}$; $T_j = 25^\circ\text{C}$

Rectifier diodes fast, soft-recovery

BY329F series

GENERAL DESCRIPTION

Glass-passivated double diffused rectifier diodes in a full pack plastic envelope featuring low forward voltage drop, fast reverse recovery and soft recovery characteristic. The devices are intended for use in TV receivers, monitors and switched mode power supplies.

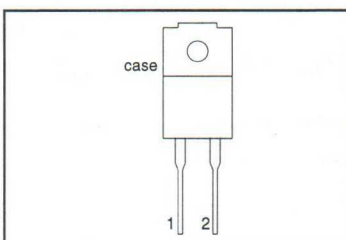
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
BY329F V_{RRM} $I_{F(AV)}$ I_{FSM} t_{rr}	Repetitive peak reverse voltage	-800 800	-1000 1000	-1200 1200	V
	Average forward current	8	8	8	A
	Non-repetitive peak forward current	65	65	65	A
	Reverse recovery time	145	145	145	ns

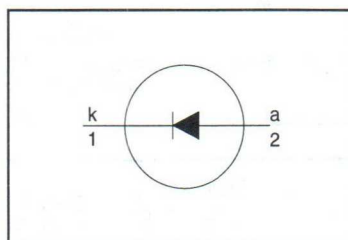
PINNING - SOD100

PIN	DESCRIPTION
1	cathode
2	anode
case	isolated

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{RSM}	Non-repetitive peak reverse voltage		-	-800 800	-1000 1000	-1200 1200	V
V_{RRM}	Repetitive peak reverse voltage		-	800	1000	1200	V
V_{RWM}	Crest working reverse voltage		-	600	800	1000	V
$I_{F(AV)}$	Average forward current ¹	square wave; $\delta = 0.5$; $T_{hs} \leq 83^\circ\text{C}$	-	8			A
		sinusoidal; $a = 1.57$; $T_{hs} \leq 90^\circ\text{C}$	-	7			A
$I_{F(RMS)}$	RMS forward current		-	11			A
I_{FRM}	Repetitive peak forward current	$t = 25\ \mu\text{s}$; $\delta = 0.5$; $T_{hs} \leq 83^\circ\text{C}$	-	16			A
I_{FSM}	Non-repetitive peak forward current.	$t = 10\ \text{ms}$; $t = 8.3\ \text{ms}$; sinusoidal; $T_j = 150^\circ\text{C}$ prior to surge; with reapplied	-	65			A
		$V_{RWM(max)}$ $t = 10\ \text{ms}$	-	71			A
I^2t	I^2t for fusing		-	28			A ² s
T_{stg}	Storage temperature		-40	150			$^\circ\text{C}$
T_j	Operating junction temperature		-	150			$^\circ\text{C}$

¹ Neglecting switching and reverse current losses.

Rectifier diodes fast, soft-recovery

BY329F series

ISOLATION LIMITING VALUE & CHARACTERISTIC

 $T_{hs} = 25\text{ }^{\circ}\text{C}$ unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_{isol}	Repetitive peak voltage from both terminals to external heatsink	R.H. $\leq 65\%$; clean and dustfree	-		1500	V
C_{isol}	Capacitance from cathode to external heatsink	$f = 1\text{ MHz}$	-	12	-	pF

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-hs}$	Thermal resistance junction to heatsink	with heatsink compound	-	-	4.8	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	without heatsink compound in free air.	-	55	5.9	K/W
			-		-	K/W

STATIC CHARACTERISTICS

 $T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage	$I_F = 20\text{ A}$	-	1.5	1.85	V
I_R	Reverse current	$V_R = V_{RWM}$; $T_j = 125\text{ }^{\circ}\text{C}$	-	0.1	1.0	mA

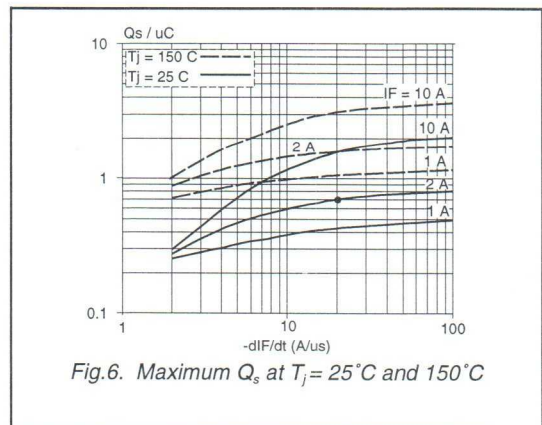
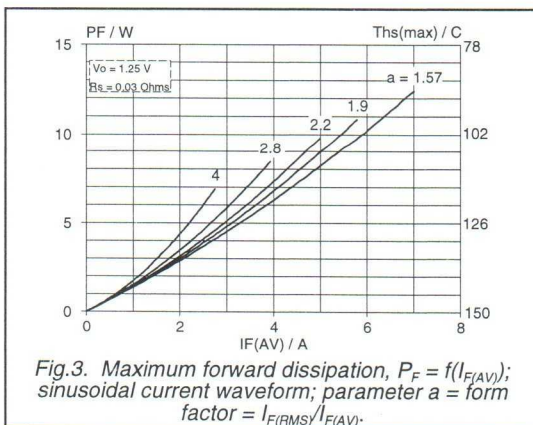
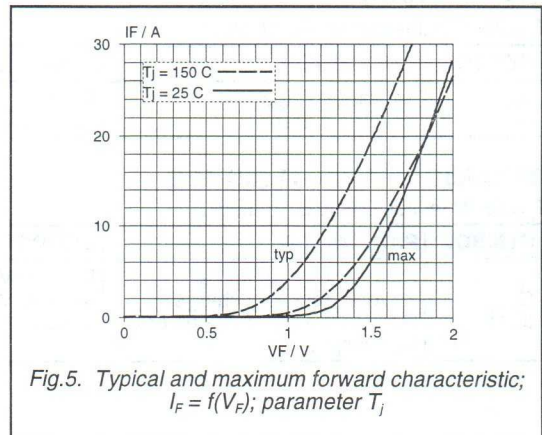
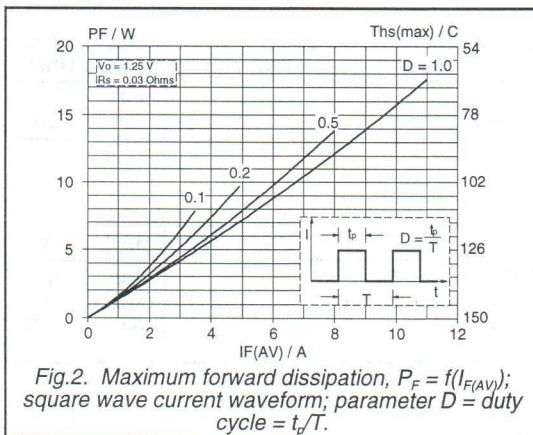
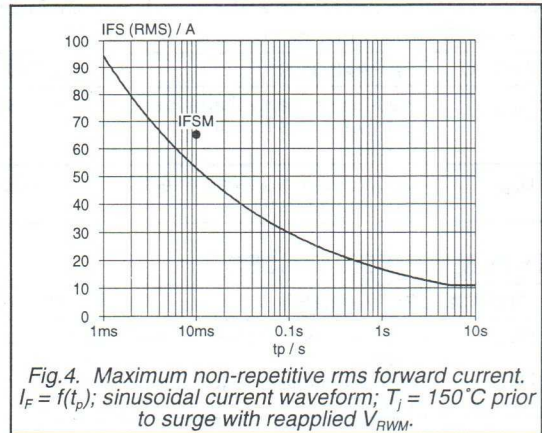
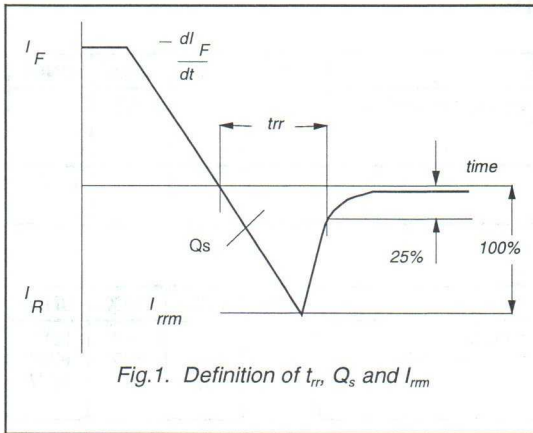
DYNAMIC CHARACTERISTICS

 $T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
t_{rr}	Reverse recovery time	$I_F = 1\text{ A}$; $V_R \geq 30\text{ V}$; $-di_F/dt = 50\text{ A}/\mu\text{s}$	-	125	145	ns
Q_s	Reverse recovery charge	$I_F = 2\text{ A}$; $V_R \geq 30\text{ V}$; $-di_F/dt = 20\text{ A}/\mu\text{s}$	-	0.5	0.7	μC
di_R/dt	Maximum slope of the reverse recovery current	$I_F = 2\text{ A}$; $-di_F/dt = 20\text{ A}/\mu\text{s}$	-	50	60	$\text{A}/\mu\text{s}$

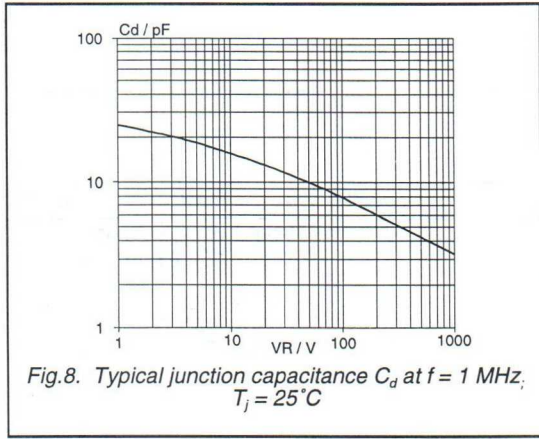
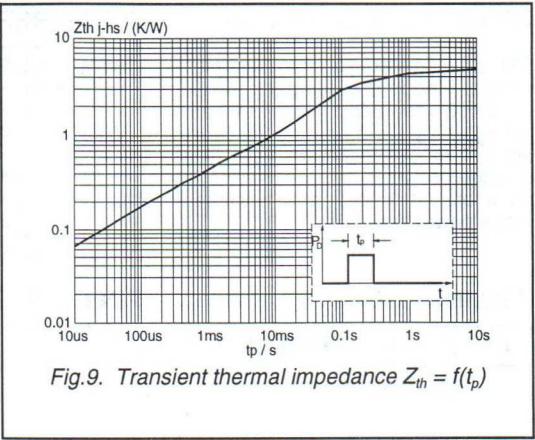
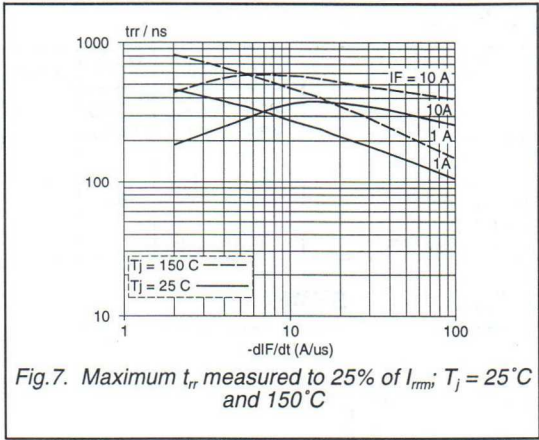
Rectifier diodes fast, soft-recovery

BY329F series



Rectifier diodes
fast, soft-recovery

BY329F series



Rectifier diodes fast, soft-recovery

BY329X series

GENERAL DESCRIPTION

Glass-passivated double diffused rectifier diodes in a full pack plastic envelope featuring low forward voltage drop, fast reverse recovery and soft recovery characteristic. The devices are intended for use in TV receivers, monitors and switched mode power supplies.

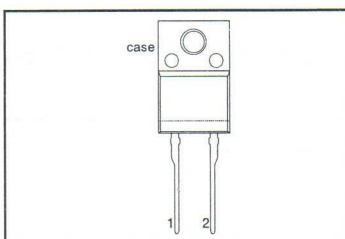
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
V_{RRM}	BY329X Repetitive peak reverse voltage	-800 800	-1000 1000	-1200 1200	V
$I_{F(AV)}$	Average forward current	8	8	8	A
I_{FSM}	Non-repetitive peak forward current	65	65	65	A
t_{rr}	Reverse recovery time	145	145	145	ns

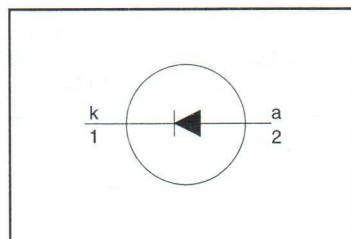
PINNING - SOD113

PIN	DESCRIPTION
1	cathode
2	anode
case	isolated

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{RSM}	Non-repetitive peak reverse voltage		-	-800 800	-1000 1000	-1200 1200	V
V_{RRM}	Repetitive peak reverse voltage		-	800	1000	1200	V
V_{RWM}	Crest working reverse voltage		-	600	800	1000	V
$I_{F(AV)}$	Average forward current ¹	square wave; $\delta = 0.5$; $T_{hs} \leq 83^\circ\text{C}$ sinusoidal; $a = 1.57$; $T_{hs} \leq 90^\circ\text{C}$	-	8			A
$I_{F(RMS)}$	RMS forward current		-	7			A
I_{FRM}	Repetitive peak forward current	$t = 25\ \mu\text{s}$; $\delta = 0.5$; $T_{hs} \leq 83^\circ\text{C}$	-	11			A
I_{FSM}	Non-repetitive peak forward current.	$t = 10\ \text{ms}$ $t = 8.3\ \text{ms}$ sinusoidal; $T_j = 150^\circ\text{C}$ prior to surge; with reapplied	-	16			A
		$V_{RWM(max)}$ $t = 10\ \text{ms}$	-	65			A
I^2t	I^2t for fusing		-	71			A ² s
T_{stg}	Storage temperature		-40	28			$^\circ\text{C}$
T_j	Operating junction temperature		-	150			$^\circ\text{C}$

¹ Neglecting switching and reverse current losses.

Rectifier diodes fast, soft-recovery

BY329X series

ISOLATION LIMITING VALUE & CHARACTERISTIC

 $T_{hs} = 25\text{ }^{\circ}\text{C}$ unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_{isol}	R.M.S. isolation voltage from both terminals to external heatsink	$f = 50\text{-}60\text{ Hz}$; sinusoidal waveform; $R.H. \leq 65\%$; clean and dustfree	-		2500	V
C_{isol}	Capacitance from both terminals to external heatsink	$f = 1\text{ MHz}$	-	10	-	pF

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-hs}$	Thermal resistance junction to heatsink	with heatsink compound	-	-	4.8	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	without heatsink compound in free air.	-	55	5.9	K/W
			-		-	K/W

STATIC CHARACTERISTICS

 $T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage	$I_F = 20\text{ A}$	-	1.5	1.85	V
I_R	Reverse current	$V_R = V_{RWM}$; $T_j = 125\text{ }^{\circ}\text{C}$	-	0.1	1.0	mA

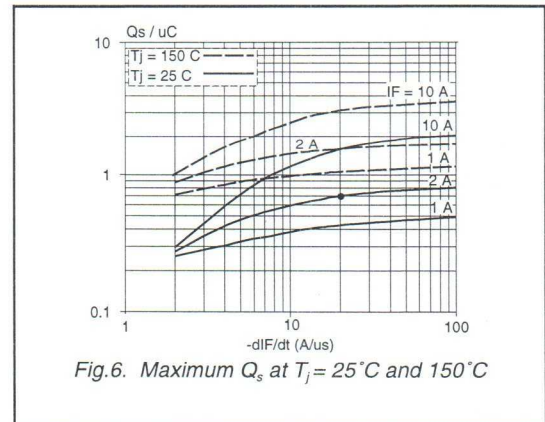
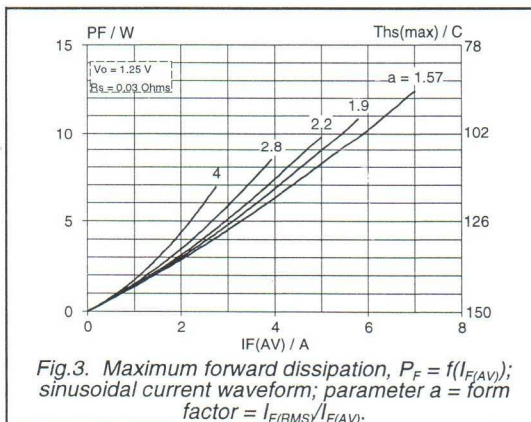
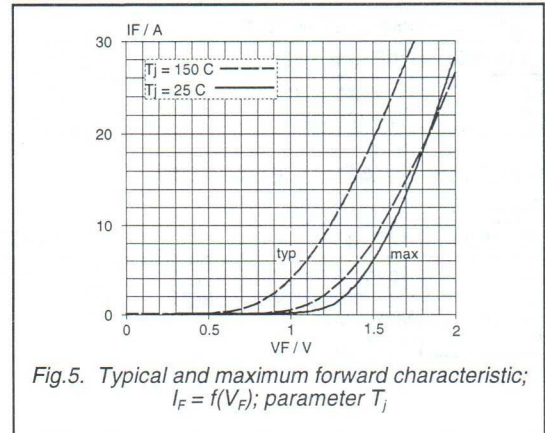
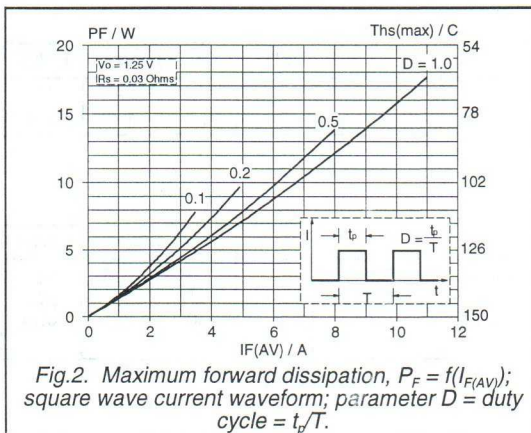
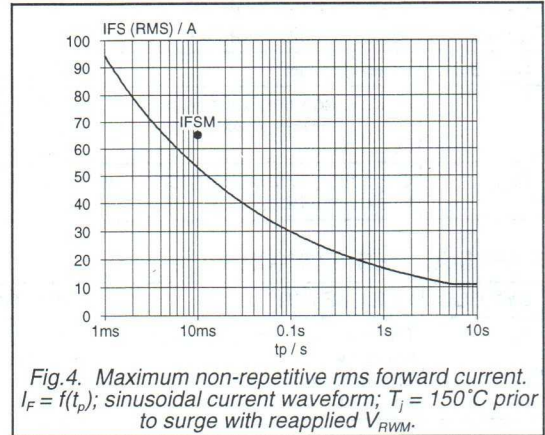
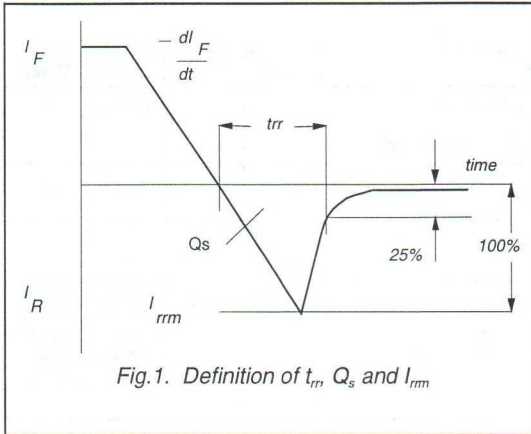
DYNAMIC CHARACTERISTICS

 $T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
t_{rr}	Reverse recovery time	$I_F = 1\text{ A}$; $V_R \geq 30\text{ V}$; $-dI_F/dt = 50\text{ A}/\mu\text{s}$	-	125	145	ns
Q_s	Reverse recovery charge	$I_F = 2\text{ A}$; $V_R \geq 30\text{ V}$; $-dI_F/dt = 20\text{ A}/\mu\text{s}$	-	0.5	0.7	μC
dI_R/dt	Maximum slope of the reverse recovery current	$I_F = 2\text{ A}$; $-dI_F/dt = 20\text{ A}/\mu\text{s}$	-	50	60	$\text{A}/\mu\text{s}$

Rectifier diodes fast, soft-recovery

BY329X series



Rectifier diodes fast, soft-recovery

BY329X series

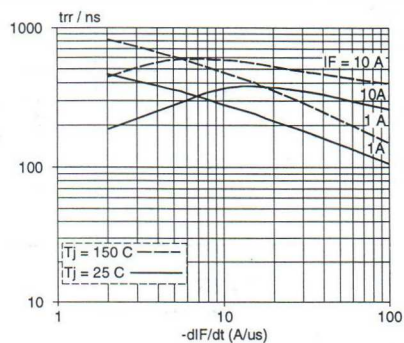


Fig.7. Maximum t_{rr} measured to 25% of I_{rm} ; $T_j = 25^\circ\text{C}$ and 150°C

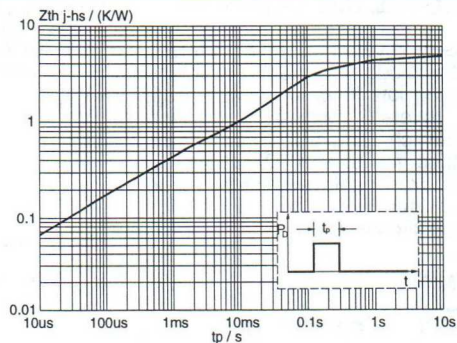


Fig.9. Transient thermal impedance $Z_{th} = f(t_p)$

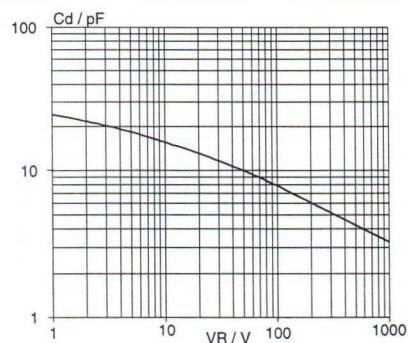


Fig.8. Typical junction capacitance C_d at $f = 1\text{ MHz}$, $T_j = 25^\circ\text{C}$

Rectifier diode fast, high-voltage

BY359-1500

GENERAL DESCRIPTION

Glass-passivated double diffused rectifier diode in a plastic envelope featuring low forward voltage drop, fast reverse recovery and soft recovery characteristic. The device is intended for use in TV receivers, series resonant switched mode power supplies and other high voltage circuits.

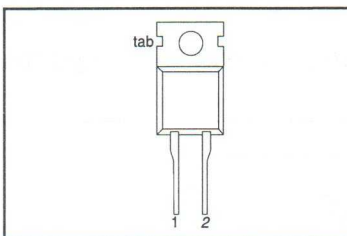
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	UNIT
V_{RRM}	Repetitive peak reverse voltage	1500	V
V_F	Forward voltage	1.5	V
$I_{F(AV)}$	Average forward current	10	A
I_{FSM}	Non-repetitive peak forward current	60	A
t_{rr}	Reverse recovery time	0.6	µs

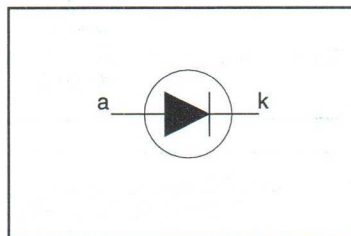
PINNING - TO220AC

PIN	DESCRIPTION
1	cathode (k)
2	anode (a)
tab	cathode (k)

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{RSM}	Non-repetitive peak reverse voltage		-	1500	V
V_{RRM}	Repetitive peak reverse voltage		-	1500	V
V_{RWM}	Crest working reverse voltage		-	1300	V
$I_{F(AV)}$	Average forward current ¹	sinusoidal; $a = 1.57$; $T_{mb} \leq 110\text{ }^{\circ}\text{C}$	-	10	A
$I_{F(RMS)}$	RMS forward current		-	15.7	A
I_{FRM}	Repetitive peak forward current	sinusoidal; $a = 1.57$	-	60	A
I_{FSM}	Non-repetitive peak forward current	$t = 10\text{ ms}$ $t = 8.3\text{ ms}$ sinusoidal; $T_J = 150\text{ }^{\circ}\text{C}$ prior to surge; with reapplied $V_{RWM(max)}$ $t = 10\text{ ms}$	-	60 66	A
I^2t	I^2t for fusing		-	18	A ² s
T_{stg}	Storage temperature		-40	150	$^{\circ}\text{C}$
T_J	Operating junction temperature		-	150	$^{\circ}\text{C}$

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\text{ j-mb}}$	Thermal resistance junction to mounting base		-	-	2.0	K/W
$R_{th\text{ j-a}}$	Thermal resistance junction to ambient	in free air.	-	60	-	K/W

¹ Neglecting switching and reverse current losses.

Rectifier diode
fast, high-voltage

BY359-1500

STATIC CHARACTERISTICS

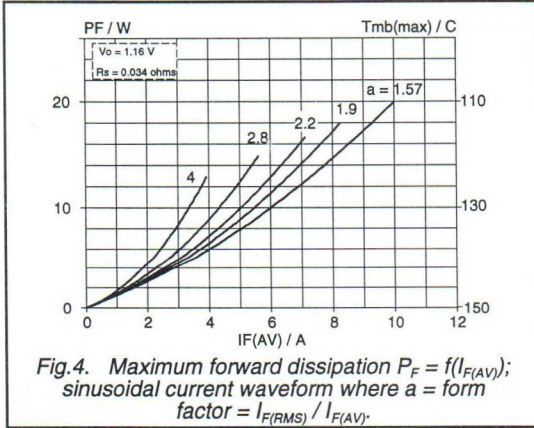
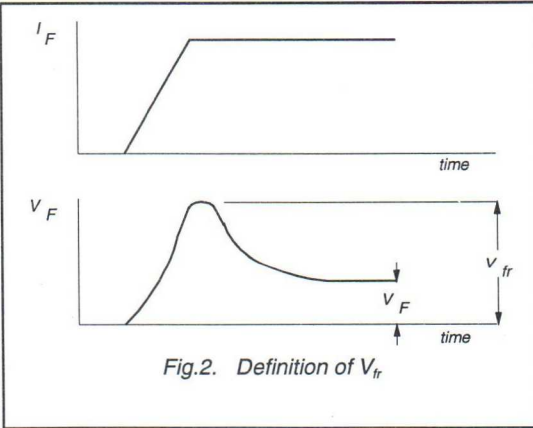
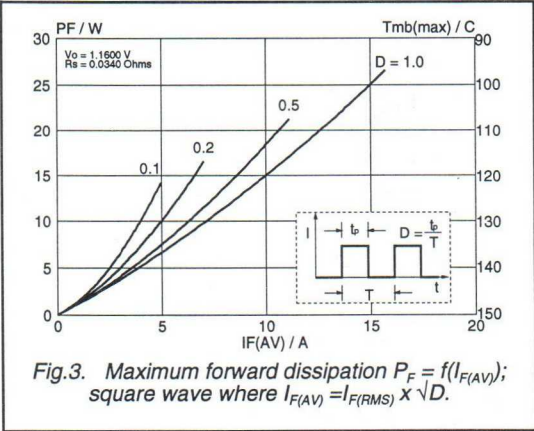
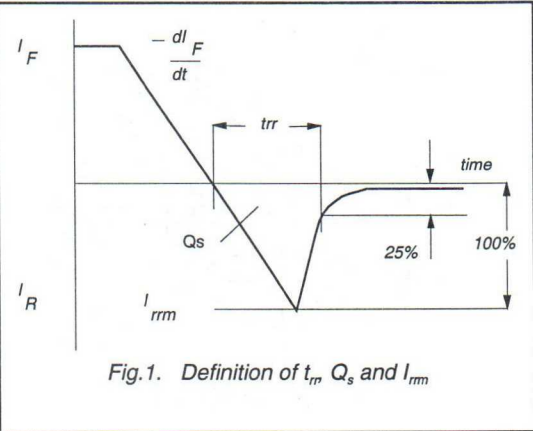
T_J = 25 °C unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V _F	Forward voltage	I _F = 20 A	-	1.3	1.8	V
		I _F = 10 A; T _J = 150 °C	-	1.00	1.5	V
I _R	Reverse current	V _R = 1300 V	-	10	100	μA
		V _R = 1300 V; T _J = 100 °C	-	50	300	μA

DYNAMIC CHARACTERISTICS

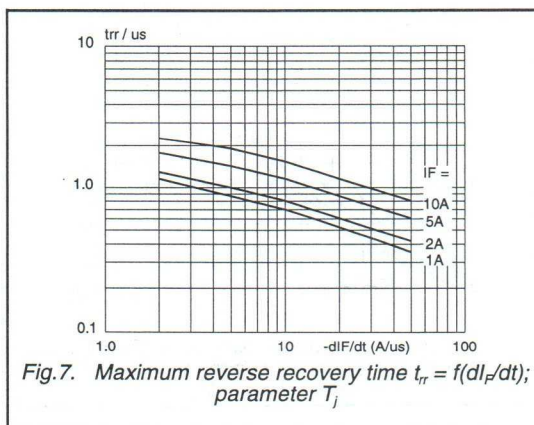
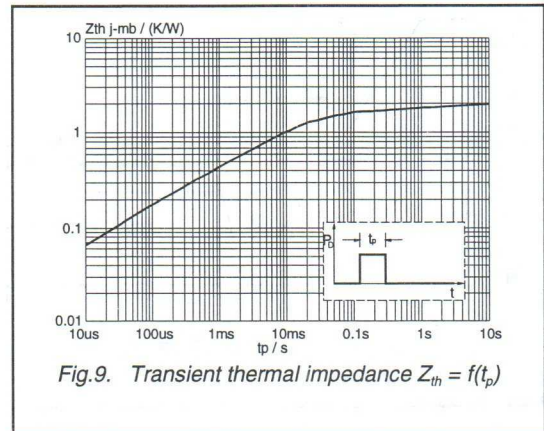
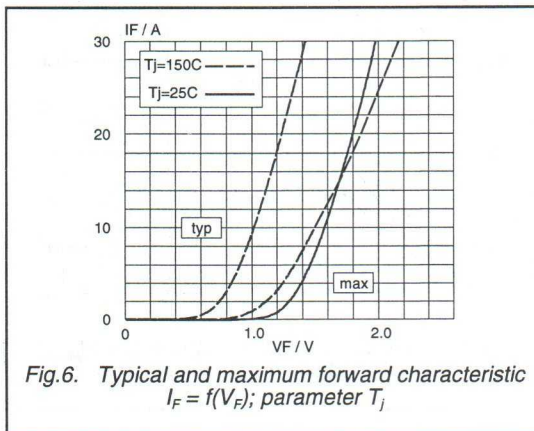
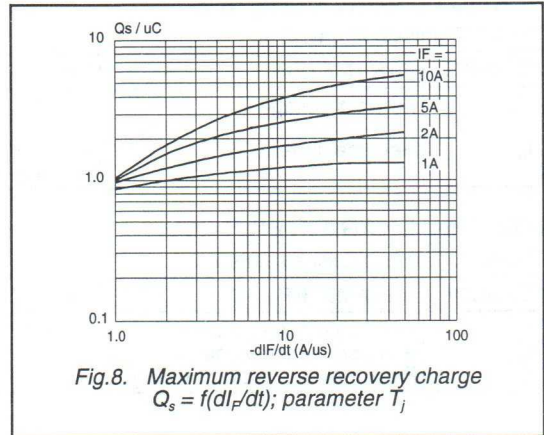
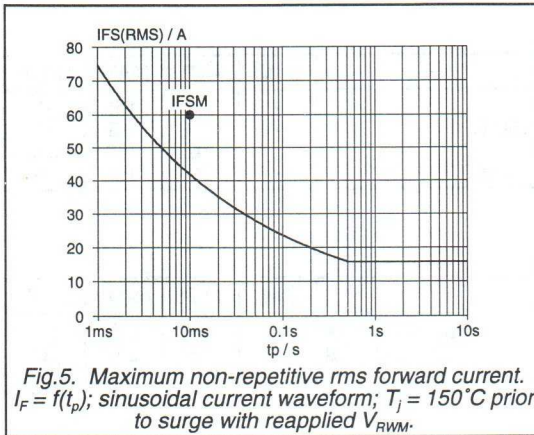
T_J = 25 °C unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
t _{rr}	Reverse recovery time	I _F = 2 A; V _R ≥ 30 V; -di _F /dt = 20 A/μs	-	0.47	0.6	μs
Q _s	Reverse recovery charge	I _F = 2 A; V _R ≥ 30 V; -di _F /dt = 20 A/μs	-	1.6	2.0	μC
V _{fr}	Peak forward recovery voltage	I _F = 10 A; di _F /dt = 30 A/μs	-	11.0	-	V



Rectifier diode fast, high-voltage

BY359-1500



Rectifier diode fast, high-voltage

BY359F-1500**GENERAL DESCRIPTION**

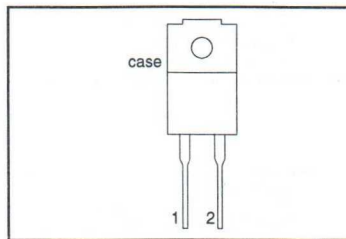
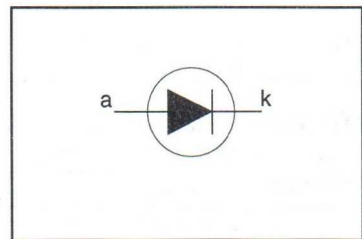
Glass-passivated double diffused rectifier diode in a full pack plastic envelope featuring low forward voltage drop, fast reverse recovery and soft recovery characteristic. The device is intended for use in TV receivers, series resonant switched mode power supplies and other high voltage circuits.

QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	UNIT
V_{RRM}	Repetitive peak reverse voltage	1500	V
V_F	Forward voltage	1.5	V
$I_{F(AV)}$	Average forward current	10	A
I_{FSM}	Non-repetitive peak forward current	60	A
t_{rr}	Reverse recovery time	0.6	μ s

PINNING - SOD100

PIN	DESCRIPTION
1	cathode
2	anode
case	isolated

PIN CONFIGURATION**SYMBOL****LIMITING VALUES**

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{RSM}	Non-repetitive peak reverse voltage		-	1500	V
V_{RRM}	Repetitive peak reverse voltage		-	1500	V
V_{RWM}	Crest working reverse voltage		-	1300	V
$I_{F(AV)}$	Average forward current ¹	sinusoidal; $a = 1.57$; $T_{hs} \leq 54^\circ\text{C}$	-	10	A
$I_{F(RMS)}$	RMS forward current		-	15.7	A
I_{FRM}	Repetitive peak forward current	sinusoidal; $a = 1.57$	-	60	A
I_{FSM}	Non-repetitive peak forward current	$t = 10$ ms $t = 8.3$ ms half sine wave; $T_j = 150^\circ\text{C}$ prior to surge; with reapplied $V_{RWM(max)}$	-	60 66	A
I^2t	I^2t for fusing	$t = 10$ ms	-	18	A ² s
T_{stg}	Storage temperature		-40	150	$^\circ\text{C}$
T_j	Operating junction temperature		-	150	$^\circ\text{C}$

ISOLATION

$T_{hs} = 25^\circ\text{C}$ unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_{isol}	Repetitive peak voltage from both terminals to external heatsink	R.H. $\leq 65\%$; clean and dustfree	-	-	1500	V
C_{isol}	Capacitance from cathode to external heatsink	$f = 1$ MHz	-	12	-	pF

¹ Neglecting switching and reverse current losses.

Rectifier diode
fast, high-voltage

BY359F-1500

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-hs}$	Thermal resistance junction to heatsink	with heatsink compound	-	-	4.8	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	without heatsink compound in free air.	-	55	5.9	K/W
					-	K/W

STATIC CHARACTERISTICS

$T_j = 25\ ^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage	$I_F = 20\ \text{A}$	-	1.3	1.8	V
		$I_F = 10\ \text{A}; T_j = 150\ ^\circ\text{C}$	-	1.00	1.5	V
I_R	Reverse current	$V_R = 1300\ \text{V}$	-	10	100	μA
		$V_R = 1300\ \text{V}; T_j = 100\ ^\circ\text{C}$	-	50	300	μA

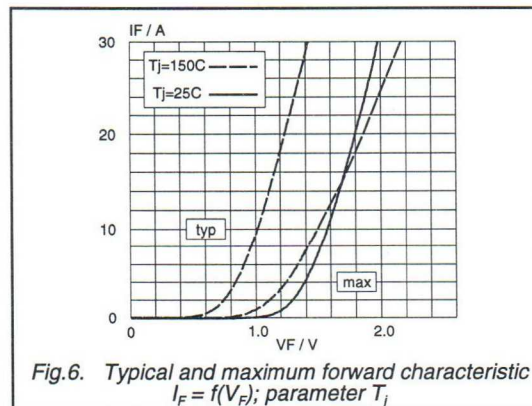
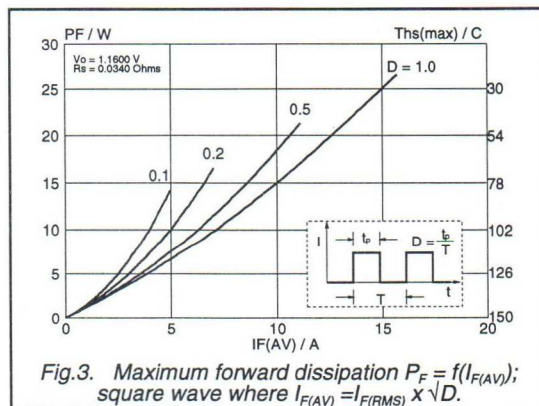
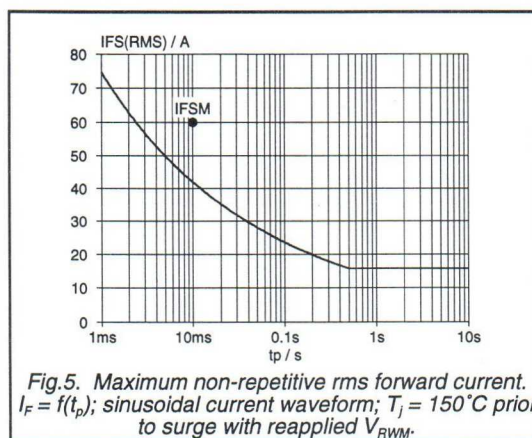
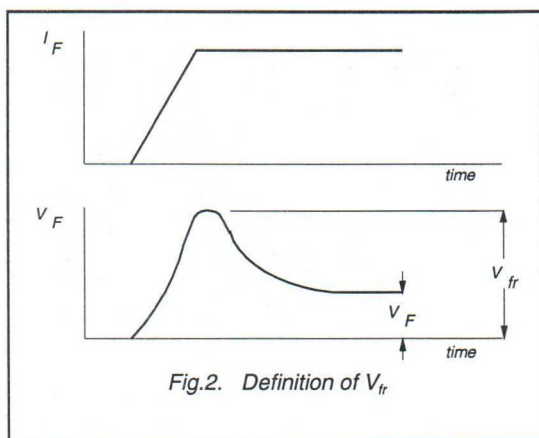
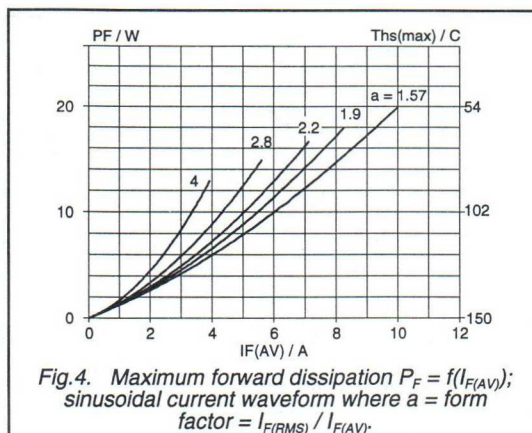
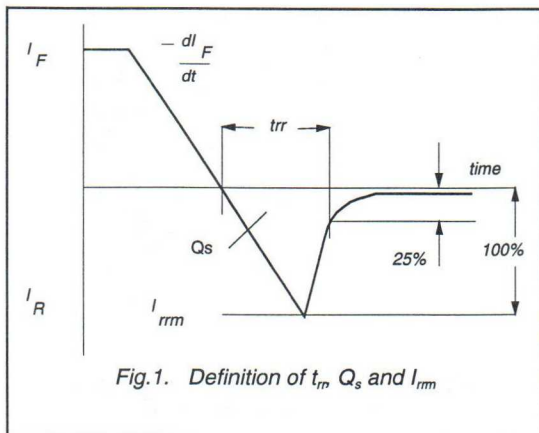
DYNAMIC CHARACTERISTICS

$T_j = 25\ ^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
t_{rr}	Reverse recovery time	$I_F = 2\ \text{A}; V_R \geq 30\ \text{V}; -di_F/dt = 20\ \text{A}/\mu\text{s}$	-	0.47	0.6	μs
Q_s	Reverse recovery charge	$I_F = 2\ \text{A}; V_R \geq 30\ \text{V}; -di_F/dt = 20\ \text{A}/\mu\text{s}$	-	1.6	2.0	μC
V_{fr}	Peak forward recovery voltage	$I_F = 10\ \text{A}; di_F/dt = 30\ \text{A}/\mu\text{s}$	-	11.0	-	V

Rectifier diode fast, high-voltage

BY359F-1500



Rectifier diode fast, high-voltage

BY359F-1500

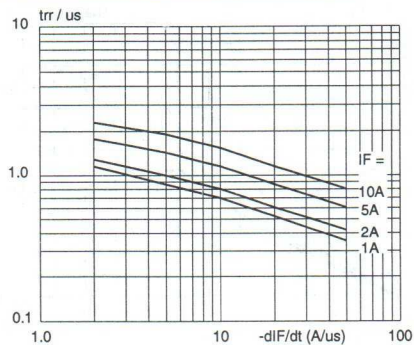


Fig.7. Maximum reverse recovery time $t_{rr} = f(diF/dt)$; parameter T_j

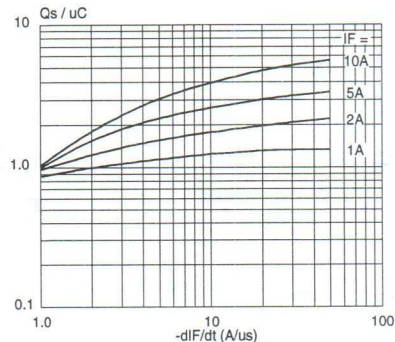


Fig.8. Maximum reverse recovery charge $Q_s = f(diF/dt)$; parameter T_j

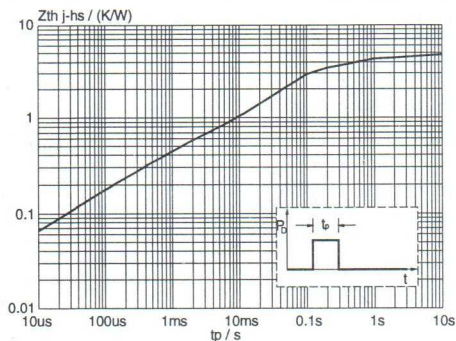


Fig.9. Transient thermal impedance $Z_{th} = f(t_p)$

Rectifier diode fast, high-voltage

BY359X-1500

GENERAL DESCRIPTION

Glass-passivated double diffused rectifier diode in a full pack plastic envelope featuring low forward voltage drop, fast reverse recovery and soft recovery characteristic. The device is intended for use in TV receivers, series resonant switched mode power supplies and other high voltage circuits.

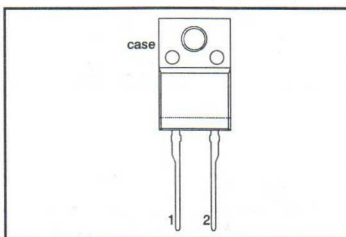
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	UNIT
V_{RRM}	Repetitive peak reverse voltage	1500	V
V_F	Forward voltage	1.5	V
$I_{F(AV)}$	Average forward current	10	A
I_{FSM}	Non-repetitive peak forward current	60	A
t_{rr}	Reverse recovery time	0.6	μ s

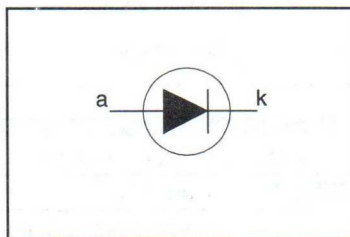
PINNING - SOD113

PIN	DESCRIPTION
1	cathode
2	anode
case	isolated

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{RSM}	Non-repetitive peak reverse voltage		-	1500	V
V_{RRM}	Repetitive peak reverse voltage		-	1500	V
V_{RWM}	Crest working reverse voltage		-	1300	V
$I_{F(AV)}$	Average forward current	sinusoidal; $a = 1.57$; $T_{hs} \leq 54^\circ\text{C}$	-	10	A
$I_{F(RMS)}$	RMS forward current		-	15.7	A
I_{FRM}	Repetitive peak forward current	sinusoidal; $a = 1.57$	-	60	A
I_{FSM}	Non-repetitive peak forward current	$t = 10$ ms $t = 8.3$ ms half sine wave; $T_j = 150^\circ\text{C}$ prior to surge; with reapplied $V_{RWM(max)}$	-	60 66	A
I^2t	I^2t for fusing	$t = 10$ ms	-	18	A^2s
T_{stg}	Storage temperature		-40	150	$^\circ\text{C}$
T_j	Operating junction temperature		-	150	$^\circ\text{C}$

ISOLATION

$T_{hs} = 25^\circ\text{C}$ unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$V_{isol(rms)}$	R.M.S. isolation voltage from both terminals to external heatsink	$f = 50\text{-}60$ Hz; sinusoidal waveform; $R.H. \leq 65\%$; clean and dustfree	-	-	2500	V_{RMS}
C_{isol}	Capacitance from both terminals to external heatsink	$f = 1$ MHz	-	10	-	pF

Rectifier diode fast, high-voltage

BY359X-1500

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-hs}$	Thermal resistance junction to heatsink	with heatsink compound	-	-	4.8	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	without heatsink compound in free air.	-	55	5.9	K/W
			-		-	K/W

STATIC CHARACTERISTICS

 $T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage	$I_F = 20\text{ A}$	-	1.3	1.8	V
		$I_F = 10\text{ A}; T_j = 150\text{ }^{\circ}\text{C}$	-	1.00	1.5	V
I_R	Reverse current	$V_R = 1300\text{ V}$	-	10	100	μA
		$V_R = 1300\text{ V}; T_j = 100\text{ }^{\circ}\text{C}$	-	50	300	μA

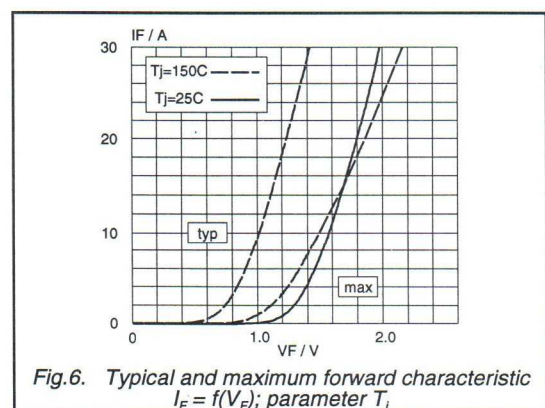
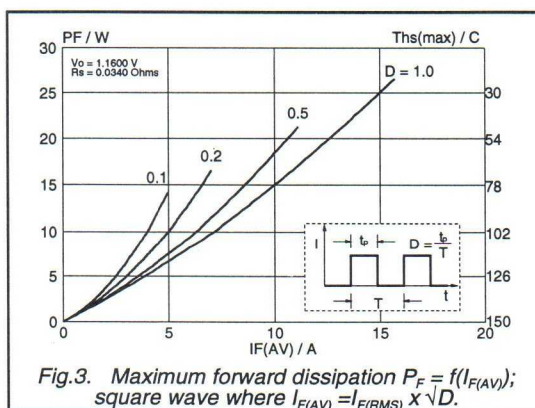
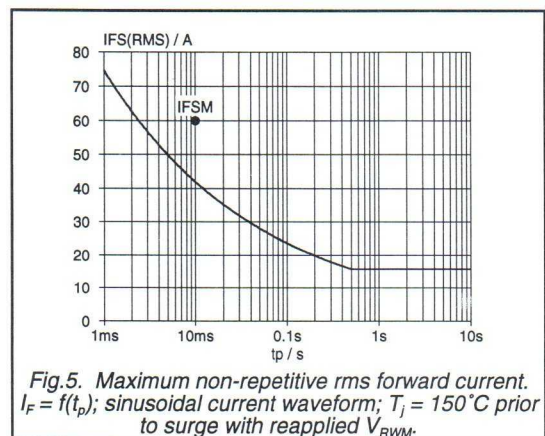
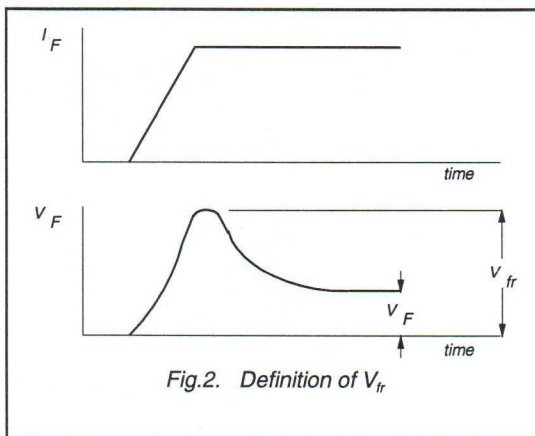
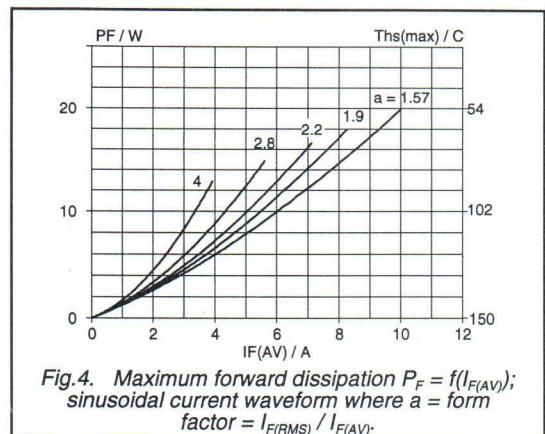
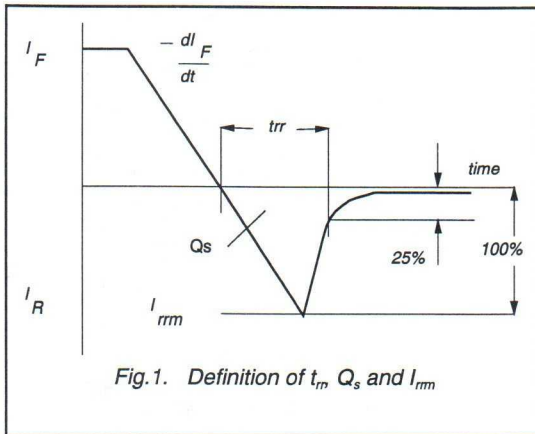
DYNAMIC CHARACTERISTICS

 $T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
t_{rr}	Reverse recovery time	$I_F = 2\text{ A}; V_R \geq 30\text{ V}; -di_F/dt = 20\text{ A}/\mu\text{s}$	-	0.47	0.6	μs
Q_s	Reverse recovery charge	$I_F = 2\text{ A}; V_R \geq 30\text{ V}; -di_F/dt = 20\text{ A}/\mu\text{s}$	-	1.6	2.0	μC
V_{fr}	Peak forward recovery voltage	$I_F = 10\text{ A}; di_F/dt = 30\text{ A}/\mu\text{s}$	-	11.0	-	V

Rectifier diode fast, high-voltage

BY359X-1500



Rectifier diode fast, high-voltage

BY359X-1500

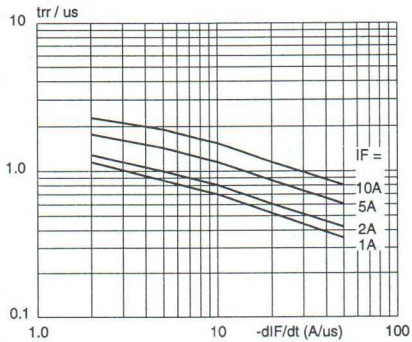


Fig.7. Maximum reverse recovery time $t_{rr} = f(dI_F/dt)$; parameter T_j

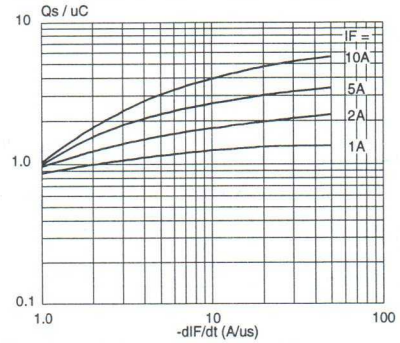


Fig.8. Maximum reverse recovery charge $Q_s = f(dI_F/dt)$; parameter T_j

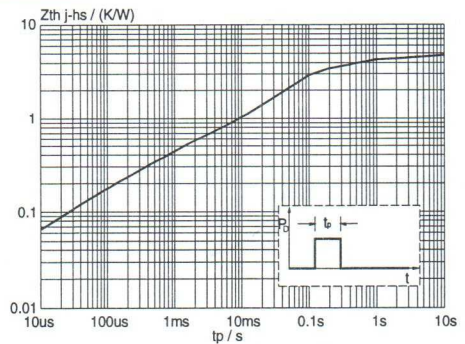


Fig.9. Transient thermal impedance $Z_{th} = f(t_p)$

Rectifier diode fast, high-voltage

BY459-1500**GENERAL DESCRIPTION**

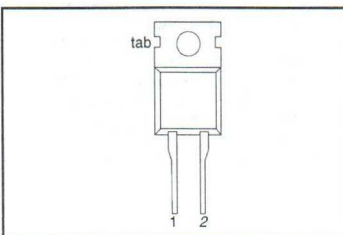
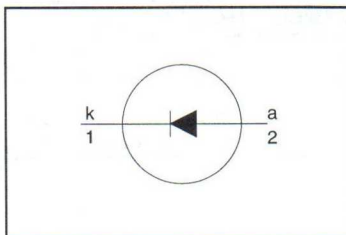
Glass-passivated double diffused rectifier diode in a plastic envelope, featuring fast forward recovery and low forward recovery voltage. The device is intended for use in multi-sync monitor horizontal deflection circuits.

QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	UNIT
V_{RRM}	Repetitive peak reverse voltage	1500	V
V_F	Forward voltage	1.2	V
I_{FWM}	Working peak forward current	10	A
I_{FRM}	Repetitive peak forward current	100	A
t_{fr}	Forward recovery time	250	ns
V_{fr}	Forward recovery voltage	14	V

PINNING - TO220AC

PIN	DESCRIPTION
1	cathode (k)
2	anode (a)
tab	cathode (k)

PIN CONFIGURATION**SYMBOL****LIMITING VALUES**

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{RSM}	Non repetitive peak reverse voltage during flash-over of picture tube		-	1500	V
V_{RRM}	Repetitive peak reverse voltage	$t = 6 \mu s$; $f = 82 \text{ kHz}$	-	1500	V
V_{RWM}	Crest working reverse voltage		-	1300	V
I_{FWM}	Working peak forward current ¹	$f = 82 \text{ kHz}$; $T_{mb} \leq 143^\circ \text{C}$	-	10	A
I_{FRM}	Repetitive peak forward current	$t = 100 \mu s$	-	100	A
I_{FSM}	Non repetitive peak forward current	$t = 10 \text{ ms}$	-	100	A
		$t = 8.3 \text{ ms}$	-	110	A
T_{stg}	Storage temperature	sinusoidal; $T_j = 150^\circ \text{C}$ prior to surge; with reapplied $V_{RWM(max)}$	-40	150	$^\circ \text{C}$
T_j	Operating junction temperature		-	150	$^\circ \text{C}$

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-mb}$	Thermal resistance junction to mounting base		-	-	1.5	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	in free air	-	60	-	K/W

¹ Including worst case forward recovery losses, see fig:5.

Rectifier diode fast, high-voltage

BY459-1500

STATIC CHARACTERISTICS

 $T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage	$I_F = 6.5\text{ A}$	-	0.95	1.3	V
I_R	Reverse current	$I_F = 6.5\text{ A}; T_j = 125\text{ }^{\circ}\text{C}$	-	0.85	1.2	V
		$V_R = V_{RWMmax}$	-	-	0.25	mA
		$V_R = V_{RWMmax}; T_j = 125\text{ }^{\circ}\text{C}$	-	-	1.0	mA

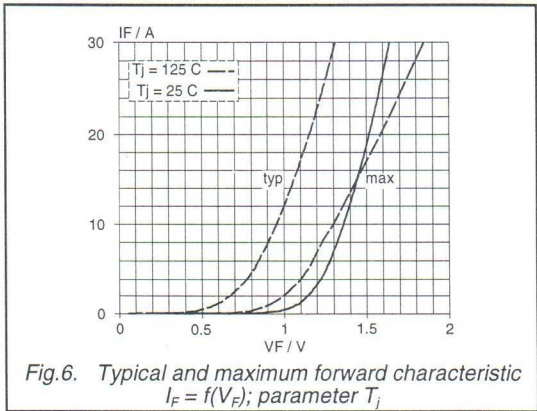
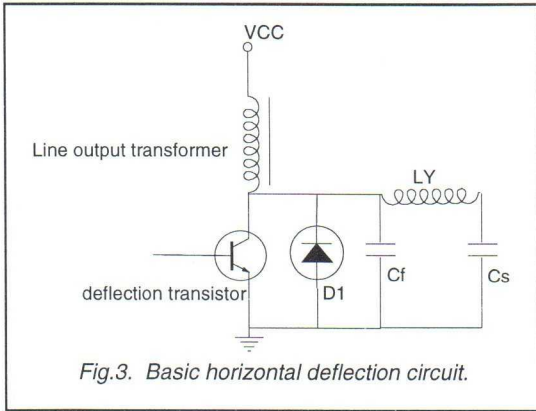
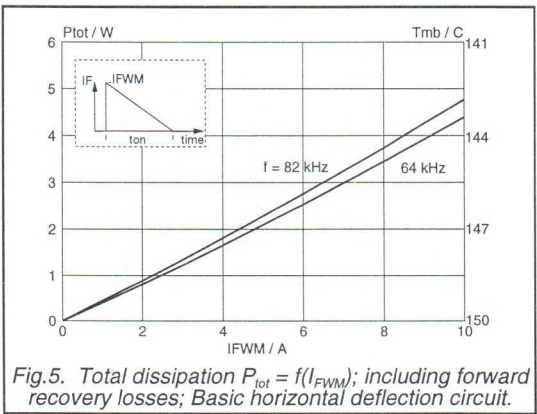
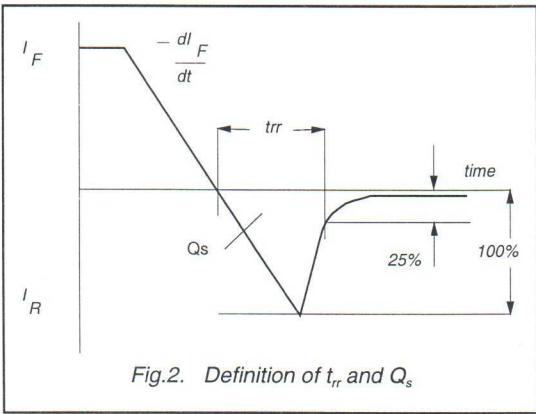
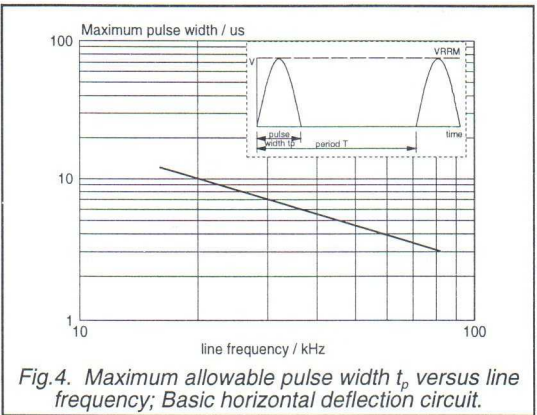
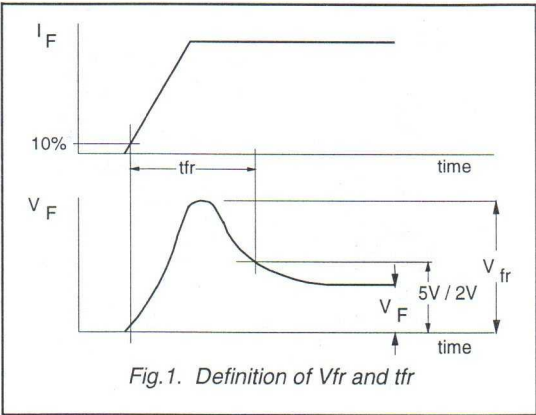
DYNAMIC CHARACTERISTICS

 $T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_{fr}	Forward recovery voltage	$I_F = 6.5\text{ A}; di_F/dt = 50\text{ A}/\mu\text{s}$	-	8	14	V
t_{fr}	Forward recovery time	$I_F = 6.5\text{ A}; di_F/dt = 50\text{ A}/\mu\text{s}; V_F = 5\text{ V}$	-	170	250	ns
		$I_F = 6.5\text{ A}; di_F/dt = 50\text{ A}/\mu\text{s}; V_F = 2\text{ V}$	-	350	-	ns
t_{rr}	Reverse recovery time	$I_F = 1\text{ A}; -di_F/dt = 50\text{ A}/\mu\text{s}; V_R \geq 30\text{ V}$	-	250	350	ns
Q_s	Reverse recovery charge	$I_F = 2\text{ A}; -di_F/dt = 20\text{ A}/\mu\text{s}; V_R \geq 30\text{ V}$	-	2.0	3.0	μC

Rectifier diode fast, high-voltage

BY459-1500



Rectifier diode fast, high-voltage

BY459-1500

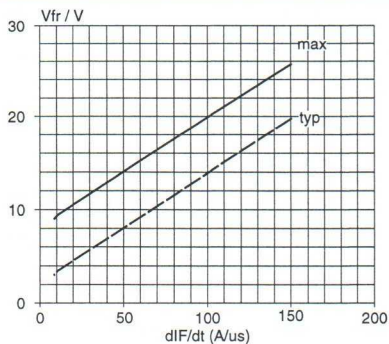


Fig.7. Typical and maximum $V_{fr} = f(dI_F/dt)$; $I_F = 6.5A$; $T_J = 25^\circ C$

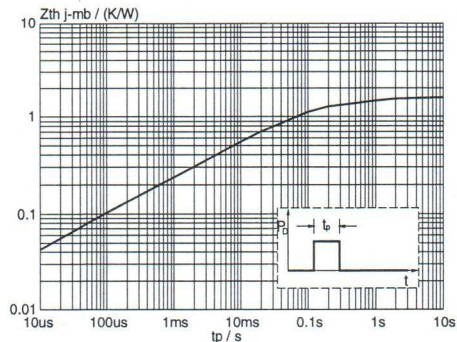


Fig.9. Transient thermal impedance $Z_{th} = f(t_p)$

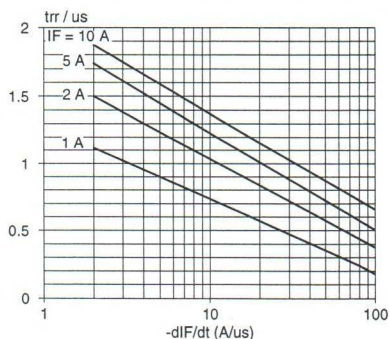


Fig.8. Maximum reverse recovery time $t_{rr} = f(dI_F/dt)$; parameter T_J ; $V_R \geq 30V$

Rectifier diode fast, high-voltage

BY459F-1500**GENERAL DESCRIPTION**

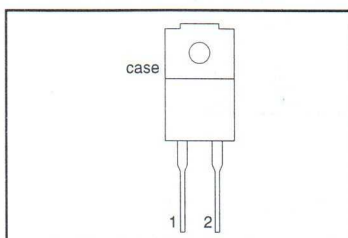
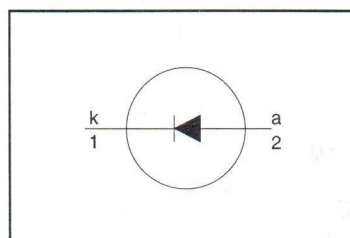
Glass-passivated double diffused rectifier diode in a full pack plastic envelope, featuring fast forward recovery and low forward recovery voltage. The device is intended for use in multi-sync monitor horizontal deflection circuits.

QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	UNIT
V_{RRM}	Repetitive peak reverse voltage	1500	V
V_F	Forward voltage	1.2	V
I_{FWM}	Working peak forward current	10	A
I_{FRM}	Repetitive peak forward current	100	A
t_{fr}	Forward recovery time	250	ns
V_{fr}	Forward recovery voltage	14	V

PINNING - SOD100

PIN	DESCRIPTION
1	cathode
2	anode
case	isolated

PIN CONFIGURATION**SYMBOL****LIMITING VALUES**

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{RSM}	Non-repetitive peak reverse voltage during flash-over of picture tube		-	1500	V
V_{RRM}	Repetitive peak reverse voltage	$t = 6 \mu s$; $f = 82 kHz$	-	1500	V
V_{RWM}	Crest working reverse voltage		-	1300	V
I_{FWM}	Working peak forward current ¹	$f = 82 kHz$; $T_{hs} \leq 127^\circ C$	-	10	A
I_{FRM}	Repetitive peak forward current	$t = 100 \mu s$	-	100	A
I_{FSM}	Non-repetitive peak forward current	$t = 10 ms$	-	100	A
		$t = 8.3 ms$	-	110	A
T_{sig}	Storage temperature	sinusoidal; $T_j = 150^\circ C$ prior to surge; with reapplied $V_{RWM(max)}$	-40	150	$^\circ C$
T_j	Operating junction temperature		-	150	$^\circ C$

ISOLATION LIMITING VALUE & CHARACTERISTIC

$T_{hs} = 25^\circ C$ unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_{isol}	Repetitive peak voltage from both terminals to external heatsink	R.H. $\leq 65\%$; clean and dustfree	-		1500	V
C_{isol}	Capacitance from cathode to external heatsink	$f = 1 MHz$	-	12	-	pF

¹ Including worst case forward recovery losses, see fig:5.

Rectifier diode fast, high-voltage

BY459F-1500

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-hs}$	Thermal resistance junction to heatsink	with heatsink compound	-	-	4.8	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	without heatsink compound in free air	-	55	5.9	K/W
			-		-	K/W

STATIC CHARACTERISTICS

 $T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage	$I_F = 6.5\text{ A}$	-	0.95	1.3	V
I_R	Reverse current	$I_F = 6.5\text{ A}; T_j = 125\text{ }^{\circ}\text{C}$	-	0.85	1.2	V
		$V_R = V_{RWMmax}$	-	-	0.25	mA
		$V_R = V_{RWMmax}; T_j = 125\text{ }^{\circ}\text{C}$	-	-	1.0	mA

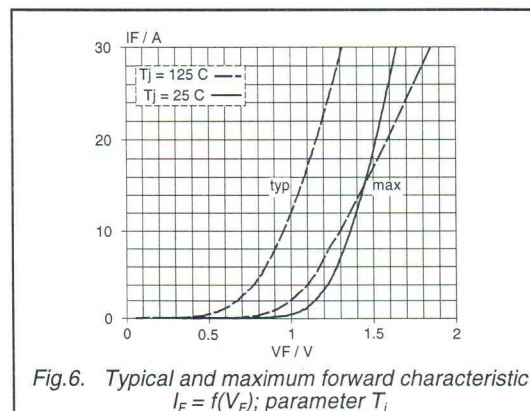
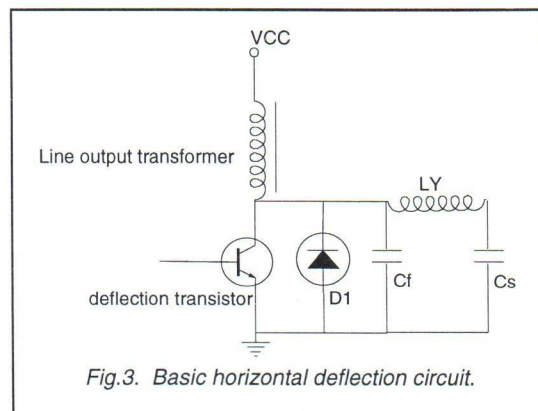
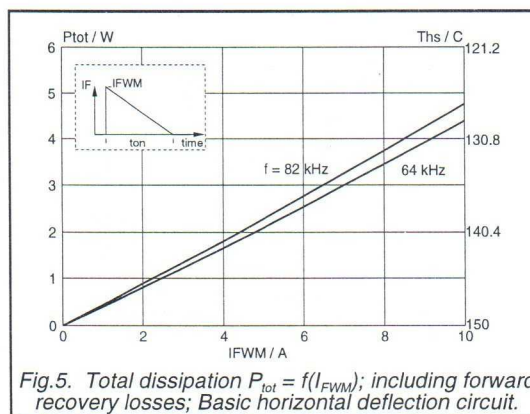
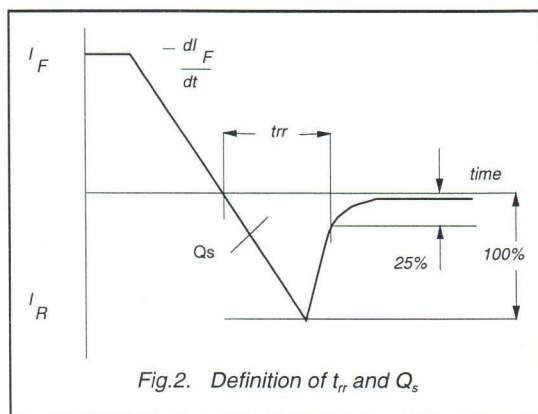
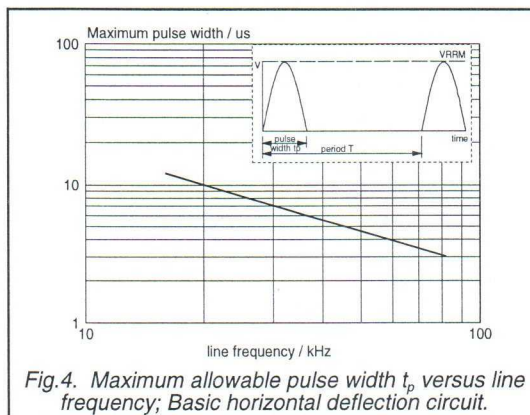
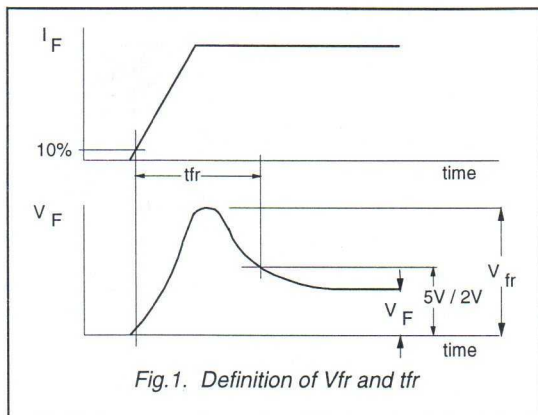
DYNAMIC CHARACTERISTICS

 $T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_{fr}	Forward recovery voltage	$I_F = 6.5\text{ A}; di_F/dt = 50\text{ A}/\mu\text{s}$	-	8	14	V
t_{fr}	Forward recovery time	$I_F = 6.5\text{ A}; di_F/dt = 50\text{ A}/\mu\text{s}; V_F = 5\text{ V}$	-	170	250	ns
		$I_F = 6.5\text{ A}; di_F/dt = 50\text{ A}/\mu\text{s}; V_F = 2\text{ V}$	-	350	-	ns
t_{rr}	Reverse recovery time	$I_F = 1\text{ A}; -di_F/dt = 50\text{ A}/\mu\text{s}; V_R \geq 30\text{ V}$	-	250	350	ns
Q_s	Reverse recovery charge	$I_F = 2\text{ A}; -di_F/dt = 20\text{ A}/\mu\text{s}; V_R \geq 30\text{ V}$	-	2.0	3.0	μC

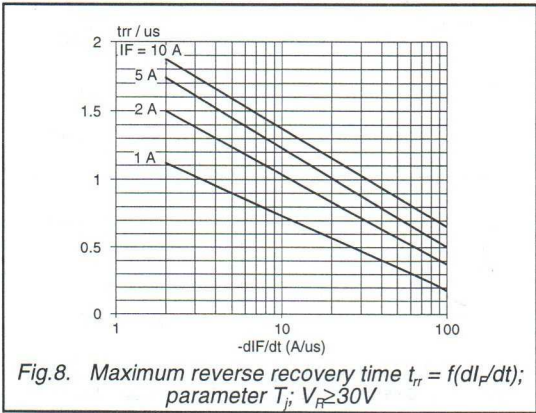
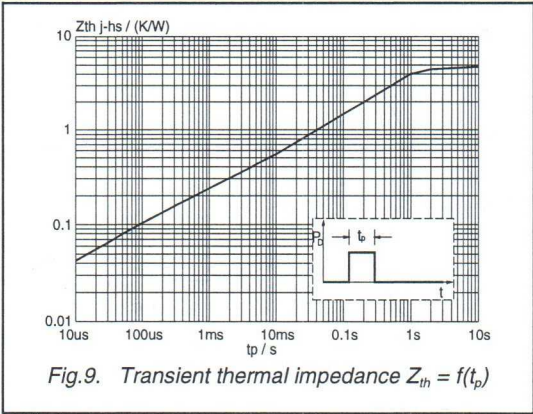
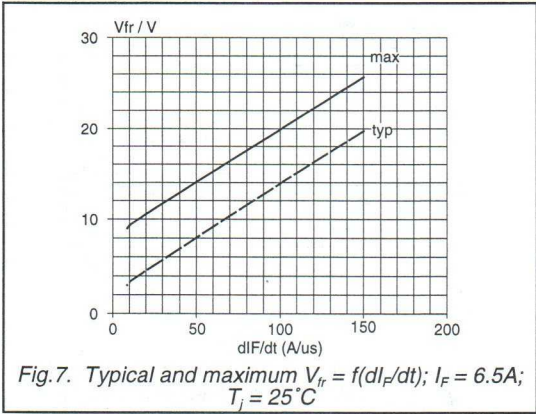
Rectifier diode fast, high-voltage

BY459F-1500



Rectifier diode fast, high-voltage

BY459F-1500



Rectifier diode fast, high-voltage

BY459X-1500

GENERAL DESCRIPTION

Glass-passivated double diffused rectifier diode in a full pack plastic envelope, featuring fast forward recovery and low forward recovery voltage. The device is intended for use in multi-sync monitor horizontal deflection circuits.

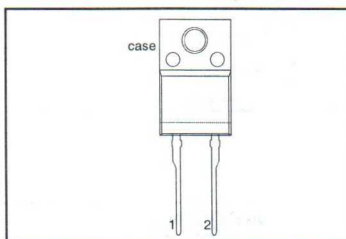
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	UNIT
V_{RRM}	Repetitive peak reverse voltage	1500	V
V_F	Forward voltage	1.2	V
I_{FWM}	Working peak forward current	10	A
I_{FRM}	Repetitive peak forward current	100	A
t_{fr}	Forward recovery time	250	ns
V_{fr}	Forward recovery voltage	14	V

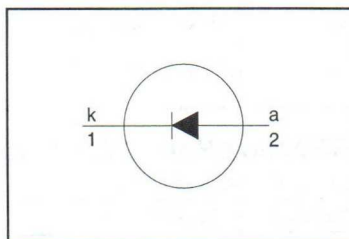
PINNING - SOD113

PIN	DESCRIPTION
1	cathode
2	anode
case	isolated

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{RSM}	Non-repetitive peak reverse voltage during flash-over of picture tube		-	1500	V
V_{RRM}	Repetitive peak reverse voltage	$t = 6 \mu s$; $f = 82 kHz$	-	1500	V
V_{RWM}	Crest working reverse voltage		-	1300	V
I_{FWM}	Working peak forward current ¹	$f = 82 kHz$; $T_{hs} \leq 127^\circ C$	-	10	A
I_{FRM}	Repetitive peak forward current	$t = 100 \mu s$	-	100	A
I_{FSM}	Non-repetitive peak forward current	$t = 10 ms$ $t = 8.3 ms$ sinusoidal; $T_1 = 150^\circ C$ prior to surge; with reapplied $V_{RWM(max)}$	-	100	A
T_{stg}	Storage temperature		-40	150	$^\circ C$
T_j	Operating junction temperature		-	150	$^\circ C$

ISOLATION LIMITING VALUE & CHARACTERISTIC

$T_{hs} = 25^\circ C$ unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_{isol}	R.M.S. isolation voltage from both terminals to external heatsink	$f = 50-60 Hz$; sinusoidal waveform; $R.H. \leq 65\%$; clean and dustfree	-		2500	V
C_{isol}	Capacitance from both terminals to external heatsink	$f = 1 MHz$	-	10	-	pF

¹ Including worst case forward recovery losses, see fig:5.

Rectifier diode fast, high-voltage

BY459X-1500

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-hs}$	Thermal resistance junction to heatsink	with heatsink compound	-	-	4.8	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	without heatsink compound in free air	-	55	5.9	K/W

STATIC CHARACTERISTICS

 $T_j = 25\ ^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage	$I_F = 6.5\ \text{A}$ $I_F = 6.5\ \text{A}; T_j = 125\ ^\circ\text{C}$	-	0.95 0.85	1.3 1.2	V V
I_R	Reverse current	$V_R = V_{RWMmax}$ $V_R = V_{RWMmax}; T_j = 125\ ^\circ\text{C}$	-	-	0.25 1.0	mA mA

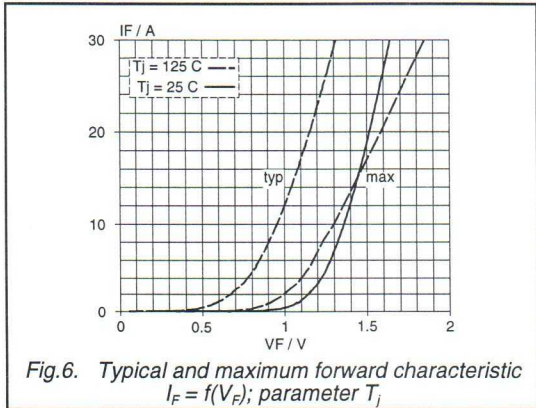
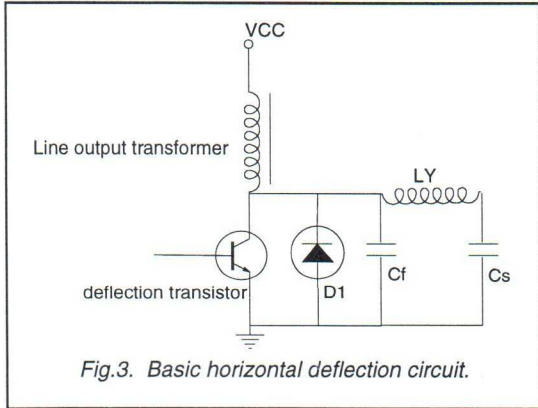
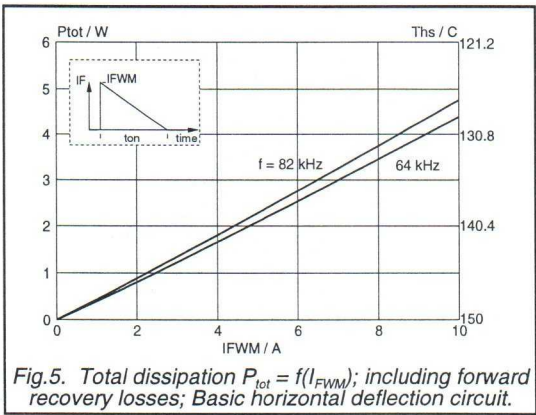
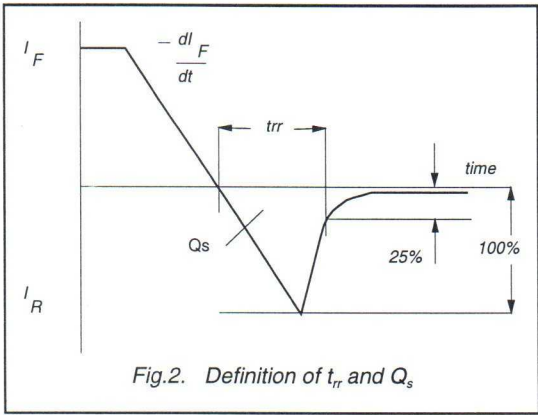
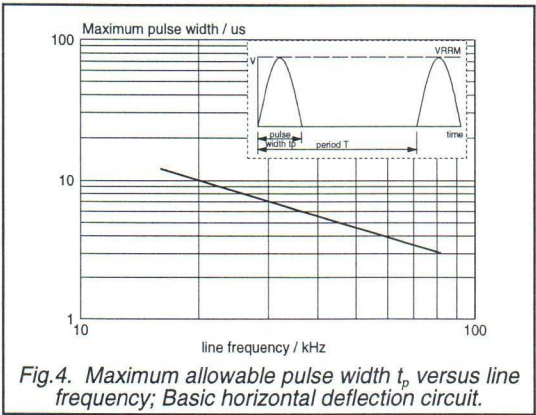
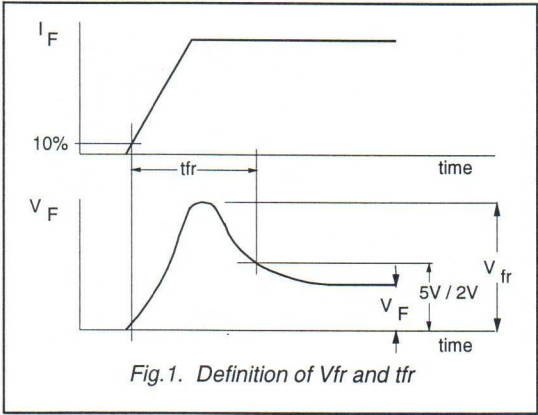
DYNAMIC CHARACTERISTICS

 $T_j = 25\ ^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_{fr}	Forward recovery voltage	$I_F = 6.5\ \text{A}; di_F/dt = 50\ \text{A}/\mu\text{s}$	-	8	14	V
t_{fr}	Forward recovery time	$I_F = 6.5\ \text{A}; di_F/dt = 50\ \text{A}/\mu\text{s}; V_F = 5\ \text{V}$ $I_F = 6.5\ \text{A}; di_F/dt = 50\ \text{A}/\mu\text{s}; V_F = 2\ \text{V}$	-	170 350	250 -	ns ns
t_{rr}	Reverse recovery time	$I_F = 1\ \text{A}; -di_F/dt = 50\ \text{A}/\mu\text{s}; V_R \geq 30\ \text{V}$	-	250	350	ns
Q_s	Reverse recovery charge	$I_F = 2\ \text{A}; -di_F/dt = 20\ \text{A}/\mu\text{s}; V_R \geq 30\ \text{V}$	-	2.0	3.0	μC

Rectifier diode
fast, high-voltage

BY459X-1500



Rectifier diode fast, high-voltage

BY459X-1500

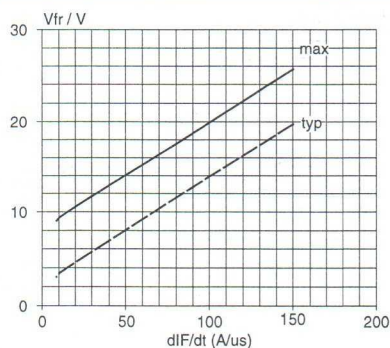


Fig. 7. Typical and maximum $V_{fr} = f(dI_F/dt)$; $I_F = 6.5A$; $T_j = 25^\circ C$

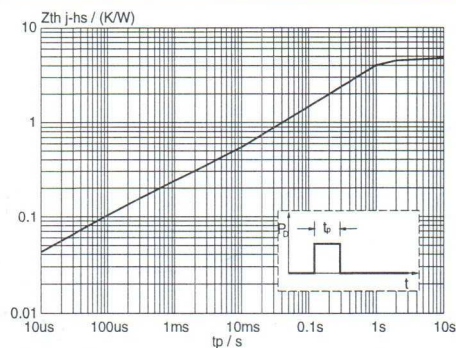


Fig. 9. Transient thermal impedance $Z_{th} = f(t_p)$

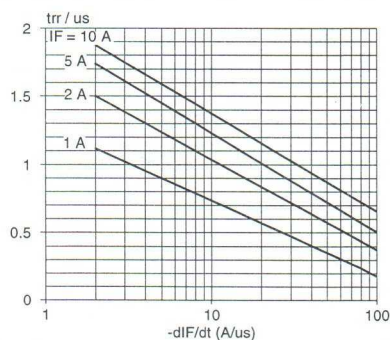


Fig. 8. Maximum reverse recovery time $t_{rr} = f(dI_F/dt)$; parameter T_j ; $V_R \geq 30V$

Rectifier diode fast, high-voltage

BY479X-1700

GENERAL DESCRIPTION

Glass-passivated double diffused rectifier diode in a full pack plastic envelope, featuring fast forward recovery and low forward recovery voltage. The device is intended for use in multi-sync monitor deflection circuits up to 64kHz. The device is designed to withstand transient reverse voltages up to 1700V.

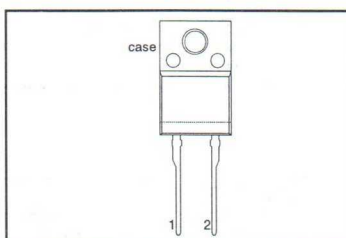
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	UNIT
V_{RRM}	Repetitive peak reverse voltage	1700	V
V_F	Forward voltage	1.2	V
I_{FWM}	Working peak forward current	10	A
I_{FRM}	Repetitive peak forward current	100	A
t_{fr}	Forward recovery time	300	ns
V_{fr}	Forward recovery voltage	19	V

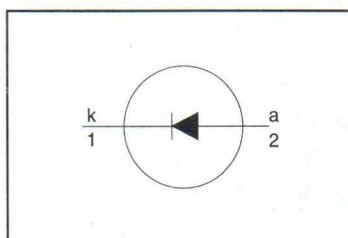
PINNING - SOD113

PIN	DESCRIPTION
1	cathode
2	anode
case	isolated

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{RSM}	Non-repetitive peak reverse voltage during flash-over of picture tube		-	1700	V
V_{RRM}	Repetitive peak reverse voltage	$t = 3.5 \mu s$; $f = 64 kHz$	-	1700	V
V_{RWM}	Crest working reverse voltage		-	1300	V
I_{FWM}	Working peak forward current ¹	$f = 64 kHz$; $T_{hs} \leq 126 ^\circ C$	-	10	A
I_{FRM}	Repetitive peak forward current	$t = 100 \mu s$	-	100	A
I_{FSM}	Non-repetitive peak forward current	$t = 10 ms$	-	100	A
		$t = 8.3 ms$	-	110	A
T_{stg}	Storage temperature	sinusoidal; $T_j = 150 ^\circ C$ prior to surge; with reapplied $V_{RWM(max)}$	-40	150	$^\circ C$
T_j	Operating junction temperature		-	150	$^\circ C$

ISOLATION LIMITING VALUE & CHARACTERISTIC

$T_{hs} = 25 ^\circ C$ unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_{isol}	R.M.S. isolation voltage from both terminals to external heatsink	$f = 50-60 Hz$; sinusoidal waveform; R.H. $\leq 65\%$; clean and dustfree	-		2500	V
C_{isol}	Capacitance from both terminals to external heatsink	$f = 1 MHz$	-	10	-	pF

¹ Including worst case forward recovery losses, see fig:5.

Rectifier diode fast, high-voltage

BY479X-1700

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-hs}$	Thermal resistance junction to heatsink	with heatsink compound	-	-	4.8	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	without heatsink compound in free air	-	55	5.9	K/W
			-		-	K/W

STATIC CHARACTERISTICS

 $T_j = 25\ ^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage	$I_F = 6.5\ \text{A}$	-	0.95	1.3	V
		$I_F = 6.5\ \text{A}; T_j = 125\ ^\circ\text{C}$	-	0.85	1.2	V
I_R	Reverse current	$V_R = V_{RWMmax}$	-	-	0.25	mA
		$V_R = V_{RWMmax}; T_j = 125\ ^\circ\text{C}$	-	-	1.0	mA

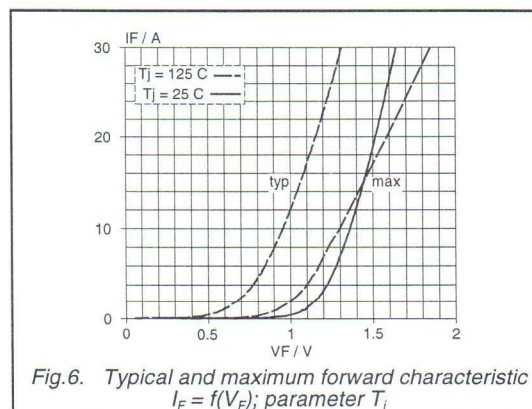
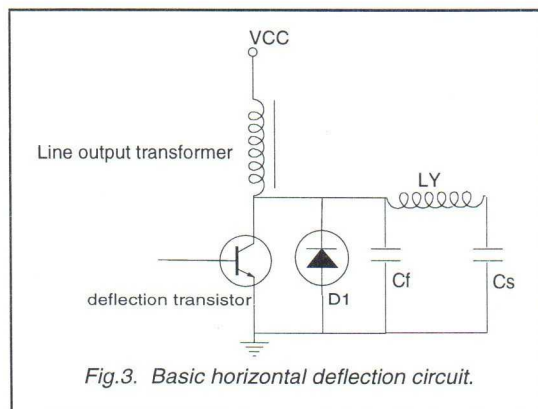
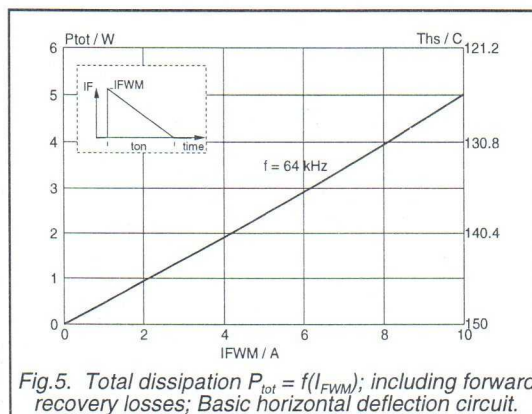
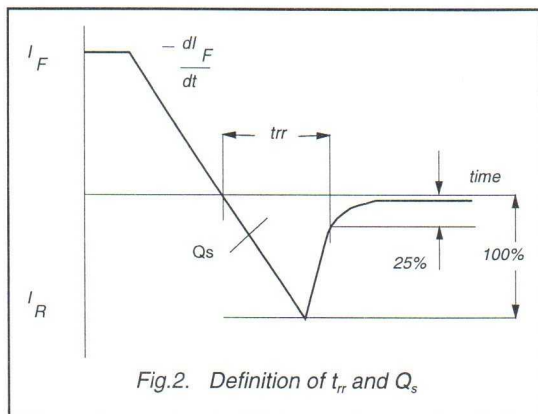
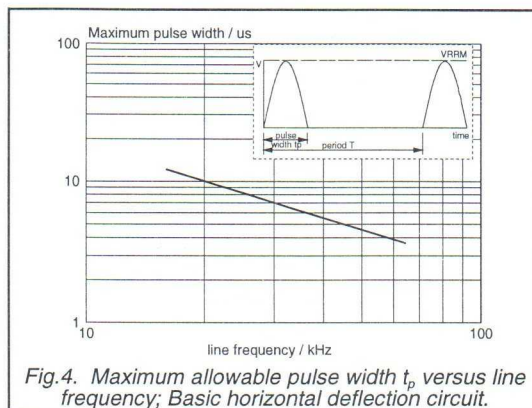
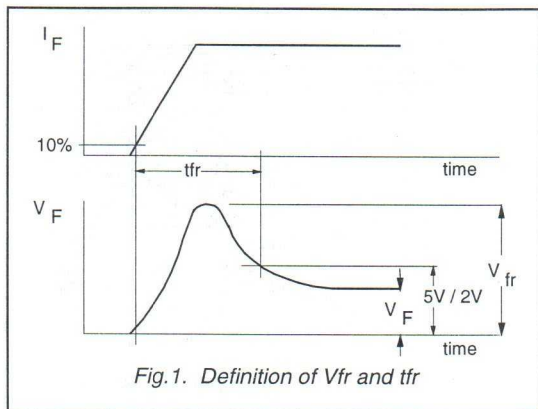
DYNAMIC CHARACTERISTICS

 $T_j = 25\ ^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_{ir}	Forward recovery voltage	$I_F = 6.5\ \text{A}; di_F/dt = 50\ \text{A}/\mu\text{s}$	-	12	19	V
t_{fr}	Forward recovery time	$I_F = 6.5\ \text{A}; di_F/dt = 50\ \text{A}/\mu\text{s}; V_F = 5\ \text{V}$	-	200	300	ns
		$I_F = 6.5\ \text{A}; di_F/dt = 50\ \text{A}/\mu\text{s}; V_F = 2\ \text{V}$	-	400	-	ns
t_{rr}	Reverse recovery time	$I_F = 1\ \text{A}; -di_F/dt = 50\ \text{A}/\mu\text{s}; V_R \geq 30\ \text{V}$	-	250	350	ns
Q_s	Reverse recovery charge	$I_F = 2\ \text{A}; -di_F/dt = 20\ \text{A}/\mu\text{s}; V_R \geq 30\ \text{V}$	-	2.0	3.0	μC

Rectifier diode fast, high-voltage

BY479X-1700



Rectifier diode fast, high-voltage

BY479X-1700

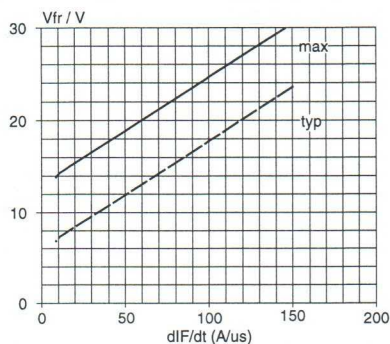


Fig. 7. Typical and maximum $V_{fr} = f(dI_F/dt)$; $I_F = 6.5A$; $T_j = 25^\circ C$

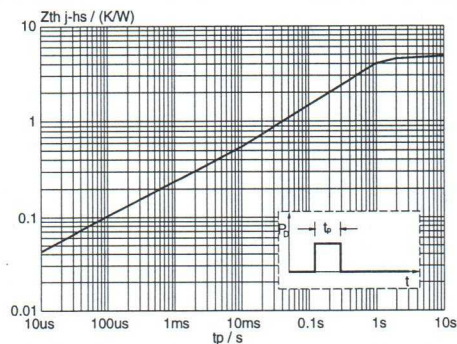


Fig. 9. Transient thermal impedance $Z_{th} = f(t_p)$

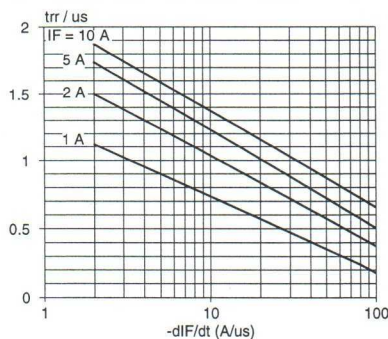


Fig. 8. Maximum reverse recovery time $t_{rr} = f(dI_F/dt)$; parameter T_j ; $V_{FR} \geq 30V$

Rectifier diode fast, high-voltage

BY559-1500

GENERAL DESCRIPTION

Glass-passivated double diffused rectifier diode in a plastic envelope, featuring fast forward recovery and low forward recovery voltage. The device is intended for use in multi-sync monitor horizontal deflection circuits with scan rates up to 120 kHz.

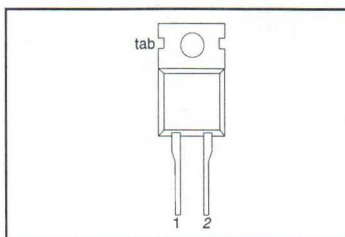
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	UNIT
V_{RRM}	Repetitive peak reverse voltage	1500	V
V_F	Forward voltage	0.9	V
I_{FWM}	Working peak forward current	20	A
I_{FRM}	Repetitive peak forward current	150	A
t_{fr}	Forward recovery time	350	ns
V_{fr}	Forward recovery voltage	11	V

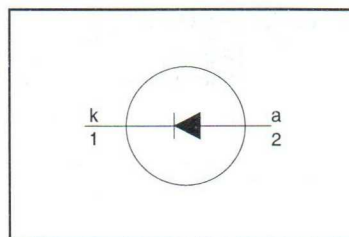
PINNING - TO220AC

PIN	DESCRIPTION
1	cathode (k)
2	anode (a)
tab	cathode (k)

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{RSM}	Non repetitive peak reverse voltage during flash-over of picture tube		-	1500	V
V_{RRM}	Repetitive peak reverse voltage	$t = 6 \mu s$; $f = 82 \text{ kHz}$	-	1500	V
V_{RWM}	Crest working reverse voltage		-	1300	V
I_{FWM}	Working peak forward current ¹	$f = 120 \text{ kHz}$; $T_{mb} \leq 144 \text{ }^\circ\text{C}$	-	20	A
I_{FRM}	Repetitive peak forward current	$t = 100 \mu s$	-	150	A
I_{FSM}	Non repetitive peak forward current	$t = 10 \text{ ms}$ $t = 8.3 \text{ ms}$ sinusoidal; $T_j = 150 \text{ }^\circ\text{C}$ prior to surge; with reapplied $V_{RWM(max)}$	-	180	A
T_{stg}	Storage temperature		-40	150	$^\circ\text{C}$
T_j	Operating junction temperature		-	150	$^\circ\text{C}$

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th j-mb}$	Thermal resistance junction to mounting base		-	-	1.0	K/W
$R_{th j-a}$	Thermal resistance junction to ambient	in free air	-	60	-	K/W

¹ Including worst case forward recovery losses, see fig:5.

Rectifier diode fast, high-voltage

BY559-1500

STATIC CHARACTERISTICS

 $T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage	$I_F = 10\text{ A}$	-	1.0	1.15	V
		$I_F = 10\text{ A}; T_j = 125\text{ }^{\circ}\text{C}$	-	0.79	0.9	V
I_R	Reverse current	$V_R = V_{RWMmax}$	-	-	0.5	mA
		$V_R = V_{RWMmax}; T_j = 125\text{ }^{\circ}\text{C}$	-	-	2.0	mA

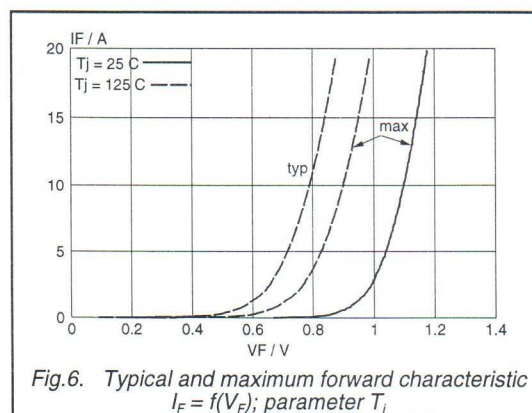
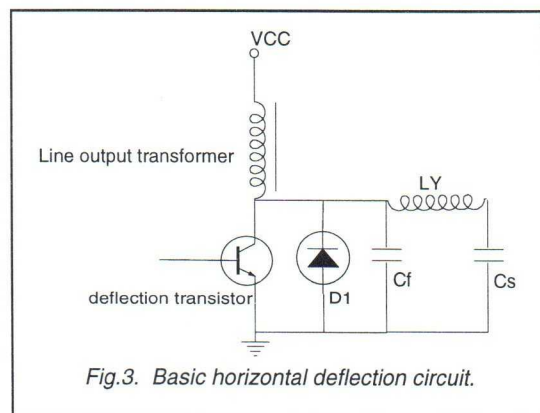
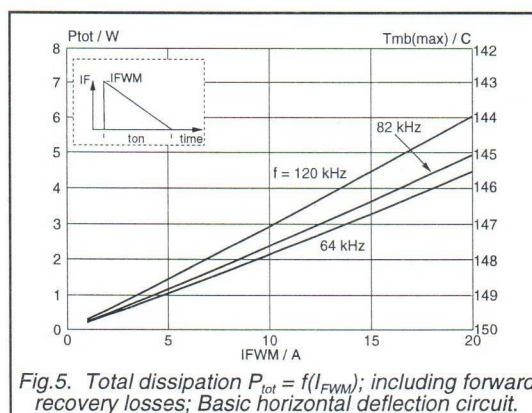
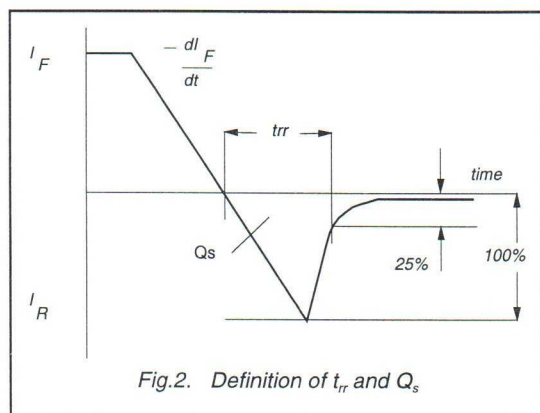
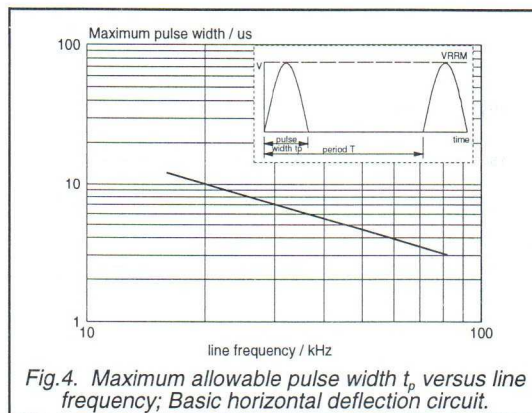
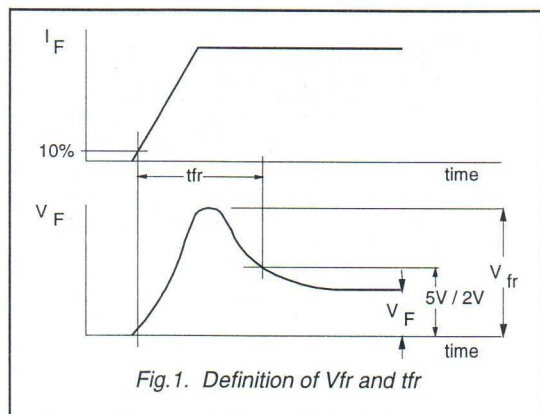
DYNAMIC CHARACTERISTICS

 $T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_{fr}	Forward recovery voltage	$I_F = 10\text{ A}; di_F/dt = 50\text{ A}/\mu\text{s}$	-	7	11	V
t_{fr}	Forward recovery time	$I_F = 10\text{ A}; di_F/dt = 50\text{ A}/\mu\text{s}; V_F = 5\text{ V}$	-	250	350	ns
		$I_F = 10\text{ A}; di_F/dt = 50\text{ A}/\mu\text{s}; V_F = 2\text{ V}$	-	450	600	ns
t_{rr}	Reverse recovery time	$I_F = 10\text{ A}; -di_F/dt = 50\text{ A}/\mu\text{s}; V_R \geq 30\text{ V}$	-	0.75	1.0	μs
Q_s	Reverse recovery charge	$I_F = 2\text{ A}; -di_F/dt = 20\text{ A}/\mu\text{s}; V_R \geq 30\text{ V}$	-	4.0	6.0	μC

Rectifier diode fast, high-voltage

BY559-1500



Rectifier diode fast, high-voltage

BY559-1500

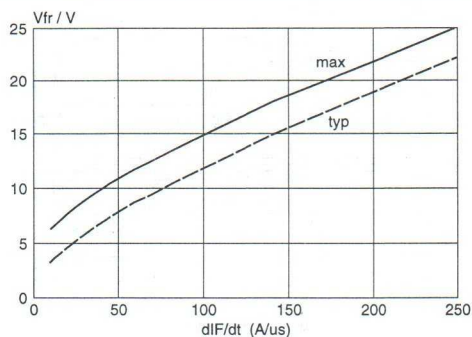


Fig. 7. Typical and maximum $V_{fr} = f(dI_F/dt)$; $I_F = 10$ A;
 $T_j = 25^\circ\text{C}$

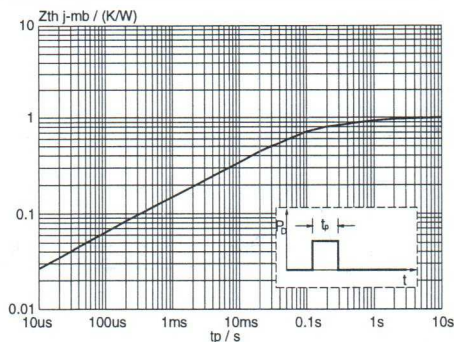


Fig. 9. Transient thermal impedance $Z_{th} = f(t_p)$

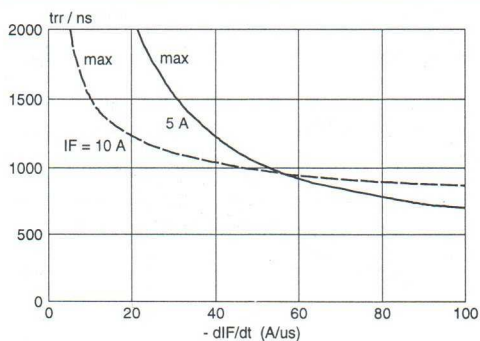


Fig. 8. Maximum reverse recovery time $t_{rr} = f(dI_F/dt)$;
parameter T_j ; $V_{FR} \geq 30$ V

Rectifier diodes ultrafast

BYQ28 series

GENERAL DESCRIPTION

Glass passivated, dual, high efficiency rectifier diodes in a plastic envelope, featuring low forward voltage drop, ultra-fast recovery times and soft recovery characteristic. They are intended for use in switched mode power supplies and high frequency circuits in general where low conduction and switching losses are essential.

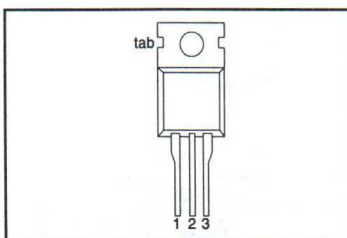
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
V_{RRM}	BYQ28- Repetitive peak reverse voltage	100 100	150 150	200 200	V
V_F	Forward voltage	0.895	0.895	0.895	V
$I_{O(AV)}$	Output current (both diodes conducting)	10	10	10	A
t_{rr}	Reverse recovery time	20	20	20	ns

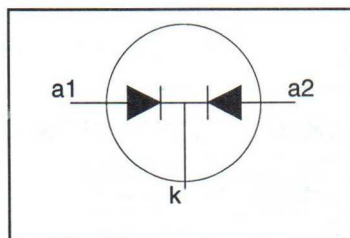
PINNING - TO220AB

PIN	DESCRIPTION
1	anode 1 (a)
2	cathode (k)
3	anode 2 (a)
tab	cathode (k)

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{RRM}	Repetitive peak reverse voltage		-	-100	-150	-200	V
V_{RWM}	Crest working reverse voltage		-	100	150	200	V
V_R	Continuous reverse voltage		-	100	150	200	V
$I_{O(AV)}$	Output current (both diodes conducting) ¹	square wave; $\delta = 0.5$; $T_{mb} \leq 119^\circ\text{C}$ sinusoidal; $a = 1.57$; $T_{mb} \leq 121^\circ\text{C}$	-	10			A
$I_{O(RMS)}$	RMS forward current		-	14			A
I_{FRM}	Repetitive peak forward current per diode	$t = 25\ \mu\text{s}$; $\delta = 0.5$; $T_{mb} \leq 119^\circ\text{C}$	-	10			A
I_{FSM}	Non-repetitive peak forward current per diode	$t = 10\ \text{ms}$ $t = 8.3\ \text{ms}$ sinusoidal; with reapplied	-	50			A
I^2t	I^2t for fusing	$V_{RWM(max)}$ $t = 10\ \text{ms}$	-	12.5			A ² s
T_{stg}	Storage temperature		-40	150			°C
T_j	Operating junction temperature		-	150			°C

¹ Neglecting switching and reverse current losses

Rectifier diodes
ultrafast

BYQ28 series

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-mb}$	Thermal resistance junction to heatsink	per diode both diodes conducting	-	-	4.5	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	in free air	-	60	3.0	K/W

STATIC CHARACTERISTICS

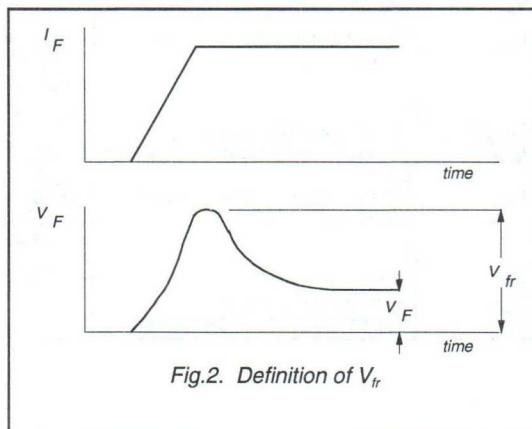
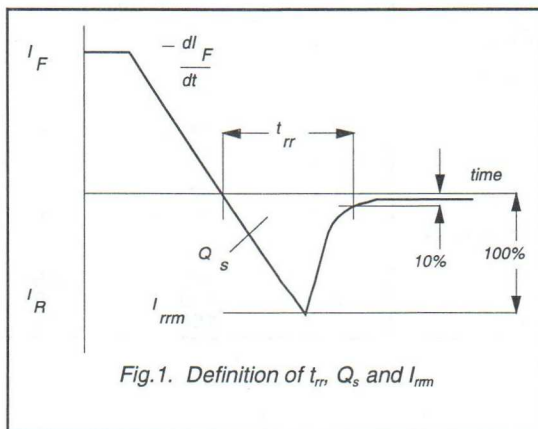
 $T_j = 25\ ^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage (per diode)	$I_F = 5\ \text{A}$; $T_j = 150\ ^\circ\text{C}$	-	0.80	0.895	V
		$I_F = 5\ \text{A}$	-	0.95	1.10	V
		$I_F = 10\ \text{A}$	-	1.10	1.25	V
I_R	Reverse current (per diode)	$V_R = V_{RWM}$; $T_j = 100\ ^\circ\text{C}$	-	0.1	0.2	mA
		$V_R = V_{RWM}$	-	2	10	μA

DYNAMIC CHARACTERISTICS

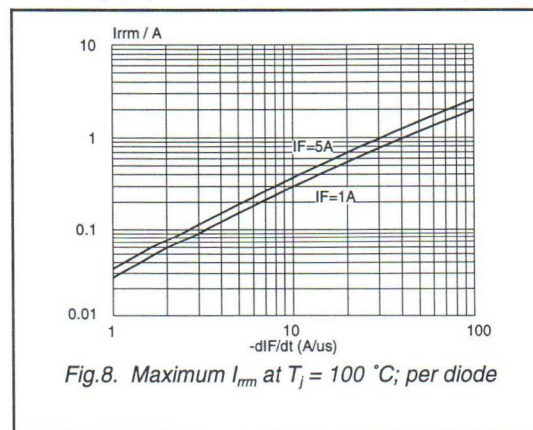
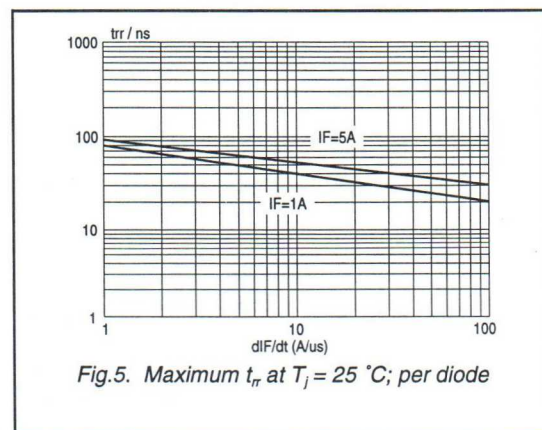
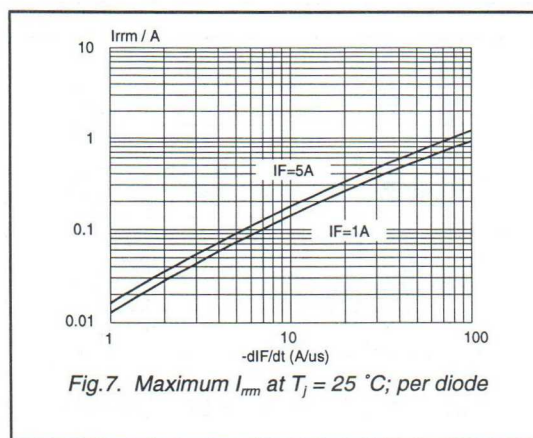
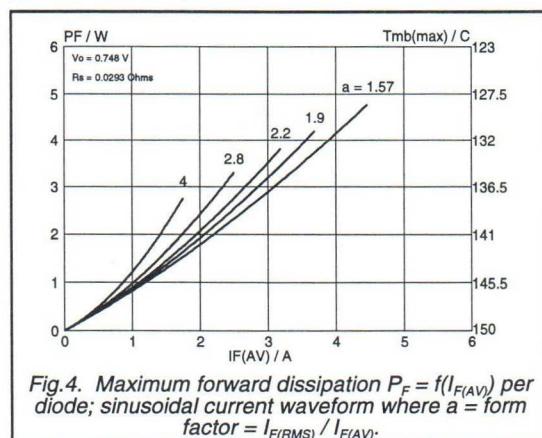
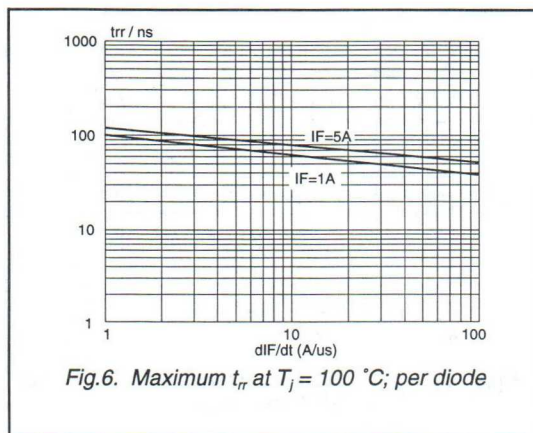
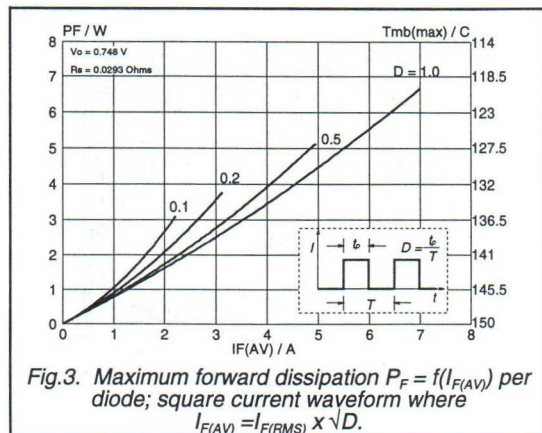
 $T_j = 25\ ^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Q_s	Reverse recovery charge (per diode)	$I_F = 2\ \text{A}$; $V_R \geq 30\ \text{V}$; $-di_F/dt = 20\ \text{A}/\mu\text{s}$	-	4	5.5	nC
t_{rr}	Reverse recovery time (per diode)	$I_F = 1\ \text{A}$; $V_R \geq 30\ \text{V}$; $-di_F/dt = 100\ \text{A}/\mu\text{s}$	-	15	20	ns
I_{rm}	Peak reverse recovery current (per diode)	$I_F = 5\ \text{A}$; $V_R \geq 30\ \text{V}$; $-di_F/dt = 50\ \text{A}/\mu\text{s}$	-	0.5	0.7	A
V_{fr}	Forward recovery voltage (per diode)	$I_F = 1\ \text{A}$; $di_F/dt = 10\ \text{A}/\mu\text{s}$	-	1	-	V



Rectifier diodes
ultrafast

BYQ28 series



Rectifier diodes
ultrafast

BYQ28 series

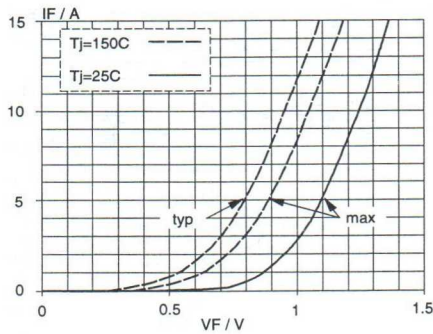


Fig.9. Typical and maximum forward characteristic
 $I_F = f(V_F)$; parameter T_J

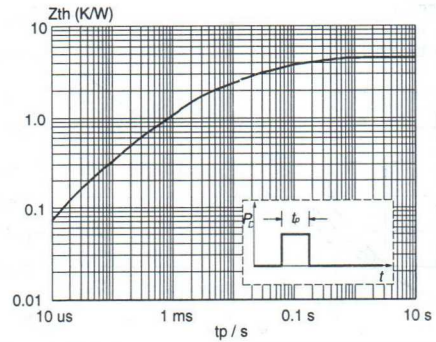


Fig.11. Transient thermal impedance; per diode;
 $Z_{th\ j-mb} = f(t_p)$.

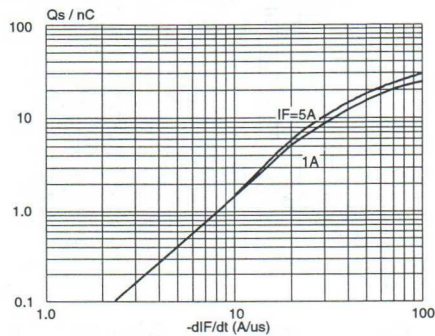


Fig.10. Maximum Q_s at $T_J = 25\text{ °C}$; per diode

Rectifier diodes ultrafast, rugged

BYQ28E series

GENERAL DESCRIPTION

Glass passivated dual epitaxial rectifier diodes in a plastic envelope, featuring low forward voltage drop, ultra-fast recovery times, soft recovery characteristic and guaranteed reverse surge and ESD capability. They are intended for use in switched mode power supplies and high frequency circuits in general where low conduction and switching losses are essential.

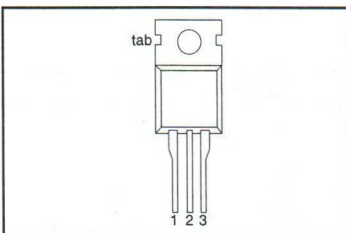
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
BYQ28E-					
V_{RRM}	Repetitive peak reverse voltage	100	150	200	V
V_F	Forward voltage	0.895	0.895	0.895	V
$I_{O(AV)}$	Output current (both diodes conducting)	10	10	10	A
t_{rr}	Reverse recovery time	25	25	25	ns
I_{RRM}	Repetitive peak reverse current per diode	0.2	0.2	0.2	A

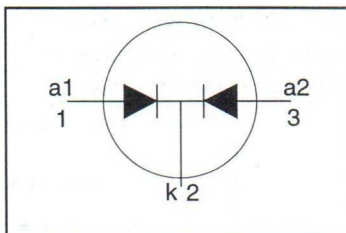
PINNING - TO220AB

PIN	DESCRIPTION
1	anode 1 (a)
2	cathode (k)
3	anode 2 (a)
tab	cathode (k)

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{RRM}	Repetitive peak reverse voltage		-	-100	-150	-200	V
V_{RWM}	Crest working reverse voltage		-	100	150	200	V
V_R	Continuous reverse voltage		-	100	150	200	V
$I_{O(AV)}$	Output current (both diodes conducting) ¹	square wave $\delta = 0.5$; $T_{mb} \leq 119^\circ\text{C}$ sinusoidal $a = 1.57$; $T_{mb} \leq 121^\circ\text{C}$	-	10			A
$I_{O(RMS)}$	RMS forward current		-	14			A
I_{FRM}	Repetitive peak forward current per diode	$t = 25\ \mu\text{s}$; $\delta = 0.5$; $T_{mb} \leq 119^\circ\text{C}$	-	10			A
I_{FSM}	Non-repetitive peak forward current per diode	$t = 10\ \text{ms}$ $t = 8.3\ \text{ms}$ sinusoidal; with reapplied	-	50			A
I^2t	I^2t for fusing	$V_{RWM(max)}$ $t = 10\ \text{ms}$	-	12.5			A ² s
I_{RRM}	Repetitive peak reverse current per diode	$t_p = 2\ \mu\text{s}$; $\delta = 0.001$	-	0.2			A
I_{RSM}	Non-repetitive peak reverse current per diode	$t_p = 100\ \mu\text{s}$	-	0.2			A
T_{stg}	Storage temperature		-40	150			$^\circ\text{C}$
T_j	Operating junction temperature		-	150			$^\circ\text{C}$

¹ Neglecting switching and reverse current losses.

Rectifier diodes ultrafast, rugged

BYQ28E series

ESD LIMITING VALUE

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_C	Electrostatic discharge capacitor voltage	Human body model; $C = 250 \text{ pF}$; $R = 1.5 \text{ k}\Omega$	-	8	kV

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th \text{ j-mb}}$	Thermal resistance junction to mounting base	per diode both diodes conducting	-	-	4.5	K/W
$R_{th \text{ j-a}}$	Thermal resistance junction to ambient	in free air	-	60	3.0	K/W
					-	K/W

STATIC CHARACTERISTICS

$T_j = 25^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage (per diode)	$I_F = 5 \text{ A}$; $T_j = 150^\circ\text{C}$	-	0.80	0.895	V
		$I_F = 5 \text{ A}$	-	0.95	1.10	V
		$I_F = 10 \text{ A}$	-	1.10	1.25	V
I_R	Reverse current (per diode)	$V_R = V_{RWM}$; $T_j = 100^\circ\text{C}$	-	0.1	0.2	mA
		$V_R = V_{RWM}$	-	2	10	μA

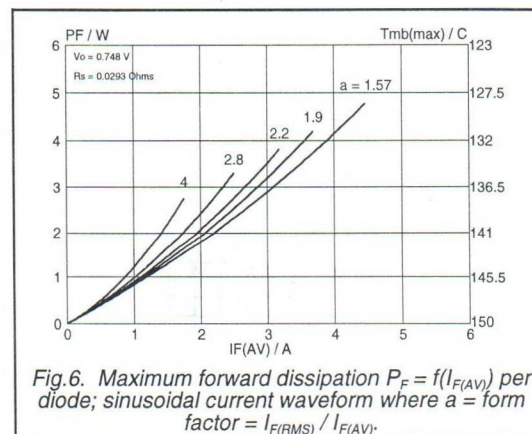
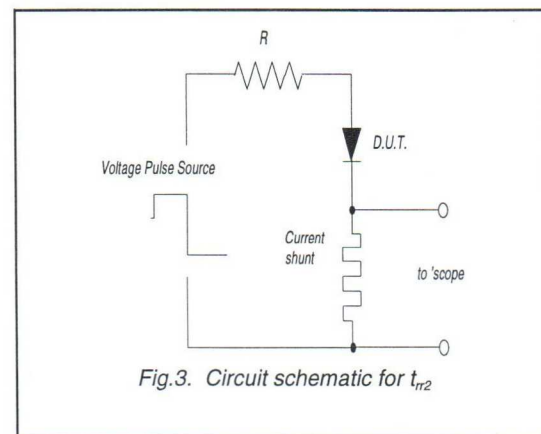
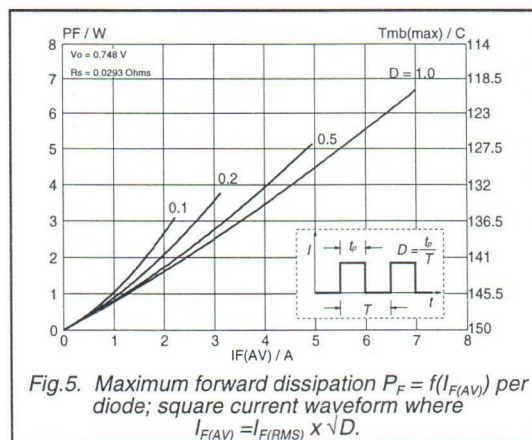
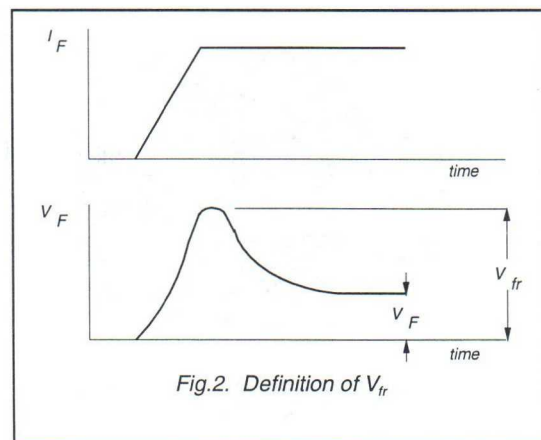
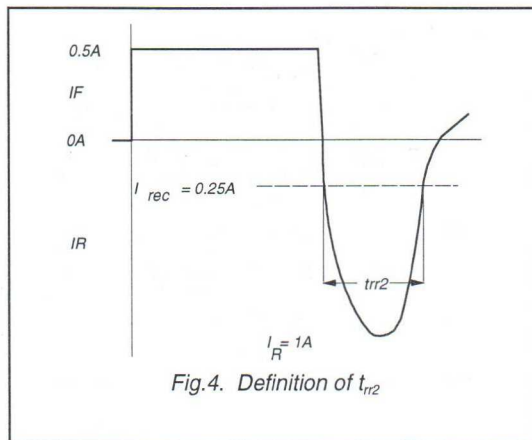
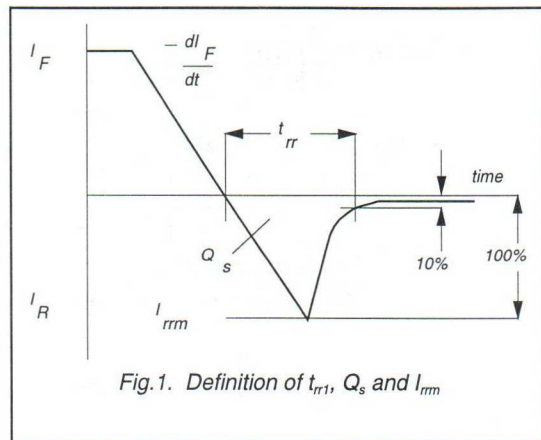
DYNAMIC CHARACTERISTICS

$T_j = 25^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Q_s	Reverse recovery charge (per diode)	$I_F = 2 \text{ A}$; $V_R \geq 30 \text{ V}$; $-dI_F/dt = 20 \text{ A}/\mu\text{s}$	-	4	9	nC
t_{rr1}	Reverse recovery time (per diode)	$I_F = 1 \text{ A}$; $V_R \geq 30 \text{ V}$; $-dI_F/dt = 100 \text{ A}/\mu\text{s}$	-	15	25	ns
t_{rr2}	Reverse recovery time (per diode)	$I_F = 0.5 \text{ A}$ to $I_R = 1 \text{ A}$; $I_{rec} = 0.25 \text{ A}$	-	10	20	ns
V_{fr}	Forward recovery voltage (per diode)	$I_F = 1 \text{ A}$; $dI_F/dt = 10 \text{ A}/\mu\text{s}$	-	1	-	V

Rectifier diodes ultrafast, rugged

BYQ28E series



Rectifier diodes ultrafast, rugged

BYQ28E series

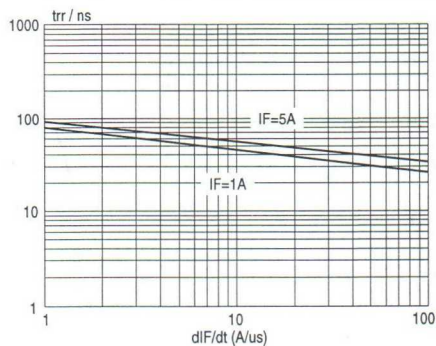


Fig. 7. Maximum t_{rr} at $T_j = 25\text{ }^{\circ}\text{C}$; per diode

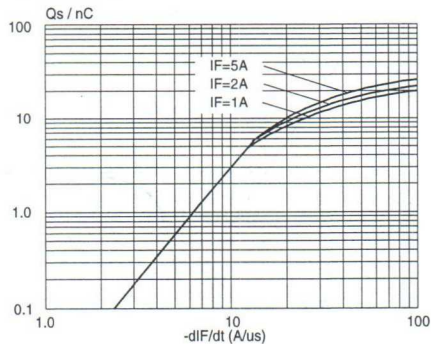


Fig. 10. Maximum Q_s at $T_j = 25\text{ }^{\circ}\text{C}$; per diode

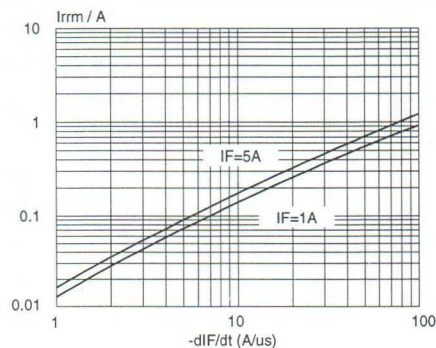


Fig. 8. Maximum I_{rms} at $T_j = 25\text{ }^{\circ}\text{C}$; per diode

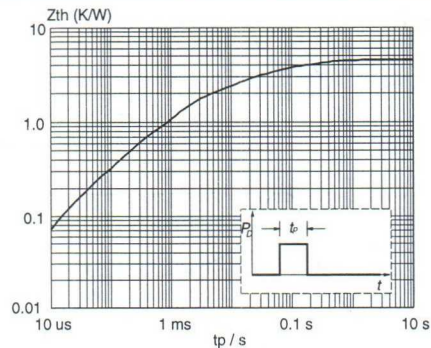


Fig. 11. Transient thermal impedance; per diode;
 $Z_{thj-mb} = f(t_p)$.

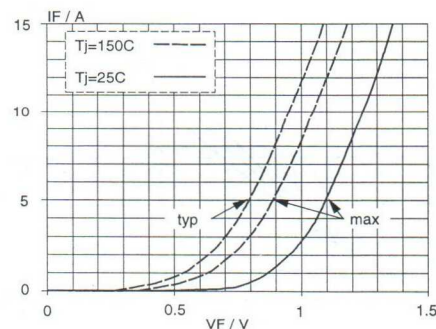


Fig. 9. Typical and maximum forward characteristic
 $I_F = f(V_F)$; parameter T_j

Rectifier diodes ultrafast, rugged

BYQ28EB series

GENERAL DESCRIPTION

Glass passivated dual epitaxial rectifier diodes in a plastic envelope suitable for surface mounting, featuring low forward voltage drop, ultra-fast recovery times, soft recovery characteristic and guaranteed reverse surge and ESD capability. They are intended for use in switched mode power supplies and high frequency circuits in general where low conduction and switching losses are essential.

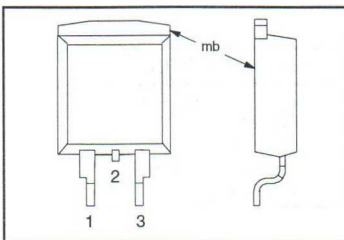
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
V_{RRM}	BYQ28EB- Repetitive peak reverse voltage	100 100	150 150	200 200	V
V_F	Forward voltage	0.895	0.895	0.895	V
$I_{O(AV)}$	Average output current (both diodes conducting)	10	10	10	A
t_{rr}	Reverse recovery time	25	25	25	ns
I_{RRM}	Repetitive peak reverse current per diode	0.2	0.2	0.2	A

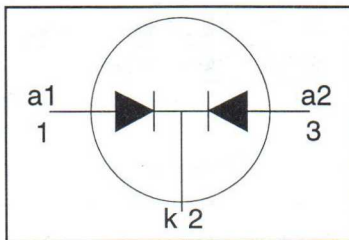
PINNING - SOT404

PIN	DESCRIPTION
1	anode 1
2	cathode
3	anode 2
mb	cathode

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{RRM}	Repetitive peak reverse voltage	square wave $\delta = 0.5$; $T_{mb} \leq 119\text{ }^{\circ}\text{C}$ sinusoidal $a = 1.57$; $T_{mb} \leq 121\text{ }^{\circ}\text{C}$	-	-100	-150	-200	V
V_{RWM}	Crest working reverse voltage		-	100	150	200	V
V_R	Continuous reverse voltage		-	100	150	200	V
$I_{O(AV)}$	Average output current (both diodes conducting) ¹	$t = 25\text{ }\mu\text{s}$; $\delta = 0.5$; $T_{mb} \leq 119\text{ }^{\circ}\text{C}$ $t = 10\text{ ms}$ $t = 8.3\text{ ms}$ sinusoidal; with reapplied	-	10			A
$I_{O(RMS)}$	RMS output current (both diodes conducting)		-	14			A
I_{FRM}	Repetitive peak forward current per diode		-	10			A
I_{FSM}	Non-repetitive peak forward current per diode	$V_{RRM(max)}$ $t_p = 2\text{ }\mu\text{s}$; $\delta = 0.001$ $t_p = 100\text{ }\mu\text{s}$	-	50			A
			-	55			A
I^2t	I^2t for fusing		-	12.5			A ² s
I_{RRM}	Repetitive peak reverse current per diode	$t_p = 100\text{ }\mu\text{s}$	-	0.2			A
I_{RSM}	Non-repetitive peak reverse current per diode		-	0.2			A
T_{stg}	Storage temperature		-40	150			$^{\circ}\text{C}$
T_j	Operating junction temperature		-	150			$^{\circ}\text{C}$

¹ Neglecting switching and reverse current losses.

Rectifier diodes
ultrafast, rugged

BYQ28EB series

ESD LIMITING VALUE

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_C	Electrostatic discharge capacitor voltage	Human body model; $C = 250 \text{ pF}$; $R = 1.5 \text{ k}\Omega$	-	8	kV

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th \text{ j-mb}}$	Thermal resistance junction to mounting base	per diode	-	-	4.5	K/W
$R_{th \text{ j-a}}$	Thermal resistance junction to ambient	both diodes conducting minimum footprint, FR4 board	-	50	3.0	K/W
					-	K/W

STATIC CHARACTERISTICS

 $T_J = 25^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage (per diode)	$I_F = 5 \text{ A}$; $T_J = 150^\circ\text{C}$	-	0.80	0.895	V
		$I_F = 5 \text{ A}$	-	0.95	1.10	V
		$I_F = 10 \text{ A}$	-	1.10	1.25	V
I_R	Reverse current (per diode)	$V_R = V_{RRM}$; $T_J = 100^\circ\text{C}$	-	0.1	0.2	mA
		$V_R = V_{RRM}$	-	2	10	μA

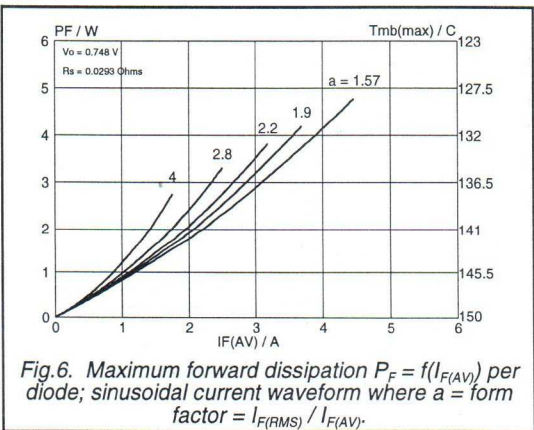
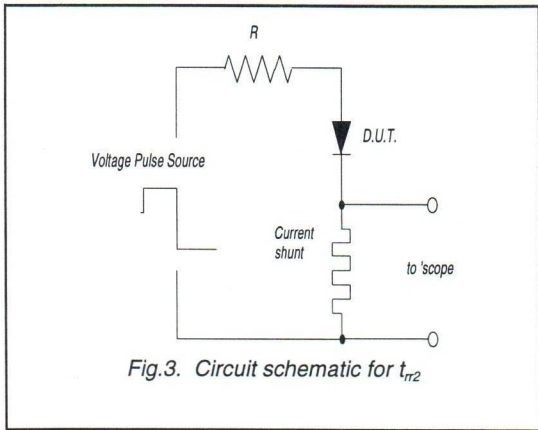
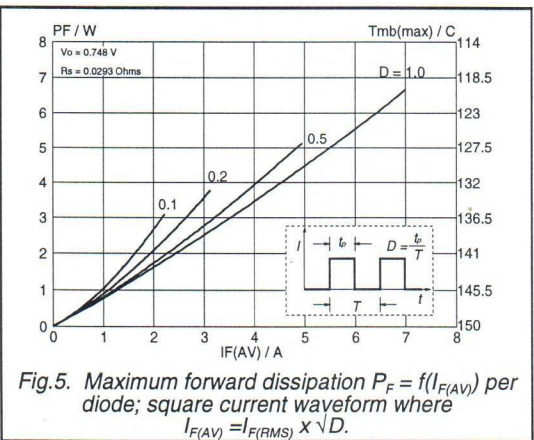
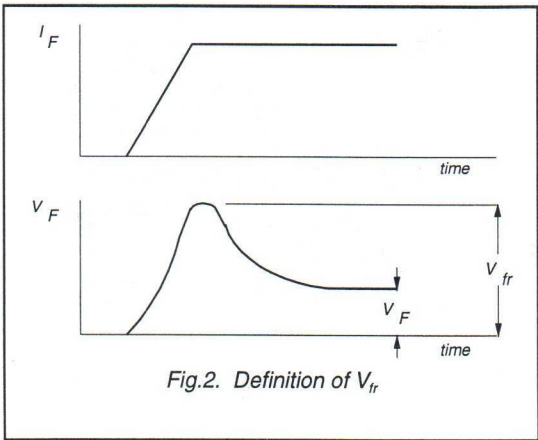
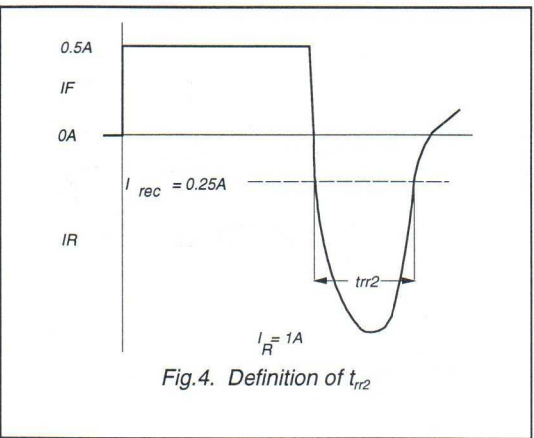
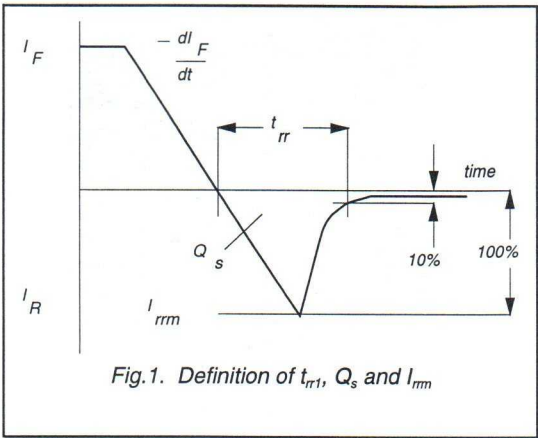
DYNAMIC CHARACTERISTICS

 $T_J = 25^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Q_s	Reverse recovery charge (per diode)	$I_F = 2 \text{ A}$; $V_R \geq 30 \text{ V}$; $-dI_F/dt = 20 \text{ A}/\mu\text{s}$	-	4	9	nC
t_{rr1}	Reverse recovery time (per diode)	$I_F = 1 \text{ A}$; $V_R \geq 30 \text{ V}$; $-dI_F/dt = 100 \text{ A}/\mu\text{s}$	-	15	25	ns
t_{rr2}	Reverse recovery time (per diode)	$I_F = 0.5 \text{ A}$ to $I_R = 1 \text{ A}$; $I_{rec} = 0.25 \text{ A}$	-	10	20	ns
V_{fr}	Forward recovery voltage (per diode)	$I_F = 1 \text{ A}$; $dI_F/dt = 10 \text{ A}/\mu\text{s}$	-	1	-	V

Rectifier diodes
ultrafast, rugged

BYQ28EB series



Rectifier diodes
ultrafast, rugged

BYQ28EB series

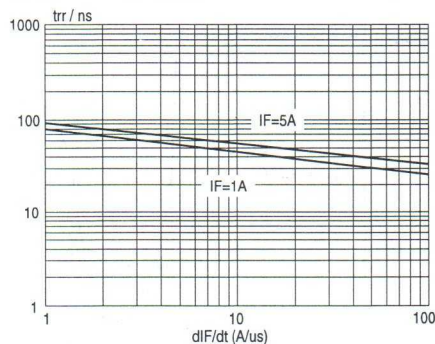


Fig.7. Maximum t_{rr} at $T_j = 25^\circ C$; per diode

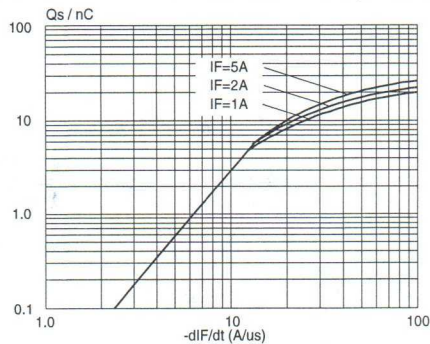


Fig.10. Maximum Q_s at $T_j = 25^\circ C$; per diode

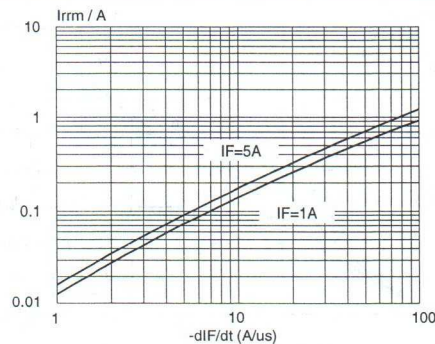


Fig.8. Maximum I_{rms} at $T_j = 25^\circ C$; per diode

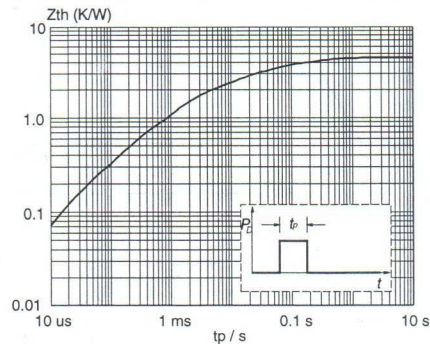


Fig.11. Transient thermal impedance; per diode;
 $Z_{th j-mb} = f(t_p)$.

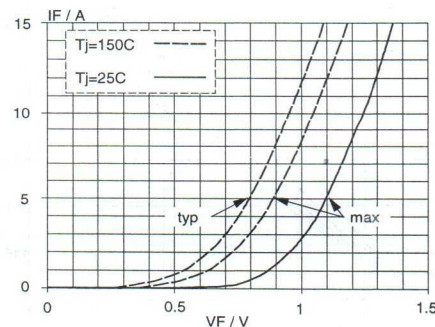


Fig.9. Typical and maximum forward characteristic
 $I_F = f(V_F)$; parameter T_j

Rectifier diodes ultrafast, rugged

BYQ28EX series

GENERAL DESCRIPTION

Glass passivated dual epitaxial rectifier diodes in a full pack plastic envelope, featuring low forward voltage drop, ultra-fast recovery times, soft recovery characteristic and guaranteed reverse surge and ESD capability. They are intended for use in switched mode power supplies and high frequency circuits in general where low conduction and switching losses are essential.

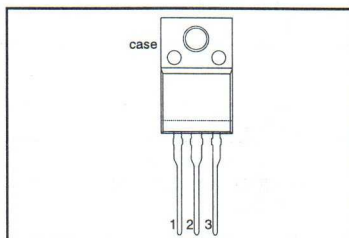
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
V_{RRM}	BYQ28EX- Repetitive peak reverse voltage	100	150	200	V
		100	150	200	
V_F	Forward voltage	0.895	0.895	0.895	V
$I_{O(AV)}$	Output current (both diodes conducting)	10	10	10	A
t_{rr}	Reverse recovery time	25	25	25	ns
I_{RRM}	Repetitive peak reverse current per diode	0.2	0.2	0.2	A

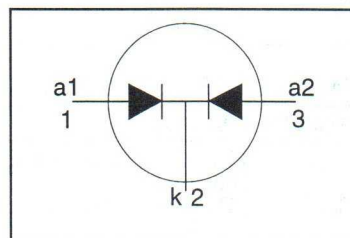
PINNING - SOT186A

PIN	DESCRIPTION
1	anode 1 (a)
2	cathode (k)
3	anode 2 (a)
case	isolated

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{RRM}	Repetitive peak reverse voltage		-	-100	-150	-200	V
V_{RWM}	Crest working reverse voltage		-	100	150	200	V
V_R	Continuous reverse voltage ¹		-	100	150	200	V
$I_{O(AV)}$	Output current (both diodes conducting) ²	square wave $\delta = 0.5$; $T_{hs} \leq 92^\circ\text{C}$ sinusoidal $a = 1.57$; $T_{hs} \leq 95^\circ\text{C}$	-	10			A
$I_{O(RMS)}$	RMS forward current		-	14			A
I_{FRM}	Repetitive peak forward current per diode	$t = 25\ \mu\text{s}$; $\delta = 0.5$; $T_{hs} \leq 92^\circ\text{C}$	-	10			A
I_{FSM}	Non-repetitive peak forward current per diode	$t = 10\ \text{ms}$ $t = 8.3\ \text{ms}$ sinusoidal; with reapplied	-	50			A
I^2t	I^2t for fusing	$V_{RWM(max)}$ $t = 10\ \text{ms}$	-	12.5			A ² s
I_{RRM}	Repetitive peak reverse current per diode	$t_p = 2\ \mu\text{s}$; $\delta = 0.001$	-	0.2			A
I_{RSM}	Non-repetitive peak reverse current per diode	$t_p = 100\ \mu\text{s}$	-	0.2			A
T_{stg}	Storage temperature		-40	150			$^\circ\text{C}$
T_j	Operating junction temperature		-	150			$^\circ\text{C}$

1 $T_{hs} \leq 148^\circ\text{C}$ for thermal stability.

2 Neglecting switching and reverse current losses

Rectifier diodes
ultrafast, rugged

BYQ28EX series

ESD LIMITING VALUE

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_C	Electrostatic discharge capacitor voltage	Human body model; $C = 250 \text{ pF}$; $R = 1.5 \text{ k}\Omega$	-	8	kV

ISOLATION LIMITING VALUE & CHARACTERISTIC

 $T_{hs} = 25^\circ\text{C}$ unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_{isol}	R.M.S. isolation voltage from all three terminals to external heatsink	$f = 50\text{-}60 \text{ Hz}$; sinusoidal waveform; $R.H. \leq 65\%$; clean and dustfree	-		2500	V
C_{isol}	Capacitance from T2 to external heatsink	$f = 1 \text{ MHz}$	-	10	-	pF

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th \text{ j-hs}}$	Thermal resistance junction to heatsink	with heatsink compound	-	-	5.7	K/W
$R_{th \text{ j-a}}$	Thermal resistance junction to ambient	without heatsink compound in free air	-	-	6.7	K/W
			-	55	-	K/W

STATIC CHARACTERISTICS

 $T_j = 25^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage (per diode)	$I_F = 5 \text{ A}$; $T_j = 150^\circ\text{C}$	-	0.80	0.895	V
		$I_F = 5 \text{ A}$	-	0.95	1.10	V
		$I_F = 10 \text{ A}$	-	1.10	1.25	V
I_R	Reverse current (per diode)	$V_R = V_{RWM}$; $T_j = 100^\circ\text{C}$	-	0.1	0.2	mA
		$V_R = V_{RWM}$	-	2	10	μA

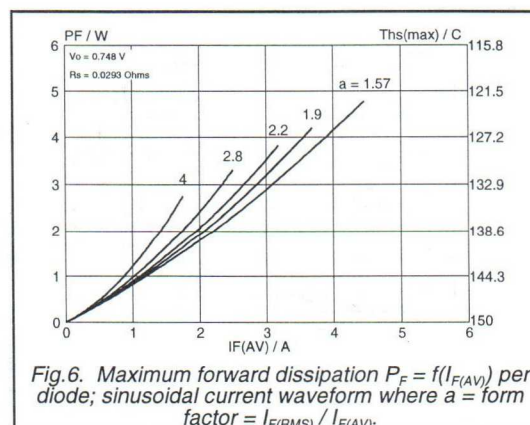
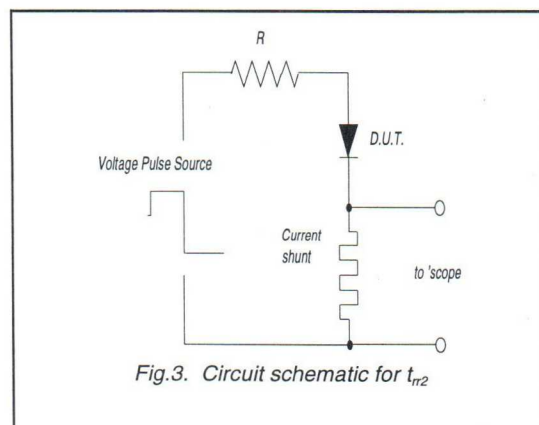
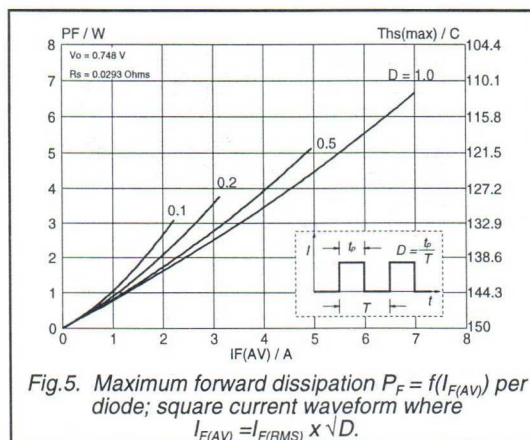
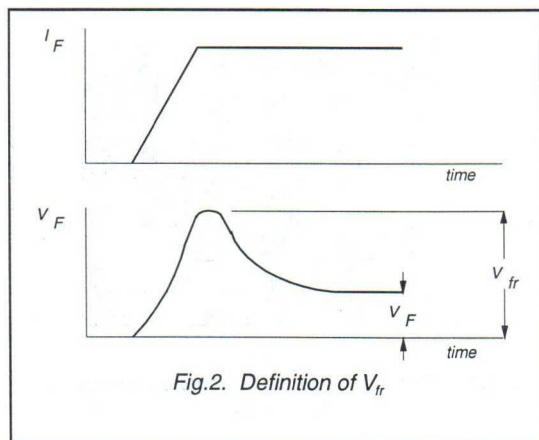
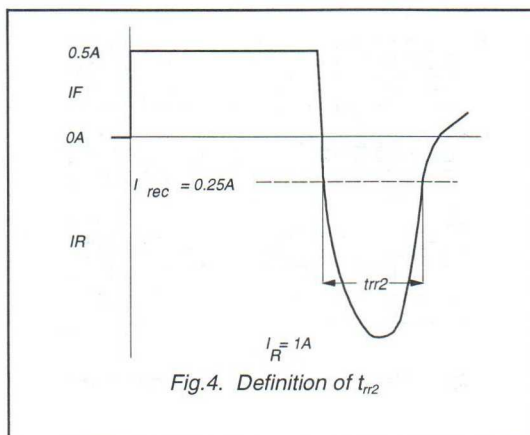
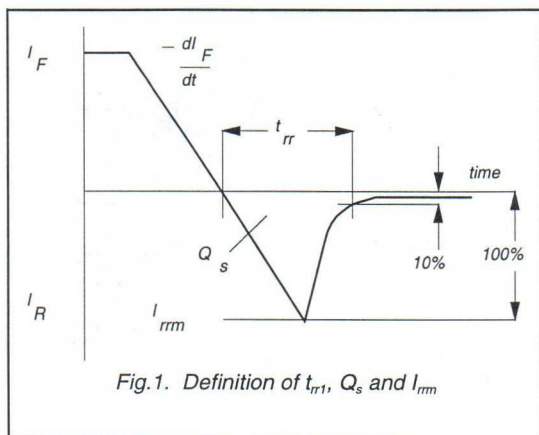
DYNAMIC CHARACTERISTICS

 $T_j = 25^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Q_s	Reverse recovery charge (per diode)	$I_F = 2 \text{ A}$; $V_R \geq 30 \text{ V}$; $-di_F/dt = 20 \text{ A}/\mu\text{s}$	-	4	9	nC
t_{rr1}	Reverse recovery time (per diode)	$I_F = 1 \text{ A}$; $V_R \geq 30 \text{ V}$; $-di_F/dt = 100 \text{ A}/\mu\text{s}$	-	15	25	ns
t_{rr2}	Reverse recovery time (per diode)	$I_F = 0.5 \text{ A}$ to $I_R = 1 \text{ A}$; $I_{rec} = 0.25 \text{ A}$	-	10	20	ns
V_{fr}	Forward recovery voltage (per diode)	$I_F = 1 \text{ A}$; $di_F/dt = 10 \text{ A}/\mu\text{s}$	-	1	-	V

Rectifier diodes ultrafast, rugged

BYQ28EX series



Rectifier diodes ultrafast, rugged

BYQ28EX series

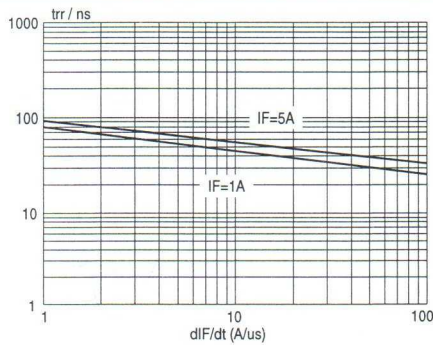


Fig. 7. Maximum t_{rr} at $T_j = 25\text{ }^{\circ}\text{C}$; per diode

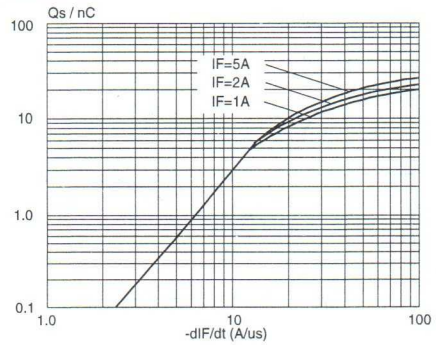


Fig. 10. Maximum Q_s at $T_j = 25\text{ }^{\circ}\text{C}$; per diode

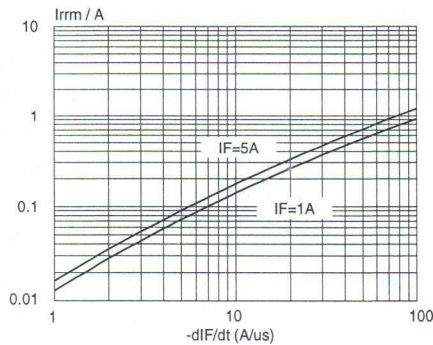


Fig. 8. Maximum I_{rrm} at $T_j = 25\text{ }^{\circ}\text{C}$; per diode

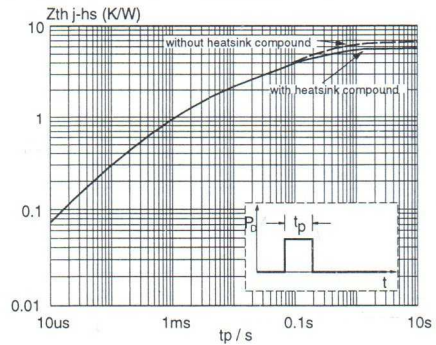


Fig. 11. Transient thermal impedance; per diode;
 $Z_{th\ j-hs} = f(t_p)$.

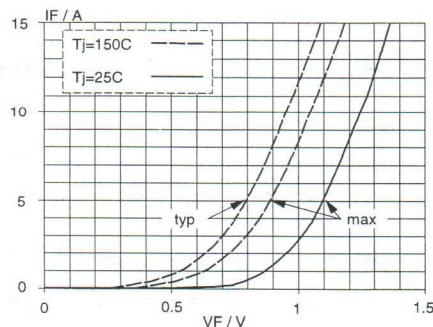


Fig. 9. Typical and maximum forward characteristic
 $I_F = f(V_F)$; parameter T_j

Rectifier diodes ultrafast

BYQ28F series

GENERAL DESCRIPTION

Glass passivated high efficiency dual rectifier diodes in a full pack plastic envelope, featuring low forward voltage drop, ultra-fast recovery times and soft recovery characteristic. They are intended for use in switched mode power supplies and high frequency circuits in general where low conduction and switching losses are essential.

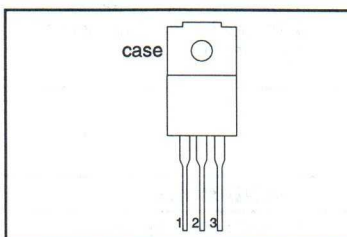
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
V_{RRM}	BYQ28F- Repetitive peak reverse voltage	100 100	150 150	200 200	V
V_F	Forward voltage	0.895	0.895	0.895	V
$I_{O(AV)}$	Output current (both diodes conducting)	10	10	10	A
t_{rr}	Reverse recovery time	20	20	20	ns

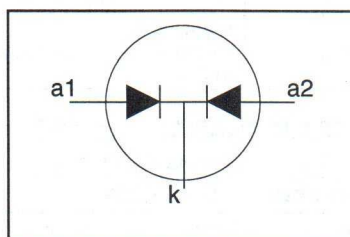
PINNING - SOT186

PIN	DESCRIPTION
1	anode 1 (a)
2	cathode (k)
3	anode 2 (a)

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{RRM}	Repetitive peak reverse voltage		-	-100	-150	-200	V
V_{RWM}	Crest working reverse voltage		-	100	150	200	V
V_R	Continuous reverse voltage		-	100	150	200	V
$I_{O(AV)}$	Output current (both diodes conducting) ²	square wave; $\delta = 0.5$; $T_{hs} \leq 92^\circ\text{C}$ sinusoidal; $a = 1.57$; $T_{hs} \leq 95^\circ\text{C}$	-	10			A
$I_{O(RMS)}$	RMS forward current		-	14			A
I_{FRM}	Repetitive peak forward current per diode	$t = 25\ \mu\text{s}$; $\delta = 0.5$; $T_{hs} \leq 92^\circ\text{C}$	-	10			A
I_{FSM}	Non-repetitive peak forward current per diode	$t = 10\ \text{ms}$ $t = 8.3\ \text{ms}$ sinusoidal; with reapplied	-	50			A
I^2t	I^2t for fusing	$V_{RWM(max)}$ $t = 10\ \text{ms}$	-	12.5			A ² s
T_{stg}	Storage temperature		-40	150			$^\circ\text{C}$
T_j	Operating junction temperature		-	150			$^\circ\text{C}$

¹ $T_{hs} \leq 148^\circ\text{C}$ for thermal stability.

² Neglecting switching and reverse current losses

Rectifier diodes ultrafast

BYQ28F series

ISOLATION

$T_{hs} = 25\text{ }^{\circ}\text{C}$ unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_{isol}	Repetitive peak voltage from all three terminals to external heatsink	R.H. $\leq 65\%$; clean and dustfree	-	-	1500	V
C_{isol}	Capacitance from T2 to external heatsink	$f = 1\text{ MHz}$	-	12	-	pF

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-hs}$	Thermal resistance junction to heatsink	with heatsink compound	-	-	5.7	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	without heatsink compound in free air	-	55	6.7	K/W

STATIC CHARACTERISTICS

$T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage (per diode)	$I_F = 5\text{ A}$; $T_j = 150\text{ }^{\circ}\text{C}$	-	0.80	0.895	V
		$I_F = 5\text{ A}$	-	0.95	1.10	V
		$I_F = 10\text{ A}$	-	1.10	1.25	V
I_R	Reverse current (per diode)	$V_R = V_{RWM}$; $T_j = 100\text{ }^{\circ}\text{C}$	-	0.1	0.2	mA
		$V_R = V_{RWM}$	-	2	10	μA

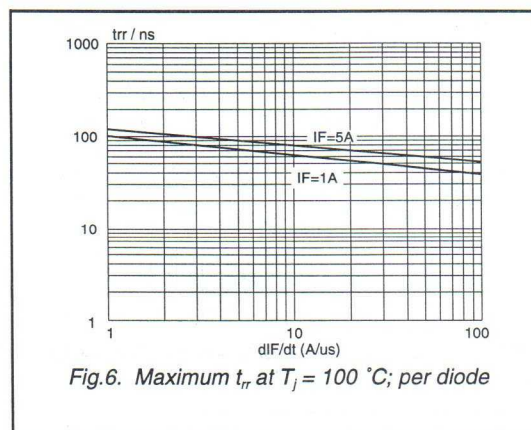
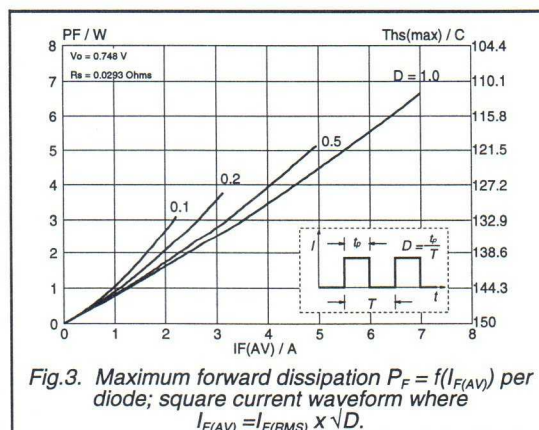
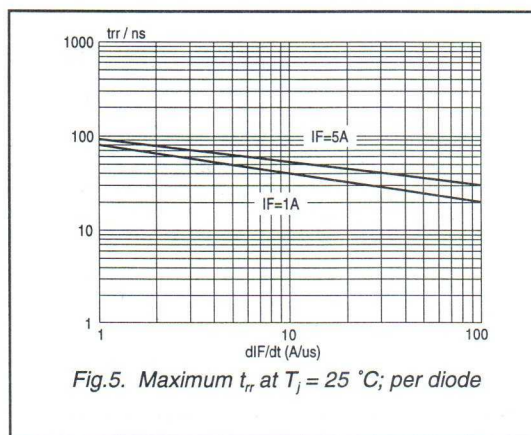
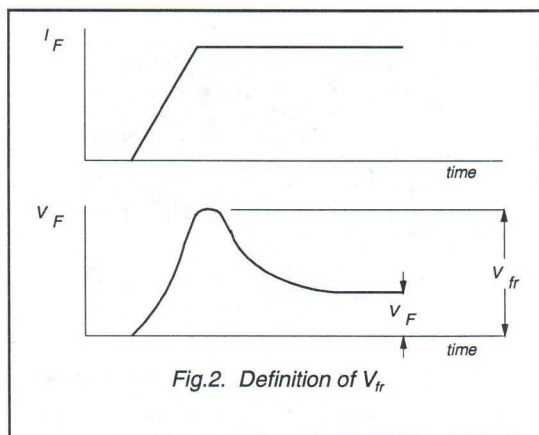
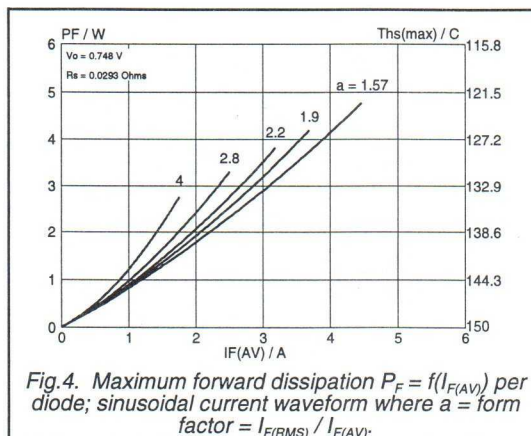
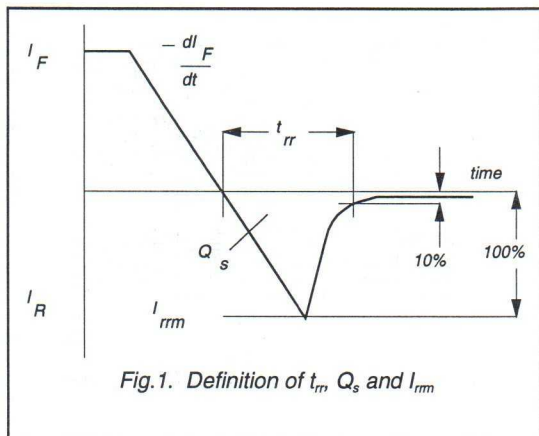
DYNAMIC CHARACTERISTICS

$T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Q_s	Reverse recovery charge (per diode)	$I_F = 2\text{ A}$; $V_R \geq 30\text{ V}$; $-dI_F/dt = 20\text{ A}/\mu\text{s}$	-	4	5.5	nC
t_{rr}	Reverse recovery time (per diode)	$I_F = 1\text{ A}$; $V_R \geq 30\text{ V}$; $-dI_F/dt = 100\text{ A}/\mu\text{s}$	-	15	20	ns
I_{rm}	Peak reverse recovery current (per diode)	$I_F = 5\text{ A}$; $V_R \geq 30\text{ V}$; $-dI_F/dt = 50\text{ A}/\mu\text{s}$	-	0.5	0.7	A
V_{fr}	Forward recovery voltage (per diode)	$I_F = 1\text{ A}$; $dI_F/dt = 10\text{ A}/\mu\text{s}$	-	1	-	V

Rectifier diodes
ultrafast

BYQ28F series



Rectifier diodes ultrafast

BYQ28F series

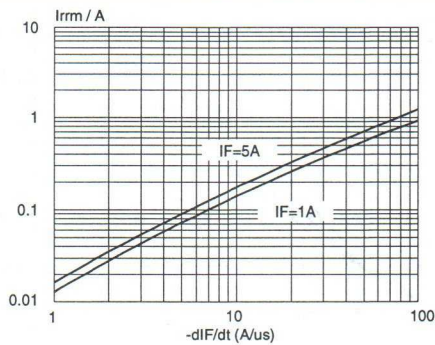


Fig. 7. Maximum I_{rms} at $T_j = 25\text{ }^{\circ}\text{C}$; per diode

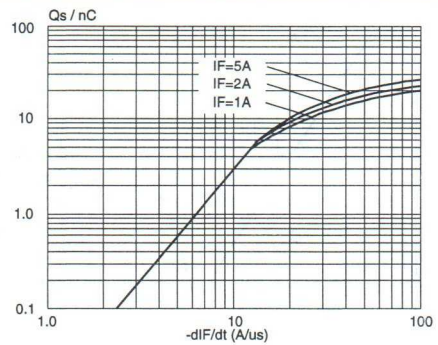


Fig. 10. Maximum Q_s at $T_j = 25\text{ }^{\circ}\text{C}$; per diode

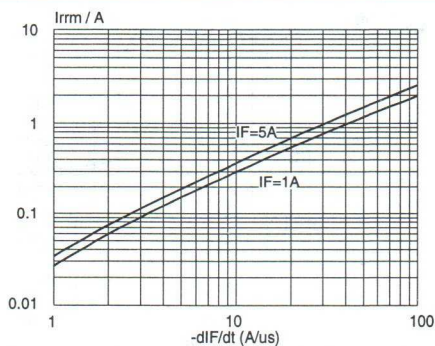


Fig. 8. Maximum I_{rms} at $T_j = 100\text{ }^{\circ}\text{C}$; per diode

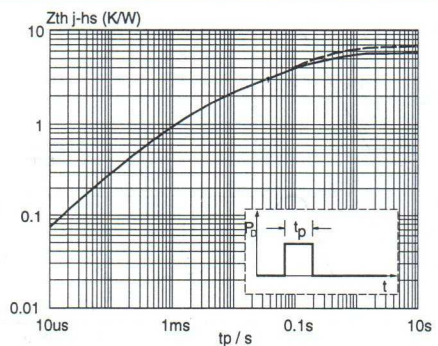


Fig. 11. Transient thermal impedance; per diode;
 $Z_{th\ j-hs} = f(t_p)$.

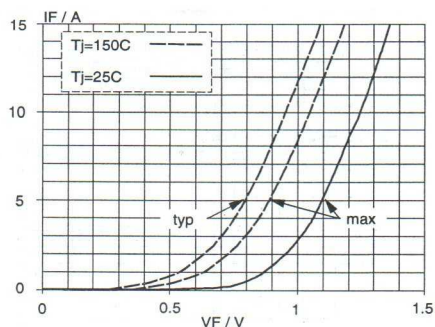


Fig. 9. Typical and maximum forward characteristic
 $I_F = f(V_F)$; parameter T_j

Rectifier diodes ultrafast

BYQ28X series

GENERAL DESCRIPTION

Glass passivated dual epitaxial rectifier diodes in a full pack plastic envelope, featuring low forward voltage drop, ultra-fast recovery times and soft recovery characteristic. They are intended for use in switched mode power supplies and high frequency circuits in general where low conduction and switching losses are essential.

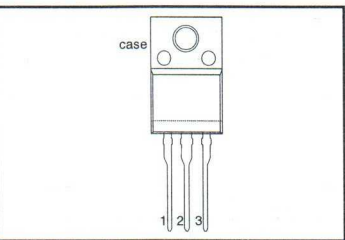
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
V_{RRM}	Repetitive peak reverse voltage	100	150	200	V
		100	150	200	
V_F	Forward voltage	0.895	0.895	0.895	V
$I_{O(AV)}$	Output current (both diodes conducting)	10	10	10	A
t_{rr}	Reverse recovery time	25	25	25	ns

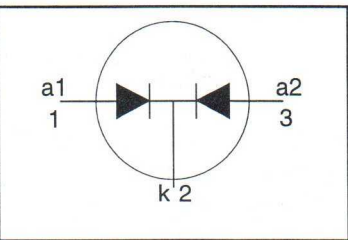
PINNING - SOT186A

PIN	DESCRIPTION
1	anode 1 (a)
2	cathode (k)
3	anode 2 (a)
case	isolated

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT	
V_{RRM}	Repetitive peak reverse voltage	square wave $\delta = 0.5$; $T_{hs} \leq 92\text{ }^{\circ}\text{C}$ sinusoidal $a = 1.57$; $T_{hs} \leq 95\text{ }^{\circ}\text{C}$	-	-100	-150	-200	V	
V_{RWM}	Crest working reverse voltage		-	100	150	200	V	
V_R	Continuous reverse voltage		-	100	150	200	V	
$I_{O(AV)}$	Output current (both diodes conducting) ²		-	10			A	
			-	9			A	
$I_{O(RMS)}$	RMS forward current	$t = 25\text{ }\mu\text{s}$; $\delta = 0.5$; $T_{hs} \leq 92\text{ }^{\circ}\text{C}$ $t = 10\text{ ms}$ $t = 8.3\text{ ms}$ sinusoidal; with reapplied	-	14			A	
I_{FRM}	Repetitive peak forward current per diode		-	10			A	
I_{FSM}	Non-repetitive peak forward current per diode		-	50			A	
			-	55			A	
I^2t	I^2t for fusing		$V_{RWM(max)}$ $t = 10\text{ ms}$	-	12.5			A ² s
T_{stg}	Storage temperature		-40	150			$^{\circ}\text{C}$	
T_j	Operating junction temperature		-	150			$^{\circ}\text{C}$	

1 $T_{hs} \leq 148^\circ\text{C}$ for thermal stability.

2 Neglecting switching and reverse current losses

Rectifier diodes
ultrafast

BYQ28X series

ISOLATION LIMITING VALUE & CHARACTERISTIC

 $T_{hs} = 25\text{ }^{\circ}\text{C}$ unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_{isol}	R.M.S. isolation voltage from all three terminals to external heatsink	$f = 50\text{--}60\text{ Hz}$; sinusoidal waveform; $R.H. \leq 65\%$; clean and dustfree	-		2500	V
C_{isol}	Capacitance from T2 to external heatsink	$f = 1\text{ MHz}$	-	10	-	pF

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-hs}$	Thermal resistance junction to heatsink	with heatsink compound	-	-	5.7	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	without heatsink compound in free air	-	55	6.7	K/W
					-	K/W

STATIC CHARACTERISTICS

 $T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage (per diode)	$I_F = 5\text{ A}$; $T_j = 150\text{ }^{\circ}\text{C}$	-	0.80	0.895	V
		$I_F = 5\text{ A}$	-	0.95	1.10	V
		$I_F = 10\text{ A}$	-	1.10	1.25	V
I_R	Reverse current (per diode)	$V_R = V_{RWM}$; $T_j = 100\text{ }^{\circ}\text{C}$	-	0.1	0.2	mA
		$V_R = V_{RWM}$	-	2	10	μA

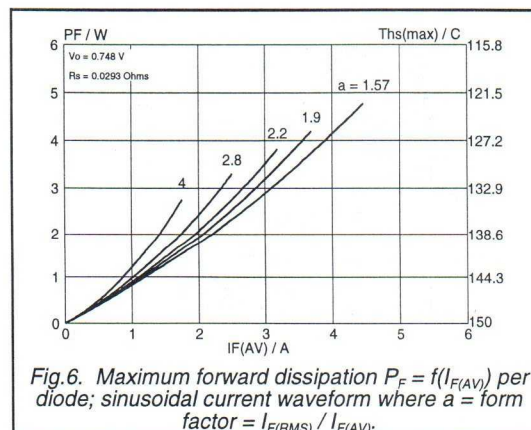
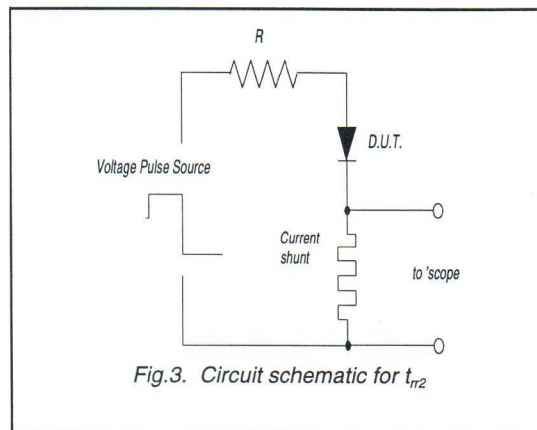
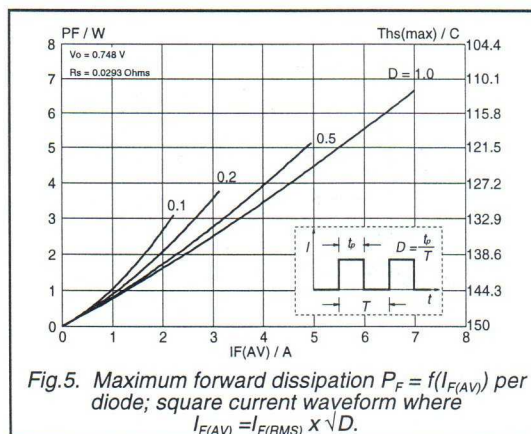
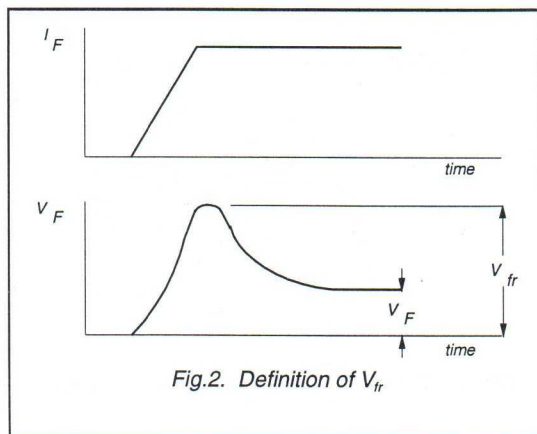
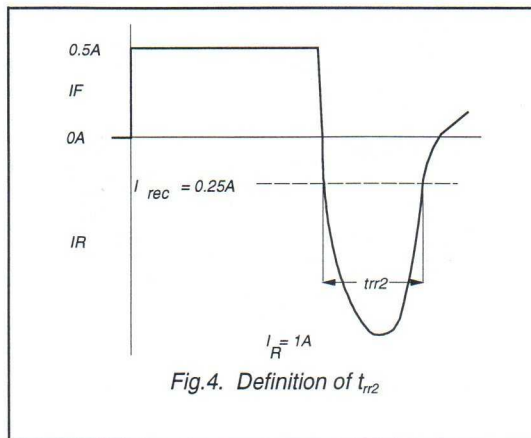
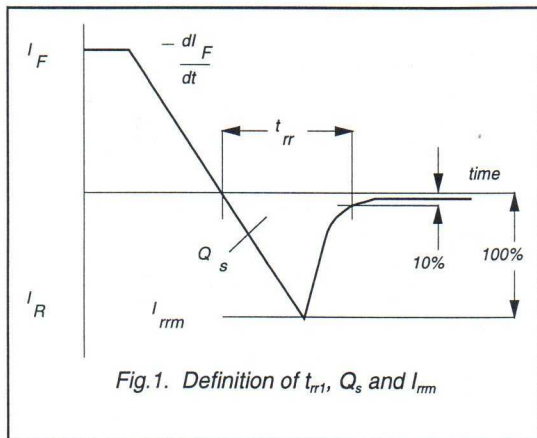
DYNAMIC CHARACTERISTICS

 $T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Q_s	Reverse recovery charge (per diode)	$I_F = 2\text{ A}$; $V_R \geq 30\text{ V}$; $-di_F/dt = 20\text{ A}/\mu\text{s}$	-	4	9	nC
t_{rr1}	Reverse recovery time (per diode)	$I_F = 1\text{ A}$; $V_R \geq 30\text{ V}$; $-di_F/dt = 100\text{ A}/\mu\text{s}$	-	15	25	ns
t_{rr2}	Reverse recovery time (per diode)	$I_F = 0.5\text{ A}$ to $I_R = 1\text{ A}$; $I_{rec} = 0.25\text{ A}$	-	10	20	ns
V_{fr}	Forward recovery voltage (per diode)	$I_F = 1\text{ A}$; $di_F/dt = 10\text{ A}/\mu\text{s}$	-	1	-	V

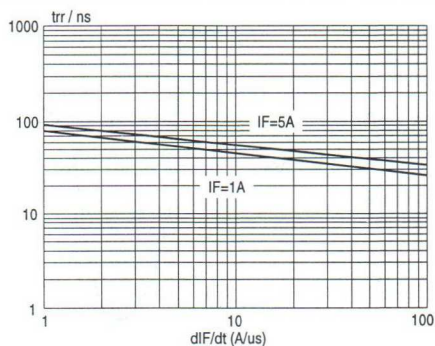
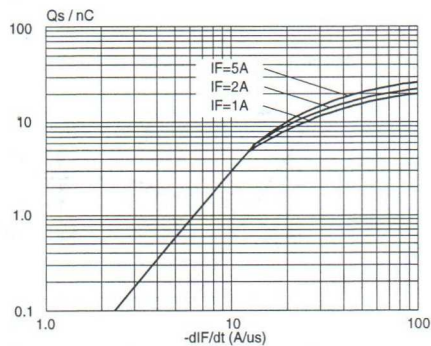
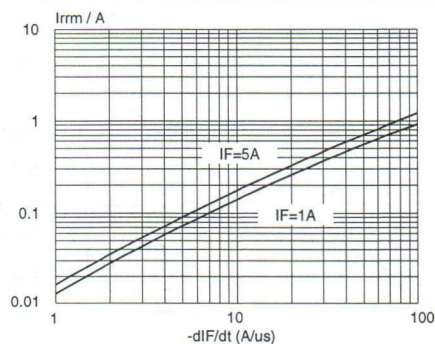
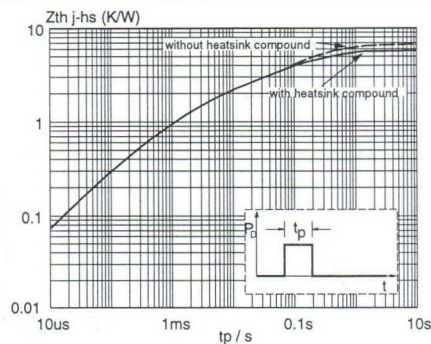
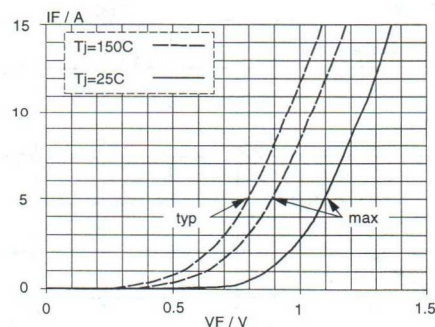
Rectifier diodes
ultrafast

BYQ28X series



Rectifier diodes
ultrafast

BYQ28X series

Fig. 7. Maximum t_{rr} at $T_j = 25\text{ }^{\circ}\text{C}$; per diodeFig. 10. Maximum Q_s at $T_j = 25\text{ }^{\circ}\text{C}$; per diodeFig. 8. Maximum I_{rrm} at $T_j = 25\text{ }^{\circ}\text{C}$; per diodeFig. 11. Transient thermal impedance; per diode;
 $Z_{th\ j-hs} = f(t_p)$.Fig. 9. Typical and maximum forward characteristic
 $I_F = f(V_F)$; parameter T_j

Rectifier diodes ultrafast

BYR29 series

GENERAL DESCRIPTION

Glass passivated, high efficiency, rugged rectifier diodes in a plastic envelope, featuring low forward voltage drop, ultra fast reverse recovery times and soft recovery characteristic. They are intended for use in switched mode power supplies and high frequency circuits in general, where both low conduction losses and low switching losses are essential.

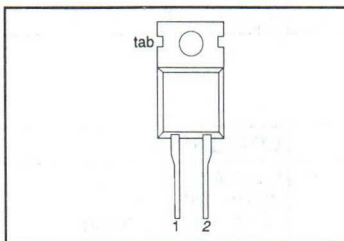
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	MAX.	UNIT
V_{RRM}	BYR29- Repetitive peak reverse voltage	500 500	600 600	700 700	800 800	V
V_F	Forward voltage	1.5	1.5	1.5	1.5	V
$I_{F(AV)}$	Average forward current	8	8	8	8	A
t_{rr}	Reverse recovery time	75	75	75	75	ns

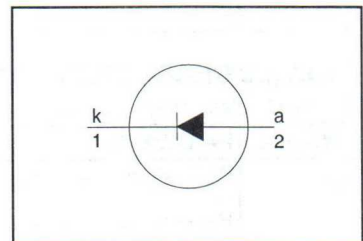
PINNING - TO220AC

PIN	DESCRIPTION
1	cathode (k)
2	anode (a)
tab	cathode (k)

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.				UNIT
				-500	-600	-700	-800	
V_{RRM}	Repetitive peak reverse voltage		-	500	600	700	800	V
V_{RWM}	Crest working reverse voltage		-	500	600	700	800	V
V_R	Continuous reverse voltage		-	500	600	700	800	V
$I_{F(AV)}$	Average forward current ¹	square wave; $\delta = 0.5$; $T_{mb} \leq 115^\circ\text{C}$	-	8				A
		sinusoidal; $a = 1.57$; $T_{mb} \leq 115^\circ\text{C}$	-	7.2				A
$I_{F(RMS)}$	RMS forward current		-	11.3				A
I_{FRM}	Repetitive peak forward current	$t = 25\ \mu\text{s}$; $\delta = 0.5$; $T_{mb} \leq 115^\circ\text{C}$	-	16				A
I_{FSM}	Non-repetitive peak forward current	$t = 10\ \text{ms}$	-	60				A
		$t = 8.3\ \text{ms}$	-	66				A
		sinusoidal; with reapplied $V_{RRM(max)}$						
I^2t	I^2t for fusing	$t = 10\ \text{ms}$	-	18				A ² s
T_{stg}	Storage temperature		-40	150				$^\circ\text{C}$
T_j	Operating junction temperature		-	150				$^\circ\text{C}$

¹ Neglecting switching and reverse current losses

Rectifier diodes
ultrafast

BYR29 series

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-mb}$	Thermal resistance junction to mounting base	in free air.	-	-	2.5	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient		-	60	-	K/W

STATIC CHARACTERISTICS

 $T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage	$I_F = 8\text{ A}$; $T_j = 150\text{ }^{\circ}\text{C}$	-	1.07	1.50	V
I_R	Reverse current	$I_F = 20\text{ A}$	-	1.75	1.95	V
		$V_R = V_{RRM}$	-	1.0	10	μA
		$V_R = V_{RRM}$; $T_j = 100\text{ }^{\circ}\text{C}$	-	0.1	0.2	mA

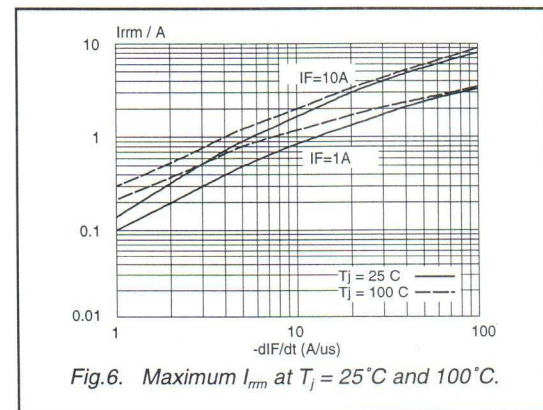
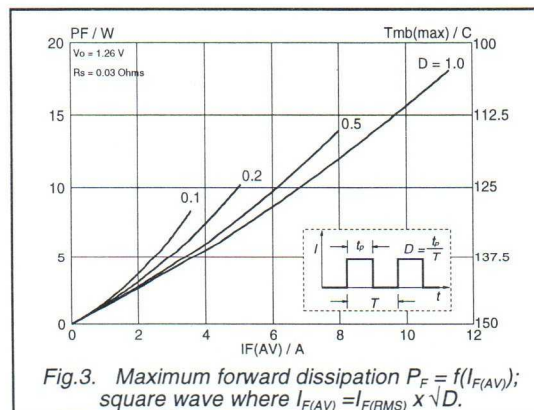
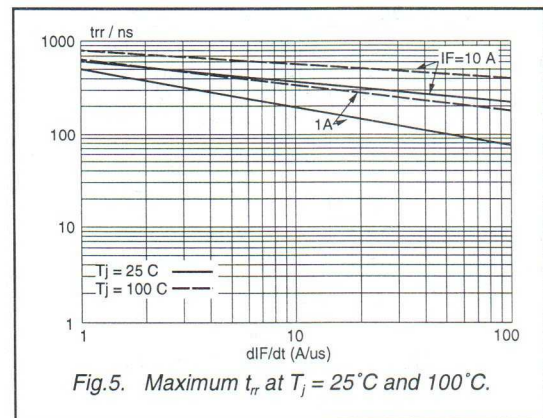
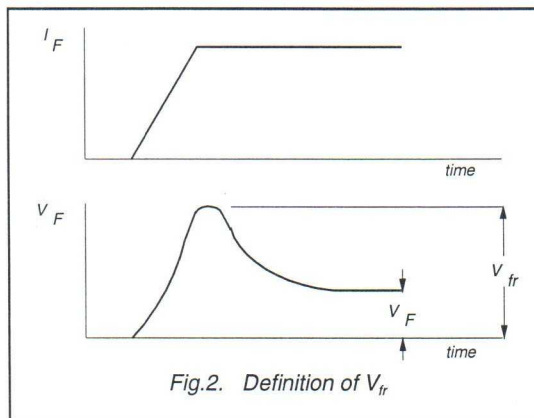
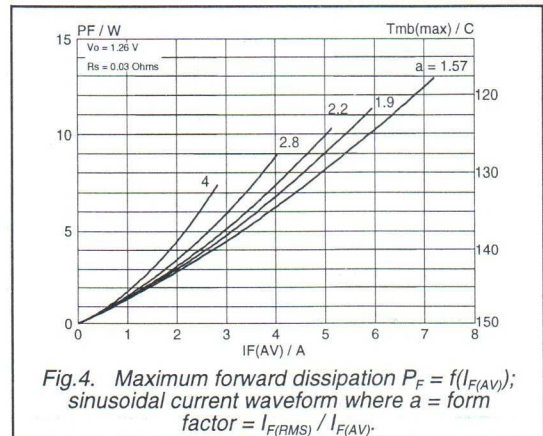
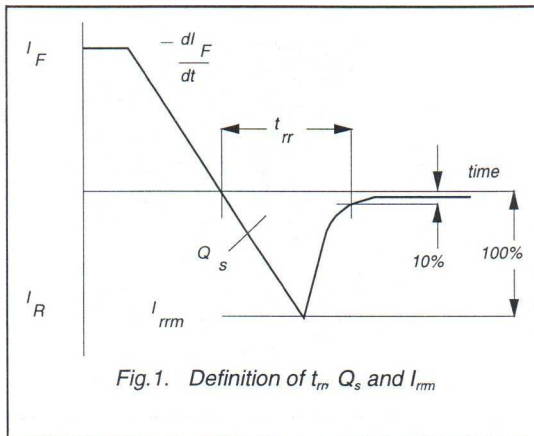
DYNAMIC CHARACTERISTICS

 $T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Q_s	Reverse recovery charge	$I_F = 2\text{ A}$ to $V_R \geq 30\text{ V}$; $di_F/dt = 20\text{ A}/\mu\text{s}$	-	150	200	nC
t_{rr}	Reverse recovery time	$I_F = 1\text{ A}$ to $V_R \geq 30\text{ V}$; $di_F/dt = 100\text{ A}/\mu\text{s}$	-	60	75	ns
I_{rm}	Peak reverse recovery current	$I_F = 10\text{ A}$ to $V_R \geq 30\text{ V}$; $di_F/dt = 50\text{ A}/\mu\text{s}$; $T_j = 100\text{ }^{\circ}\text{C}$	-	-	6	A
V_{fr}	Forward recovery voltage	$I_F = 10\text{ A}$; $di_F/dt = 10\text{ A}/\mu\text{s}$	-	5.0	-	V

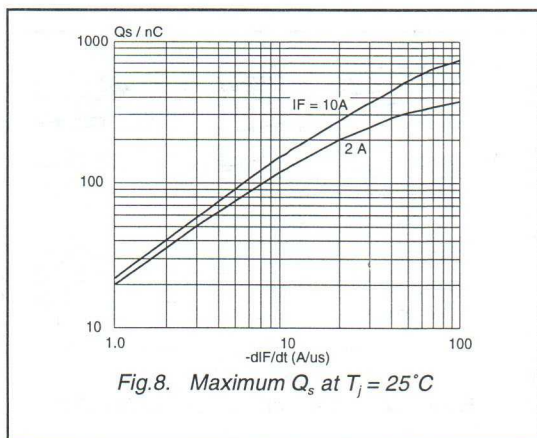
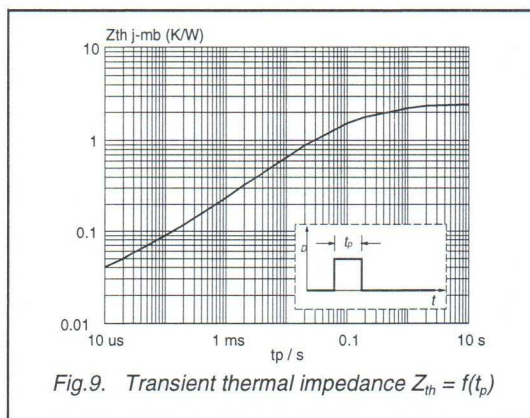
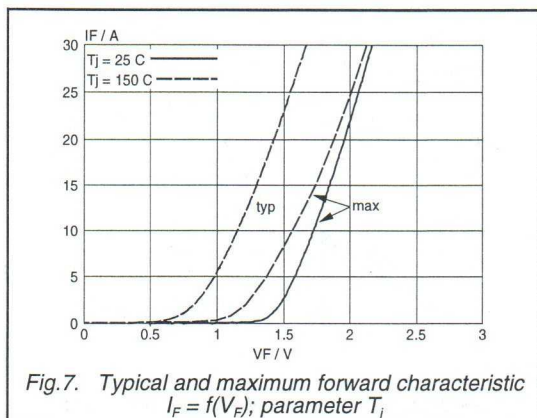
Rectifier diodes
ultrafast

BYR29 series



Rectifier diodes
ultrafast

BYR29 series



Rectifier diodes ultrafast

BYR29F series

GENERAL DESCRIPTION

Glass passivated, high efficiency, rugged rectifier diodes in a full pack, plastic envelope, featuring low forward voltage drop, ultra fast reverse recovery times and soft recovery characteristic. They are intended for use in switched mode power supplies and high frequency circuits in general, where both low conduction losses and low switching losses are essential.

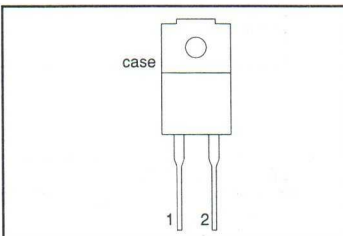
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	MAX.	UNIT
	BYR29F-	500	600	700	800	
V_{RRM}	Repetitive peak reverse voltage	500	600	700	800	V
V_F	Forward voltage	1.5	1.5	1.5	1.5	V
$I_{F(AV)}$	Average forward current	8	8	8	8	A
t_{rr}	Reverse recovery time	75	75	75	75	ns

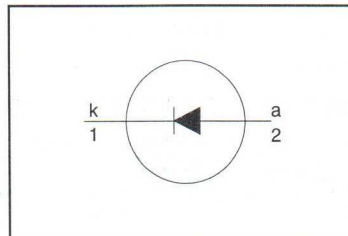
PINNING - SOD100

PIN	DESCRIPTION
1	cathode
2	anode
case	isolated

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.				UNIT
V_{RRM}	Repetitive peak reverse voltage	$T_{hs} \leq 136^\circ\text{C}$	-	-500	-600	-700	-800	V
V_{RWM}	Crest working reverse voltage		-	500	600	700	800	V
V_R	Continuous reverse voltage		-	500	600	700	800	V
$I_{F(AV)}$	Average forward current ¹		-	8				A
		square wave; $\delta = 0.5$;	-	7.2				A
		$T_{hs} \leq 73^\circ\text{C}$	-					A
		sinusoidal; $a = 1.57$;	-	11.3				A
		$T_{hs} \leq 79^\circ\text{C}$	-					A
$I_{F(RMS)}$	RMS forward current	$t = 25\ \mu\text{s}; \delta = 0.5$; $T_{hs} \leq 73^\circ\text{C}$	-	16				A
I_{FRM}	Repetitive peak forward current		-	60				A
I_{FSM}	Non-repetitive peak forward current		-	66				A
		$t = 10\ \text{ms}$	-	18				A
		$t = 8.3\ \text{ms}$	-					A
		sinusoidal; with reapplied $V_{RRM(max)}$	-	150				A
		$t = 10\ \text{ms}$	-					A
I^2t	I^2t for fusing		-	18				A ² s
T_{stg}	Storage temperature		-40	150				°C
T_j	Operating junction temperature		-	150				°C

¹ Neglecting switching and reverse current losses

Rectifier diodes
ultrafast

BYR29F series

ISOLATION LIMITING VALUE & CHARACTERISTIC

 $T_{hs} = 25\text{ }^{\circ}\text{C}$ unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_{isol}	Repetitive peak voltage from both terminals to external heatsink	R.H. $\leq 65\%$; clean and dustfree	-		1500	V
C_{isol}	Capacitance from cathode to external heatsink	$f = 1\text{ MHz}$	-	12	-	pF

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-hs}$	Thermal resistance junction to heatsink	with heatsink compound	-	-	5.5	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	without heatsink compound in free air.	-	55	7.2	K/W

STATIC CHARACTERISTICS

 $T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage	$I_F = 8\text{ A}$; $T_j = 150\text{ }^{\circ}\text{C}$	-	1.07	1.50	V
		$I_F = 20\text{ A}$	-	1.75	1.95	V
I_R	Reverse current	$V_R = V_{RRM}$	-	1.0	10	μA
		$V_R = V_{RRM}$; $T_j = 100\text{ }^{\circ}\text{C}$	-	0.1	0.2	mA

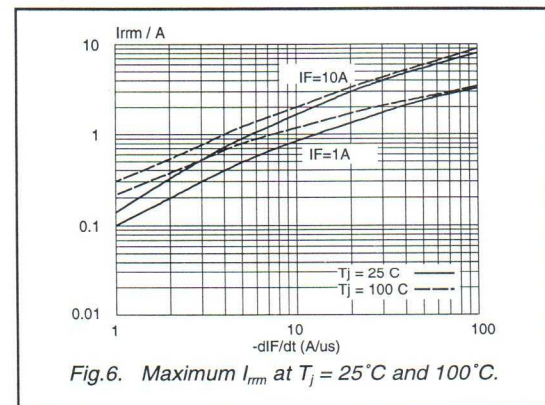
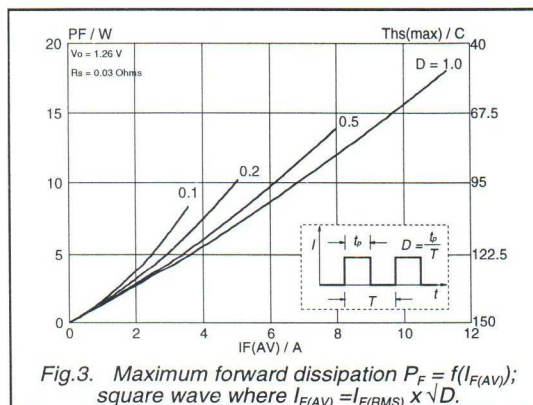
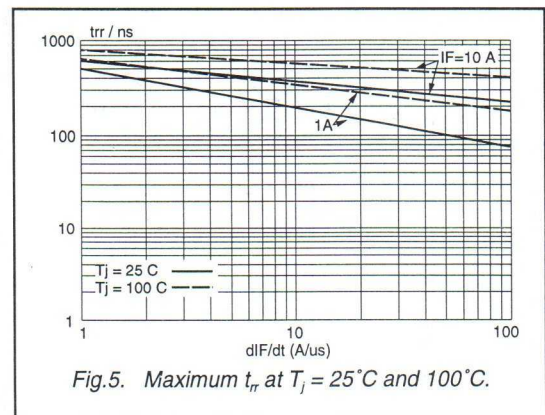
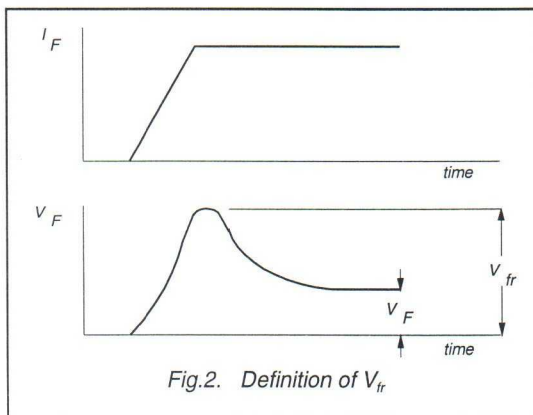
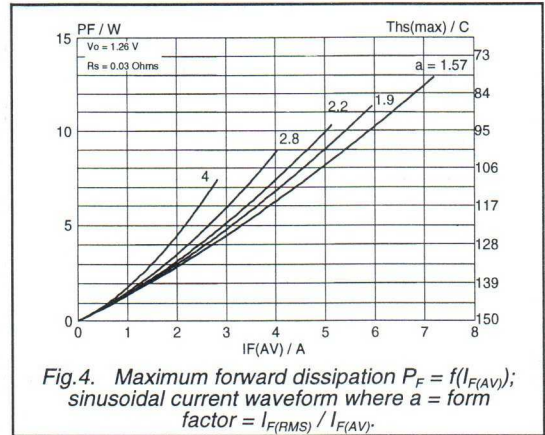
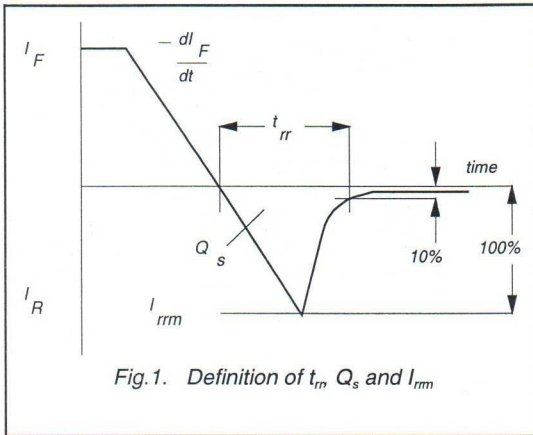
DYNAMIC CHARACTERISTICS

 $T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Q_s	Reverse recovery charge	$I_F = 2\text{ A}$ to $V_R \geq 30\text{ V}$; $di_F/dt = 20\text{ A}/\mu\text{s}$	-	150	200	nC
t_{rr}	Reverse recovery time	$I_F = 1\text{ A}$ to $V_R \geq 30\text{ V}$; $di_F/dt = 100\text{ A}/\mu\text{s}$	-	60	75	ns
I_{rm}	Peak reverse recovery current	$I_F = 10\text{ A}$ to $V_R \geq 30\text{ V}$; $di_F/dt = 50\text{ A}/\mu\text{s}$; $T_j = 100\text{ }^{\circ}\text{C}$	-	-	6	A
V_{fr}	Forward recovery voltage	$I_F = 10\text{ A}$; $di_F/dt = 10\text{ A}/\mu\text{s}$	-	5.0	-	V

Rectifier diodes ultrafast

BYR29F series



Rectifier diodes ultrafast

BYR29F series

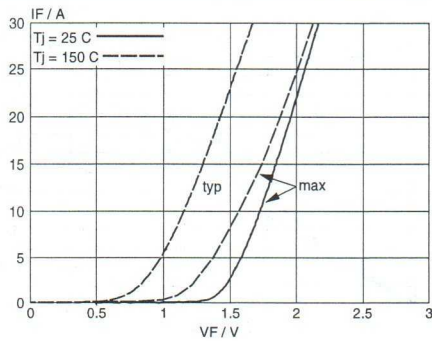


Fig. 7. Typical and maximum forward characteristic $I_F = f(V_F)$; parameter T_J

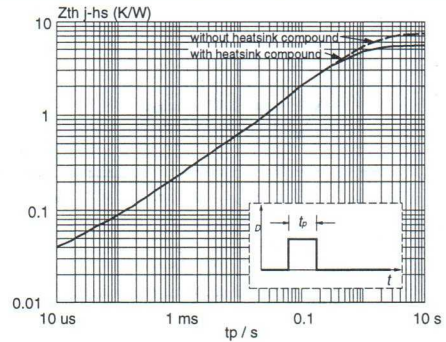


Fig. 9. Transient thermal impedance $Z_{th} = f(t_p)$

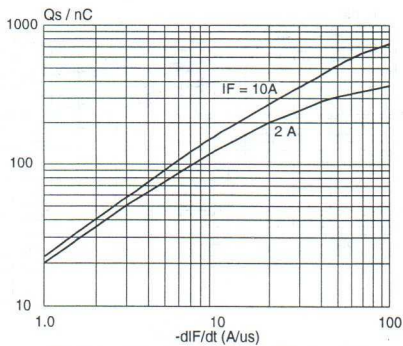


Fig. 8. Maximum Q_s at $T_J = 25^\circ\text{C}$

Dual rectifier diodes
ultrafast

BYT28 series

GENERAL DESCRIPTION

Glass passivated, high efficiency rectifier diodes in a plastic envelope, featuring low forward voltage drop, ultra fast reverse recovery times and soft recovery characteristic. They are intended for use in switched mode power supplies and high frequency circuits in general, where both low conduction losses and low switching losses are essential.

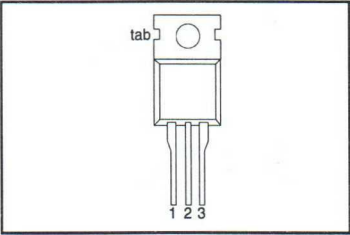
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
V_{RRM} V_F $I_{O(AV)}$ t_{rr}	BYT28- Repetitive peak reverse voltage	300 300	400 400	500 500	V
	Forward voltage	1.05	1.05	1.05	V
	Output current (both diodes conducting)	10	10	10	A
	Reverse recovery time	60	60	60	ns

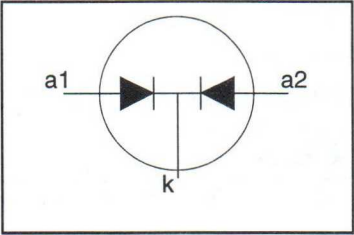
PINNING - TO220AB

PIN	DESCRIPTION
1	anode 1 (a)
2	cathode (k)
3	anode 2 (a)
tab	cathode (k)

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{RRM}	Repetitive peak reverse voltage	square wave; $\delta = 0.5$; $T_{mb} \leq 115\text{ }^{\circ}\text{C}$ sinusoidal; $a = 1.57$; $T_{mb} \leq 119\text{ }^{\circ}\text{C}$	-	-300	-400	-500	V
V_{RWM}	Crest working reverse voltage		-	300	400	500	V
V_R	Continuous reverse voltage ¹		-	200	300	400	V
$I_{O(AV)}$	Output current (both diodes conducting) ²		-	200	300	400	V
$I_{O(RMS)}$	RMS forward current	$t = 25\text{ }\mu\text{s}$; $\delta = 0.5$; $T_{mb} \leq 115\text{ }^{\circ}\text{C}$ $t = 10\text{ ms}$ $t = 8.3\text{ ms}$ sinusoidal; with reapplied $V_{RWM(max)}$ $t = 10\text{ ms}$	-	10			A
I_{FRM}	Repetitive peak forward current per diode		-	9			A
I_{FSM}	Non-repetitive peak forward current per diode.		-	14			A
I^2t	I^2t for fusing		-	10			A
T_{slg}	Storage temperature		-	50			A
T_j	Operating junction temperature		-	55			A
			-	12.5			A ² s
			-40	150			$^{\circ}\text{C}$
			-	150			$^{\circ}\text{C}$

1 $T_{mb} \leq 147\text{ }^{\circ}\text{C}$ for thermal stability.

2 Neglecting switching and reverse current losses.

Dual rectifier diodes ultrafast

BYT28 series

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-hs}$	Thermal resistance junction to heatsink	per diode both diodes conducting	-	-	4.5	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	in free air.	-	60	3.0	K/W

STATIC CHARACTERISTICS

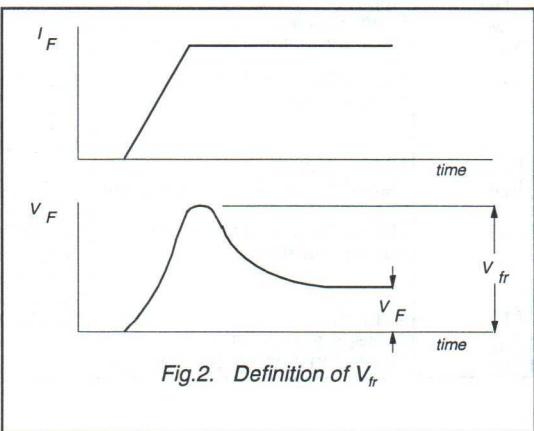
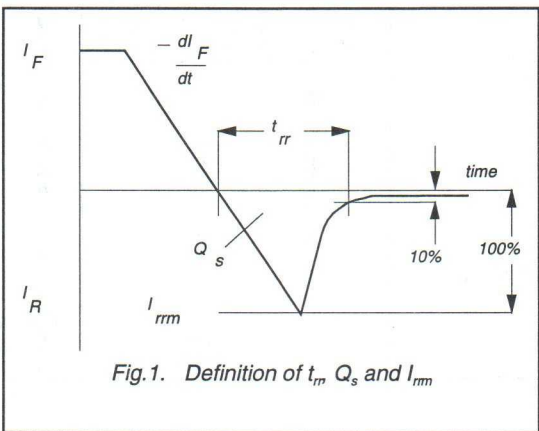
$T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage	$I_F = 5\text{ A}$; $T_j = 150\text{ }^{\circ}\text{C}$	-	0.95	1.05	V
		$I_F = 15\text{ A}$	-	1.30	1.40	V
I_R	Reverse current	$V_R = V_{RWM}$	-	2.0	10	μA
		$V_R = V_{RWM}$; $T_j = 100\text{ }^{\circ}\text{C}$	-	10	200	μA

DYNAMIC CHARACTERISTICS

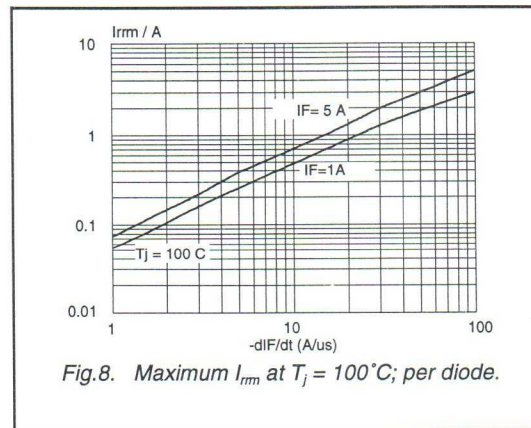
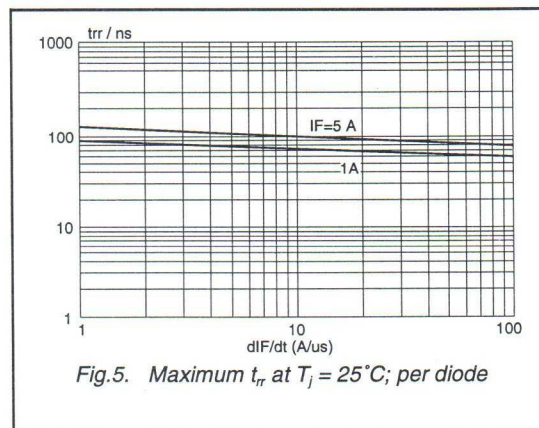
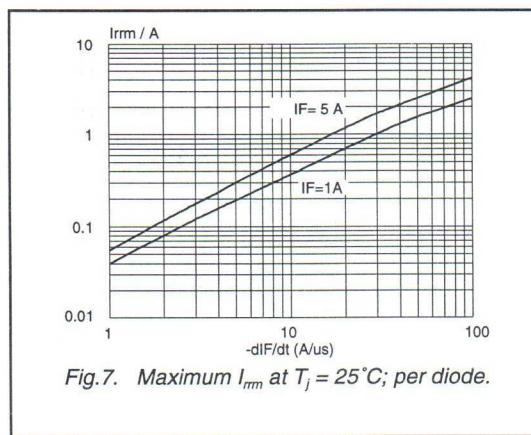
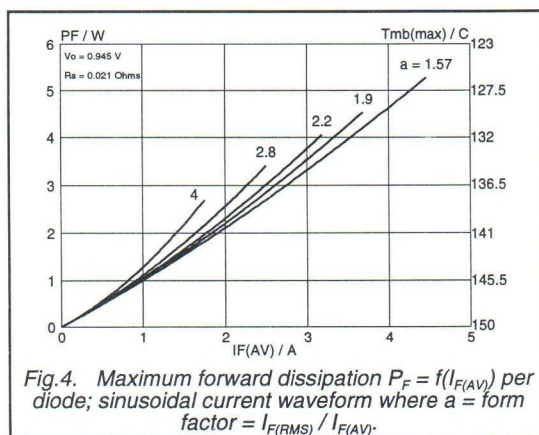
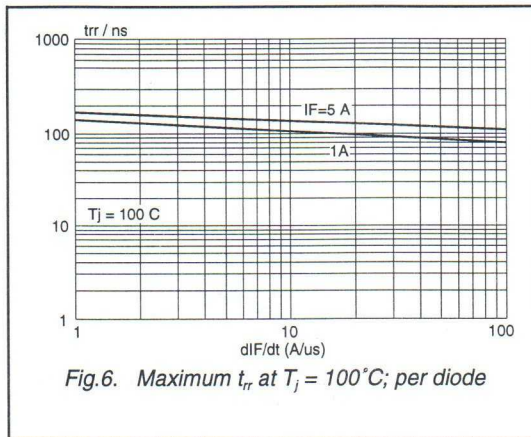
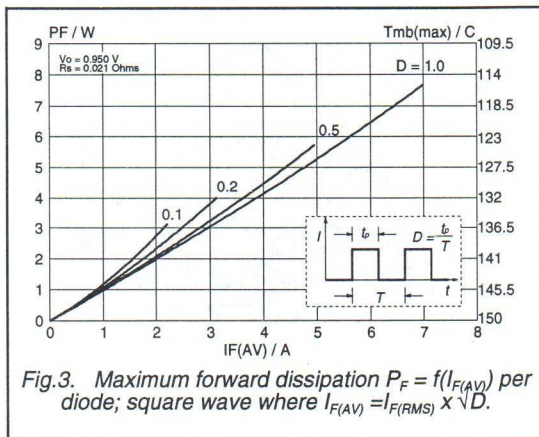
$T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Q_s	Reverse recovery charge	$I_F = 2\text{ A}$ to $V_R \geq 30\text{ V}$; $di_F/dt = 20\text{ A}/\mu\text{s}$	-	50	60	nC
t_{rr}	Reverse recovery time	$I_F = 1\text{ A}$ to $V_R \geq 30\text{ V}$; $di_F/dt = 100\text{ A}/\mu\text{s}$	-	50	60	ns
I_{rm}	Peak reverse recovery current	$I_F = 5\text{ A}$ to $V_R \geq 30\text{ V}$; $di_F/dt = 50\text{ A}/\mu\text{s}$; $T_j = 100\text{ }^{\circ}\text{C}$	-	2.0	3.0	A
V_{fr}	Forward recovery voltage	$I_F = 1\text{ A}$; $di_F/dt = 10\text{ A}/\mu\text{s}$	-	2.5	-	V



Dual rectifier diodes ultrafast

BYT28 series



Dual rectifier diodes
ultrafast

BYT28 series

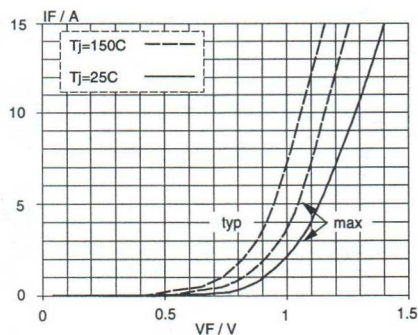


Fig.9. Typical and maximum forward characteristic
 $I_F = f(V_F)$; parameter T_J

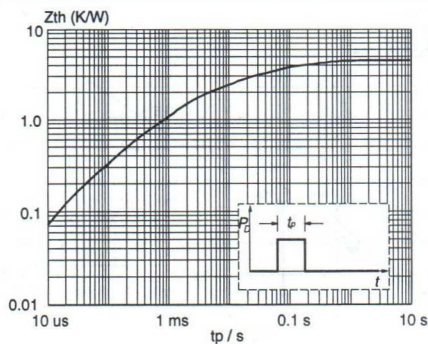


Fig.11. Transient thermal impedance per diode
 $Z_{th} = f(t_p)$

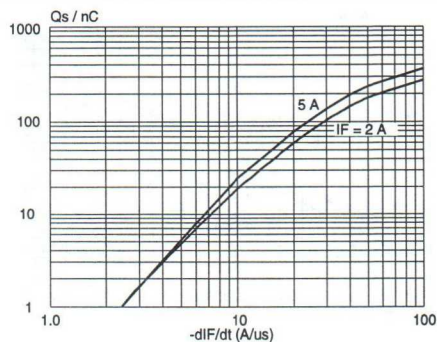


Fig.10. Maximum Q_s at $T_J = 25^\circ\text{C}$; per diode.

Rectifier diodes ultrafast

BYT79 series

GENERAL DESCRIPTION

Glass passivated, high efficiency rectifier diodes in a plastic envelope featuring low forward voltage drop, ultra fast reverse recovery times and soft recovery characteristic. They are intended for use in switched mode power supplies and high frequency circuits in general, where both low conduction losses and low switching losses are essential.

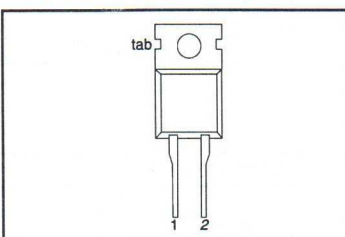
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
	BYT79-				
V_{RRM}	Repetitive peak reverse voltage	300 300	400 400	500 500	V
V_F	Forward voltage	1.05	1.05	1.05	V
$I_{F(AV)}$	Forward current	14	14	14	A
t_{rr}	Reverse recovery time	60	60	60	ns

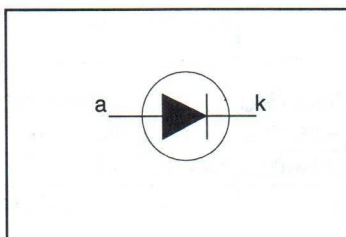
PINNING - TO220AC

PIN	DESCRIPTION
1	cathode (k)
2	anode (a)
tab	cathode (k)

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{RRM}	Repetitive peak reverse voltage		-	-300	-400	-500	V
V_{RWM}	Crest working reverse voltage		-	300	400	500	V
V_R	Continuous reverse voltage		-	200	300	400	V
$I_{F(AV)}$	Average forward current ²	square wave; $\delta = 0.5$; $T_{mb} \leq 117^\circ\text{C}$ sinusoidal; $a = 1.57$; $T_{mb} \leq 119^\circ\text{C}$	-	14			A
$I_{F(RMS)}$	RMS forward current		-	12.5			A
I_{FRM}	Repetitive peak forward current	$t = 25\ \mu\text{s}$; $\delta = 0.5$; $T_{mb} \leq 117^\circ\text{C}$	-	20			A
I_{FSM}	Non-repetitive peak forward current.	$t = 10\ \text{ms}$ $t = 8.3\ \text{ms}$ sinusoidal; with reapplied	-	130			A
I^2t	I^2t for fusing	$V_{RWM(max)}$ $t = 10\ \text{ms}$	-	85			A ² s
T_{stg}	Storage temperature		-40	150			°C
T_j	Operating junction temperature		-	150			°C

1 $T_{mb} \leq 147^\circ\text{C}$ for thermal stability.

2 Neglecting switching and reverse current losses

Rectifier diodes
ultrafast

BYT79 series

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-mb}$	Thermal resistance junction to mounting base	in free air.	-	-	2.0	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient		-	60	-	K/W

STATIC CHARACTERISTICS

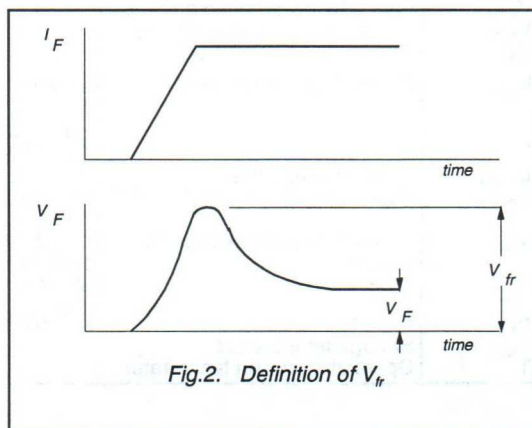
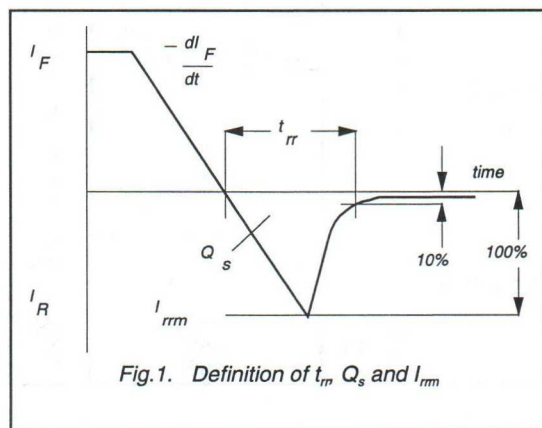
 $T_j = 25\ ^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage	$I_F = 15\ \text{A}$; $T_j = 150\ ^\circ\text{C}$	-	0.90	1.05	V
I_R	Reverse current	$I_F = 50\ \text{A}$	-	1.30	1.40	V
		$V_R = V_{RWM}$	-	5.0	50	μA
		$V_R = V_{RWM}$; $T_j = 100\ ^\circ\text{C}$	-	0.2	0.8	mA

DYNAMIC CHARACTERISTICS

 $T_j = 25\ ^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Q_s	Reverse recovery charge	$I_F = 2\ \text{A}$ to $V_R \geq 30\ \text{V}$; $di_F/dt = 20\ \text{A}/\mu\text{s}$	-	50	60	nC
t_{rr}	Reverse recovery time	$I_F = 1\ \text{A}$ to $V_R \geq 30\ \text{V}$; $di_F/dt = 100\ \text{A}/\mu\text{s}$	-	50	60	ns
I_{rm}	Peak reverse recovery current	$I_F = 10\ \text{A}$ to $V_R \geq 30\ \text{V}$; $di_F/dt = 50\ \text{A}/\mu\text{s}$; $T_j = 100\ ^\circ\text{C}$	-	4.0	5.2	A
V_{fr}	Forward recovery voltage	$I_F = 10\ \text{A}$; $di_F/dt = 10\ \text{A}/\mu\text{s}$	-	2.5	-	V



Rectifier diodes
ultrafast

BYT79 series

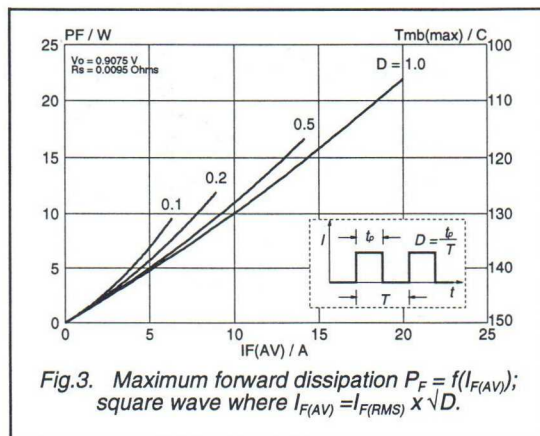


Fig.3. Maximum forward dissipation $P_F = f(I_F(AV))$; square wave where $I_F(AV) = I_F(RMS) \times \sqrt{D}$.

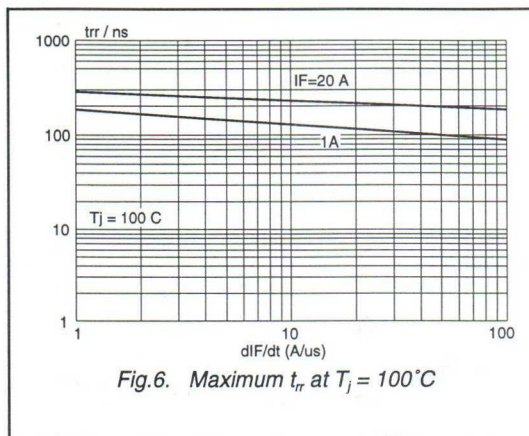


Fig.6. Maximum t_{rr} at $T_j = 100^\circ\text{C}$

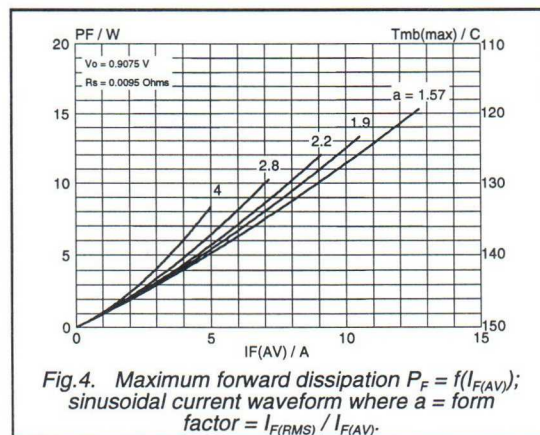


Fig.4. Maximum forward dissipation $P_F = f(I_F(AV))$; sinusoidal current waveform where $a = \text{form factor} = I_F(RMS) / I_F(AV)$.

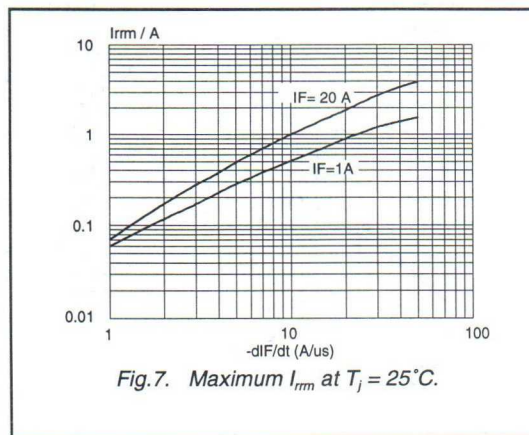


Fig.7. Maximum I_{rm} at $T_j = 25^\circ\text{C}$.

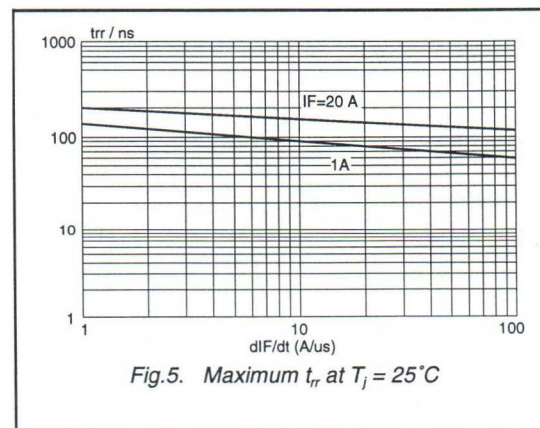


Fig.5. Maximum t_{rr} at $T_j = 25^\circ\text{C}$

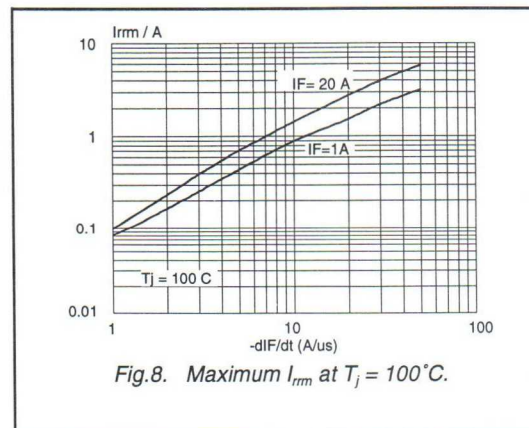


Fig.8. Maximum I_{rm} at $T_j = 100^\circ\text{C}$.

Rectifier diodes
ultrafast

BYT79 series

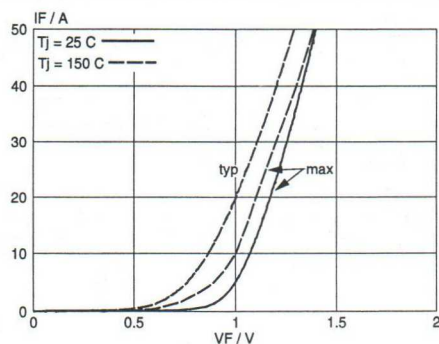


Fig.9. Typical and maximum forward characteristic
 $I_F = f(V_F)$; parameter T_J

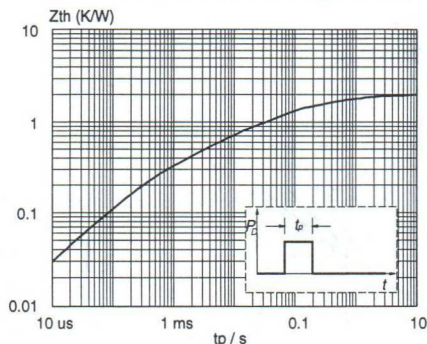


Fig.11. Transient thermal impedance $Z_{th} = f(t_p)$

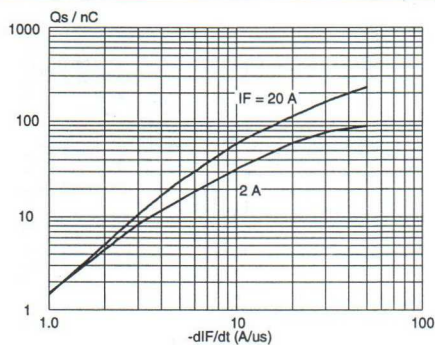


Fig.10. Maximum Q_s at $T_J = 25^\circ\text{C}$

Rectifier diodes
ultrafast

BYV29 series

GENERAL DESCRIPTION

Glass passivated, high efficiency, rectifier diodes in a plastic envelope featuring low forward voltage drop, ultra fast reverse recovery times and soft recovery characteristic. They are intended for use in switched mode power supplies and high frequency circuits in general, where both low conduction losses and low switching losses are essential.

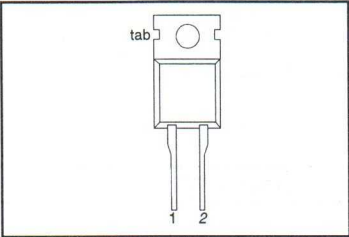
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
V_{RRM} V_F $I_{F(AV)}$ t_{rr}	BYV29- Repetitive peak reverse voltage	300 300	400 400	500 500	V
	Forward voltage	1.03	1.03	1.03	V
	Average forward current	9	9	9	A
	Reverse recovery time	60	60	60	ns

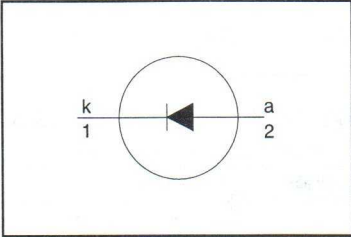
PINNING - TO220AC

PIN	DESCRIPTION
1	cathode (k)
2	anode (a)
tab	cathode (k)

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{RRM}	Repetitive peak reverse voltage		-	-300	-400	-500	V
V_{RWM}	Crest working reverse voltage		-	300	400	500	V
V_R	Continuous reverse voltage		-	300	400	500	V
$I_{F(AV)}$	Average forward current ¹	square wave; $\delta = 0.5$; $T_{mb} \leq 123\text{ }^{\circ}\text{C}$	-	9			A
		sinusoidal; $a = 1.57$; $T_{mb} \leq 125\text{ }^{\circ}\text{C}$	-	8			A
$I_{F(RMS)}$	RMS forward current		-	13			A
I_{FRM}	Repetitive peak forward current	$t = 25\text{ }\mu\text{s}$; $\delta = 0.5$; $T_{mb} \leq 123\text{ }^{\circ}\text{C}$	-	18			A
I_{FSM}	Non-repetitive peak forward current.	$t = 10\text{ ms}$ $t = 8.3\text{ ms}$ sinusoidal; with reapplied	-	100			A
			-	110			A
I^2t	I^2t for fusing	$V_{RRM(max)}$ $t = 10\text{ ms}$	-	50			A ² s
T_{slg}	Storage temperature		-40	150			$^{\circ}\text{C}$
T_j	Operating junction temperature		-	150			$^{\circ}\text{C}$

¹ Neglecting switching and reverse current losses.

Rectifier diodes
ultrafast

BYV29 series

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-mb}$	Thermal resistance junction to mounting base	in free air.	-	-	2.5	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient		-	60	-	K/W

STATIC CHARACTERISTICS

 $T_j = 25\ ^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage	$I_F = 8\ \text{A}; T_j = 150\ ^\circ\text{C}$	-	0.90	1.03	V
		$I_F = 8\ \text{A}$	-	1.05	1.25	V
		$I_F = 20\ \text{A}$	-	1.20	1.40	V
I_R	Reverse current	$V_R = V_{RRM}$	-	2.0	50	μA
		$V_R = V_{RRM}; T_j = 100\ ^\circ\text{C}$	-	0.1	0.35	mA

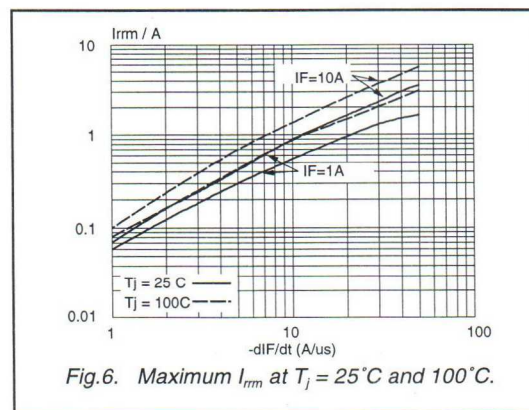
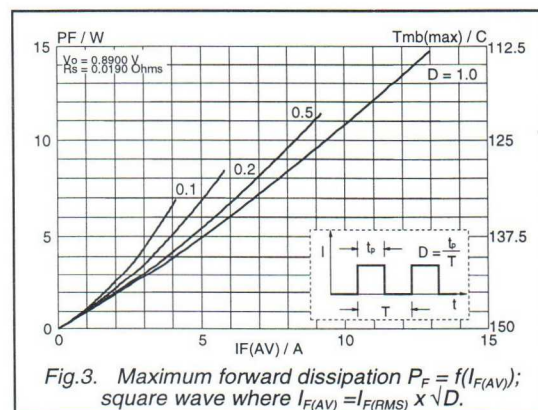
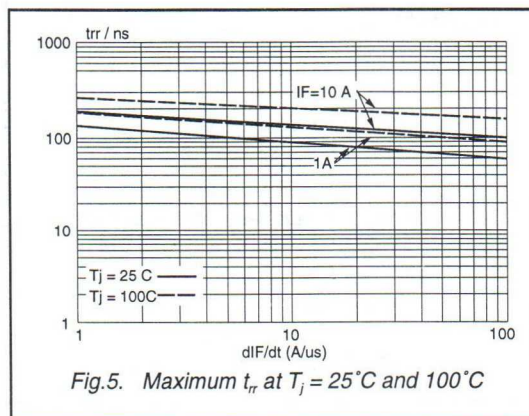
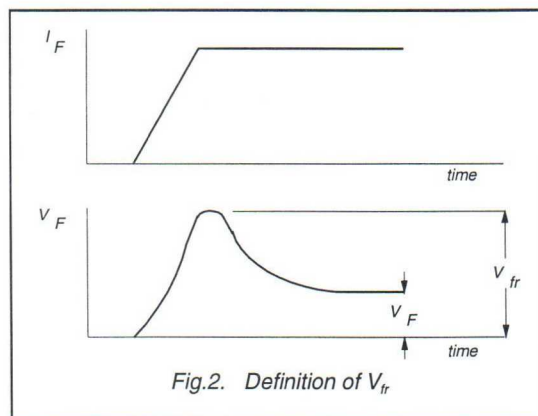
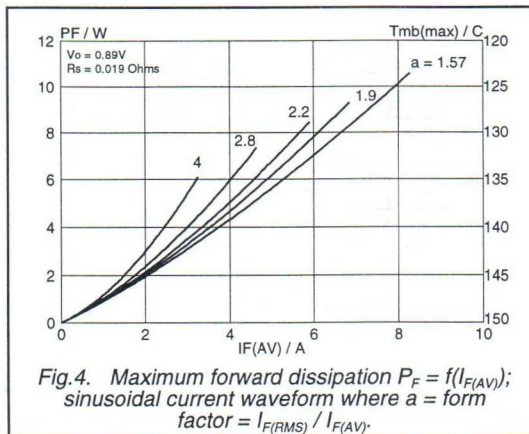
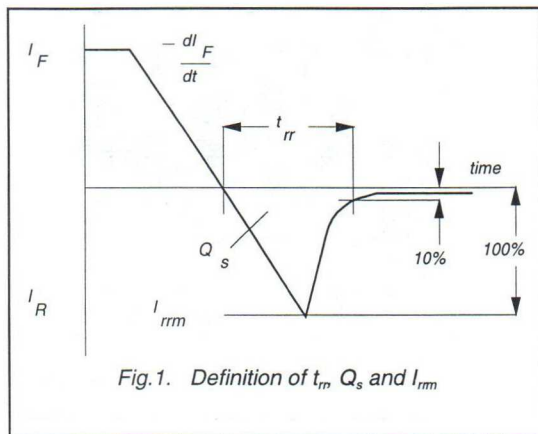
DYNAMIC CHARACTERISTICS

 $T_j = 25\ ^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Q_s	Reverse recovery charge	$I_F = 2\ \text{A}$ to $V_R \geq 30\ \text{V}$; $dI_F/dt = 20\ \text{A}/\mu\text{s}$	-	40	60	nC
t_{rr}	Reverse recovery time	$I_F = 1\ \text{A}$ to $V_R \geq 30\ \text{V}$; $dI_F/dt = 100\ \text{A}/\mu\text{s}$	-	50	60	ns
I_{rm}	Peak reverse recovery current	$I_F = 10\ \text{A}$ to $V_R \geq 30\ \text{V}$; $dI_F/dt = 50\ \text{A}/\mu\text{s}; T_j = 100\ ^\circ\text{C}$	-	4.0	5.5	A
V_{fr}	Forward recovery voltage	$I_F = 10\ \text{A}; dI_F/dt = 10\ \text{A}/\mu\text{s}$	-	2.5	-	V

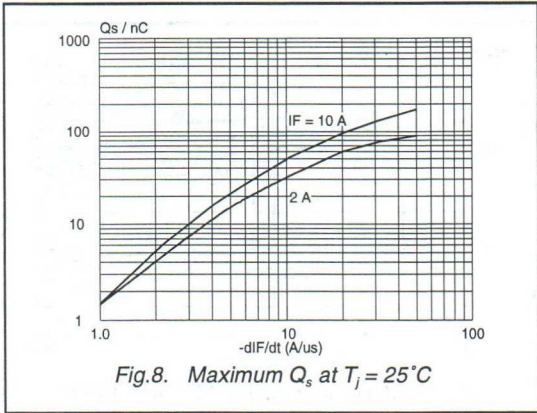
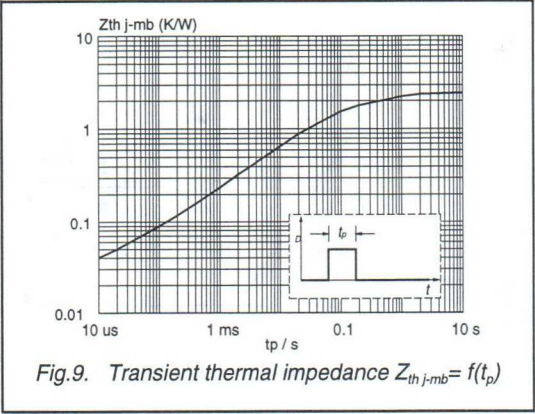
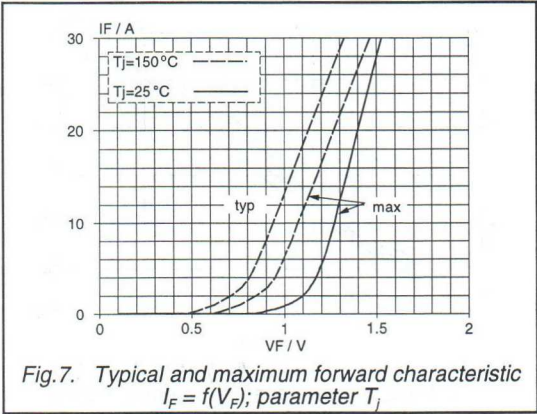
Rectifier diodes
ultrafast

BYV29 series



Rectifier diodes
ultrafast

BYV29 series



Rectifier diodes ultrafast

BYV29F series

GENERAL DESCRIPTION

Glass passivated, high efficiency rectifier diodes in a full pack plastic envelope, featuring low forward voltage drop, ultra fast reverse recovery times and soft recovery characteristic. They are intended for use in switched mode power supplies and high frequency circuits in general, where both low conduction losses and low switching losses are essential.

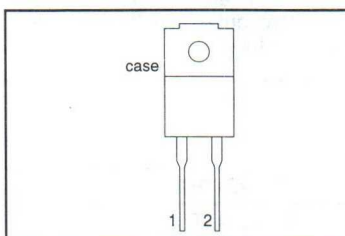
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
V_{RRM}	BYV29F- Repetitive peak reverse voltage	300 300	400 400	500 500	V
V_F	Forward voltage	1.03	1.03	1.03	V
$I_{F(AV)}$	Average forward current	9	9	9	A
t_{rr}	Reverse recovery time	60	60	60	ns

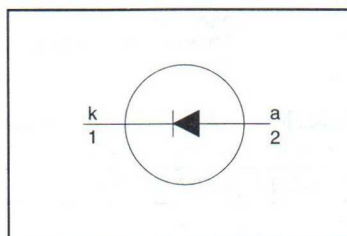
PINNING - SOD100

PIN	DESCRIPTION
1	cathode
2	anode
case	isolated

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{RRM}	Repetitive peak reverse voltage	$T_{hs} \leq 138^\circ\text{C}$	-	-300	-400	-500	V
V_{RWM}	Crest working reverse voltage		-	300	400	500	V
V_R	Continuous reverse voltage		-	300	400	500	V
$I_{F(AV)}$	Average forward current ¹	square wave; $\delta = 0.5$; $T_{hs} \leq 90^\circ\text{C}$ sinusoidal; $a = 1.57$; $T_{hs} \leq 95^\circ\text{C}$	-	9			A
$I_{F(RMS)}$	RMS forward current		-	13			A
I_{FRM}	Repetitive peak forward current		-	18			A
I_{FSM}	Non-repetitive peak forward current	$t = 25\ \mu\text{s}$; $\delta = 0.5$; $T_{hs} \leq 90^\circ\text{C}$ $t = 10\ \text{ms}$ $t = 8.3\ \text{ms}$ sinusoidal; with reapplied $V_{RRM(max)}$ $t = 10\ \text{ms}$	-	100			A
			-	110			A
I^2t	I^2t for fusing		-	50			A ² s
T_{stg}	Storage temperature		-40	150			$^\circ\text{C}$
T_j	Operating junction temperature		-	150			$^\circ\text{C}$

¹ Neglecting switching and reverse current losses

Rectifier diodes
ultrafast

BYV29F series

ISOLATION LIMITING VALUE & CHARACTERISTIC

 $T_{hs} = 25\text{ }^{\circ}\text{C}$ unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_{isol}	Repetitive peak voltage from both terminals to external heatsink	R.H. $\leq 65\%$; clean and dustfree	-		1500	V
C_{isol}	Capacitance from cathode to external heatsink	$f = 1\text{ MHz}$	-	12	-	pF

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-hs}$	Thermal resistance junction to heatsink	with heatsink compound	-	-	5.5	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	without heatsink compound in free air.	-	55	7.2	K/W

STATIC CHARACTERISTICS

 $T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage	$I_F = 8\text{ A}$; $T_j = 150\text{ }^{\circ}\text{C}$	-	0.90	1.03	V
		$I_F = 8\text{ A}$	-	1.05	1.25	V
		$I_F = 20\text{ A}$	-	1.20	1.40	V
I_R	Reverse current	$V_R = V_{RRM}$	-	2.0	50	μA
		$V_R = V_{RRM}$; $T_j = 100\text{ }^{\circ}\text{C}$	-	0.1	0.35	mA

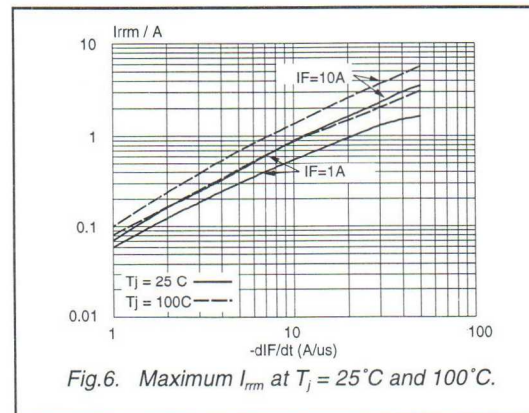
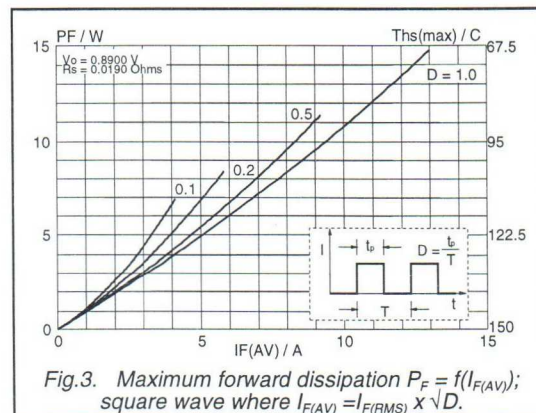
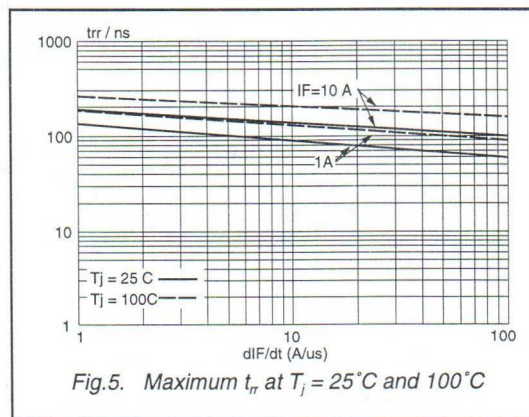
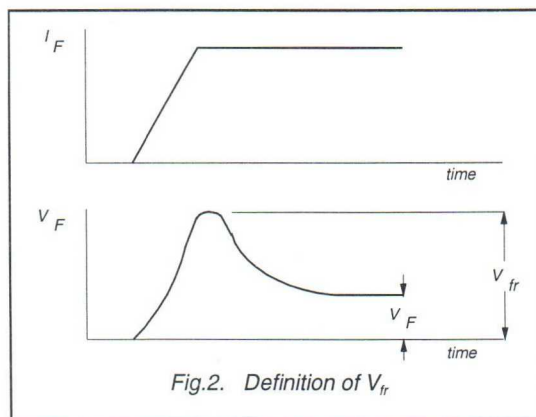
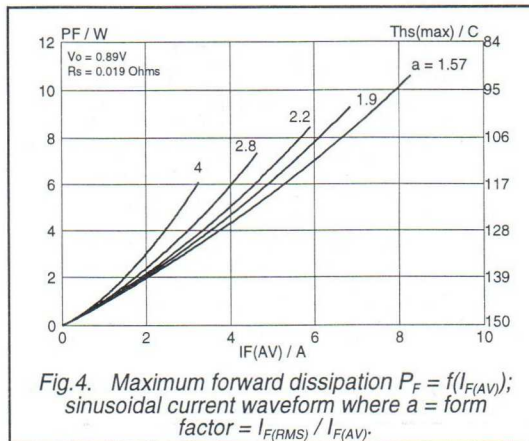
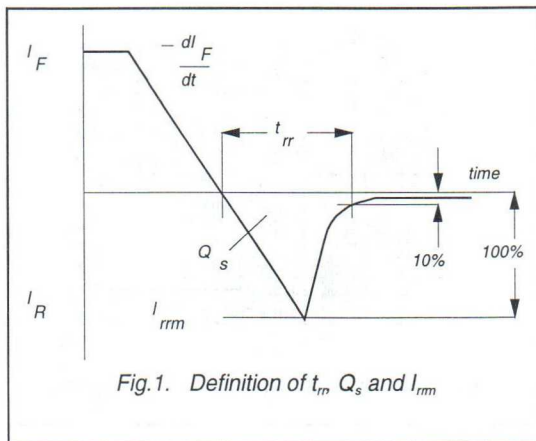
DYNAMIC CHARACTERISTICS

 $T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Q_s	Reverse recovery charge	$I_F = 2\text{ A}$ to $V_R \geq 30\text{ V}$; $di_F/dt = 20\text{ A}/\mu\text{s}$	-	40	60	nC
t_{rr}	Reverse recovery time	$I_F = 1\text{ A}$ to $V_R \geq 30\text{ V}$; $di_F/dt = 100\text{ A}/\mu\text{s}$	-	50	60	ns
I_{rrm}	Peak reverse recovery current	$I_F = 10\text{ A}$ to $V_R \geq 30\text{ V}$; $di_F/dt = 50\text{ A}/\mu\text{s}$; $T_j = 100\text{ }^{\circ}\text{C}$	-	4.0	5.5	A
V_{fr}	Forward recovery voltage	$I_F = 10\text{ A}$; $di_F/dt = 10\text{ A}/\mu\text{s}$	-	2.5	-	V

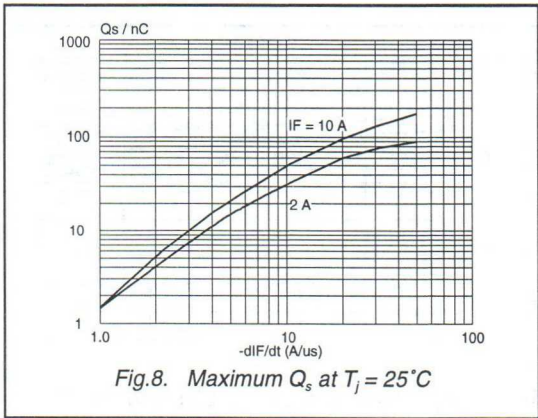
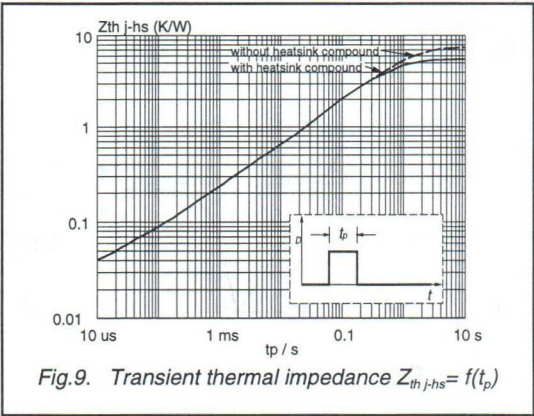
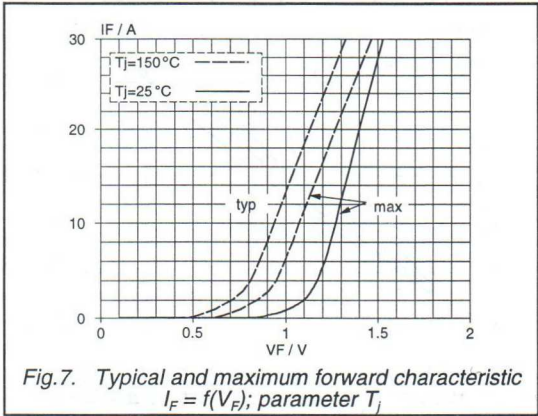
Rectifier diodes
ultrafast

BYV29F series



Rectifier diodes
ultrafast

BYV29F series



Rectifier diodes
ultrafast

BYV32 series

GENERAL DESCRIPTION

Glass passivated high efficiency dual rectifier diodes in a plastic envelope, featuring low forward voltage drop, ultra-fast recovery times and soft recovery characteristic. They are intended for use in switched mode power supplies and high frequency circuits in general where low conduction and switching losses are essential.

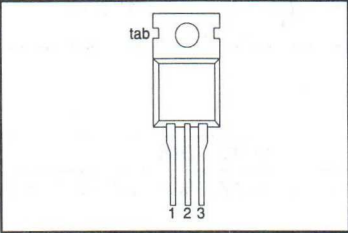
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
V_{RRM}	Repetitive peak reverse voltage	100	150	200	V
		100	150	200	
V_F	Forward voltage	0.85	0.85	0.85	V
$I_{O(AV)}$	Output current (both diodes conducting)	20	20	20	A
t_{rr}	Reverse recovery time	25	25	25	ns

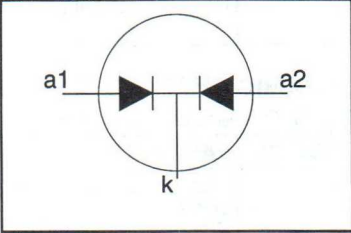
PINNING - TO220AB

PIN	DESCRIPTION
1	anode 1 (a)
2	cathode (k)
3	anode 2 (a)
tab	cathode (k)

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{RRM}	Repetitive peak reverse voltage	square wave $\delta = 0.5$; $T_{mb} \leq 115\text{ }^{\circ}\text{C}$ sinusoidal $a = 1.57$; $T_{mb} \leq 118\text{ }^{\circ}\text{C}$	-	-100	-150	-200	V
V_{RWM}	Crest working reverse voltage		-	100	150	200	V
V_R	Continuous reverse voltage		-	100	150	200	V
$I_{O(AV)}$	Output current (both diodes conducting) ¹	$t = 25\text{ }\mu\text{s}$; $\delta = 0.5$; $T_{mb} \leq 115\text{ }^{\circ}\text{C}$ $t = 10\text{ ms}$ $t = 8.3\text{ ms}$ sinusoidal; with reapplied $V_{RWM(max)}$ $t = 10\text{ ms}$	-	20			A
$I_{O(RMS)}$	RMS forward current		-	18			A
I_{FRM}	Repetitive peak forward current per diode		-	28			A
I_{FSM}	Non-repetitive peak forward current per diode		-	20			A
I_{FSM}	Non-repetitive peak forward current per diode		-	125			A
I^2t	I^2t for fusing		-	137			A
T_{stg}	Storage temperature		-40	78			A^2s
T_j	Operating junction temperature		-	150			$^{\circ}\text{C}$
			-	150			$^{\circ}\text{C}$

1 Neglecting switching and reverse current losses

Rectifier diodes
ultrafast

BYV32 series

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-mb}$	Thermal resistance junction to mounting base	per diode	-	-	2.4	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	both diodes conducting in free air	-	-	1.6	K/W
			-	60	-	K/W

STATIC CHARACTERISTICS

 $T_j = 25\ ^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage (per diode)	$I_F = 8\ \text{A}$; $T_j = 150\ ^\circ\text{C}$	-	0.72	0.85	V
		$I_F = 20\ \text{A}$	-	1.00	1.15	V
I_R	Reverse current (per diode)	$V_R = V_{RWM}$; $T_j = 100\ ^\circ\text{C}$	-	0.2	0.6	mA
		$V_R = V_{RWM}$	-	6	30	μA

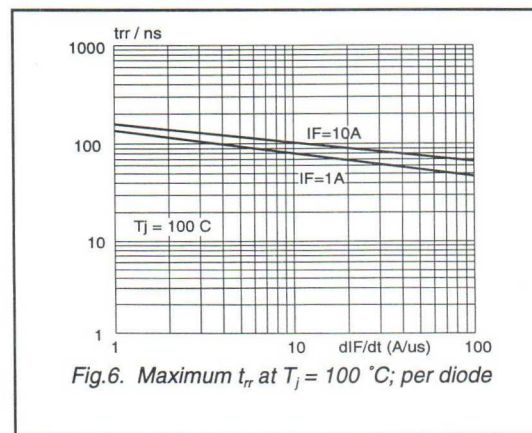
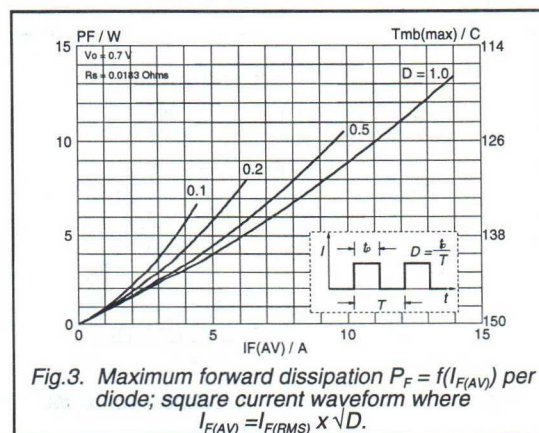
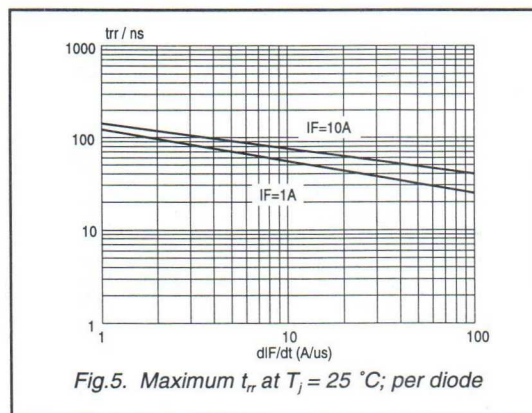
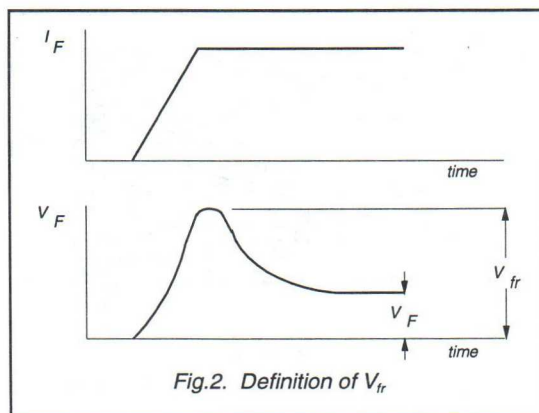
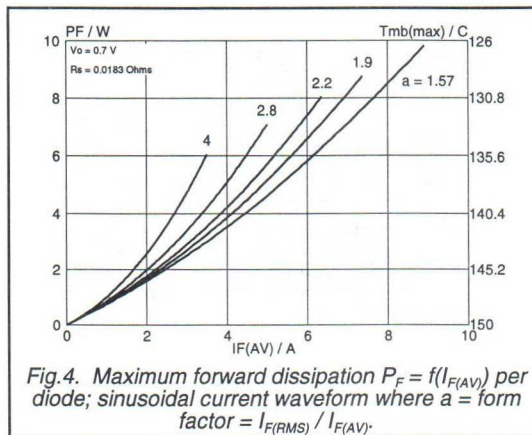
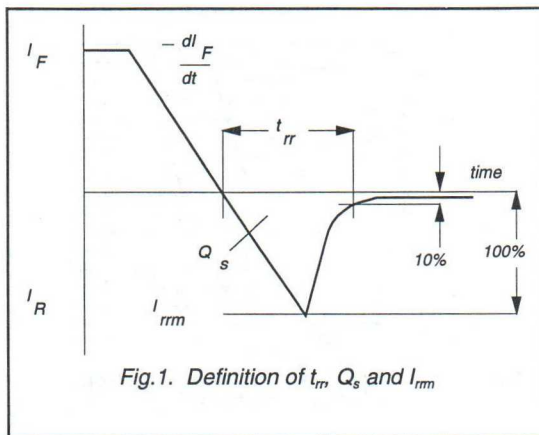
DYNAMIC CHARACTERISTICS

 $T_j = 25\ ^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Q_s	Reverse recovery charge (per diode)	$I_F = 2\ \text{A}$; $V_R \geq 30\ \text{V}$; $-di_F/dt = 20\ \text{A}/\mu\text{s}$	-	8	12.5	nC
t_{rr}	Reverse recovery time (per diode)	$I_F = 1\ \text{A}$; $V_R \geq 30\ \text{V}$; $-di_F/dt = 100\ \text{A}/\mu\text{s}$	-	20	25	ns
I_{rm}	Peak reverse recovery current (per diode)	$I_F = 1\ \text{A}$; $V_R \geq 30\ \text{V}$; $-di_F/dt = 50\ \text{A}/\mu\text{s}$; $T_j = 100\ ^\circ\text{C}$	-	1.5	2	A
V_{fr}	Forward recovery voltage (per diode)	$I_F = 1\ \text{A}$; $di_F/dt = 10\ \text{A}/\mu\text{s}$	-	1	-	V

Rectifier diodes
ultrafast

BYV32 series



Rectifier diodes ultrafast

BYV32 series

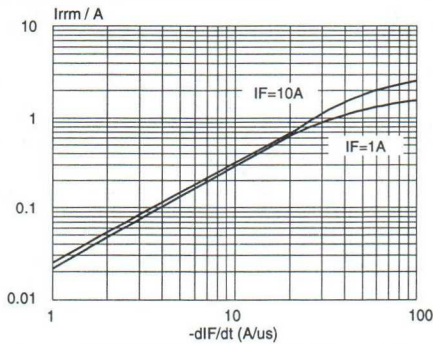


Fig. 7. Maximum I_{rms} at $T_j = 25\text{ °C}$; per diode

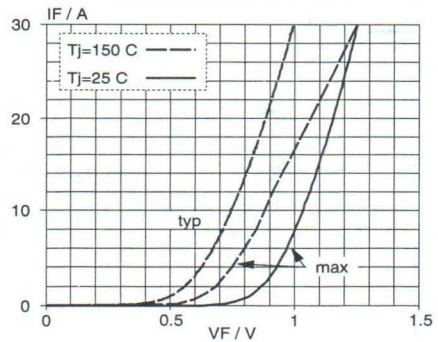


Fig. 9. Typical and maximum forward characteristic $I_F = f(V_F)$; parameter T_j

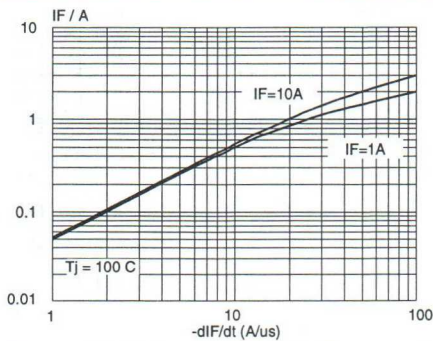


Fig. 8. Maximum I_{rms} at $T_j = 100\text{ °C}$; per diode

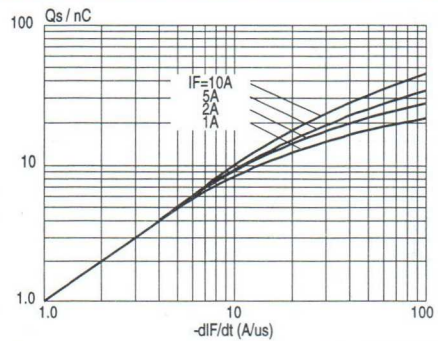


Fig. 10. Maximum Q_s at $T_j = 25\text{ °C}$; per diode

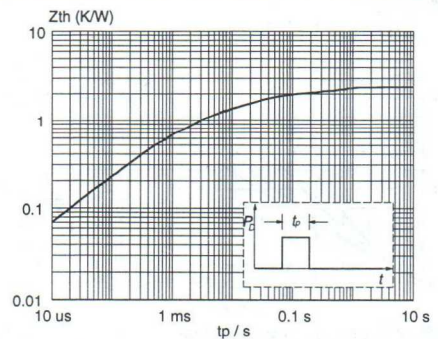


Fig. 11. Transient thermal impedance; per diode;
 $Z_{th\ j-mb} = f(t_p)$.

Rectifier diodes ultrafast, rugged

BYV32E series

GENERAL DESCRIPTION

Glass passivated high efficiency rugged dual rectifier diodes in a plastic envelope, featuring low forward voltage drop, ultra-fast recovery times and soft recovery characteristic. These devices can withstand reverse voltage transients and have guaranteed reverse surge and ESD capability. They are intended for use in switched mode power supplies and high frequency circuits in general where low conduction and switching losses are essential.

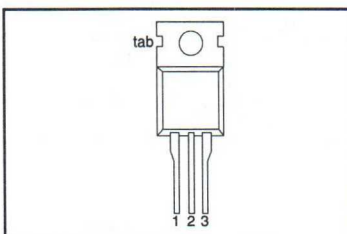
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
V_{RRM}	BYV32E- Repetitive peak reverse voltage	100 100	150 150	200 200	V
V_F	Forward voltage	0.85	0.85	0.85	V
$I_{O(AV)}$	Output current (both diodes conducting)	20	20	20	A
t_{rr}	Reverse recovery time	25	25	25	ns
I_{RRM}	Repetitive peak reverse current per diode	0.2	0.2	0.2	A

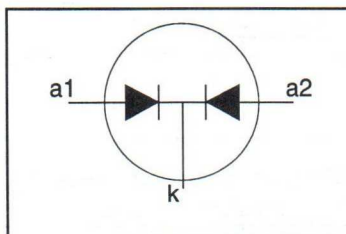
PINNING - TO220AB

PIN	DESCRIPTION
1	anode 1 (a)
2	cathode (k)
3	anode 2 (a)
tab	cathode (k)

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{RRM}	Repetitive peak reverse voltage		-	-100	-150	-200	V
V_{RWM}	Crest working reverse voltage		-	100	150	200	V
V_R	Continuous reverse voltage		-	100	150	200	V
$I_{O(AV)}$	Output current (both diodes conducting) ¹	square wave $\delta = 0.5$; $T_{mb} \leq 115^\circ\text{C}$ sinusoidal $a = 1.57$; $T_{mb} \leq 118^\circ\text{C}$	-	20			A
$I_{O(RMS)}$	RMS forward current		-	28			A
I_{FRM}	Repetitive peak forward current per diode	$t = 25 \mu\text{s}$; $\delta = 0.5$; $T_{mb} \leq 115^\circ\text{C}$	-	20			A
I_{FSM}	Non-repetitive peak forward current per diode	$t = 10 \text{ ms}$ $t = 8.3 \text{ ms}$ sinusoidal; with reapplied	-	125			A
I^2t	I^2t for fusing	$V_{RWM(max)}$ $t = 10 \text{ ms}$	-	78			A ² s
I_{RRM}	Repetitive peak reverse current per diode	$t_p = 2 \mu\text{s}$; $\delta = 0.001$	-	0.2			A
I_{RSM}	Non-repetitive peak reverse current per diode	$t_p = 100 \mu\text{s}$	-	0.2			A
T_{stg}	Storage temperature		-40	150			$^\circ\text{C}$
T_j	Operating junction temperature		-	150			$^\circ\text{C}$

¹ Neglecting switching and reverse current losses

Rectifier diodes ultrafast, rugged

BYV32E series

ESD LIMITING VALUE

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_C	Electrostatic discharge capacitor voltage	Human body model; $C = 250 \text{ pF}$; $R = 1.5 \text{ k}\Omega$	-	8	kV

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th \text{ j-mb}}$	Thermal resistance junction to mounting base	per diode both diodes conducting	-	-	2.4	K/W
$R_{th \text{ j-a}}$	Thermal resistance junction to ambient	in free air	-	60	1.6	K/W

STATIC CHARACTERISTICS

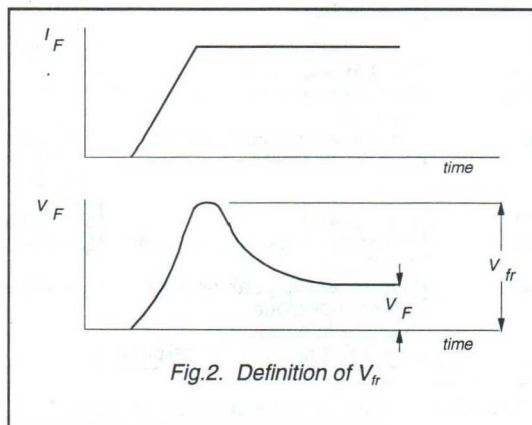
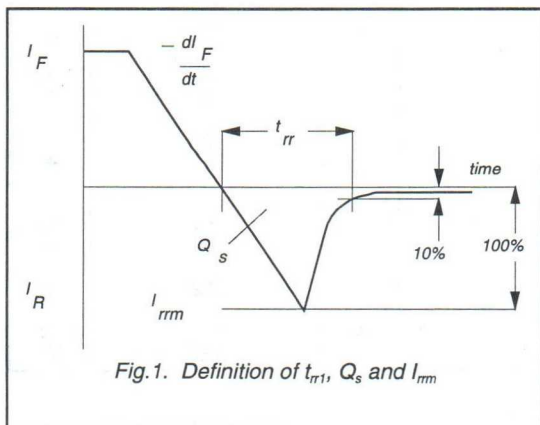
$T_J = 25^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage (per diode)	$I_F = 8 \text{ A}$; $T_J = 150^\circ\text{C}$	-	0.72	0.85	V
		$I_F = 20 \text{ A}$	-	1.00	1.15	V
I_R	Reverse current (per diode)	$V_R = V_{RWM}$; $T_J = 100^\circ\text{C}$	-	0.2	0.6	mA
		$V_R = V_{RWM}$	-	6	30	μA

DYNAMIC CHARACTERISTICS

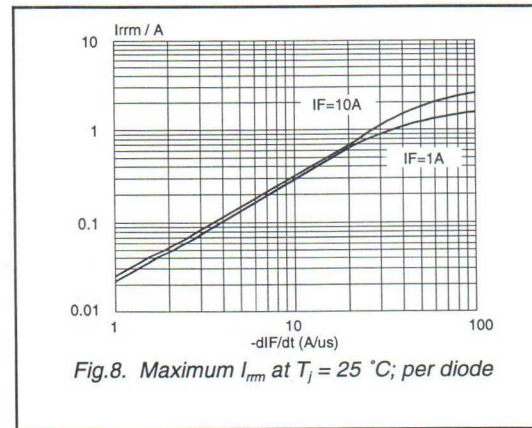
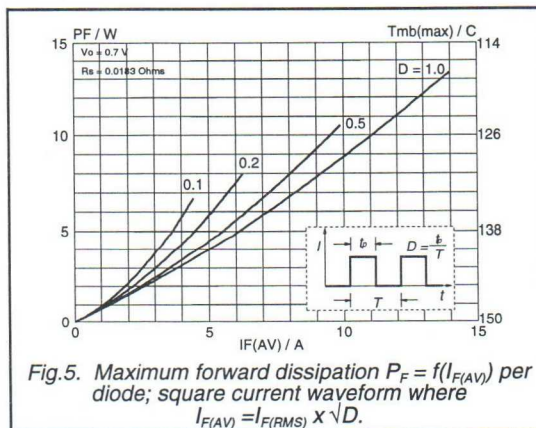
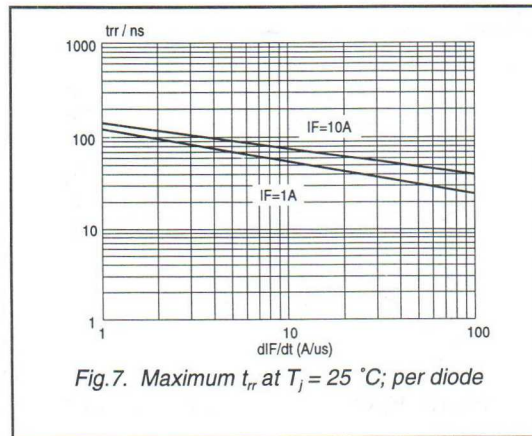
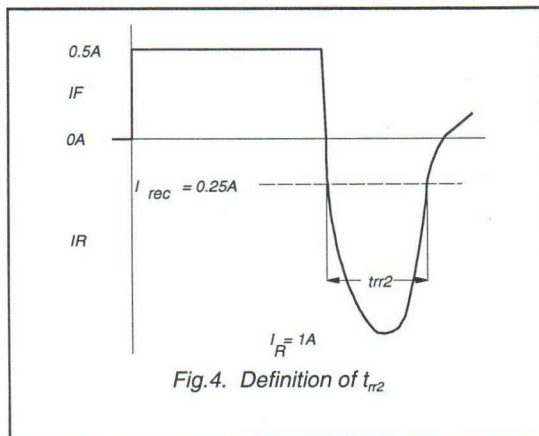
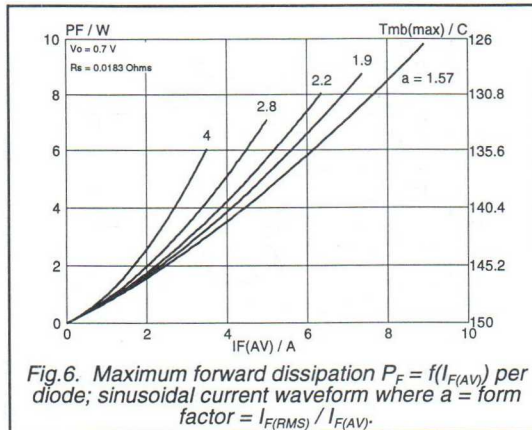
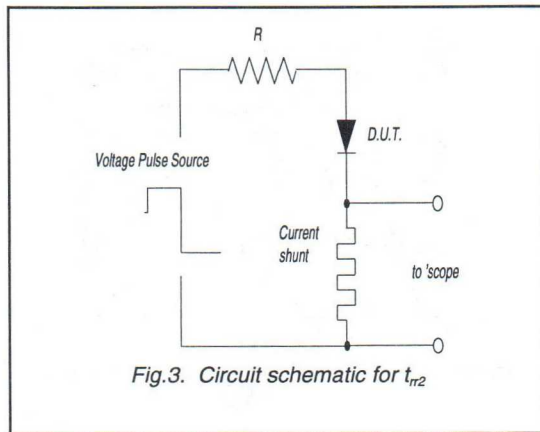
$T_J = 25^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Q_s	Reverse recovery charge (per diode)	$I_F = 2 \text{ A}$; $V_R \geq 30 \text{ V}$; $-di_F/dt = 20 \text{ A}/\mu\text{s}$	-	8	12.5	nC
t_{rr1}	Reverse recovery time (per diode)	$I_F = 1 \text{ A}$; $V_R \geq 30 \text{ V}$; $-di_F/dt = 100 \text{ A}/\mu\text{s}$	-	20	25	ns
t_{rr2}	Reverse recovery time (per diode)	$I_F = 0.5 \text{ A}$ to $I_R = 1 \text{ A}$; $I_{rec} = 0.25 \text{ A}$	-	10	20	ns
V_{fr}	Forward recovery voltage (per diode)	$I_F = 1 \text{ A}$; $di_F/dt = 10 \text{ A}/\mu\text{s}$	-	1	-	V



Rectifier diodes ultrafast, rugged

BYV32E series



Rectifier diodes ultrafast, rugged

BYV32E series

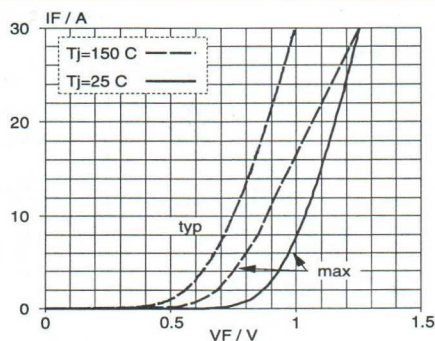


Fig.9. Typical and maximum forward characteristic
 $I_F = f(V_F)$; parameter T_J

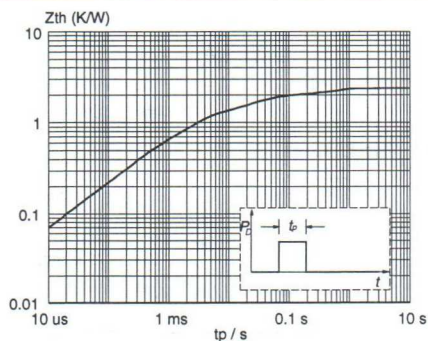


Fig.11. Transient thermal impedance; per diode;
 $Z_{th\ j-mb} = f(t_p)$.

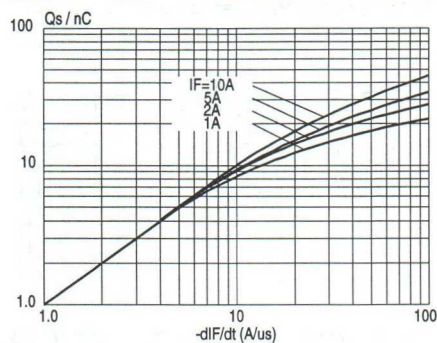


Fig.10. Maximum Q_s at $T_J = 25\text{ °C}$; per diode

Rectifier diodes
ultrafast, rugged

BYV32EB series

GENERAL DESCRIPTION

Glass passivated dual epitaxial rectifier diodes in a plastic envelope suitable for surface mounting, featuring low forward voltage drop, ultra-fast recovery times, soft recovery characteristic and guaranteed reverse surge and ESD capability. They are intended for use in switched mode power supplies and high frequency circuits in general where low conduction and switching losses are essential.

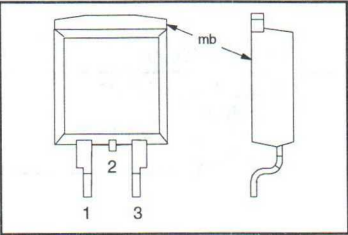
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
V_{RRM}	BYV32EB- Repetitive peak reverse voltage	100 100	150 150	200 200	V
V_F	Forward voltage	0.85	0.85	0.85	V
$I_{O(AV)}$	Average output current (both diodes conducting)	20	20	20	A
t_{rr}	Reverse recovery time	25	25	25	ns
I_{RRM}	Repetitive peak reverse current per diode	0.2	0.2	0.2	A

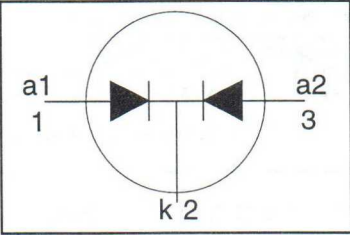
PINNING - SOT404

PIN	DESCRIPTION
1	anode 1
2	cathode
3	anode 2
mb	cathode

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
				-100	-150	-200	
V_{RRM}	Repetitive peak reverse voltage		-	100	150	200	V
V_{RWM}	Crest working reverse voltage		-	100	150	200	V
V_R	Continuous reverse voltage		-	100	150	200	V
$I_{O(AV)}$	Average output current (both diodes conducting) ¹	square wave $\delta = 0.5$; $T_{mb} \leq 115\text{ }^{\circ}\text{C}$ sinusoidal $a = 1.57$; $T_{mb} \leq 118\text{ }^{\circ}\text{C}$	-	20			A
$I_{O(RMS)}$	RMS output current (both diodes conducting)		-	28			A
I_{FRM}	Repetitive peak forward current per diode	$t = 25\text{ }\mu\text{s}$; $\delta = 0.5$; $T_{hs} \leq 115\text{ }^{\circ}\text{C}$	-	20			A
I_{FSM}	Non-repetitive peak forward current per diode	$t = 10\text{ ms}$ $t = 8.3\text{ ms}$ sinusoidal; with reapplied	-	125 137			A A
I^2t	I^2t for fusing	$V_{RRM(max)}$ $t = 10\text{ ms}$	-	78			A ² s
I_{RRM}	Repetitive peak reverse current per diode	$t_p = 2\text{ }\mu\text{s}$; $\delta = 0.001$	-	0.2			A
I_{RSM}	Non-repetitive peak reverse current per diode	$t_p = 100\text{ }\mu\text{s}$	-	0.2			A
T_{stg}	Storage temperature		-40	150			$^{\circ}\text{C}$
T_j	Operating junction temperature		-	150			$^{\circ}\text{C}$

¹ Neglecting switching and reverse current losses.

Rectifier diodes ultrafast, rugged

BYV32EB series

ESD LIMITING VALUE

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_C	Electrostatic discharge capacitor voltage	Human body model; $C = 250 \text{ pF}$; $R = 1.5 \text{ k}\Omega$	-	8	kV

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th \text{ j-mb}}$	Thermal resistance junction to mounting base	per diode	-	-	2.4	K/W
$R_{th \text{ j-a}}$	Thermal resistance junction to ambient	both diodes conducting minimum footprint, FR4 board	-	50	1.6	K/W
					-	K/W

STATIC CHARACTERISTICS

$T_j = 25^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage (per diode)	$I_F = 8 \text{ A}$; $T_j = 150^\circ\text{C}$	-	0.72	0.85	V
		$I_F = 20 \text{ A}$	-	1.00	1.15	V
I_R	Reverse current (per diode)	$V_R = V_{RRM}$; $T_j = 100^\circ\text{C}$	-	0.2	0.6	mA
		$V_R = V_{RRM}$	-	6	30	μA

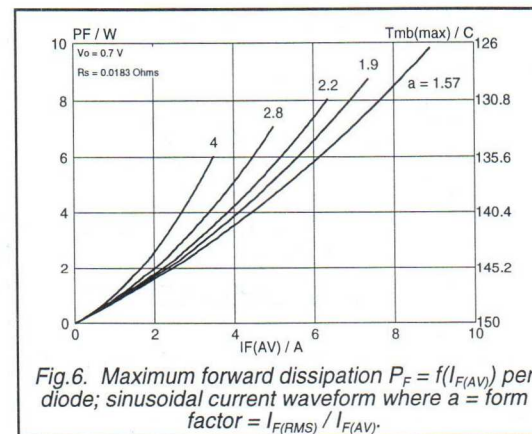
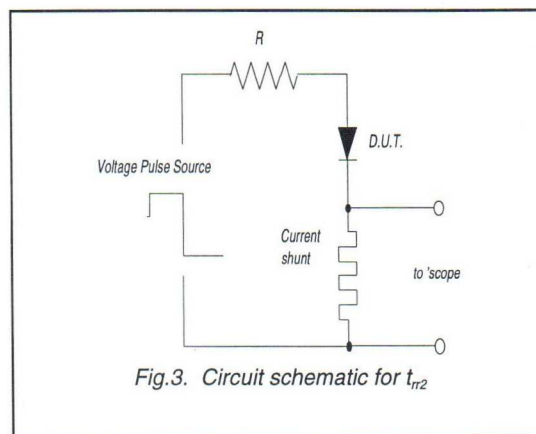
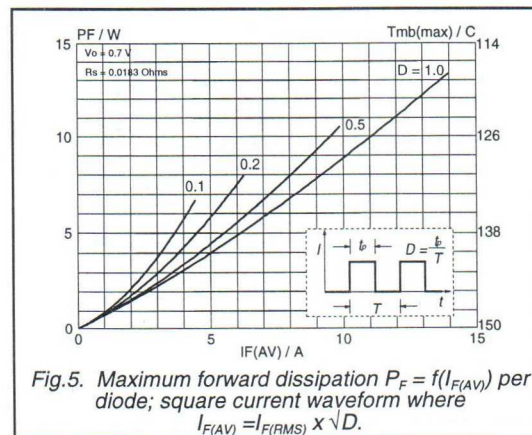
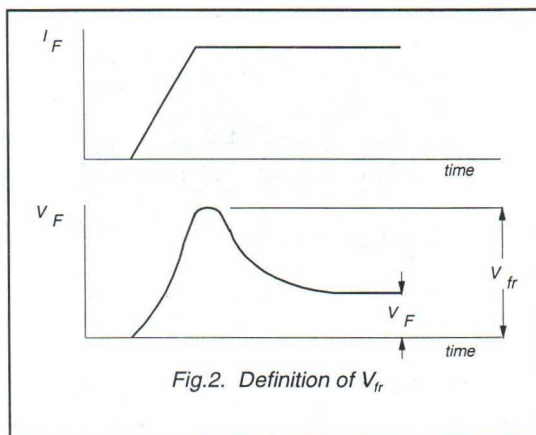
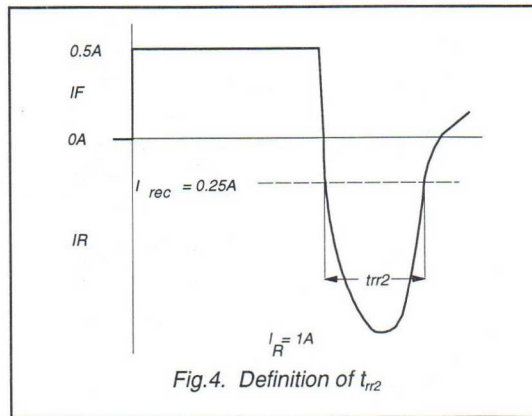
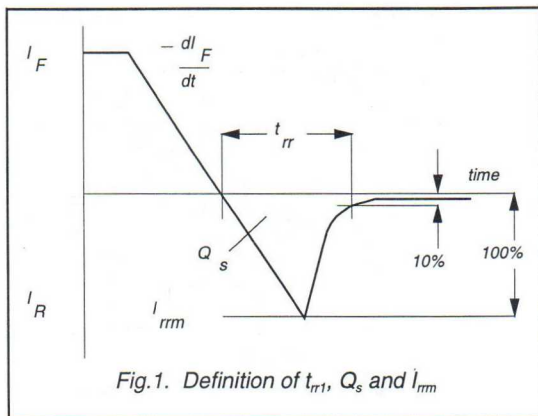
DYNAMIC CHARACTERISTICS

$T_j = 25^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Q_s	Reverse recovery charge (per diode)	$I_F = 2 \text{ A}$; $V_R \geq 30 \text{ V}$; $-dI_F/dt = 20 \text{ A}/\mu\text{s}$	-	8	12.5	nC
t_{rr1}	Reverse recovery time (per diode)	$I_F = 1 \text{ A}$; $V_R \geq 30 \text{ V}$; $-dI_F/dt = 100 \text{ A}/\mu\text{s}$	-	20	25	ns
t_{rr2}	Reverse recovery time (per diode)	$I_F = 0.5 \text{ A}$ to $I_R = 1 \text{ A}$; $I_{rec} = 0.25 \text{ A}$	-	10	20	ns
V_{fr}	Forward recovery voltage (per diode)	$I_F = 1 \text{ A}$; $dI_F/dt = 10 \text{ A}/\mu\text{s}$	-	1	-	V

Rectifier diodes
ultrafast, rugged

BYV32EB series



Rectifier diodes ultrafast, rugged

BYV32EB series

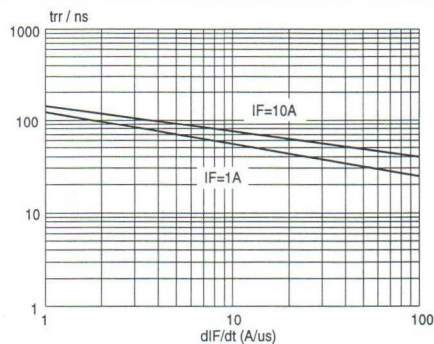


Fig. 7. Maximum t_{rr} at $T_j = 25^\circ\text{C}$; per diode

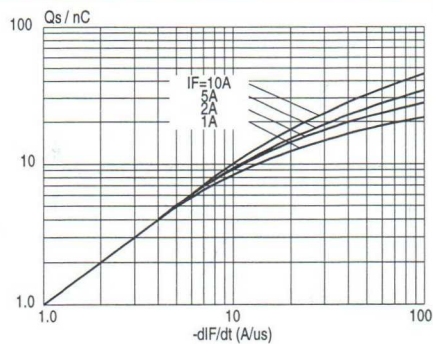


Fig. 10. Maximum Q_s at $T_j = 25^\circ\text{C}$; per diode

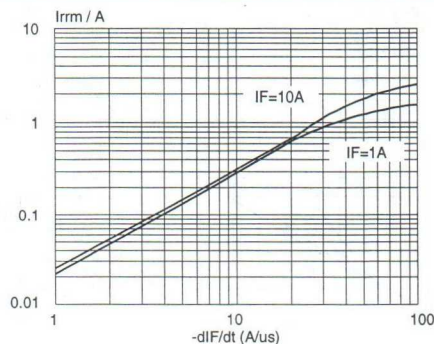


Fig. 8. Maximum I_{rrm} at $T_j = 25^\circ\text{C}$; per diode

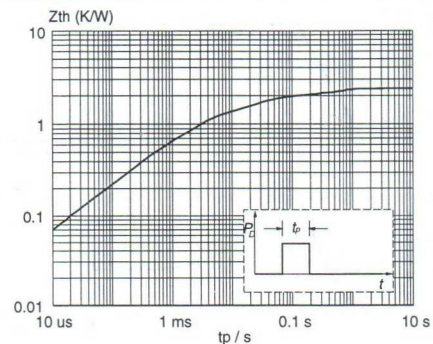


Fig. 11. Transient thermal impedance; per diode;
 $Z_{th j-mb} = f(t_p)$.

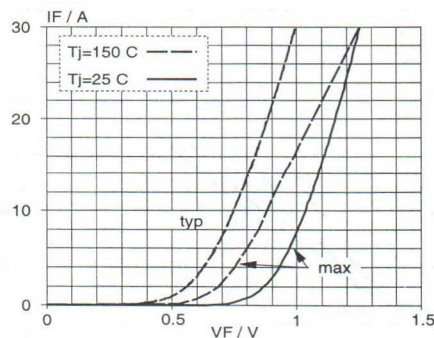


Fig. 9. Typical and maximum forward characteristic
 $I_F = f(V_F)$; parameter T_j

Rectifier diodes ultrafast, rugged

BYV32EX series

GENERAL DESCRIPTION

Glass passivated dual epitaxial rectifier diodes in a full pack plastic envelope, featuring low forward voltage drop, ultra-fast recovery times, soft recovery characteristic and guaranteed reverse surge and ESD capability. They are intended for use in switched mode power supplies and high frequency circuits in general where low conduction and switching losses are essential.

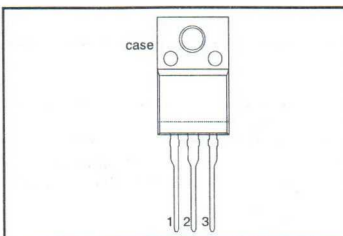
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
V_{RRM}	Repetitive peak reverse voltage	100	150	200	V
		100	150	200	
V_F	Forward voltage	0.85	0.85	0.85	V
$I_{O(AV)}$	Output current (both diodes conducting)	12	12	12	A
t_{rr}	Reverse recovery time	25	25	25	ns
I_{RRM}	Repetitive peak reverse current per diode	0.2	0.2	0.2	A

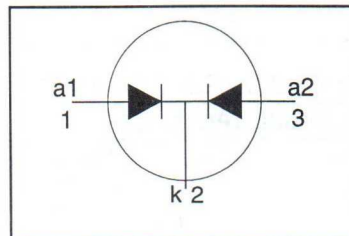
PINNING - SOT186A

PIN	DESCRIPTION
1	anode 1 (a)
2	cathode (k)
3	anode 2 (a)
case	isolated

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
				-100	-150	-200	
V_{RRM}	Repetitive peak reverse voltage	square wave $\delta = 0.5$; $T_{hs} \leq 95^\circ\text{C}$ sinusoidal $a = 1.57$; $T_{hs} \leq 91^\circ\text{C}$	-	100	150	200	V
V_{RWM}	Crest working reverse voltage		-	100	150	200	V
V_R	Continuous reverse voltage		-	100	150	200	V
$I_{O(AV)}$	Output current (both diodes conducting) ¹	$t = 25\ \mu\text{s}$; $\delta = 0.5$; $T_{hs} \leq 95^\circ\text{C}$ $t = 10\ \text{ms}$ $t = 8.3\ \text{ms}$ sinusoidal; with reapplied $V_{RWM(max)}$ $t = 10\ \text{ms}$ $t_p = 2\ \mu\text{s}$; $\delta = 0.001$	-	12			A
$I_{O(RMS)}$	RMS forward current		-	12			A
I_{FRM}	Repetitive peak forward current per diode		-	20			A
I_{FSM}	Non-repetitive peak forward current per diode	$t_p = 100\ \mu\text{s}$	-	125			A
I^2t	I^2t for fusing		-	137			A
I_{RRM}	Repetitive peak reverse current per diode		-	78			A ² s
I_{RSM}	Non-repetitive peak reverse current per diode	T_{stg}	-	0.2			A
T_{stg}	Storage temperature		-40	150			°C
T_j	Operating junction temperature		-	150			°C

¹ Neglecting switching and reverse current losses

Rectifier diodes ultrafast, rugged

BYV32EX series

ESD LIMITING VALUE

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_C	Electrostatic discharge capacitor voltage	Human body model; $C = 250 \text{ pF}$; $R = 1.5 \text{ k}\Omega$	-	8	kV

ISOLATION LIMITING VALUE & CHARACTERISTIC

$T_{HS} = 25^\circ\text{C}$ unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_{isol}	R.M.S. isolation voltage from all three terminals to external heatsink	$f = 50\text{-}60 \text{ Hz}$; sinusoidal waveform; $R.H. \leq 65\%$; clean and dustfree	-		2500	V
C_{isol}	Capacitance from T2 to external heatsink	$f = 1 \text{ MHz}$	-	10	-	pF

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-hs}$	Thermal resistance junction to heatsink (per diode)	with heatsink compound	-	-	5.0	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	without heatsink compound in free air	-	55	7.0	K/W

STATIC CHARACTERISTICS

$T_J = 25^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage (per diode)	$I_F = 8 \text{ A}$; $T_J = 150^\circ\text{C}$	-	0.72	0.85	V
		$I_F = 20 \text{ A}$	-	1.00	1.15	V
I_R	Reverse current (per diode)	$V_R = V_{RWM}$; $T_J = 100^\circ\text{C}$	-	0.2	0.6	mA
		$V_R = V_{RWM}$	-	6	30	μA

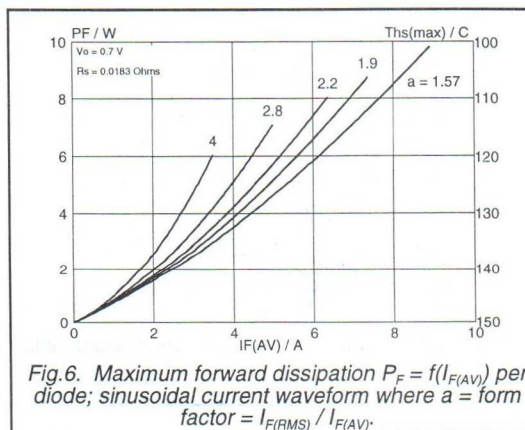
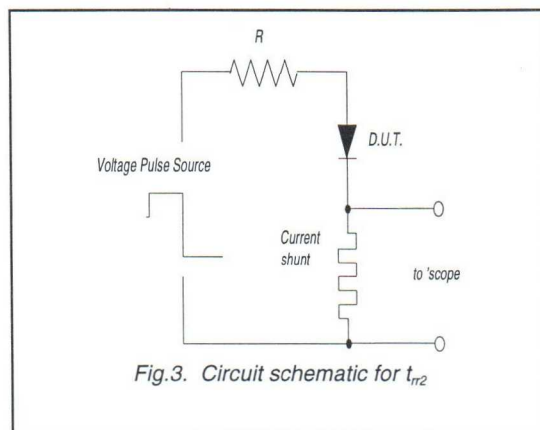
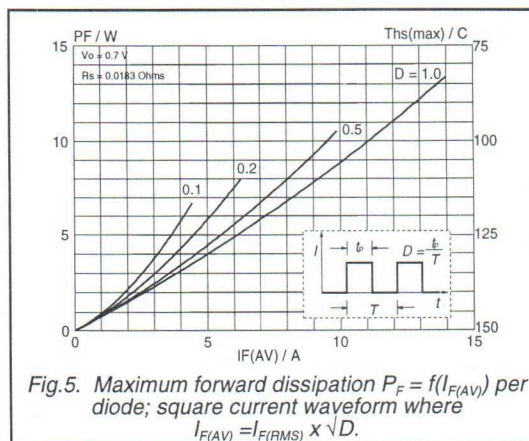
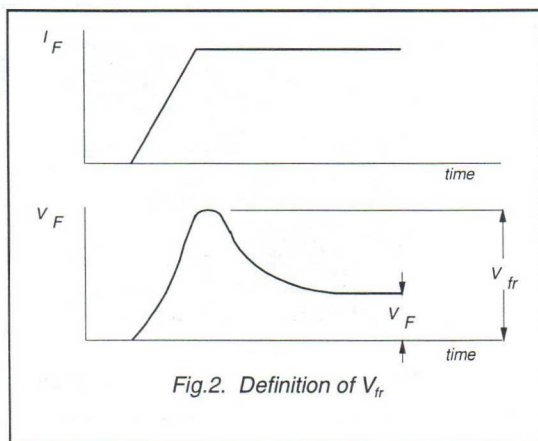
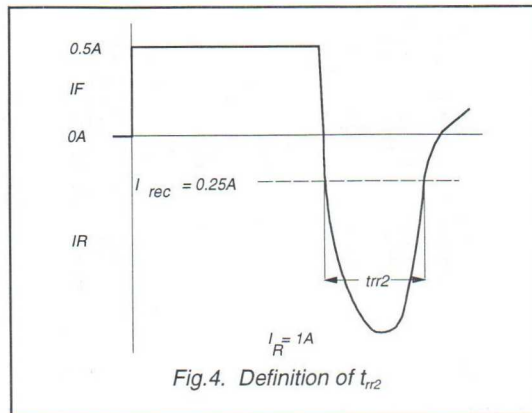
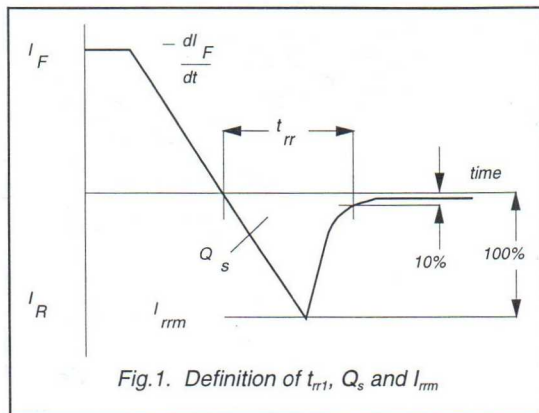
DYNAMIC CHARACTERISTICS

$T_J = 25^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Q_s	Reverse recovery charge (per diode)	$I_F = 2 \text{ A}$; $V_R \geq 30 \text{ V}$; $-dI_F/dt = 20 \text{ A}/\mu\text{s}$	-	8	12.5	nC
t_{rr1}	Reverse recovery time (per diode)	$I_F = 1 \text{ A}$; $V_R \geq 30 \text{ V}$; $-dI_F/dt = 100 \text{ A}/\mu\text{s}$	-	20	25	ns
t_{rr2}	Reverse recovery time (per diode)	$I_F = 0.5 \text{ A}$ to $I_R = 1 \text{ A}$; $I_{rec} = 0.25 \text{ A}$	-	10	20	ns
V_{fr}	Forward recovery voltage (per diode)	$I_F = 1 \text{ A}$; $dI_F/dt = 10 \text{ A}/\mu\text{s}$	-	1	-	V

Rectifier diodes
ultrafast, rugged

BYV32EX series



Rectifier diodes ultrafast, rugged

BYV32EX series

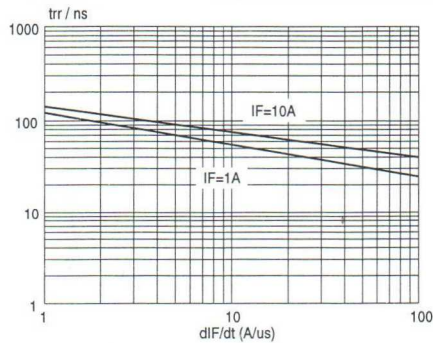


Fig. 7. Maximum t_{rr} at $T_j = 25^\circ\text{C}$; per diode

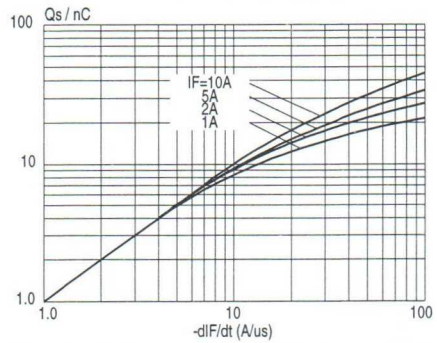


Fig. 10. Maximum Q_s at $T_j = 25^\circ\text{C}$; per diode

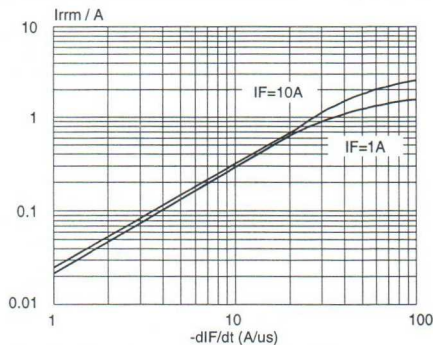


Fig. 8. Maximum I_{rrm} at $T_j = 25^\circ\text{C}$; per diode

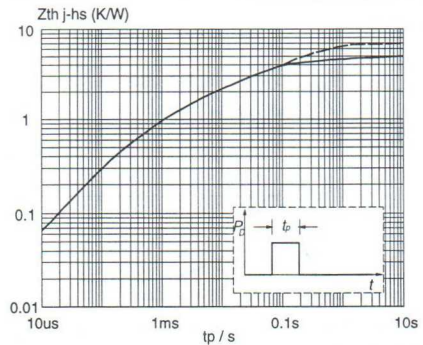


Fig. 11. Transient thermal impedance; per diode;
 $Z_{th\ j-hs} = f(t_p)$.

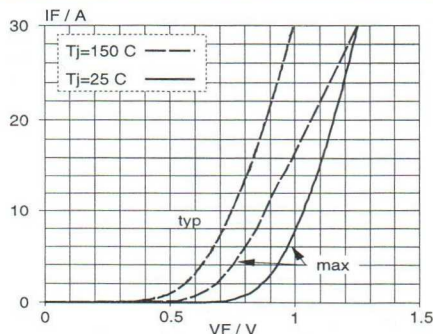


Fig. 9. Typical and maximum forward characteristic
 $I_F = f(V_F)$; parameter T_j

Rectifier diodes
ultrafast

BYV32F series

GENERAL DESCRIPTION

Glass passivated, high efficiency, dual, rectifier diodes in a full pack, plastic envelope, featuring low forward voltage drop, ultra-fast recovery times and soft recovery characteristic. They are intended for use in switched mode power supplies and high frequency circuits in general where low conduction and switching losses are essential.

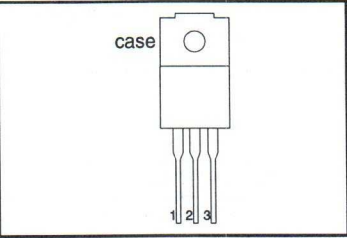
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
	BYV32F-	100	150	200	
V_{RRM}	Repetitive peak reverse voltage	100	150	200	V
V_F	Forward voltage	0.85	0.85	0.85	V
$I_{O(AV)}$	Output current (both diodes conducting)	12	12	12	A
t_{rr}	Reverse recovery time	25	25	25	ns

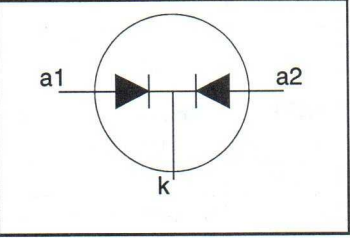
PINNING - SOT186

PIN	DESCRIPTION
1	anode 1 (a)
2	cathode (k)
3	anode 2 (a)

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{RRM}	Repetitive peak reverse voltage		-	-100	-150	-200	V
V_{RWM}	Crest working reverse voltage		-	100	150	200	V
V_R	Continuous reverse voltage ¹		-	100	150	200	V
$I_{O(AV)}$	Output current (both diodes conducting) ²	square wave; $\delta = 0.5$; $T_{hs} \leq 95\text{ }^{\circ}\text{C}$ sinusoidal; $a = 1.57$; $T_{hs} \leq 91\text{ }^{\circ}\text{C}$	-	12			A
$I_{O(RMS)}$	RMS forward current		-	20			A
I_{FRM}	Repetitive peak forward current per diode	$t = 25\text{ }\mu\text{s}$; $\delta = 0.5$; $T_{hs} \leq 95\text{ }^{\circ}\text{C}$	-	20			A
I_{FSM}	Non-repetitive peak forward current per diode	$t = 10\text{ ms}$ $t = 8.3\text{ ms}$ sinusoidal; with reapplied $V_{RWM(max)}$	-	125			A
I^2t	I^2t for fusing	$t = 10\text{ ms}$	-	78			A ² s
T_{stg}	Storage temperature		-40	150			$^{\circ}\text{C}$
T_j	Operating junction temperature		-	150			$^{\circ}\text{C}$

1 $T_{hs} \leq 130^{\circ}\text{C}$ for thermal stability.

2 Neglecting switching and reverse current losses

Rectifier diodes ultrafast

BYV32F series

ISOLATION

$T_{hs} = 25\text{ }^{\circ}\text{C}$ unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_{isol}	Repetitive peak voltage from all three terminals to external heatsink	R.H. $\leq 65\%$; clean and dustfree	-	-	1500	V
C_{isol}	Capacitance from T2 to external heatsink	$f = 1\text{ MHz}$	-	12	-	pF

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-hs}$	Thermal resistance junction to heatsink	with heatsink compound	-	-	5.0	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	without heatsink compound in free air	-	55	7.0	K/W

STATIC CHARACTERISTICS

$T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage (per diode)	$I_F = 8\text{ A}$; $T_j = 150\text{ }^{\circ}\text{C}$	-	0.72	0.85	V
I_R	Reverse current (per diode)	$I_F = 20\text{ A}$ $V_R = V_{RWM}$; $T_j = 100\text{ }^{\circ}\text{C}$ $V_R = V_{RWM}$	-	1.00	1.15	V
			-	0.2	0.6	mA
			-	6	30	μA

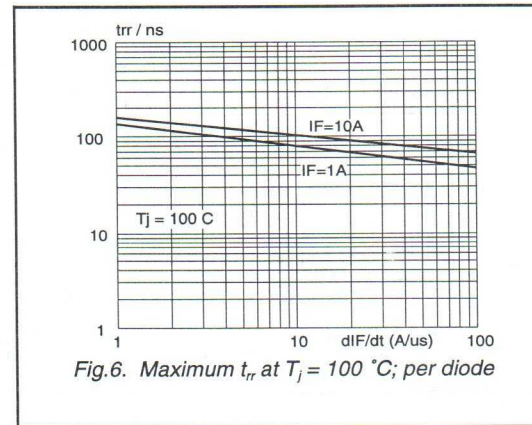
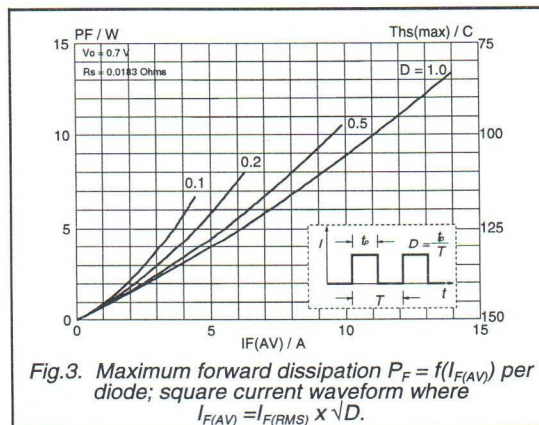
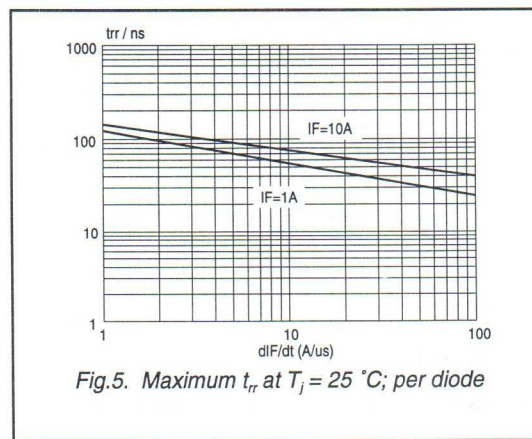
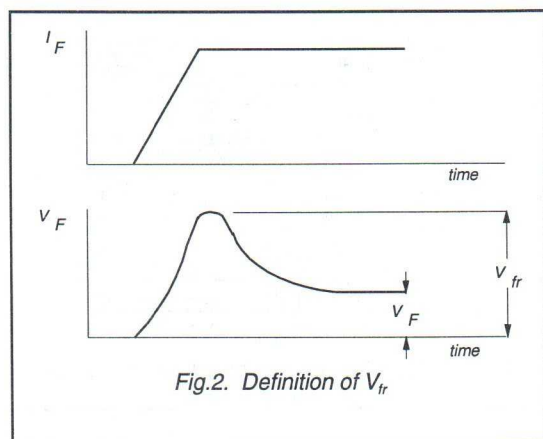
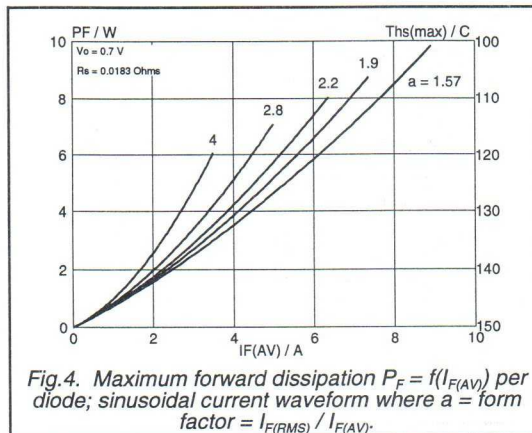
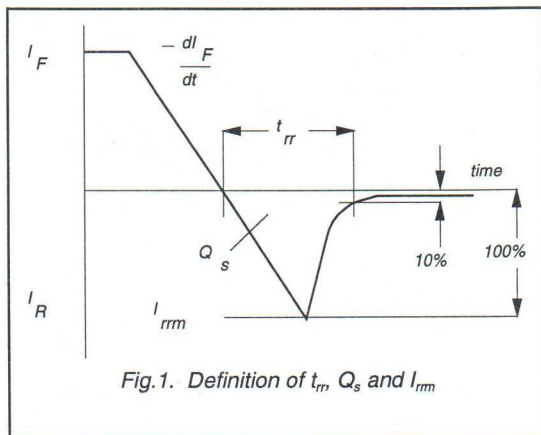
DYNAMIC CHARACTERISTICS

$T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Q_s	Reverse recovery charge (per diode)	$I_F = 2\text{ A}$; $V_R \geq 30\text{ V}$; $-di_F/dt = 20\text{ A}/\mu\text{s}$	-	8	12.5	nC
t_{rr}	Reverse recovery time (per diode)	$I_F = 1\text{ A}$; $V_R \geq 30\text{ V}$; $-di_F/dt = 100\text{ A}/\mu\text{s}$	-	20	25	ns
I_{rm}	Peak reverse recovery current (per diode)	$I_F = 1\text{ A}$; $V_R \geq 30\text{ V}$; $-di_F/dt = 50\text{ A}/\mu\text{s}$; $T_j = 100\text{ }^{\circ}\text{C}$	-	1.5	2	A
V_{tr}	Forward recovery voltage (per diode)	$I_F = 1\text{ A}$; $di_F/dt = 10\text{ A}/\mu\text{s}$	-	0.9	-	V

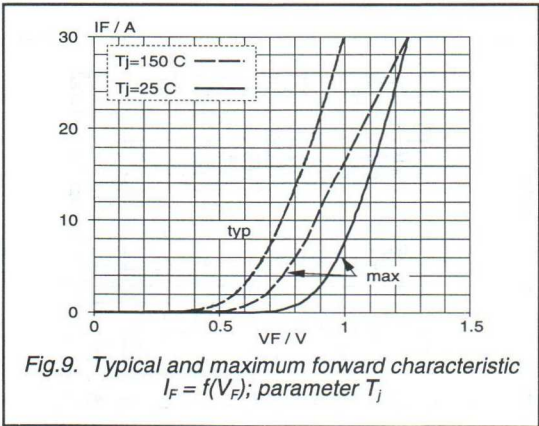
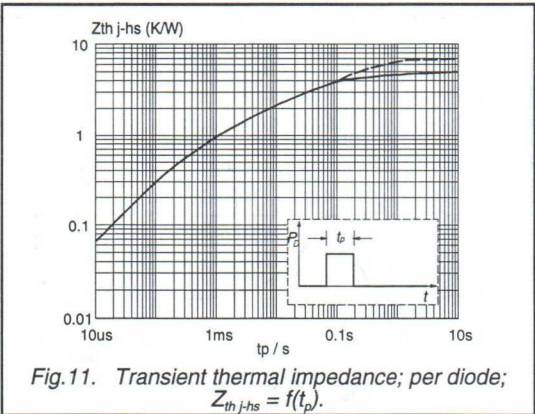
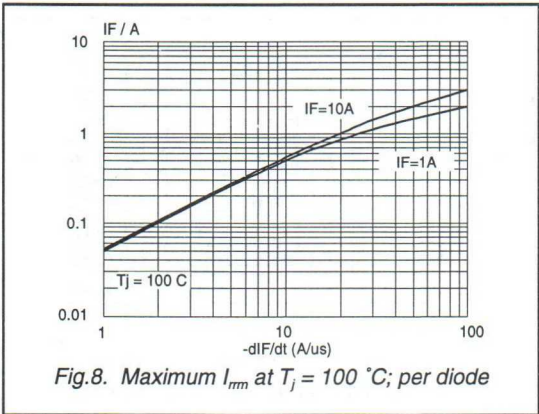
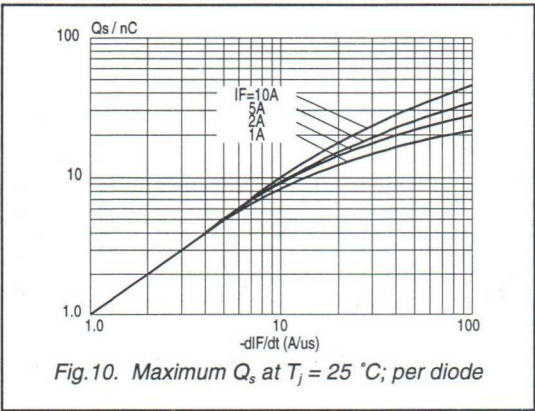
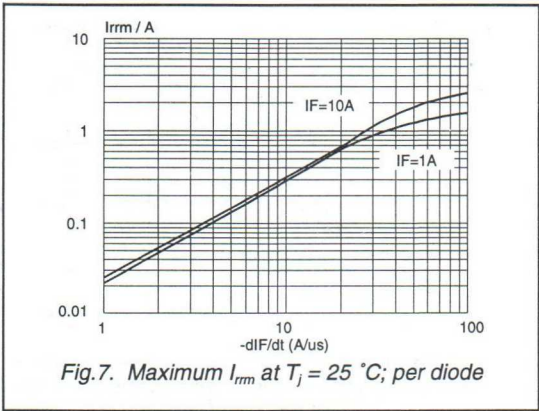
Rectifier diodes ultrafast

BYV32F series



Rectifier diodes ultrafast

BYV32F series



Dual rectifier diodes
ultrafast

BYV34 series

GENERAL DESCRIPTION

Glass passivated, high efficiency rectifier diodes in a plastic envelope featuring low forward voltage drop, ultra fast reverse recovery times and soft recovery characteristic. They are intended for use in switched mode power supplies and high frequency circuits in general, where both low conduction losses and low switching losses are essential.

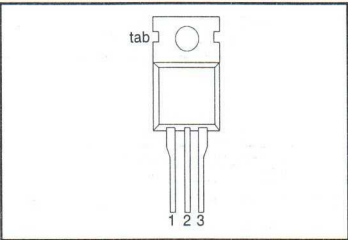
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
V_{RRM}	BYV34- Repetitive peak reverse voltage	300	400	500	V
		300	400	500	
V_F	Forward voltage	1.05	1.05	1.05	V
$I_{O(AV)}$	Average output current (both diodes conducting)	20	20	20	A
t_{rr}	Reverse recovery time	60	60	60	ns

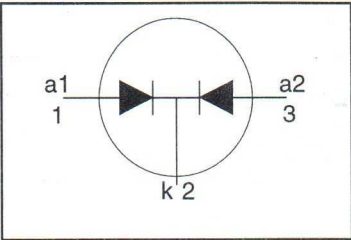
PINNING - TO220AB

PIN	DESCRIPTION
1	anode 1 (a)
2	cathode (k)
3	anode 2 (a)
tab	cathode (k)

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{RRM}	Repetitive peak reverse voltage	$T_{mb} \leq 138^{\circ}\text{C}$	-	-300	-400	-500	V
V_{RWM}	Crest working reverse voltage		-	300	400	500	V
V_R	Continuous reverse voltage		-	300	400	500	V
$I_{O(AV)}$	Average output current (both diodes conducting) ¹	square wave; $\delta = 0.5$;	-	20			A
		$T_{mb} \leq 115^{\circ}\text{C}$	-	18			A
		sinusoidal; $a = 1.57$;	-	28			A
		$T_{mb} \leq 116^{\circ}\text{C}$	-	20			A
$I_{O(RMS)}$	RMS output current (both diodes conducting)	$t = 25\text{ }\mu\text{s}$; $\delta = 0.5$;	-	120			A
I_{FRM}	Repetitive peak forward current per diode	$T_{mb} \leq 115^{\circ}\text{C}$	-	132			A
I_{FSM}	Non-repetitive peak forward current per diode.	$t = 10\text{ ms}$	-	72			A
		$t = 8.3\text{ ms}$	-	150			A
		sinusoidal; with reapplied	-	150			A
I^2t	I^2t for fusing	$V_{RRM(max)}$	-	72			A ² s
T_{stg}	Storage temperature	$t = 10\text{ ms}$	-40	150			$^{\circ}\text{C}$
T_j	Operating junction temperature		-	150			$^{\circ}\text{C}$

1 Neglecting switching and reverse current losses

Dual rectifier diodes
ultrafast

BYV34 series

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-hs}$	Thermal resistance junction to heatsink	per diode	-	-	2.4	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	both diodes conducting in free air.	-	-	1.6	K/W
			-	60	-	K/W

STATIC CHARACTERISTICS

 $T_j = 25\ ^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage (per diode)	$I_F = 10\ \text{A}$; $T_j = 150\ ^\circ\text{C}$	-	0.87	1.05	V
I_R	Reverse current (per diode)	$I_F = 20\ \text{A}$	-	1.10	1.35	V
		$V_R = V_{RRM}$	-	10	50	μA
		$V_R = V_{RRM}$; $T_j = 100\ ^\circ\text{C}$	-	0.2	0.6	mA

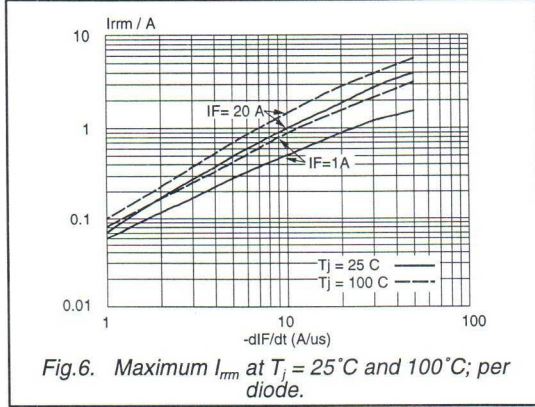
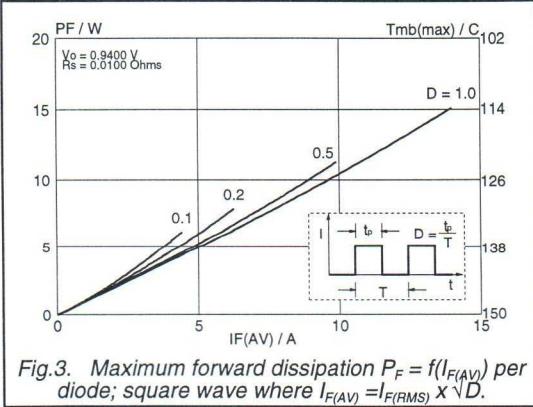
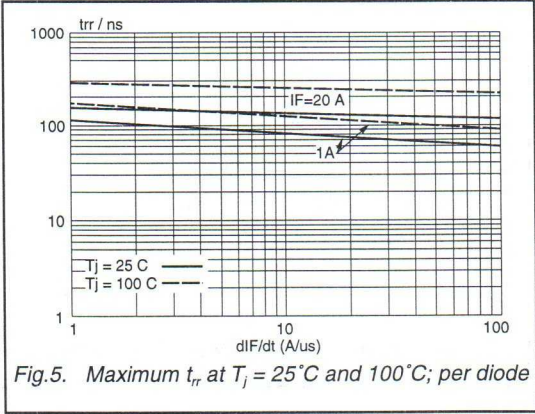
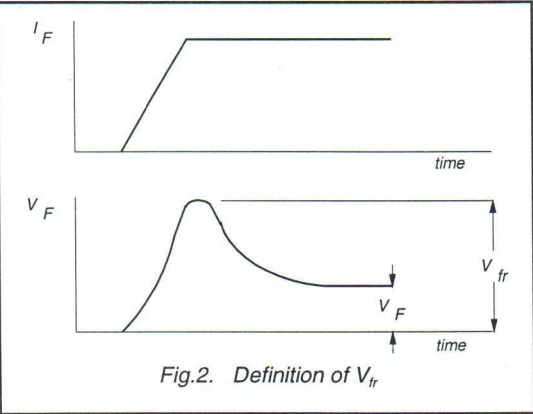
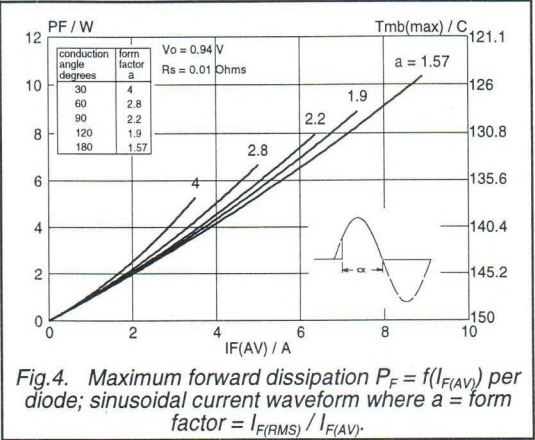
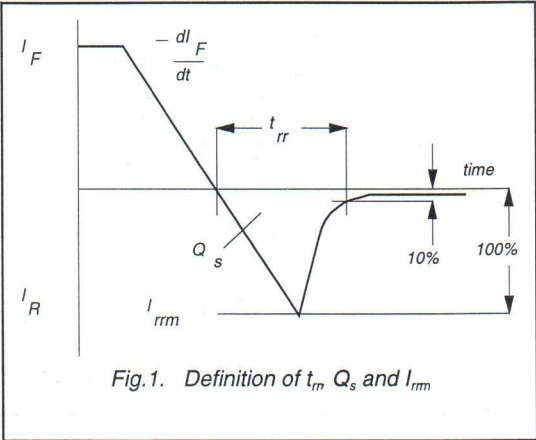
DYNAMIC CHARACTERISTICS

 $T_j = 25\ ^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Q_s	Reverse recovery charge (per diode)	$I_F = 2\ \text{A}$ to $V_R \geq 30\ \text{V}$; $di_F/dt = 20\ \text{A}/\mu\text{s}$	-	50	60	nC
t_{rr}	Reverse recovery time (per diode)	$I_F = 1\ \text{A}$ to $V_R \geq 30\ \text{V}$; $di_F/dt = 100\ \text{A}/\mu\text{s}$	-	50	60	ns
I_{rm}	Peak reverse recovery current (per diode)	$I_F = 10\ \text{A}$ to $V_R \geq 30\ \text{V}$; $di_F/dt = 50\ \text{A}/\mu\text{s}$; $T_j = 100\ ^\circ\text{C}$	-	4.0	5.0	A
V_{fr}	Forward recovery voltage (per diode)	$I_F = 10\ \text{A}$; $di_F/dt = 10\ \text{A}/\mu\text{s}$	-	2.5	-	V

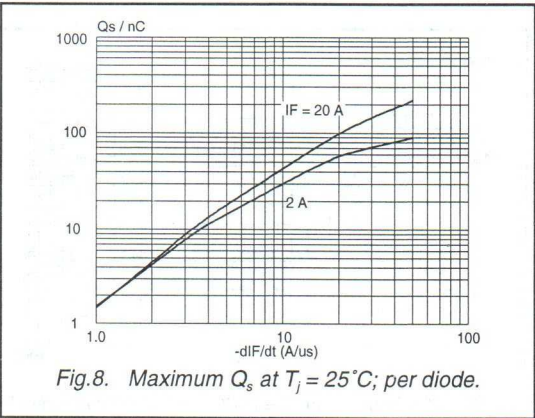
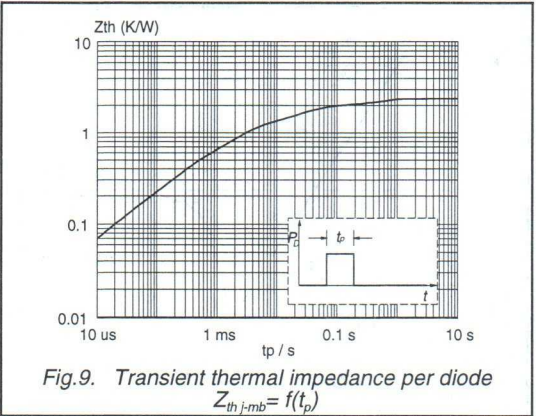
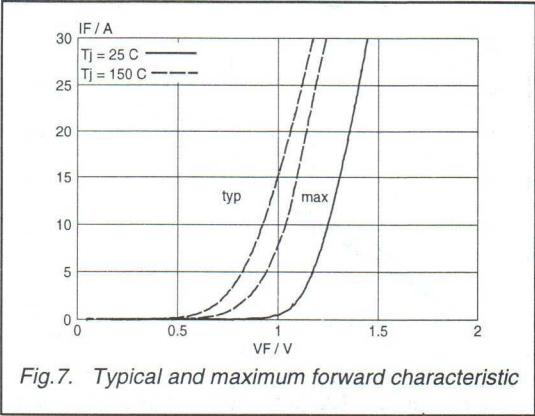
Dual rectifier diodes
ultrafast

BYV34 series



Dual rectifier diodes
ultrafast

BYV34 series



Rectifier diodes
ultrafast

BYV40 series

GENERAL DESCRIPTION

Glass passivated high efficiency dual rectifier diodes in a plastic envelope suitable for surface mounting, featuring low forward voltage drop, ultra-fast recovery times and soft recovery characteristic. They are intended for use in switched mode power supplies and high frequency circuits in general where low conduction and switching losses are essential.

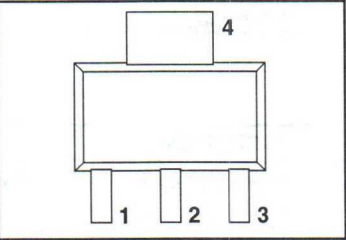
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
V_{RRM}	BYV40- Repetitive peak reverse voltage	100 100	150 150	200 200	V
V_F	Forward voltage	0.7	0.7	0.7	V
$I_{O(AV)}$	Output current (both diodes conducting)	1.5	1.5	1.5	A
t_{rr}	Reverse recovery time	25	25	25	ns

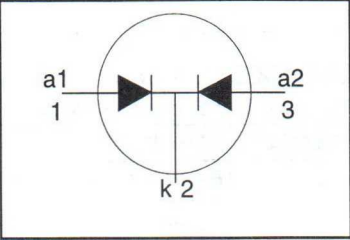
PINNING - SOT223

PIN	DESCRIPTION
1	anode 1 (a)
2	cathode (k)
3	anode 2 (a)
4	cathode (k)

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{RRM}	Repetitive peak reverse voltage		-	-100	-150	-200	V
V_{RWM}	Crest working reverse voltage		-	100	150	200	V
V_R	Continuous reverse voltage		-	100	150	200	V
$I_{O(AV)}$	Output current (both diodes conducting) ²	square wave; $\delta = 0.5$; $T_{sp} \leq 132^\circ\text{C}$	-	1.5			A
		sinusoidal; $a = 1.57$; $T_{sp} \leq 134^\circ\text{C}$	-	1.35			A
$I_{O(RMS)}$	RMS forward current		-	2.1			A
I_{FRM}	Repetitive peak forward current per diode	$t = 25\text{ }\mu\text{s}$; $\delta = 0.5$; $T_{sp} \leq 132^\circ\text{C}$	-	1.5			A
I_{FSM}	Non-repetitive peak forward current per diode	$t_p = 10\text{ ms}$ $t_p = 8.3\text{ ms}$ sinusoidal; $T_j = 150^\circ\text{C}$ prior to surge; with reapplied	-	6			A
		$V_{RWM(max)}$ $t = 10\text{ ms}$	-	6.6			A
I^2t	I^2t for fusing		-	0.18			A ² s
T_{stg}	Storage temperature		-65	150			°C
T_j	Operating junction temperature		-	150			°C

1 $T_{sp} \leq 120^\circ\text{C}$ for thermal stability.

2 Neglecting switching and reverse current losses

Rectifier diodes
ultrafast

BYV40 series

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-sp}$	Thermal resistance junction to solder point	one or both diodes conducting	-	-	15	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	pcb mounted; minimum footprint	-	156	-	K/W
		pcb mounted; pad area as in fig:9	-	70	-	K/W

STATIC CHARACTERISTICS

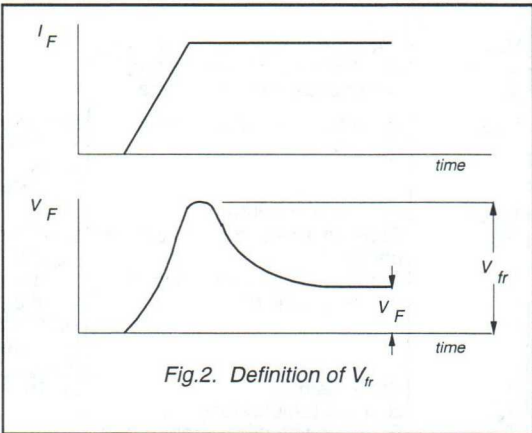
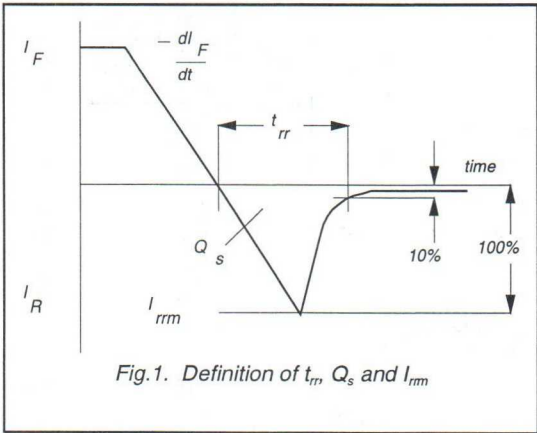
$T_j = 25\ ^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage (per diode)	$I_F = 0.5\ \text{A}; T_j = 150\ ^\circ\text{C}$	-	0.50	0.7	V
		$I_F = 1.5\ \text{A}$	-	0.82	1.0	V
I_R	Reverse current (per diode)	$V_R = V_{RWM}; T_j = 100\ ^\circ\text{C}$	-	100	300	μA
		$V_R = V_{RWM}$	-	5	10	μA

DYNAMIC CHARACTERISTICS

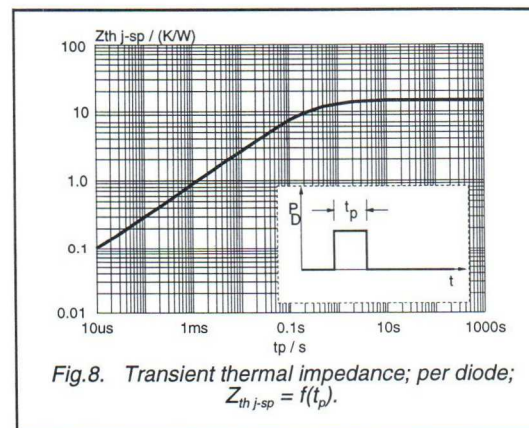
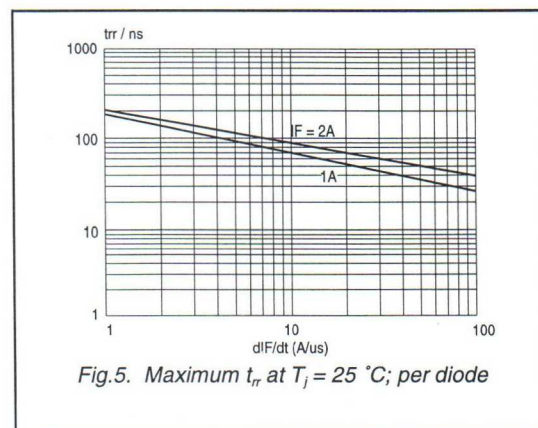
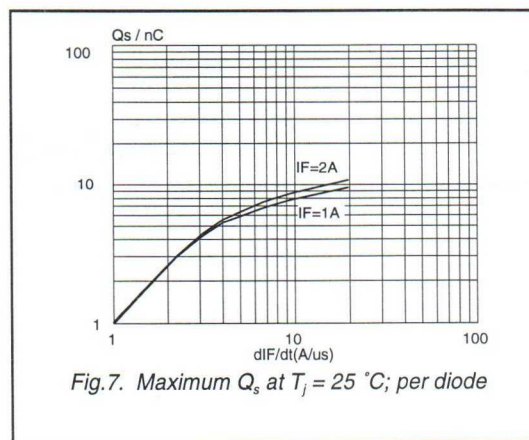
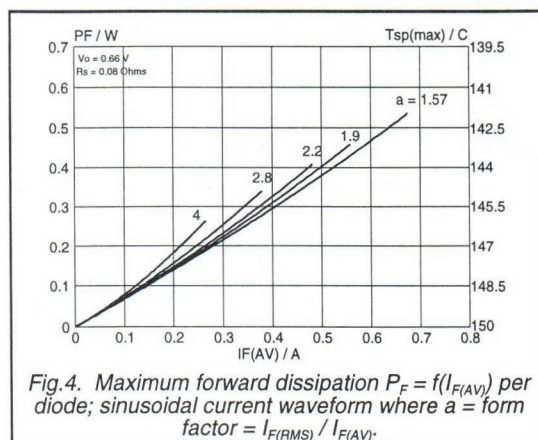
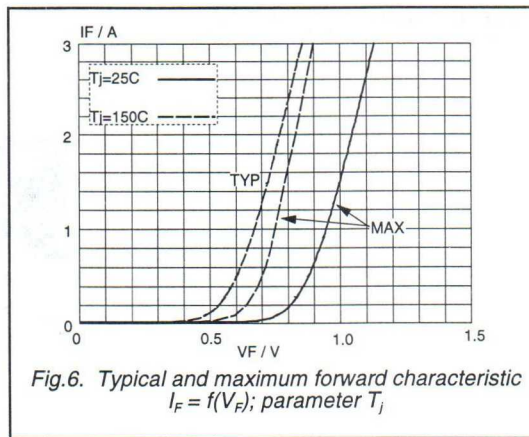
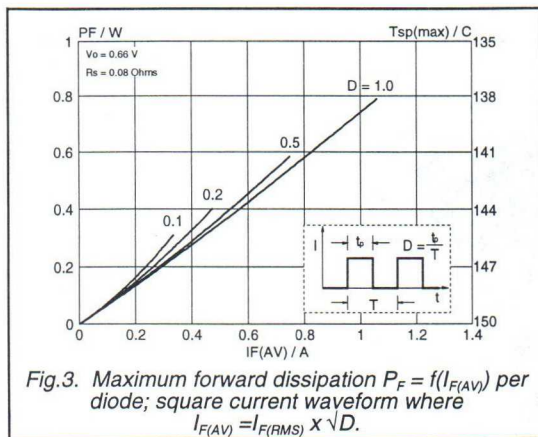
$T_j = 25\ ^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Q_s	Reverse recovery charge (per diode)	$I_F = 2\ \text{A}; V_R \geq 30\ \text{V}; -di_F/dt = 20\ \text{A}/\mu\text{s}$	-	-	11	nC
t_{rr}	Reverse recovery time (per diode)	$I_F = 1\ \text{A}; V_R \geq 30\ \text{V}; -di_F/dt = 100\ \text{A}/\mu\text{s}$	-	-	25	ns
V_{fr}	Forward recovery voltage (per diode)	$I_F = 2\ \text{A}; di_F/dt = 20\ \text{A}/\mu\text{s}$	-	3	-	V



Rectifier diodes
ultrafast

BYV40 series



Rectifier diodes
ultrafast

BYV40 series

PRINTED CIRCUIT BOARD

Dimensions in mm.

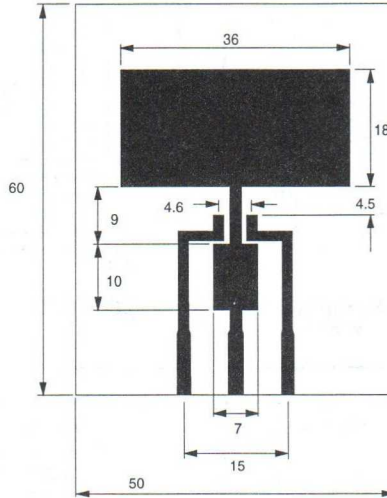


Fig.9. PCB for thermal resistance and power rating for SOT223.
PCB: FR4 epoxy glass (1.6 mm thick), copper laminate (35 μ m thick).

Rectifier diodes ultrafast, rugged

BYV40E series

GENERAL DESCRIPTION

Glass passivated, rugged dual rectifier diodes in a plastic envelope suitable for surface mounting, featuring low forward voltage drop, ultra-fast recovery times and soft recovery characteristic. These devices can withstand reverse voltage transients and have guaranteed reverse surge and ESD capability.

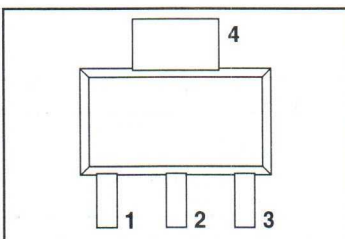
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
V_{RRM}	BYV40E- Repetitive peak reverse voltage	100 100	150 150	200 200	V
V_F	Forward voltage	0.7	0.7	0.7	V
$I_{O(AV)}$	Output current (both diodes conducting)	1.5	1.5	1.5	A
t_{rr}	Reverse recovery time	25	25	25	ns
I_{RRM}	Repetitive peak reverse current per diode	0.1	0.1	0.1	A

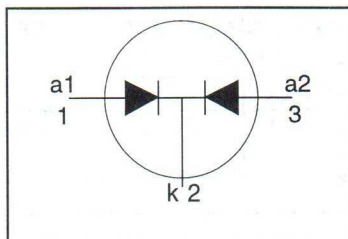
PINNING - SOT223

PIN	DESCRIPTION
1	anode 1 (a)
2	cathode (k)
3	anode 2 (a)
4	cathode (k)

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{RRM}	Repetitive peak reverse voltage		-	-100	-150	-200	V
V_{RWM}	Crest working reverse voltage		-	100	150	200	V
V_R	Continuous reverse voltage ¹		-	100	150	200	V
$I_{O(AV)}$	Output current (both diodes conducting) ²	square wave; $\delta = 0.5$; $T_{sp} \leq 132^\circ\text{C}$	-	1.5			A
		sinusoidal; $a = 1.57$; $T_{sp} \leq 134^\circ\text{C}$	-	1.35			A
$I_{O(RMS)}$	RMS forward current		-	2.1			A
I_{FRM}	Repetitive peak forward current per diode	$t = 25\ \mu\text{s}$; $\delta = 0.5$; $T_{sp} \leq 132^\circ\text{C}$	-	1.5			A
I_{FSM}	Non-repetitive peak forward current per diode	$t_p = 10\ \text{ms}$ $t_p = 8.3\ \text{ms}$ sinusoidal; $T_j = 150^\circ\text{C}$ prior to surge; with reapplied	-	6			A
		$V_{RWM(max)}$ $t = 10\ \text{ms}$	-	6.6			A
I^2t	I^2t for fusing		-	0.18			A ² s
I_{RRM}	Repetitive peak reverse current per diode	$t_p = 2\ \mu\text{s}$; $\delta = 0.001$	-	0.1			A
I_{RSM}	Non-repetitive peak reverse current per diode	$t_p = 100\ \mu\text{s}$	-	0.1			A
T_{stg}	Storage temperature		-65	150			$^\circ\text{C}$
T_j	Operating junction temperature		-	150			$^\circ\text{C}$

1 $T_{sp} \leq 120^\circ\text{C}$ for thermal stability.

2 Neglecting switching and reverse current losses

Rectifier diodes ultrafast, rugged

BYV40E series

ESD LIMITING VALUE

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_C	Electrostatic discharge capacitor voltage	Human body model; $C = 250 \text{ pF}$; $R = 1.5 \text{ k}\Omega$	-	8	kV

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th \text{ j-sp}}$	Thermal resistance junction to solder point	one or both diodes conducting	-	-	15	K/W
$R_{th \text{ j-a}}$	Thermal resistance junction to ambient	pcb mounted; minimum footprint	-	156	-	K/W
		pcb mounted; pad area as in fig:11	-	70	-	K/W

STATIC CHARACTERISTICS

$T_J = 25^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage (per diode)	$I_F = 0.5 \text{ A}$; $T_J = 150^\circ\text{C}$	-	0.50	0.7	V
		$I_F = 1.5 \text{ A}$	-	0.82	1.0	V
I_R	Reverse current (per diode)	$V_R = V_{RWM}$; $T_J = 100^\circ\text{C}$	-	100	300	μA
		$V_R = V_{RWM}$	-	5	10	μA

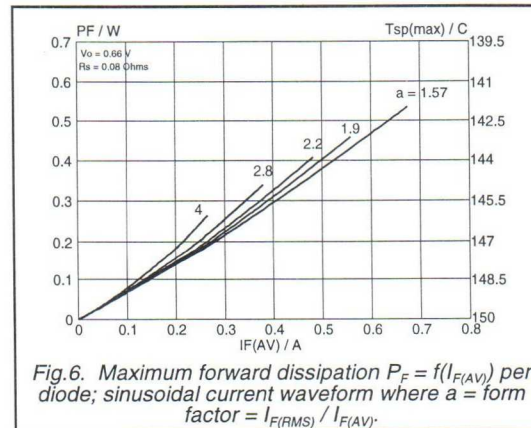
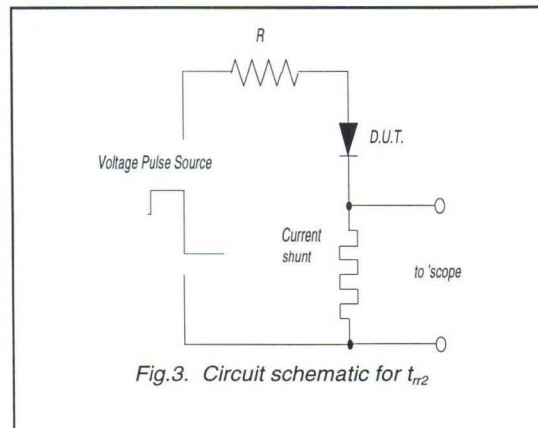
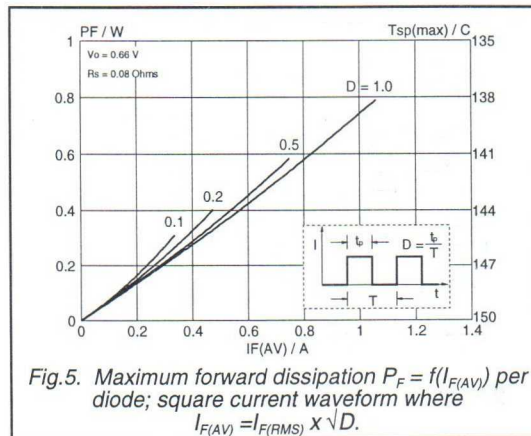
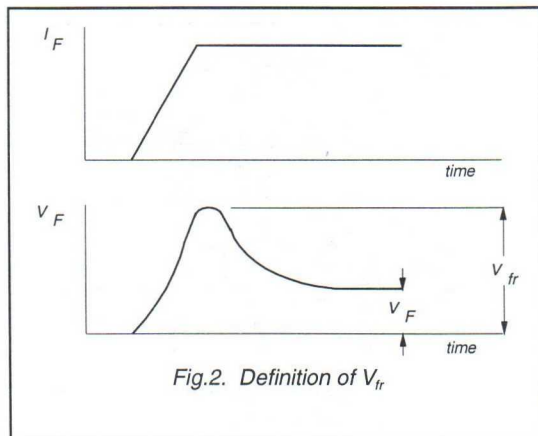
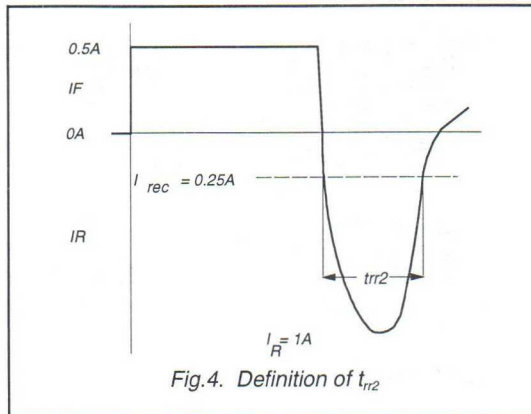
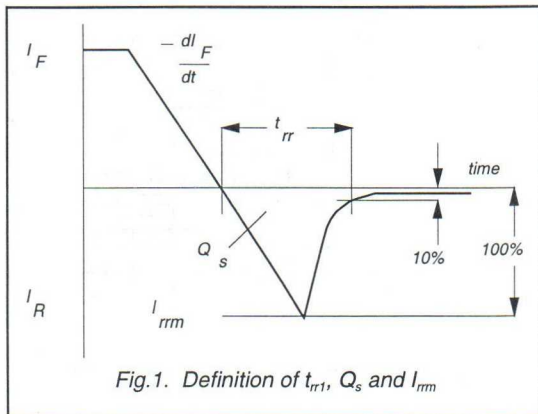
DYNAMIC CHARACTERISTICS

$T_J = 25^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Q_s	Reverse recovery charge (per diode)	$I_F = 2 \text{ A}$; $V_R \geq 30 \text{ V}$; $-di_F/dt = 20 \text{ A}/\mu\text{s}$	-	-	11	nC
t_{rr1}	Reverse recovery time (per diode)	$I_F = 1 \text{ A}$; $V_R \geq 30 \text{ V}$; $-di_F/dt = 100 \text{ A}/\mu\text{s}$	-	-	25	ns
t_{rr2}	Reverse recovery time (per diode)	$I_F = 0.5 \text{ A}$ to $I_R = 1 \text{ A}$; $I_{rec} = 0.25 \text{ A}$	-	10	20	ns
V_{fr}	Forward recovery voltage (per diode)	$I_F = 2 \text{ A}$; $di_F/dt = 20 \text{ A}/\mu\text{s}$	-	3	-	V

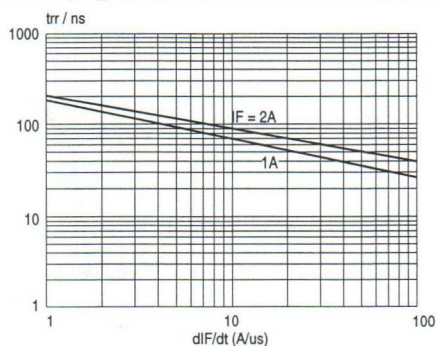
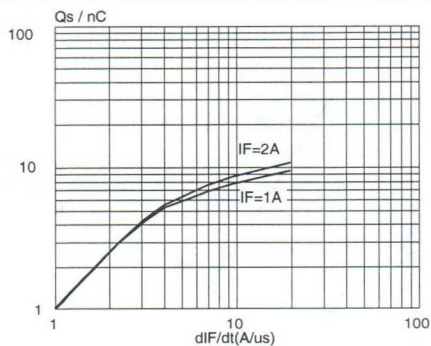
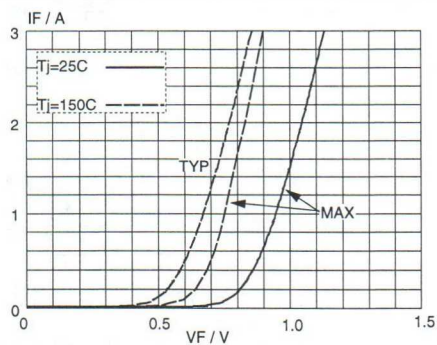
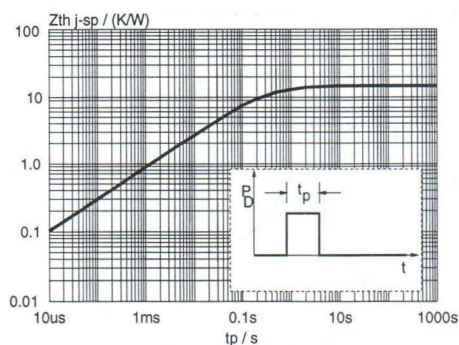
Rectifier diodes ultrafast, rugged

BYV40E series



Rectifier diodes
ultrafast, rugged

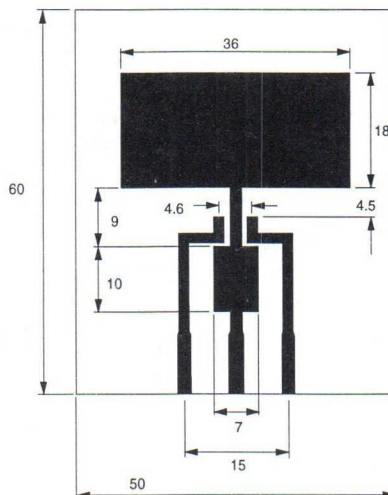
BYV40E series

Fig. 7. Maximum t_{rr} at $T_j = 25\text{ }^{\circ}\text{C}$; per diodeFig. 9. Maximum Q_s at $T_j = 25\text{ }^{\circ}\text{C}$; per diodeFig. 8. Typical and maximum forward characteristic $I_F = f(V_F)$; parameter T_j Fig. 10. Transient thermal impedance; per diode;
 $Z_{th\ j-sp} = f(t_p)$.

Rectifier diodes
ultrafast, rugged

BYV40E series

PRINTED CIRCUIT BOARD

*Dimensions in mm.*

*Fig.11. PCB for thermal resistance and power rating for SOT223.
PCB: FR4 epoxy glass (1.6 mm thick), copper laminate (35 μ m thick).*

Rectifier diodes ultrafast

BYV42 series

GENERAL DESCRIPTION

Glass passivated high efficiency dual rectifier diodes in a plastic envelope, featuring low forward voltage drop, ultra-fast recovery times and soft recovery characteristic. They are intended for use in switched mode power supplies and high frequency circuits in general where low conduction and switching losses are essential.

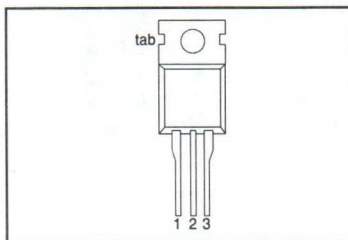
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
V_{RRM} V_F $I_{O(AV)}$ t_{rr}	BYV42- Repetitive peak reverse voltage	100 100	150 150	200 200	V
	Forward voltage	0.85	0.85	0.85	V
	Output current (both diodes conducting)	30	30	30	A
	Reverse recovery time	28	28	28	ns

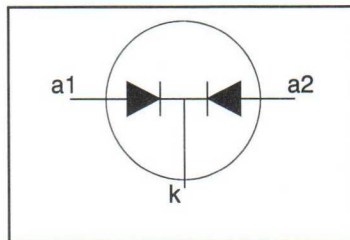
PINNING - TO220AB

PIN	DESCRIPTION
1	anode 1 (a)
2	cathode (k)
3	anode 2 (a)
tab	cathode (k)

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{RRM}	Repetitive peak reverse voltage		-	-100 100	-150 150	-200 200	V
V_{RWM}	Crest working reverse voltage		-	100	150	200	V
V_R	Continuous reverse voltage ¹		-	100	150	200	V
$I_{O(AV)}$	Output current (both diodes conducting) ²	square wave; $\delta = 0.5$; $T_{mb} \leq 108^\circ\text{C}$ sinusoidal; $a = 1.57$; $T_{mb} \leq 111^\circ\text{C}$	-	30			A
$I_{O(RMS)}$	RMS forward current		-	43			A
I_{FRM}	Repetitive peak forward current per diode	$t = 25 \mu\text{s}$; $\delta = 0.5$; $T_{mb} \leq 108^\circ\text{C}$	-	30			A
I_{FSM}	Non-repetitive peak forward current per diode	$t = 10 \text{ ms}$ $t = 8.3 \text{ ms}$ sinusoidal; with reapplied	-	150			A
I^2t	I^2t for fusing	$V_{RWM(max)}$ $t = 10 \text{ ms}$	-	112			A ² s
T_{stg}	Storage temperature		-40	150			°C
T_j	Operating junction temperature		-	150			°C

1 $T_{mb} \leq 144^\circ\text{C}$ for thermal stability.

2 Neglecting switching and reverse current losses.

For output currents in excess of 20 A, connection should be made to the exposed metal mounting base.

Rectifier diodes
ultrafast

BYV42 series

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-mb}$	Thermal resistance junction to mounting base	per diode	-	-	2.4	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	both diodes conducting in free air	-	-	1.4	K/W
			-	60	-	K/W

STATIC CHARACTERISTICS

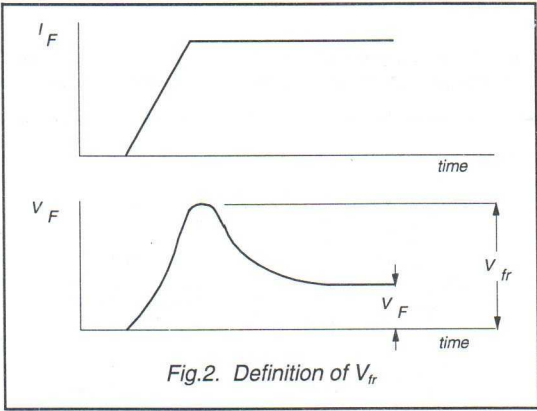
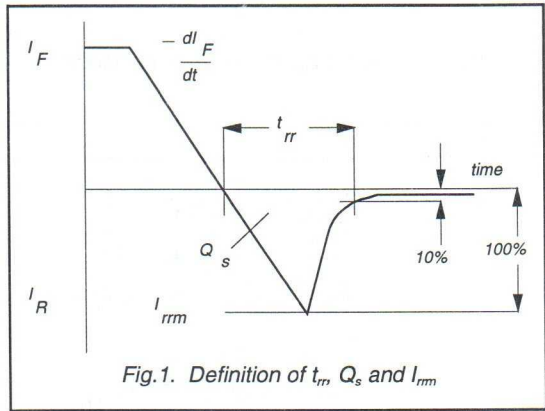
$T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage (per diode)	$I_F = 15\text{ A}$; $T_j = 150\text{ }^{\circ}\text{C}$	-	0.78	0.85	V
		$I_F = 15\text{ A}$	-	0.95	1.05	V
		$I_F = 30\text{ A}$	-	1.00	1.20	V
I_R	Reverse current (per diode)	$V_R = V_{RWM}$; $T_j = 100\text{ }^{\circ}\text{C}$	-	0.5	1	mA
		$V_R = V_{RWM}$	-	10	100	μA

DYNAMIC CHARACTERISTICS

$T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Q_s	Reverse recovery charge (per diode)	$I_F = 2\text{ A}$; $V_R \geq 30\text{ V}$; $-dI_F/dt = 20\text{ A}/\mu\text{s}$	-	6	15	nC
t_{rr}	Reverse recovery time (per diode)	$I_F = 1\text{ A}$; $V_R \geq 30\text{ V}$; $-dI_F/dt = 100\text{ A}/\mu\text{s}$	-	20	28	ns
I_{rm}	Peak reverse recovery current (per diode)	$I_F = 1\text{ A}$; $V_R \geq 30\text{ V}$; $-dI_F/dt = 50\text{ A}/\mu\text{s}$; $T_j = 100\text{ }^{\circ}\text{C}$	-	2.0	2.4	A
V_{fr}	Forward recovery voltage (per diode)	$I_F = 1\text{ A}$; $dI_F/dt = 10\text{ A}/\mu\text{s}$	-	1	-	V



Rectifier diodes
ultrafast

BYV42 series

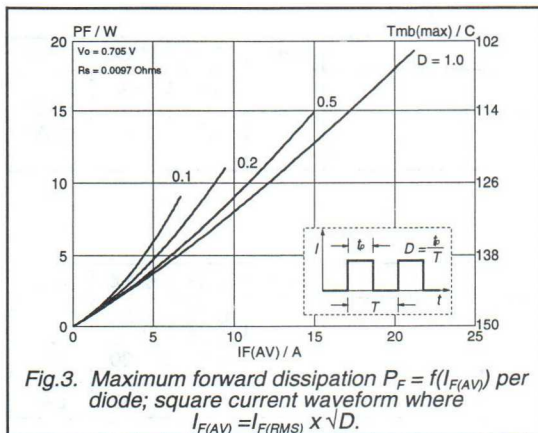


Fig.3. Maximum forward dissipation $P_F = f(I_F(AV))$ per diode; square current waveform where $I_F(AV) = I_F(RMS) \times \sqrt{D}$.

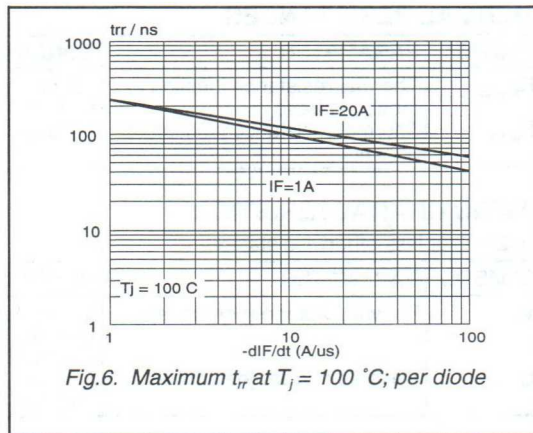


Fig.6. Maximum t_{rr} at $T_j = 100$ °C; per diode

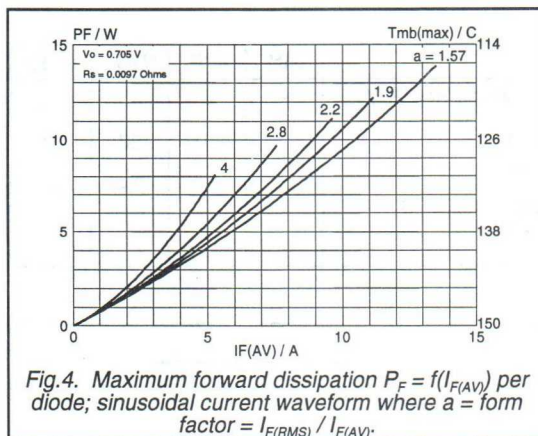


Fig.4. Maximum forward dissipation $P_F = f(I_F(AV))$ per diode; sinusoidal current waveform where $a =$ form factor $= I_F(RMS) / I_F(AV)$.

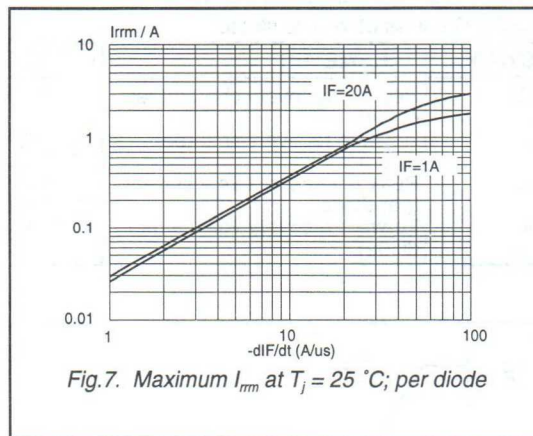


Fig.7. Maximum I_{rms} at $T_j = 25$ °C; per diode

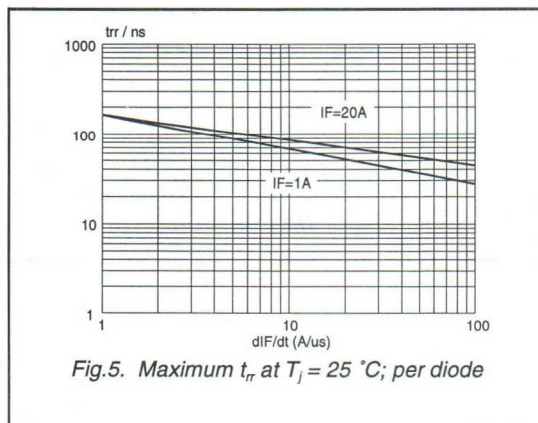


Fig.5. Maximum t_{rr} at $T_j = 25$ °C; per diode

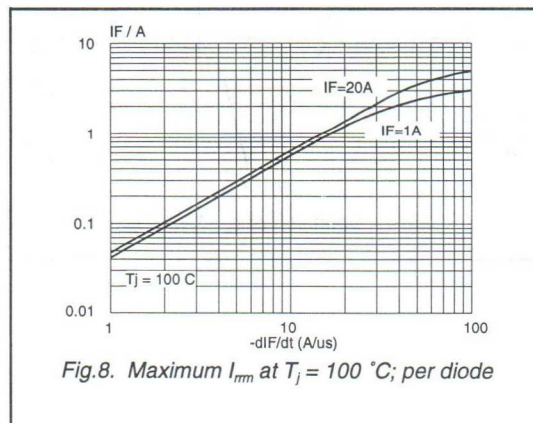


Fig.8. Maximum I_{rms} at $T_j = 100$ °C; per diode

Rectifier diodes
ultrafast

BYV42 series

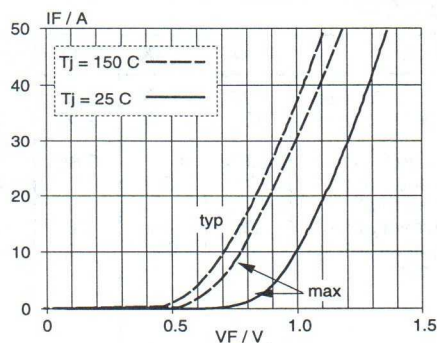


Fig.9. Typical and maximum forward characteristic
 $I_F = f(V_F)$; parameter T_J

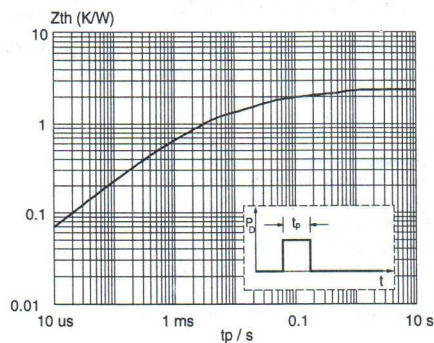


Fig.11. Transient thermal impedance; per diode;
 $Z_{th j-mb} = f(t_p)$.

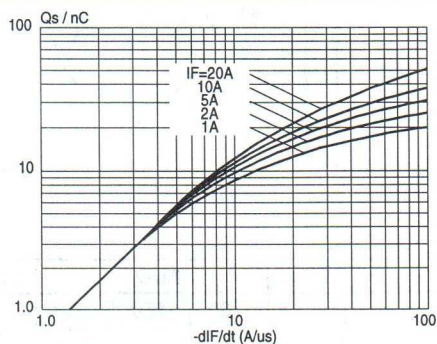


Fig.10. Maximum Q_s at $T_J = 25\text{ }^{\circ}\text{C}$; per diode

Rectifier diodes ultrafast, rugged

BYV42E series

GENERAL DESCRIPTION

Glass passivated high efficiency rugged dual rectifier diodes in a plastic envelope, featuring low forward voltage drop, ultra-fast recovery times and soft recovery characteristic. These devices can withstand reverse voltage transients and have guaranteed reverse surge and ESD capability. They are intended for use in switched mode power supplies and high frequency circuits in general where low conduction and switching losses are essential.

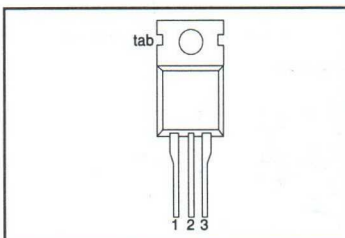
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
V_{RRM}	BYV42E- Repetitive peak reverse voltage	100 100	150 150	200 200	V
V_F	Forward voltage	0.85	0.85	0.85	V
$I_{O(AV)}$	Output current (both diodes conducting)	30	30	30	A
t_{rr}	Reverse recovery time	28	28	28	ns
I_{RRM}	Repetitive peak reverse current per diode	0.2	0.2	0.2	A

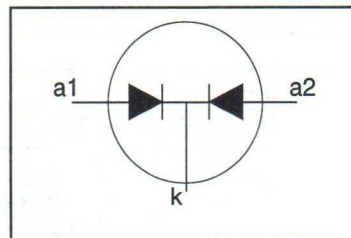
PINNING - TO220AB

PIN	DESCRIPTION
1	anode 1 (a)
2	cathode (k)
3	anode 2 (a)
tab	cathode (k)

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{RRM}	Repetitive peak reverse voltage		-	-100	-150	-200	V
V_{RWM}	Crest working reverse voltage		-	100	150	200	V
V_R	Continuous reverse voltage ¹		-	100	150	200	V
$I_{O(AV)}$	Output current (both diodes conducting) ²	square wave $\delta = 0.5$; $T_{mb} \leq 108^\circ\text{C}$ sinusoidal $a = 1.57$; $T_{mb} \leq 111^\circ\text{C}$	-	30			A
$I_{O(RMS)}$	RMS forward current		-	43			A
I_{FRM}	Repetitive peak forward current per diode	$t = 25\ \mu\text{s}$; $\delta = 0.5$; $T_{mb} \leq 108^\circ\text{C}$	-	30			A
I_{FSM}	Non-repetitive peak forward current per diode	$t = 10\ \text{ms}$ $t = 8.3\ \text{ms}$ sinusoidal; with reapplied	-	150			A
I^2t	I^2t for fusing	$V_{RWM(max)}$ $t = 10\ \text{ms}$	-	112			A ² s
I_{RRM}	Repetitive peak reverse current per diode	$t_p = 2\ \mu\text{s}$; $\delta = 0.001$	-	0.2			A
I_{RSM}	Non-repetitive peak reverse current per diode	$t_p = 100\ \mu\text{s}$	-	0.2			A
T_{stg}	Storage temperature		-40	150			$^\circ\text{C}$
T_j	Operating junction temperature		-	150			$^\circ\text{C}$

1 $T_{mb} \leq 144^\circ\text{C}$ for thermal stability.

2 Neglecting switching and reverse current losses.

For output currents in excess of 20 A, connection should be made to the exposed metal mounting base.

Rectifier diodes ultrafast, rugged

BYV42E series

ESD LIMITING VALUE

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_C	Electrostatic discharge capacitor voltage	Human body model; $C = 250 \text{ pF}$; $R = 1.5 \text{ k}\Omega$	-	8	kV

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th \text{ j-mb}}$	Thermal resistance junction to mounting base	per diode	-	-	2.4	K/W
$R_{th \text{ j-a}}$	Thermal resistance junction to ambient	both diodes conducting in free air	-	60	1.4	K/W
					-	K/W

STATIC CHARACTERISTICS

 $T_j = 25^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage (per diode)	$I_F = 15 \text{ A}$; $T_j = 150^\circ\text{C}$	-	0.78	0.85	V
		$I_F = 15 \text{ A}$	-	0.95	1.05	V
		$I_F = 30 \text{ A}$	-	1.00	1.20	V
I_R	Reverse current (per diode)	$V_R = V_{RWM}$; $T_j = 100^\circ\text{C}$	-	0.5	1	mA
		$V_R = V_{RWM}$	-	10	100	μA

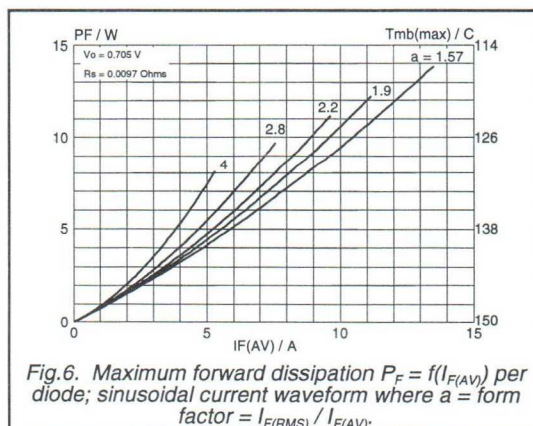
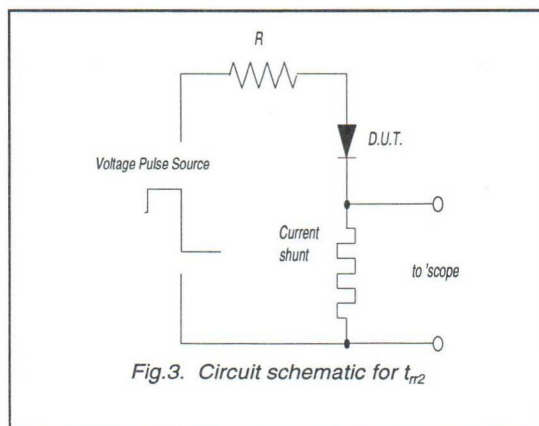
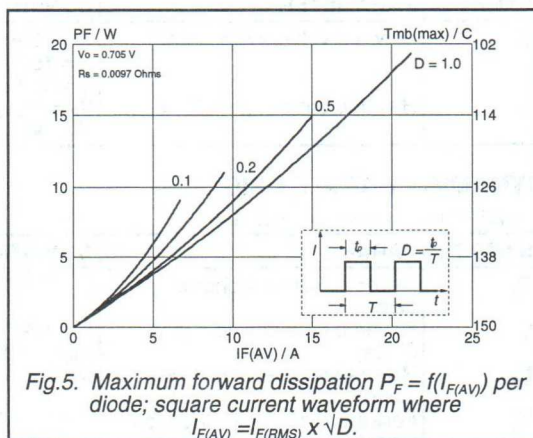
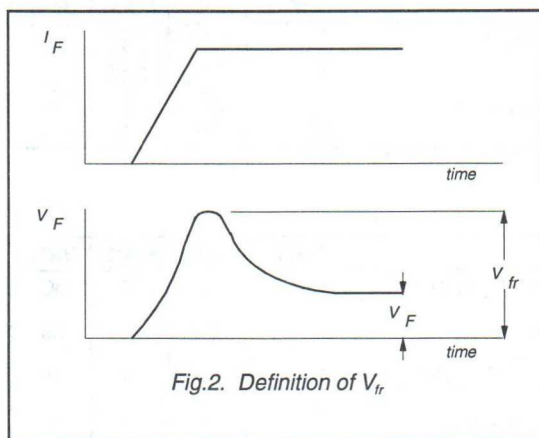
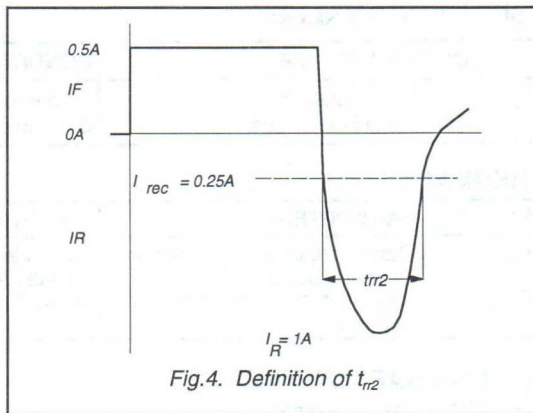
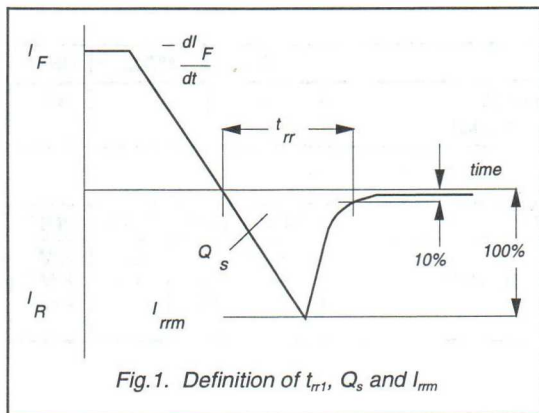
DYNAMIC CHARACTERISTICS

 $T_j = 25^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Q_s	Reverse recovery charge (per diode)	$I_F = 2 \text{ A}$; $V_R \geq 30 \text{ V}$; $-di_F/dt = 20 \text{ A}/\mu\text{s}$	-	6	15	nC
t_{rr1}	Reverse recovery time (per diode)	$I_F = 1 \text{ A}$; $V_R \geq 30 \text{ V}$; $-di_F/dt = 100 \text{ A}/\mu\text{s}$	-	20	28	ns
t_{rr2}	Reverse recovery time (per diode)	$I_F = 0.5 \text{ A}$ to $I_R = 1 \text{ A}$; $I_{rec} = 0.25 \text{ A}$	-	13	22	ns
V_{fr}	Forward recovery voltage (per diode)	$I_F = 1 \text{ A}$; $di_F/dt = 10 \text{ A}/\mu\text{s}$	-	1	-	V

Rectifier diodes ultrafast, rugged

BYV42E series



Rectifier diodes ultrafast, rugged

BYV42E series

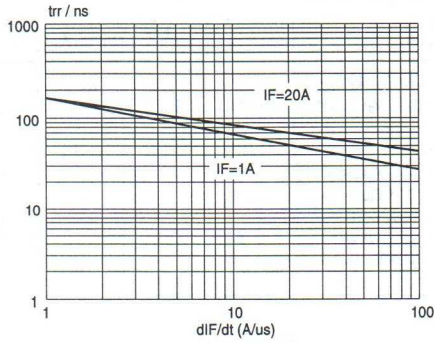


Fig. 7. Maximum t_{rr} at $T_j = 25\text{ }^{\circ}\text{C}$; per diode

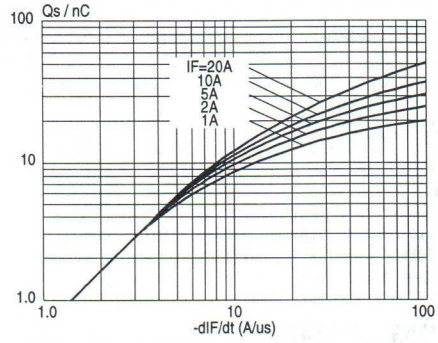


Fig. 10. Maximum Q_s at $T_j = 25\text{ }^{\circ}\text{C}$; per diode

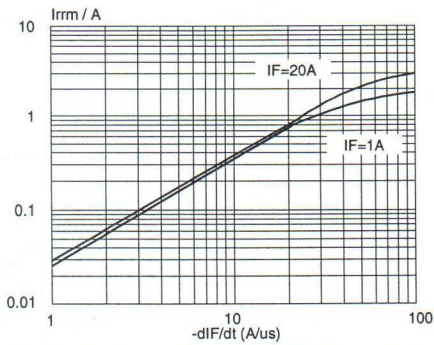


Fig. 8. Maximum I_{rrm} at $T_j = 25\text{ }^{\circ}\text{C}$; per diode

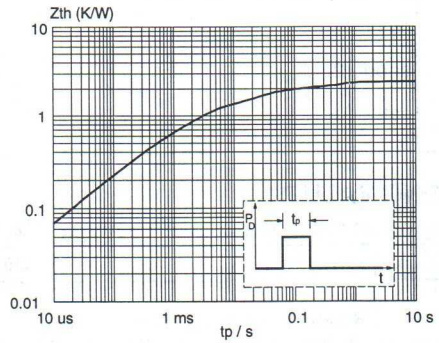


Fig. 11. Transient thermal impedance; per diode;
 $Z_{th-j-mb} = f(t_p)$.

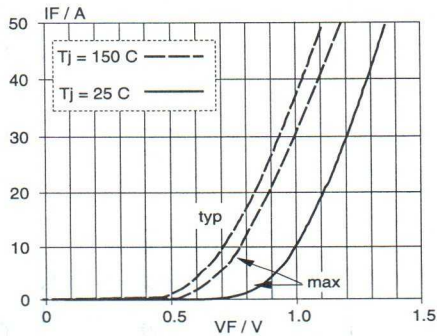


Fig. 9. Typical and maximum forward characteristic
 $I_F = f(V_F)$; parameter T_j

Rectifier diodes ultrafast, rugged

BYV42EB series

GENERAL DESCRIPTION

Glass passivated dual epitaxial rectifier diodes in a plastic envelope suitable for surface mounting, featuring low forward voltage drop, ultra-fast recovery times, soft recovery characteristic and guaranteed reverse surge and ESD capability. They are intended for use in switched mode power supplies and high frequency circuits in general where low conduction and switching losses are essential.

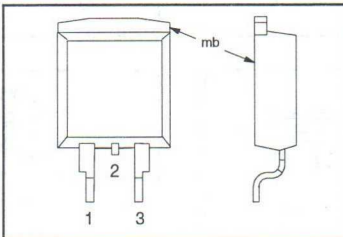
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
	BYV42EB-	100	150	200	
V_{RRM}	Repetitive peak reverse voltage	100	150	200	V
V_F	Forward voltage	0.85	0.85	0.85	V
$I_{O(AV)}$	Average output current (both diodes conducting)	30	30	30	A
t_{rr}	Reverse recovery time	28	28	28	ns
I_{RRM}	Repetitive peak reverse current per diode	0.2	0.2	0.2	A

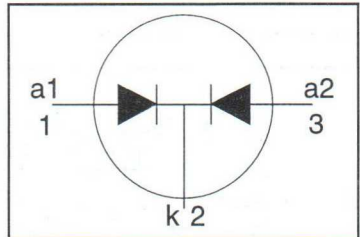
PINNING - SOT404

PIN	DESCRIPTION
1	anode 1
2	cathode
3	anode 2
mb	cathode

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{RRM}	Repetitive peak reverse voltage	$T_{mb} \leq 144^\circ\text{C}$	-	-100	-150	-200	V
V_{RWM}	Crest working reverse voltage		-	100	150	200	V
V_R	Continuous reverse voltage		-	100	150	200	V
$I_{O(AV)}$	Average output current (both diodes conducting) ¹	square wave $\delta = 0.5$; $T_{mb} \leq 108^\circ\text{C}$	-	30			A
		sinusoidal $a = 1.57$; $T_{mb} \leq 111^\circ\text{C}$	-	27			A
$I_{O(RMS)}$	RMS output current (both diodes conducting)		-	43			A
I_{FRM}	Repetitive peak forward current per diode	$t = 25\ \mu\text{s}$; $\delta = 0.5$; $T_{hs} \leq 108^\circ\text{C}$	-	30			A
I_{FSM}	Non-repetitive peak forward current per diode	$t = 10\ \text{ms}$ $t = 8.3\ \text{ms}$ sinusoidal; with reapplied	-	150			A
			-	160			A
I^2t	I^2t for fusing	$V_{RRM(max)}$ $t = 10\ \text{ms}$	-	112			A ² s
I_{RRM}	Repetitive peak reverse current per diode	$t_p = 2\ \mu\text{s}$; $\delta = 0.001$	-	0.2			A
I_{RSM}	Non-repetitive peak reverse current per diode	$t_p = 100\ \mu\text{s}$	-	0.2			A
T_{stg}	Storage temperature		-40	150			$^\circ\text{C}$
T_j	Operating junction temperature		-	150			$^\circ\text{C}$

¹ Neglecting switching and reverse current losses.

Rectifier diodes ultrafast, rugged

BYV42EB series

ESD LIMITING VALUE

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_C	Electrostatic discharge capacitor voltage	Human body model; $C = 250 \text{ pF}$; $R = 1.5 \text{ k}\Omega$	-	8	kV

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th \text{ j-mb}}$	Thermal resistance junction to mounting base	per diode	-	-	2.4	K/W
$R_{th \text{ j-a}}$	Thermal resistance junction to ambient	both diodes conducting minimum footprint, FR4 board	-	50	1.4	K/W
					-	K/W

STATIC CHARACTERISTICS

$T_j = 25 \text{ }^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage (per diode)	$I_F = 15 \text{ A}$; $T_j = 150 \text{ }^\circ\text{C}$	-	0.78	0.85	V
		$I_F = 15 \text{ A}$	-	0.95	1.05	V
		$I_F = 30 \text{ A}$	-	1.00	1.20	V
I_R	Reverse current (per diode)	$V_R = V_{RRM}$; $T_j = 100 \text{ }^\circ\text{C}$	-	0.5	1	mA
		$V_R = V_{RRM}$	-	10	100	μA

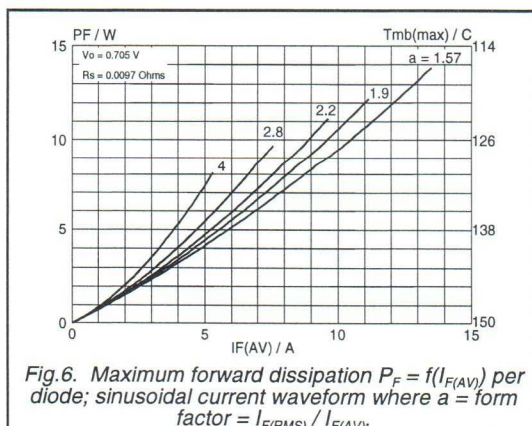
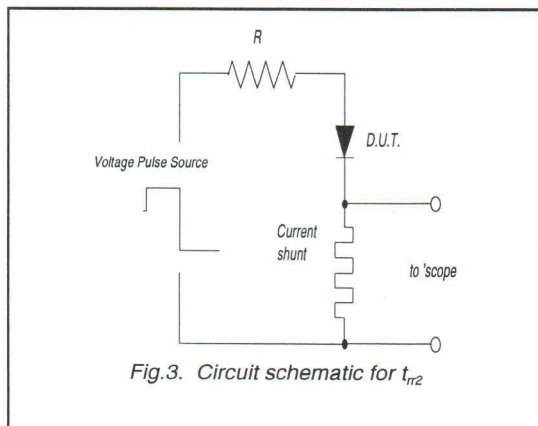
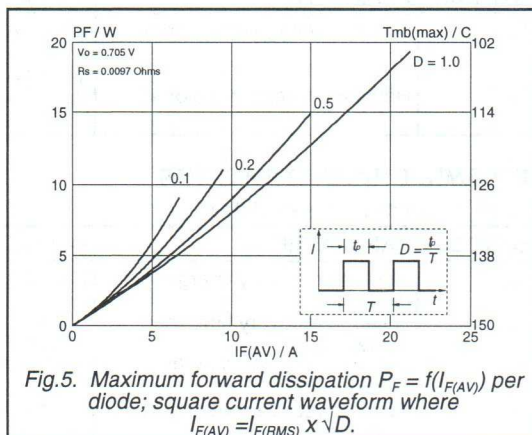
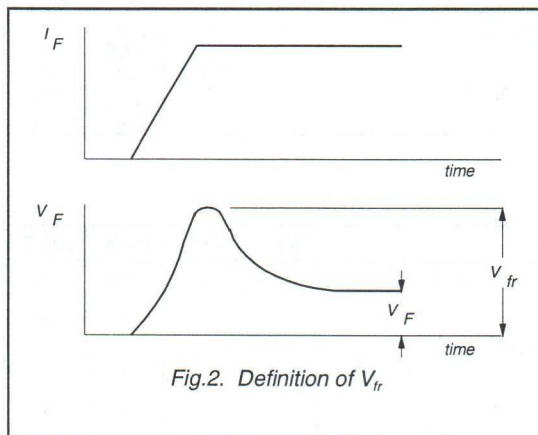
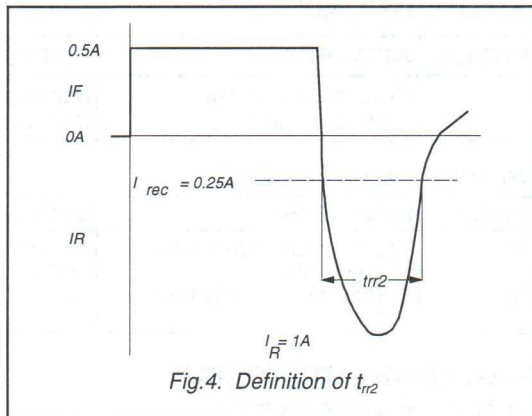
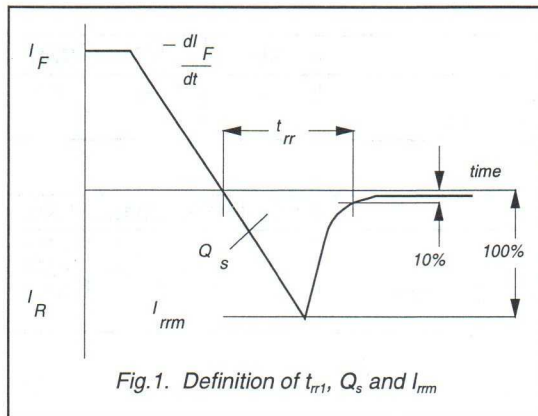
DYNAMIC CHARACTERISTICS

$T_j = 25 \text{ }^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Q_s	Reverse recovery charge (per diode)	$I_F = 2 \text{ A}$; $V_R \geq 30 \text{ V}$; $-di_F/dt = 20 \text{ A}/\mu\text{s}$	-	6	15	nC
t_{rr1}	Reverse recovery time (per diode)	$I_F = 1 \text{ A}$; $V_R \geq 30 \text{ V}$; $-di_F/dt = 100 \text{ A}/\mu\text{s}$	-	20	28	ns
t_{rr2}	Reverse recovery time (per diode)	$I_F = 0.5 \text{ A}$ to $I_R = 1 \text{ A}$; $I_{rec} = 0.25 \text{ A}$	-	13	22	ns
V_{fr}	Forward recovery voltage (per diode)	$I_F = 1 \text{ A}$; $di_F/dt = 10 \text{ A}/\mu\text{s}$	-	1	-	V

Rectifier diodes ultrafast, rugged

BYV42EB series



Rectifier diodes ultrafast, rugged

BYV42EB series

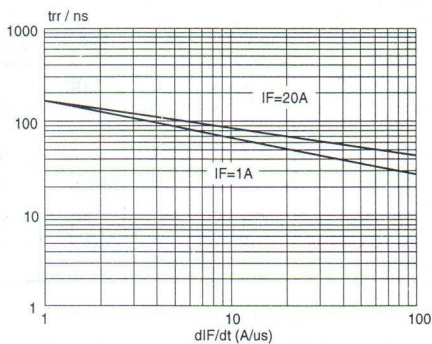


Fig.7. Maximum t_{rr} at $T_j = 25\text{ }^{\circ}\text{C}$; per diode

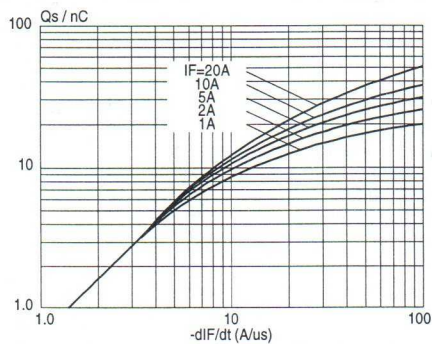


Fig.10. Maximum Q_s at $T_j = 25\text{ }^{\circ}\text{C}$; per diode

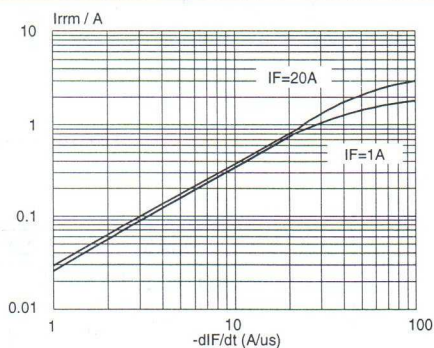


Fig.8. Maximum I_{rms} at $T_j = 25\text{ }^{\circ}\text{C}$; per diode

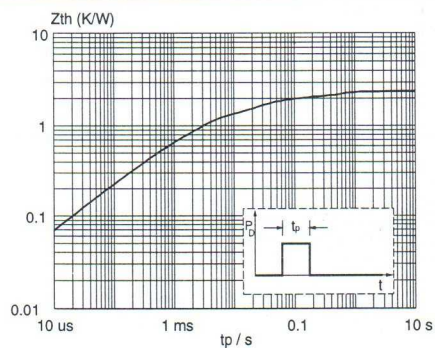


Fig.11. Transient thermal impedance; per diode;
 $Z_{th-jmb} = f(t_p)$.

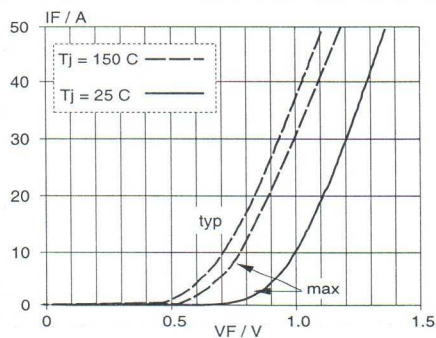


Fig.9. Typical and maximum forward characteristic
 $I_F = f(V_F)$; parameter T_j

Rectifier diodes ultrafast, rugged

BYV42EX series

GENERAL DESCRIPTION

Glass passivated dual epitaxial rectifier diodes in a full pack plastic envelope, featuring low forward voltage drop, ultra-fast recovery times, soft recovery characteristic and guaranteed reverse surge and ESD capability. They are intended for use in switched mode power supplies and high frequency circuits in general where low conduction and switching losses are essential.

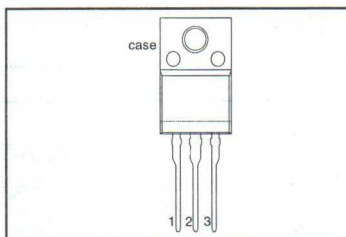
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
V_{RRM}	Repetitive peak reverse voltage	100	150	200	V
		100	150	200	
V_F	Forward voltage	0.90	0.90	0.90	V
$I_{O(AV)}$	Output current (both diodes conducting)	20	20	20	A
t_{rr}	Reverse recovery time	28	28	28	ns
I_{RRM}	Repetitive peak reverse current per diode	0.2	0.2	0.2	A

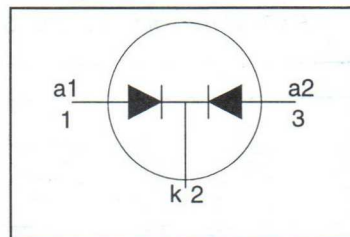
PINNING - SOT186A

PIN	DESCRIPTION
1	anode 1 (a)
2	cathode (k)
3	anode 2 (a)
case	isolated

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{RRM}	Repetitive peak reverse voltage	square wave $\delta = 0.5$; $T_{hs} \leq 78^\circ\text{C}$ sinusoidal $a = 1.57$; $T_{hs} \leq 78^\circ\text{C}$	-	-100	-150	-200	V
V_{RWM}	Crest working reverse voltage		-	100	150	200	V
V_R	Continuous reverse voltage ¹		-	100	150	200	V
$I_{O(AV)}$	Output current (both diodes conducting) ²	$t = 25\ \mu\text{s}$; $\delta = 0.5$; $T_{hs} \leq 78^\circ\text{C}$ $t = 10\ \text{ms}$ $t = 8.3\ \text{ms}$ sinusoidal; with reappplied $V_{RWM(max)}$ $t = 10\ \text{ms}$ $t_p = 2\ \mu\text{s}$; $\delta = 0.001$ $t_p = 100\ \mu\text{s}$	-	20			A
$I_{O(RMS)}$	RMS forward current		-	20			A
I_{FRM}	Repetitive peak forward current per diode		-	30			A
I_{FSM}	Non-repetitive peak forward current per diode		-	150			A
I_{FSM}	Non-repetitive peak forward current per diode		-	160			A
I^2t	I^2t for fusing	$t_p = 100\ \mu\text{s}$	-	112			A ² s
I_{RRM}	Repetitive peak reverse current per diode		-	0.2			A
I_{RSM}	Non-repetitive peak reverse current per diode		-	0.2			A
T_{stg}	Storage temperature		-40	150			$^\circ\text{C}$
T_j	Operating junction temperature		-	150			$^\circ\text{C}$

¹ $T_{hs} \leq 125^\circ\text{C}$ for thermal stability.

² Neglecting switching and reverse current losses.

Rectifier diodes ultrafast, rugged

BYV42EX series

ESD LIMITING VALUE

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_C	Electrostatic discharge capacitor voltage	Human body model; $C = 250 \text{ pF}$; $R = 1.5 \text{ k}\Omega$	-	8	kV

ISOLATION LIMITING VALUE & CHARACTERISTIC

$T_{hs} = 25 \text{ }^\circ\text{C}$ unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_{isol}	R.M.S. isolation voltage from all three terminals to external heatsink	$f = 50\text{-}60 \text{ Hz}$; sinusoidal waveform; $R.H. \leq 65\%$; clean and dustfree	-		2500	V
C_{isol}	Capacitance from T2 to external heatsink	$f = 1 \text{ MHz}$	-	10	-	pF

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th \text{ j-hs}}$	Thermal resistance junction to heatsink	both diodes conducting with heatsink compound without heatsink compound per diode	- -	- -	4.0 8.0	K/W K/W
$R_{th \text{ j-a}}$	Thermal resistance junction to ambient	with heatsink compound without heatsink compound in free air	- -	- 55	5.0 9.0 -	K/W K/W K/W

STATIC CHARACTERISTICS

$T_j = 25 \text{ }^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage (per diode)	$I_F = 15 \text{ A}$; $T_j = 150 \text{ }^\circ\text{C}$	-	0.83	0.90	V
		$I_F = 15 \text{ A}$	-	0.95	1.05	V
		$I_F = 30 \text{ A}$	-	1.00	1.20	V
I_R	Reverse current (per diode)	$V_R = V_{RWM}$; $T_j = 100 \text{ }^\circ\text{C}$	-	0.5	1	mA
		$V_R = V_{RWM}$	-	10	100	μA

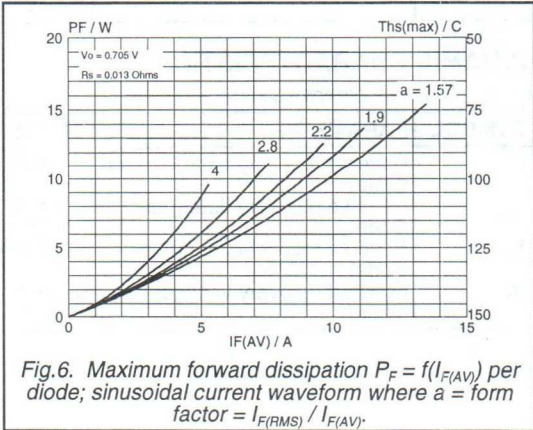
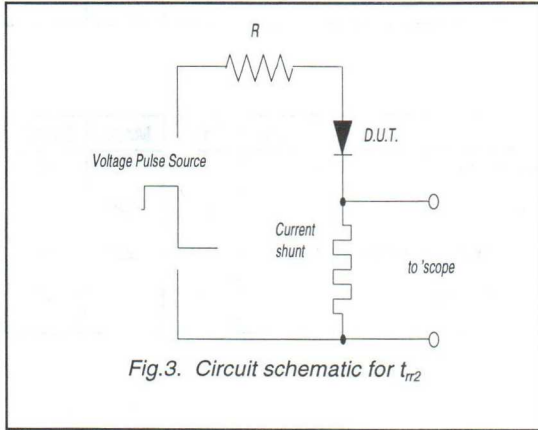
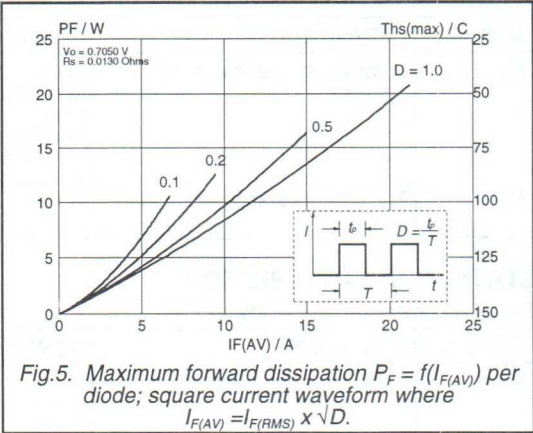
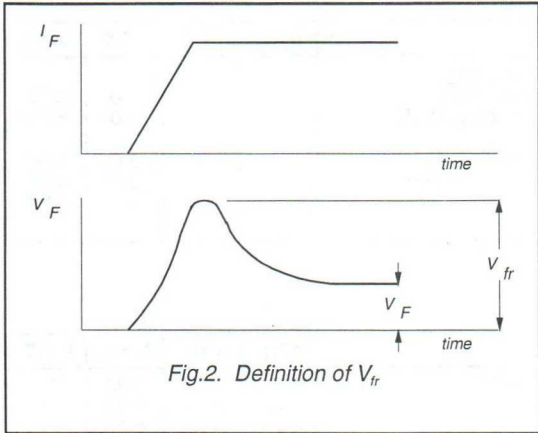
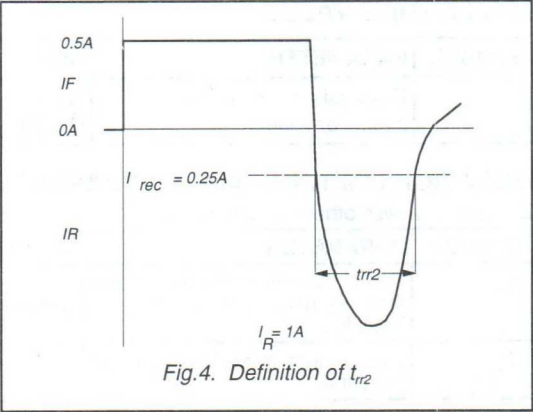
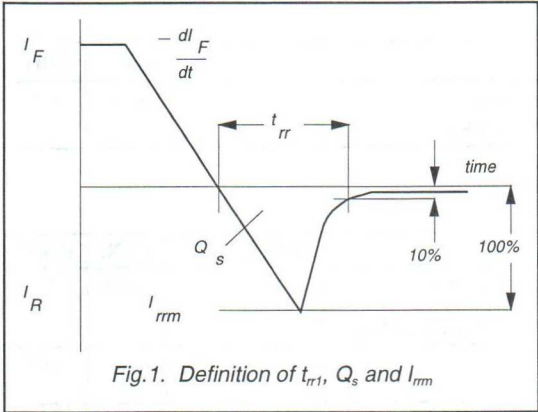
DYNAMIC CHARACTERISTICS

$T_j = 25 \text{ }^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Q_s	Reverse recovery charge (per diode)	$I_F = 2 \text{ A}$; $V_R \geq 30 \text{ V}$; $-dl_F/dt = 20 \text{ A}/\mu\text{s}$	-	6	15	nC
t_{rr1}	Reverse recovery time (per diode)	$I_F = 1 \text{ A}$; $V_R \geq 30 \text{ V}$; $-dl_F/dt = 100 \text{ A}/\mu\text{s}$	-	20	28	ns
t_{rr2}	Reverse recovery time (per diode)	$I_F = 0.5 \text{ A}$ to $I_R = 1 \text{ A}$; $I_{rec} = 0.25 \text{ A}$	-	13	22	ns
V_{fr}	Forward recovery voltage (per diode)	$I_F = 1 \text{ A}$; $dl_F/dt = 10 \text{ A}/\mu\text{s}$	-	1	-	V

Rectifier diodes
ultrafast, rugged

BYV42EX series



Rectifier diodes ultrafast, rugged

BYV42EX series

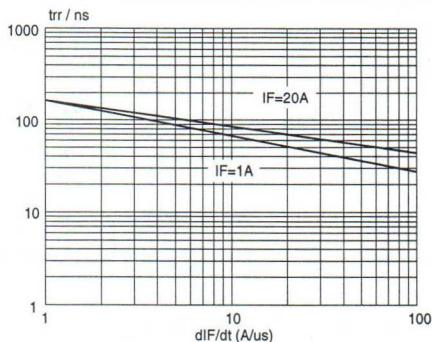


Fig. 7. Maximum t_{rr} at $T_j = 25\text{ }^{\circ}\text{C}$; per diode

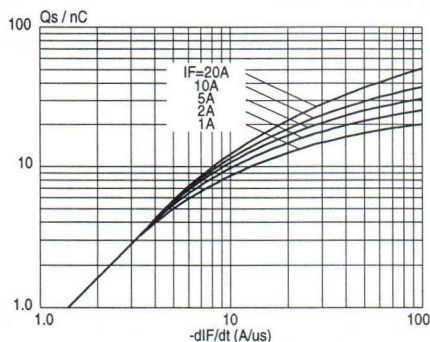


Fig. 10. Maximum Q_s at $T_j = 25\text{ }^{\circ}\text{C}$; per diode

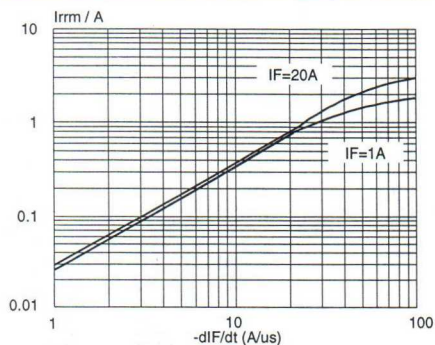


Fig. 8. Maximum I_{rms} at $T_j = 25\text{ }^{\circ}\text{C}$; per diode

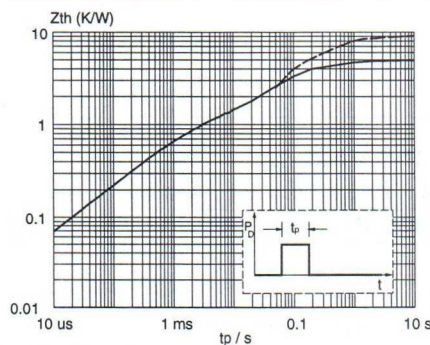


Fig. 11. Transient thermal impedance; per diode;
 $Z_{th-jhs} = f(t_p)$.

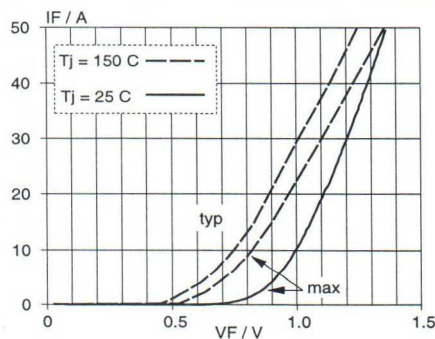


Fig. 9. Typical and maximum forward characteristic
 $I_F = f(V_F)$; parameter T_j

Rectifier diodes
ultrafast

BYV42F series

GENERAL DESCRIPTION

Glass passivated, high efficiency, dual, rectifier diodes in a full pack, plastic envelope, featuring low forward voltage drop, ultra-fast recovery times and soft recovery characteristic. They are intended for use in switched mode power supplies and high frequency circuits in general where low conduction and switching losses are essential.

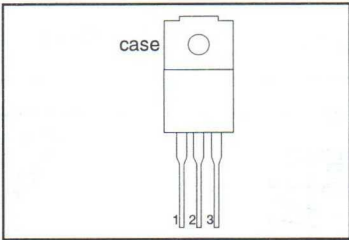
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
V_{RRM} V_F $I_{O(AV)}$ t_{rr}	BYV42F- Repetitive peak reverse voltage	100 100	150 150	200 200	V
	Forward voltage	0.90	0.90	0.90	V
	Output current (both diodes conducting)	20	20	20	A
	Reverse recovery time	28	28	28	ns

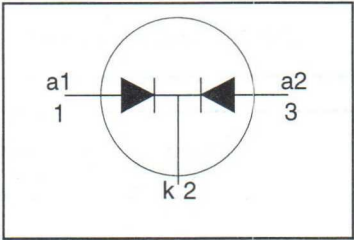
PINNING - SOT186

PIN	DESCRIPTION
1	anode 1 (a)
2	cathode (k)
3	anode 2 (a)

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{RRM}	Repetitive peak reverse voltage	square wave; $\delta = 0.5$; $T_{hs} \leq 78\text{ }^{\circ}\text{C}$ sinusoidal; $a = 1.57$; $T_{hs} \leq 78\text{ }^{\circ}\text{C}$	-	-100 100	-150 150	-200 200	V
V_{RWM}	Crest working reverse voltage		-	100	150	200	V
V_R	Continuous reverse voltage ¹		-	100	150	200	V
$I_{O(AV)}$	Output current (both diodes conducting) ²		-	20			A
$I_{O(RMS)}$	RMS forward current	$t = 25\text{ }\mu\text{s}$; $\delta = 0.5$; $T_{hs} \leq 78\text{ }^{\circ}\text{C}$ $t = 10\text{ ms}$ $t = 8.3\text{ ms}$ sinusoidal; with reapplied $V_{RWM(max)}$ $t = 10\text{ ms}$	-	20			A
I_{FRM}	Repetitive peak forward current per diode		-	30			A
I_{FSM}	Non-repetitive peak forward current per diode		-	150			A
			-	160			A
I^2t	I^2t for fusing		-	112			A ² s
T_{stg}	Storage temperature		-40	150			$^{\circ}\text{C}$
T_j	Operating junction temperature		-	150			$^{\circ}\text{C}$

1 $T_{hs} \leq 125^{\circ}\text{C}$ for thermal stability.

2 Neglecting switching and reverse current losses.

Rectifier diodes
ultrafast

BYV42F series

ISOLATION LIMITING VALUE & CHARACTERISTIC

 $T_{hs} = 25\text{ }^{\circ}\text{C}$ unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_{isol}	Repetitive peak voltage from all three terminals to external heatsink	R.H. $\leq 65\%$; clean and dustfree	-		1500	V
C_{isol}	Capacitance from T2 to external heatsink	$f = 1\text{ MHz}$	-	12	-	pF

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-hs}$	Thermal resistance junction to heatsink	both diodes conducting with heatsink compound without heatsink compound per diode	- -	- -	4.0 8.0	K/W K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	with heatsink compound without heatsink compound in free air	- -	- 55	5.0 9.0 -	K/W K/W K/W

STATIC CHARACTERISTICS

 $T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage (per diode)	$I_F = 15\text{ A}$; $T_j = 150\text{ }^{\circ}\text{C}$	-	0.83	0.90	V
		$I_F = 15\text{ A}$	-	0.95	1.05	V
		$I_F = 30\text{ A}$	-	1.00	1.20	V
I_R	Reverse current (per diode)	$V_R = V_{RWM}$; $T_j = 100\text{ }^{\circ}\text{C}$	-	0.5	1	mA
		$V_R = V_{RWM}$	-	10	100	μA

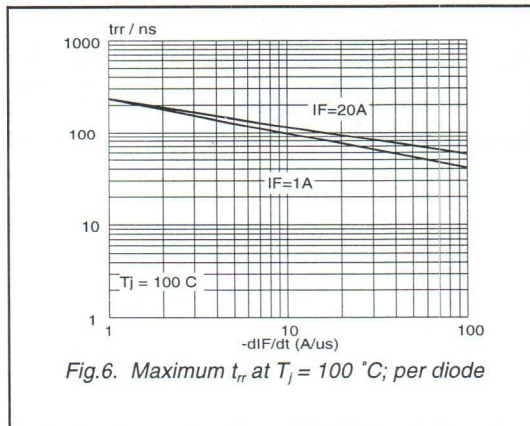
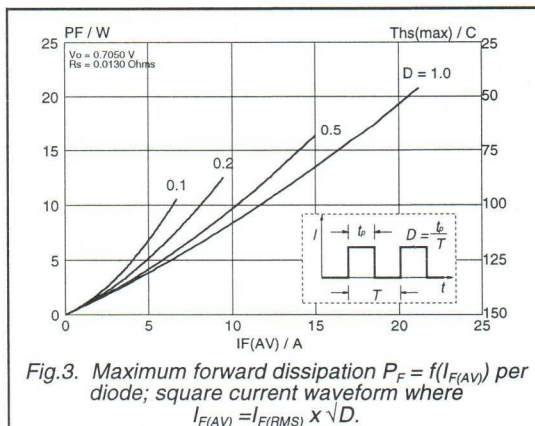
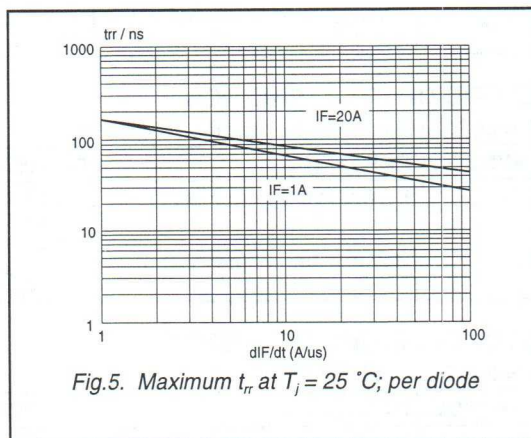
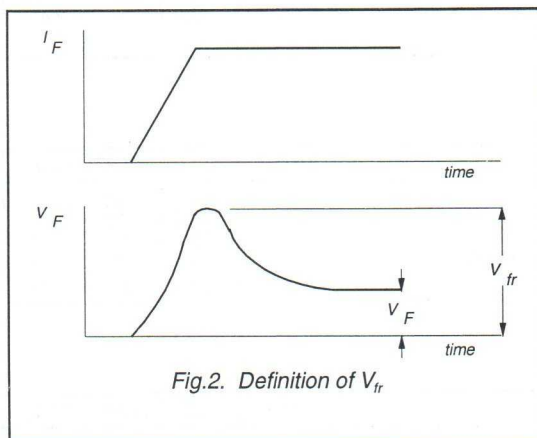
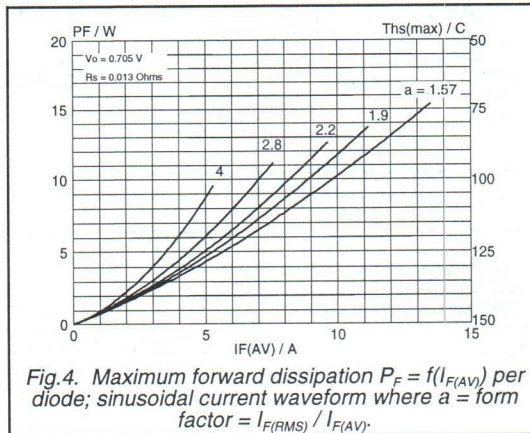
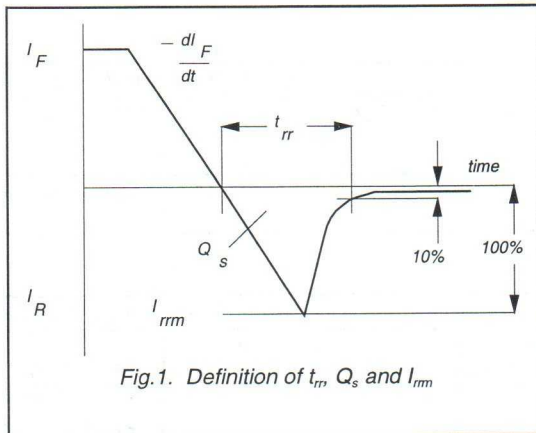
DYNAMIC CHARACTERISTICS

 $T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Q_s	Reverse recovery charge (per diode)	$I_F = 2\text{ A}$; $V_R \geq 30\text{ V}$; $-di_F/dt = 20\text{ A}/\mu\text{s}$	-	6	15	nC
t_{rr}	Reverse recovery time (per diode)	$I_F = 1\text{ A}$; $V_R \geq 30\text{ V}$; $-di_F/dt = 100\text{ A}/\mu\text{s}$	-	20	28	ns
I_{rm}	Peak reverse recovery current (per diode)	$I_F = 10\text{ A}$; $V_R \geq 30\text{ V}$; $-di_F/dt = 50\text{ A}/\mu\text{s}$; $T_j = 100\text{ }^{\circ}\text{C}$	-	2	2.4	A
V_{fr}	Forward recovery voltage (per diode)	$I_F = 1\text{ A}$; $di_F/dt = 10\text{ A}/\mu\text{s}$	-	1	-	V

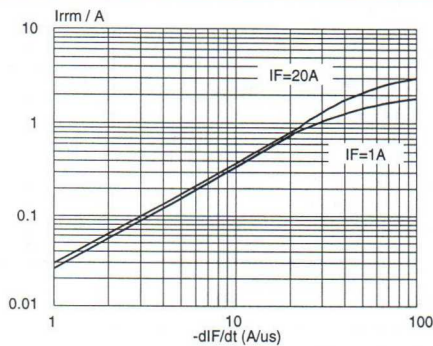
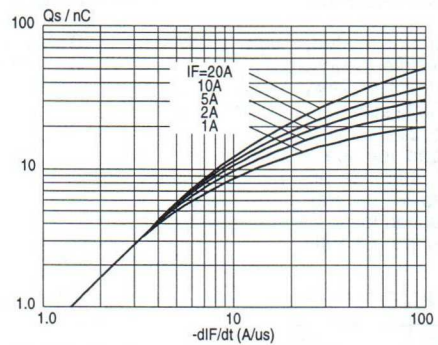
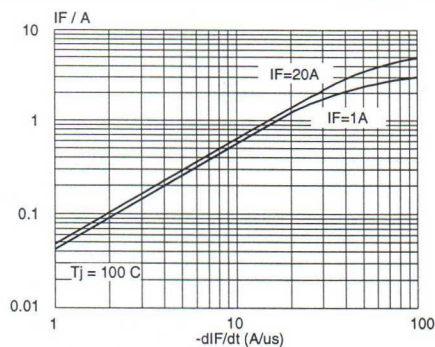
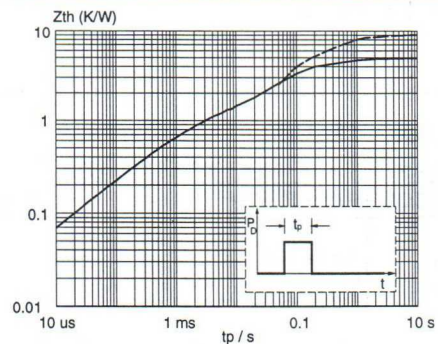
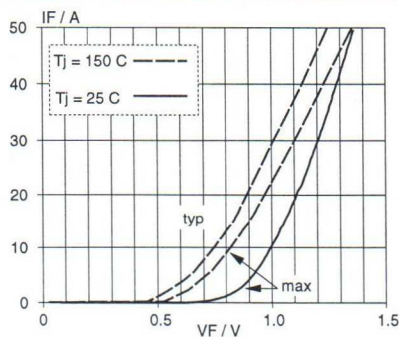
Rectifier diodes
ultrafast

BYV42F series



Rectifier diodes
ultrafast

BYV42F series

Fig. 7. Maximum I_{rms} at $T_j = 25\text{ }^{\circ}\text{C}$; per diodeFig. 10. Maximum Q_s at $T_j = 25\text{ }^{\circ}\text{C}$; per diodeFig. 8. Maximum I_{rms} at $T_j = 100\text{ }^{\circ}\text{C}$; per diodeFig. 11. Transient thermal impedance; per diode;
 $Z_{th\ j-hs} = f(t_p)$.Fig. 9. Typical and maximum forward characteristic
 $I_F = f(V_F)$; parameter T_j

Dual rectifier diodes ultrafast

BYV44 series

GENERAL DESCRIPTION

Glass passivated, high efficiency rectifier diodes in a plastic envelope featuring low forward voltage drop, ultra fast reverse recovery times and soft recovery characteristic. They are intended for use in switched mode power supplies and high frequency circuits in general, where both low conduction losses and low switching losses are essential.

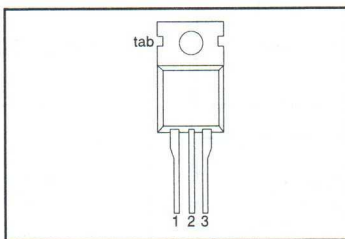
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
V_{RRM}	BYV44- Repetitive peak reverse voltage	300 300	400 400	500 500	V
V_F	Forward voltage	1.12	1.12	1.12	V
$I_{O(AV)}$	Average output current (both diodes conducting)	30	30	30	A
t_{rr}	Reverse recovery time	60	60	60	ns

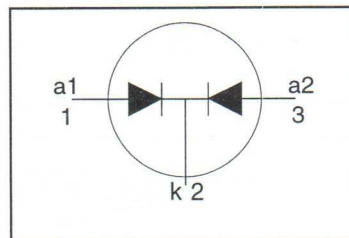
PINNING - TO220AB

PIN	DESCRIPTION
1	anode 1 (a)
2	cathode (k)
3	anode 2 (a)
tab	cathode (k)

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{RRM}	Repetitive peak reverse voltage	$T_{mb} \leq 136^\circ\text{C}$	-	-300 300	-400 400	-500 500	V
V_{RWM}	Crest working reverse voltage		-	300	400	500	V
V_R	Continuous reverse voltage		-	300	400	500	V
$I_{O(AV)}$	Average output current (both diodes conducting) ¹	square wave; $\delta = 0.5$; $T_{mb} \leq 94^\circ\text{C}$ sinusoidal; $a = 1.57$; $T_{mb} \leq 98^\circ\text{C}$	-	30			A
			-	27			A
			-	43			A
$I_{O(RMS)}$	RMS output current (both diodes conducting)	$t = 25\ \mu\text{s}$; $\delta = 0.5$; $T_{mb} \leq 94^\circ\text{C}$	-	30			A
I_{FRM}	Repetitive peak forward current per diode		-	150			A
I_{FSM}	Non-repetitive peak forward current per diode.		-	160			A
I^2t	I^2t for fusing	$t = 8.3\ \text{ms}$ sinusoidal; with reapplied $V_{RRM(max)}$ $t = 10\ \text{ms}$	-	112			A ² s
T_{stg}	Storage temperature		-40	150			$^\circ\text{C}$
T_j	Operating junction temperature		-	150			$^\circ\text{C}$

¹ Neglecting switching and reverse current losses.

For output currents in excess of 20 A, connection should be made to the exposed metal mounting base.

Dual rectifier diodes ultrafast

BYV44 series

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-hs}$	Thermal resistance junction to heatsink	per diode both diodes conducting	-	-	2.4	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	in free air.	-	60	1.4	K/W

STATIC CHARACTERISTICS

 $T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage (per diode)	$I_F = 15\text{ A}$; $T_j = 150\text{ }^{\circ}\text{C}$	-	0.95	1.12	V
		$I_F = 15\text{ A}$	-	1.08	1.25	V
		$I_F = 30\text{ A}$	-	1.15	1.36	V
I_R	Reverse current (per diode)	$V_R = V_{RRM}$	-	10	50	μA
		$V_R = V_{RRM}$; $T_j = 100\text{ }^{\circ}\text{C}$	-	0.3	0.8	mA

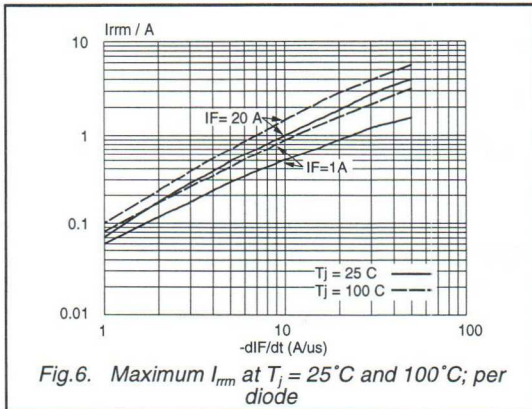
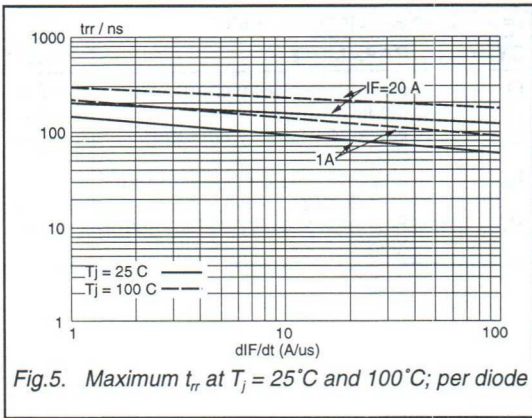
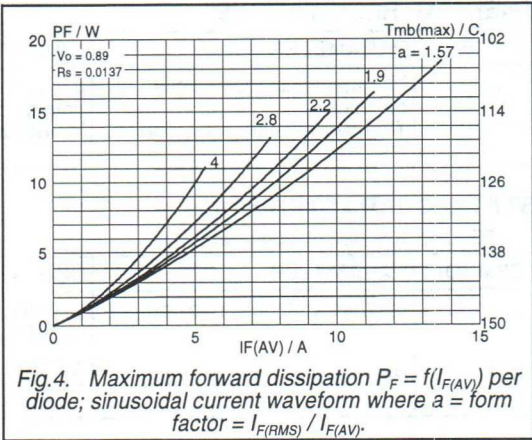
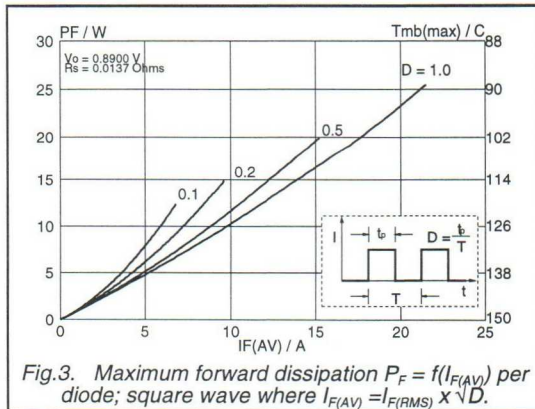
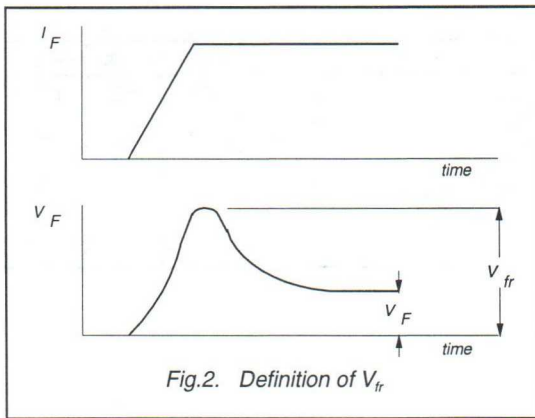
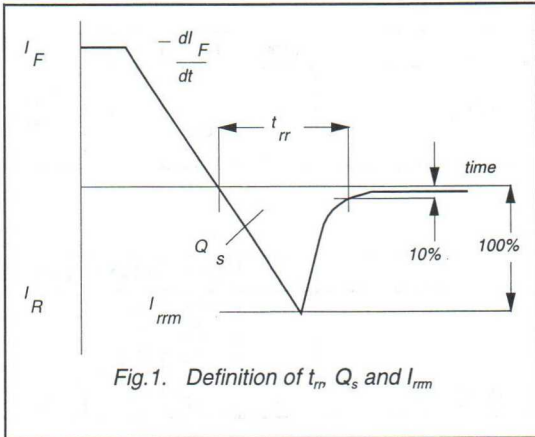
DYNAMIC CHARACTERISTICS

 $T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Q_s	Reverse recovery charge (per diode)	$I_F = 2\text{ A}$ to $V_R \geq 30\text{ V}$; $di_F/dt = 20\text{ A}/\mu\text{s}$	-	40	60	nC
t_{rr}	Reverse recovery time (per diode)	$I_F = 1\text{ A}$ to $V_R \geq 30\text{ V}$; $di_F/dt = 100\text{ A}/\mu\text{s}$	-	50	60	ns
I_{rm}	Peak reverse recovery current (per diode)	$I_F = 10\text{ A}$ to $V_R \geq 30\text{ V}$; $di_F/dt = 50\text{ A}/\mu\text{s}$; $T_j = 100\text{ }^{\circ}\text{C}$	-	4.2	5.2	A
V_{fr}	Forward recovery voltage (per diode)	$I_F = 10\text{ A}$; $di_F/dt = 10\text{ A}/\mu\text{s}$	-	2.5	-	V

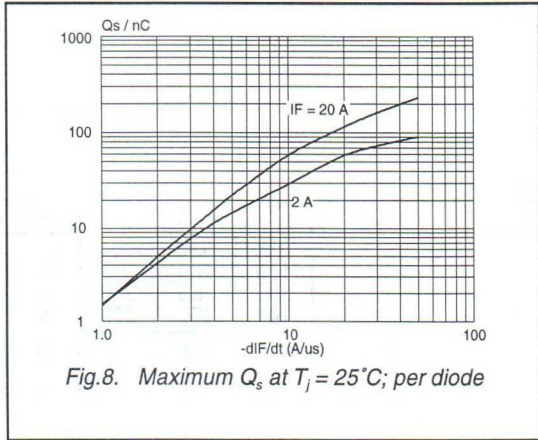
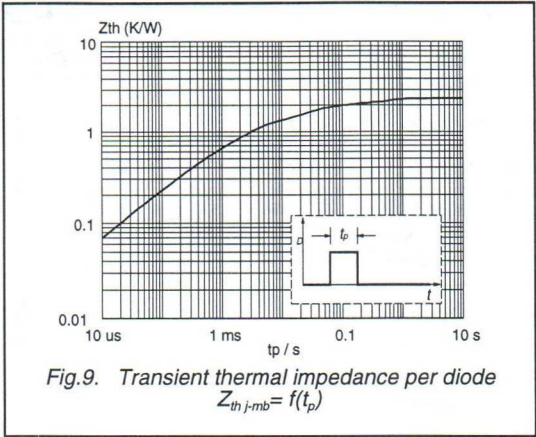
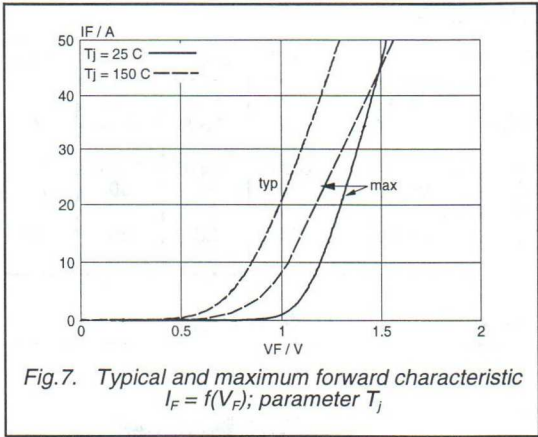
Dual rectifier diodes ultrafast

BYV44 series



Dual rectifier diodes
ultrafast

BYV44 series



Rectifier diodes ultrafast

BYV72 series

GENERAL DESCRIPTION

Glass passivated, high efficiency, dual, rectifier diodes in a plastic envelope, featuring low forward voltage drop, ultra-fast recovery times and soft recovery characteristic. They are intended for use in switched mode power supplies and high frequency circuits in general where low conduction and switching losses are essential.

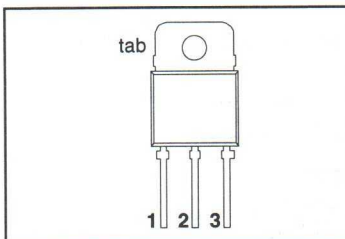
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
V_{RRM}	BYV72- Repetitive peak reverse voltage	100 100	150 150	200 200	V
V_F	Forward voltage	0.90	0.90	0.90	V
$I_{O(AV)}$	Output current (both diodes conducting)	30	30	30	A
t_{rr}	Reverse recovery time	28	28	28	ns

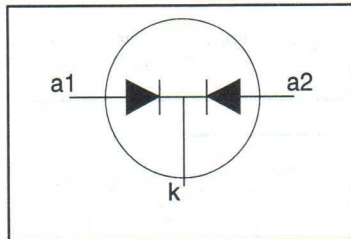
PINNING - SOT93

PIN	DESCRIPTION
1	Anode 1 (a)
2	Cathode (k)
3	Anode 2 (a)
tab	Cathode (k)

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
				-100	-150	-200	
V_{RRM}	Repetitive peak reverse voltage	square wave; $\delta = 0.5$; $T_{mb} \leq 108^\circ\text{C}$ sinusoidal; $a = 1.57$; $T_{mb} \leq 111^\circ\text{C}$	-	100	150	200	V
V_{RWM}	Crest working reverse voltage		-	100	150	200	V
V_R	Continuous reverse voltage ¹		-	100	150	200	V
$I_{O(AV)}$	Output current (both diodes conducting) ²	$t = 25\ \mu\text{s}$; $\delta = 0.5$; $T_{mb} \leq 108^\circ\text{C}$ $t = 10\ \text{ms}$ $t = 8.3\ \text{ms}$ sinusoidal; with reappplied $V_{RWM(max)}$ $t = 10\ \text{ms}$	-	30			A
			-	27			A
$I_{O(RMS)}$	RMS forward current		-	43			A
I_{FRM}	Repetitive peak forward current per diode		-	30			A
I_{FSM}	Non-repetitive peak forward current per diode		-	150 160			A A
I^2t	I^2t for fusing		-	112			A ² s
T_{stg}	Storage temperature		-40	150			$^\circ\text{C}$
T_j	Operating junction temperature		-	150			$^\circ\text{C}$

¹ $T_{mb} \leq 144^\circ\text{C}$ for thermal stability.

² Neglecting switching and reverse current losses.

For output currents in excess of 20 A, connection should be made to the exposed metal mounting base.

Rectifier diodes
ultrafast

BYV72 series

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-mb}$	Thermal resistance junction to mounting base	per diode	-	-	2.4	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	both diodes conducting in free air	-	-	1.4	K/W
			-	45	-	K/W

STATIC CHARACTERISTICS

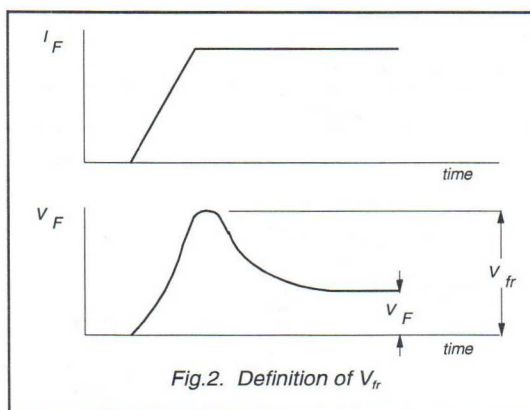
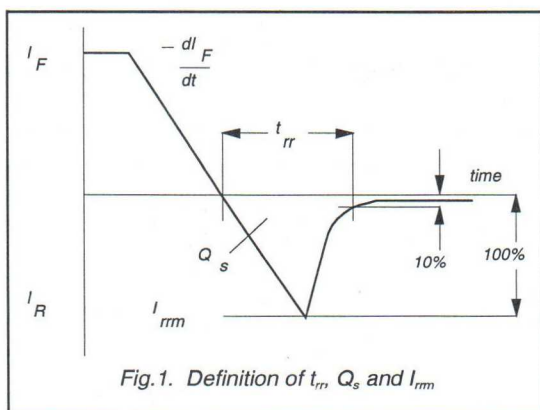
 $T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage (per diode)	$I_F = 15\text{ A}$; $T_j = 150\text{ }^{\circ}\text{C}$	-	0.83	0.90	V
		$I_F = 15\text{ A}$	-	0.95	1.05	V
		$I_F = 30\text{ A}$	-	1.00	1.20	V
I_R	Reverse current (per diode)	$V_R = V_{RWM}$; $T_j = 100\text{ }^{\circ}\text{C}$	-	0.5	1	mA
		$V_R = V_{RWM}$	-	10	100	μA

DYNAMIC CHARACTERISTICS

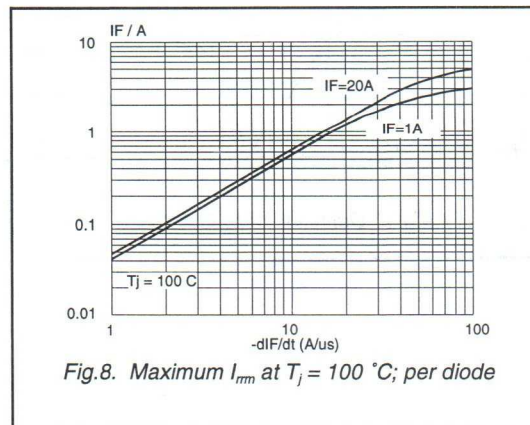
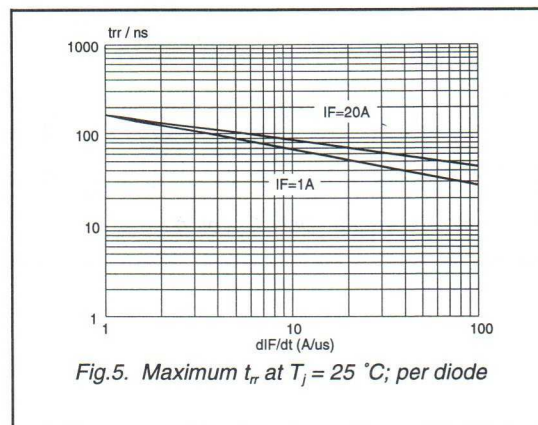
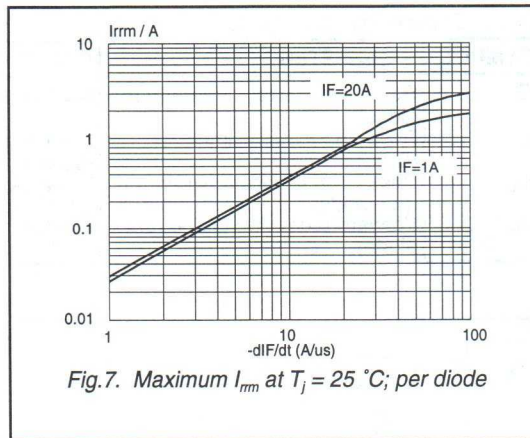
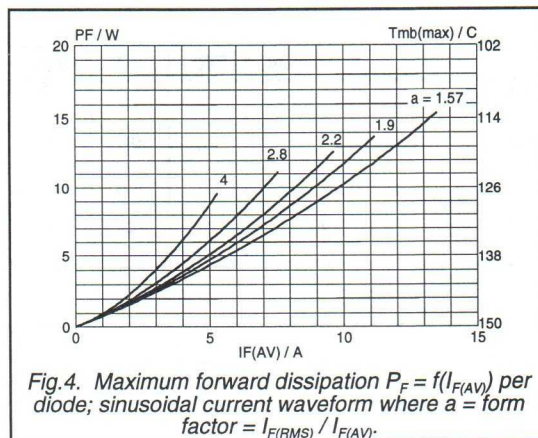
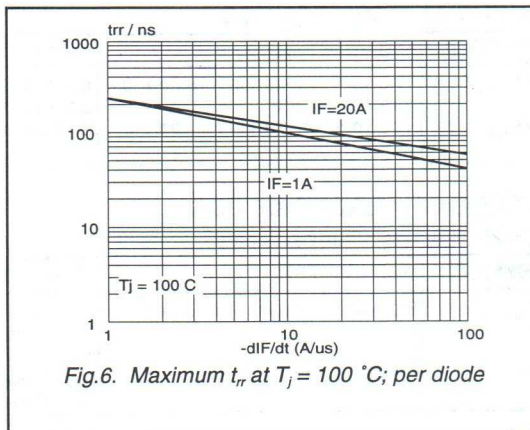
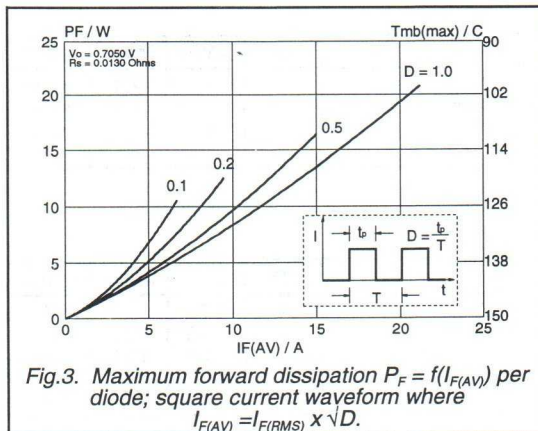
 $T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Q_s	Reverse recovery charge (per diode)	$I_F = 2\text{ A}$; $V_R \geq 30\text{ V}$; $-di_F/dt = 20\text{ A}/\mu\text{s}$	-	6	15	nC
t_{rr}	Reverse recovery time (per diode)	$I_F = 1\text{ A}$; $V_R \geq 30\text{ V}$; $-di_F/dt = 100\text{ A}/\mu\text{s}$	-	20	28	ns
I_{rm}	Peak reverse recovery current (per diode)	$I_F = 10\text{ A}$; $V_R \geq 30\text{ V}$; $-di_F/dt = 50\text{ A}/\mu\text{s}$; $T_j = 100\text{ }^{\circ}\text{C}$	-	2	2.4	A
V_{fr}	Forward recovery voltage (per diode)	$I_F = 1\text{ A}$; $di_F/dt = 10\text{ A}/\mu\text{s}$	-	1	-	V



Rectifier diodes
ultrafast

BYV72 series



Rectifier diodes ultrafast

BYV72 series

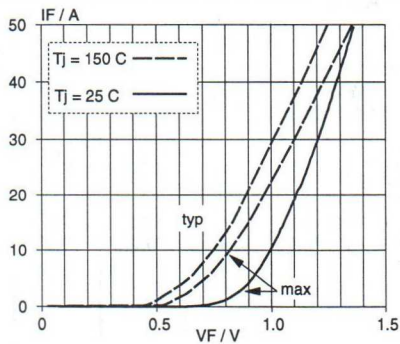


Fig.9. Typical and maximum forward characteristic
 $I_F = f(V_F)$; parameter T_J

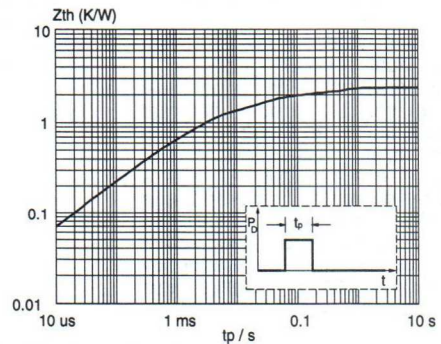


Fig.11. Transient thermal impedance; per diode;
 $Z_{th j-mb} = f(t_p)$.

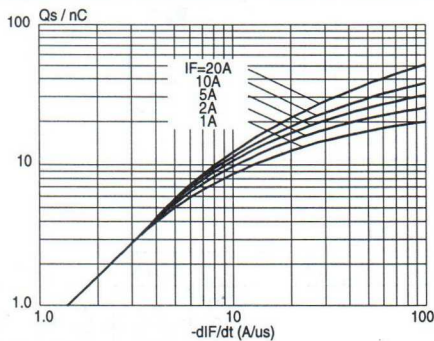


Fig.10. Maximum Q_s at $T_J = 25\text{ °C}$; per diode

Rectifier diodes ultrafast, rugged

BYV72E series

GENERAL DESCRIPTION

Glass passivated high efficiency rugged dual rectifier diodes in a plastic envelope, featuring low forward voltage drop, ultra-fast recovery times and soft recovery characteristic. These devices can withstand reverse voltage transients and have guaranteed reverse surge and ESD capability. They are intended for use in switched mode power supplies and high frequency circuits in general where low conduction and switching losses are essential.

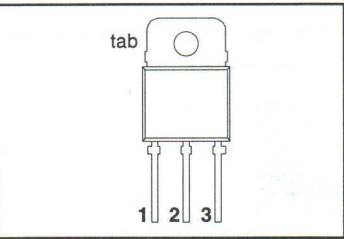
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
V_{RRM}	BYV72E- Repetitive peak reverse voltage	100 100	150 150	200 200	V
V_F	Forward voltage	0.90	0.90	0.90	V
$I_{O(AV)}$	Output current (both diodes conducting)	30	30	30	A
t_{rr}	Reverse recovery time	28	28	28	ns
I_{RRM}	Repetitive peak reverse current per diode	0.2	0.2	0.2	A

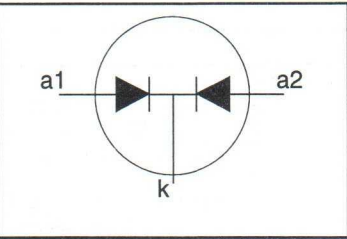
PINNING - SOT93

PIN	DESCRIPTION
1	Anode 1 (a)
2	Cathode (k)
3	Anode 2 (a)
tab	Cathode (k)

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{RRM}	Repetitive peak reverse voltage		-	-100 100	-150 150	-200 200	V
V_{RWM}	Crest working reverse voltage		-	100	150	200	V
V_R	Continuous reverse voltage		-	100	150	200	V
$I_{O(AV)}$	Output current (both diodes conducting) ²	square wave $\delta = 0.5$; $T_{mb} \leq 104^\circ\text{C}$ sinusoidal; $a = 1.57$; $T_{mb} \leq 107^\circ\text{C}$	-	30			A
$I_{O(RMS)}$	RMS forward current		-	43			A
I_{FRM}	Repetitive peak forward current per diode	$t = 25\ \mu\text{s}$; $\delta = 0.5$; $T_{mb} \leq 104^\circ\text{C}$	-	30			A
I_{FSM}	Non-repetitive peak forward current per diode	$t = 10\ \text{ms}$ $t = 8.3\ \text{ms}$ sinusoidal; with reapplied	-	150			A
$I_{FSM}^2 t$	$I^2 t$ for fusing	$V_{RWM(max)}$ $t = 10\ \text{ms}$	-	112			A ² s
I_{RRM}	Repetitive peak reverse current per diode	$t_p = 2\ \mu\text{s}$; $\delta = 0.001$	-	0.2			A
I_{RSM}	Non-repetitive peak reverse current per diode	$t_p = 100\ \mu\text{s}$	-	0.2			A
T_{stg}	Storage temperature		-40	150			$^\circ\text{C}$
T_j	Operating junction temperature		-	150			$^\circ\text{C}$

1 $T_{mb} \leq 144^\circ\text{C}$ for thermal stability.

2 Neglecting switching and reverse current losses.

For output currents in excess of 20 A, connection should be made to the exposed metal mounting base.

Rectifier diodes ultrafast, rugged

BYV72E series

ESD LIMITING VALUE

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_C	Electrostatic discharge capacitor voltage	Human body model; $C = 250 \text{ pF}$; $R = 1.5 \text{ k}\Omega$	-	8	kV

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th \text{ j-mb}}$	Thermal resistance junction to mounting base	per diode both diodes conducting	-	-	2.4	K/W
$R_{th \text{ j-a}}$	Thermal resistance junction to ambient	in free air	-	45	1.4	K/W
					-	K/W

STATIC CHARACTERISTICS

$T_j = 25 \text{ }^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage (per diode)	$I_F = 15 \text{ A}$; $T_j = 150^\circ\text{C}$	-	0.83	0.90	V
		$I_F = 15 \text{ A}$	-	0.95	1.05	V
		$I_F = 30 \text{ A}$	-	1.00	1.20	V
I_R	Reverse current (per diode)	$V_R = V_{RWM}$; $T_j = 100 \text{ }^\circ\text{C}$	-	0.5	1	mA
		$V_R = V_{RWM}$	-	10	100	μA

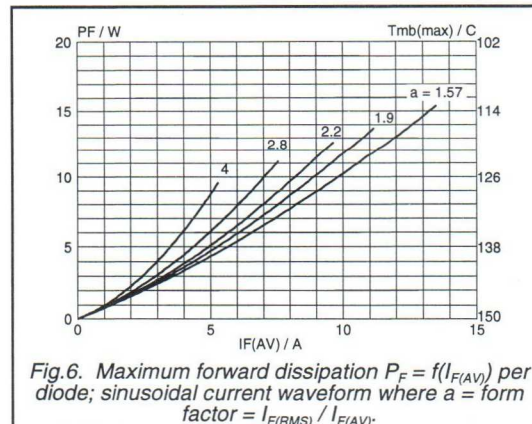
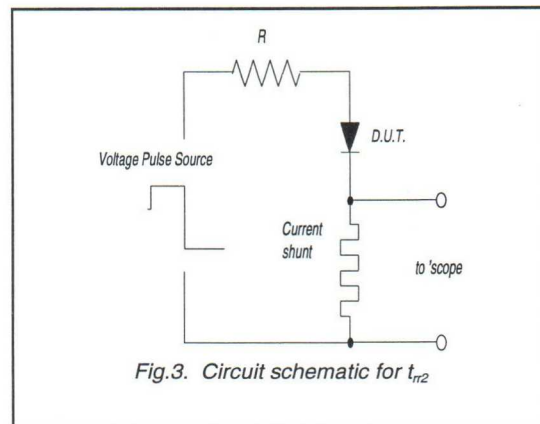
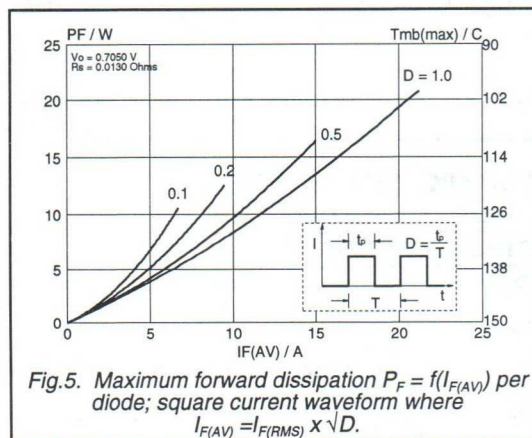
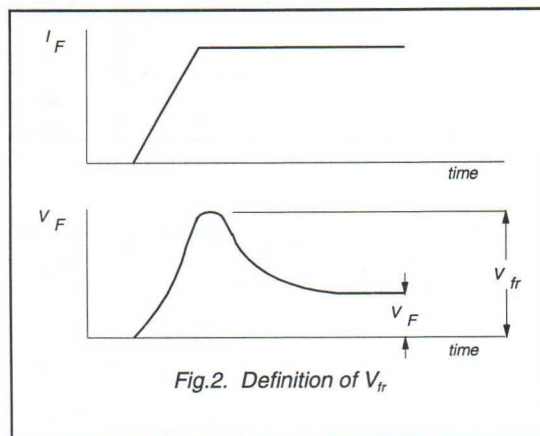
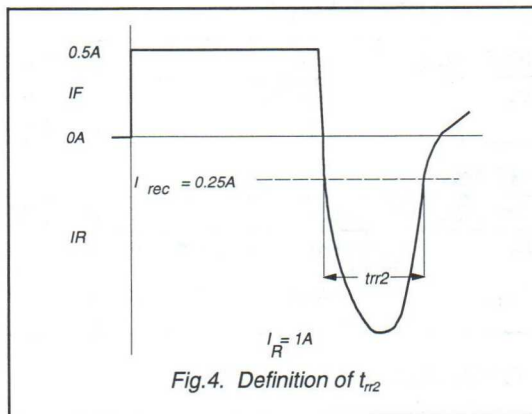
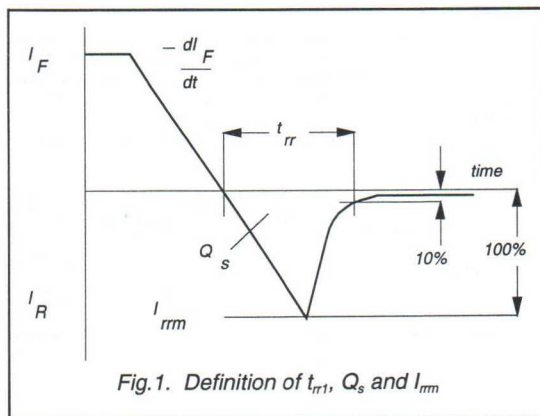
DYNAMIC CHARACTERISTICS

$T_j = 25 \text{ }^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Q_s	Reverse recovery charge (per diode)	$I_F = 2 \text{ A}$; $V_R \geq 30 \text{ V}$; $-di_F/dt = 20 \text{ A}/\mu\text{s}$	-	6	15	nC
t_{rr1}	Reverse recovery time (per diode)	$I_F = 1 \text{ A}$; $V_R \geq 30 \text{ V}$; $-di_F/dt = 100 \text{ A}/\mu\text{s}$	-	20	28	ns
t_{rr2}	Reverse recovery time (per diode)	$I_F = 0.5 \text{ A}$ to $I_R = 1 \text{ A}$; $I_{rec} = 0.25 \text{ A}$	-	13	22	ns
V_{fr}	Forward recovery voltage (per diode)	$I_F = 1 \text{ A}$; $di_F/dt = 10 \text{ A}/\mu\text{s}$	-	1	-	V

Rectifier diodes ultrafast, rugged

BYV72E series



Rectifier diodes ultrafast, rugged

BYV72E series

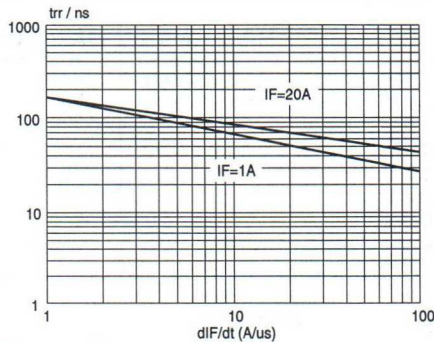


Fig. 7. Maximum t_{rr} at $T_j = 25\text{ °C}$; per diode

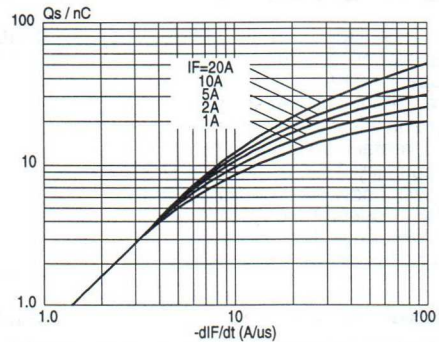


Fig. 10. Maximum Q_s at $T_j = 25\text{ °C}$; per diode

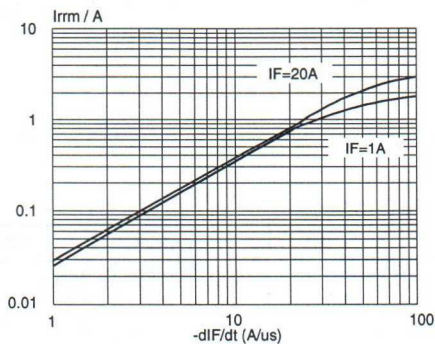


Fig. 8. Maximum I_{rrm} at $T_j = 25\text{ °C}$; per diode

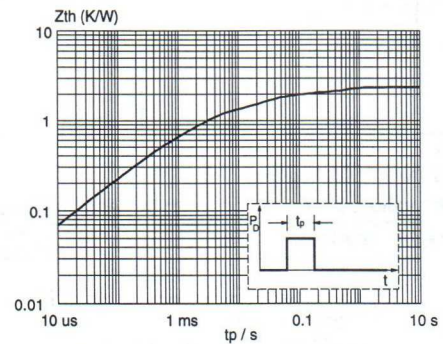


Fig. 11. Transient thermal impedance; per diode;
 $Z_{th-jmb} = f(t_p)$.

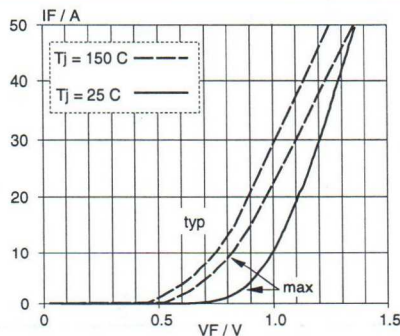


Fig. 9. Typical and maximum forward characteristic
 $I_F = f(V_F)$; parameter T_j

Rectifier diodes ultrafast, rugged

BYV72EF series

GENERAL DESCRIPTION

Glass passivated dual epitaxial rectifier diodes in a full pack plastic envelope, featuring low forward voltage drop, ultra-fast recovery times, soft recovery characteristic and guaranteed reverse surge and ESD capability. They are intended for use in switched mode power supplies and high frequency circuits in general where low conduction and switching losses are essential.

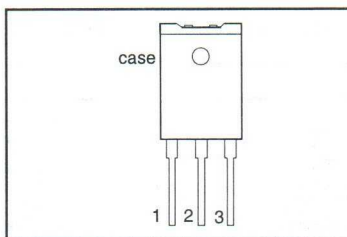
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
V_{RRM}	BYV72EF- Repetitive peak reverse voltage	100 100	150 150	200 200	V
V_F	Forward voltage	0.90	0.90	0.90	V
$I_{O(AV)}$	Output current (both diodes conducting)	20	20	20	A
t_{rr}	Reverse recovery time	28	28	28	ns
I_{RRM}	Repetitive peak reverse current per diode	0.2	0.2	0.2	A

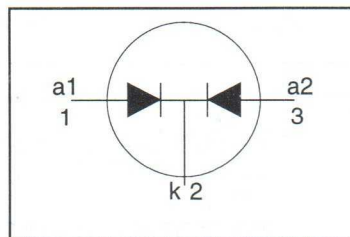
PINNING - SOT199

PIN	DESCRIPTION
1	anode 1 (a)
2	cathode (k)
3	anode 2 (a)

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{RRM}	Repetitive peak reverse voltage		-	-100	-150	-200	V
V_{RWM}	Crest working reverse voltage		-	100	150	200	V
V_R	Continuous reverse voltage		-	100	150	200	V
$I_{O(AV)}$	Output current (both diodes conducting) ²	square wave $\delta = 0.5$; $T_{hs} \leq 78^\circ\text{C}$ sinusoidal $a = 1.57$; $T_{hs} \leq 78^\circ\text{C}$	-	20			A
$I_{O(RMS)}$	RMS forward current		-	20			A
I_{FRM}	Repetitive peak forward current per diode	$t = 25\ \mu\text{s}$; $\delta = 0.5$; $T_{hs} \leq 78^\circ\text{C}$	-	30			A
I_{FSM}	Non-repetitive peak forward current per diode	$t = 10\ \text{ms}$ $t = 8.3\ \text{ms}$ sinusoidal; with reapplied	-	150			A
I^2t	I^2t for fusing	$V_{RWM(max)}$ $t = 10\ \text{ms}$	-	112			A ² s
I_{RRM}	Repetitive peak reverse current per diode	$t_p = 2\ \mu\text{s}$; $\delta = 0.001$	-	0.2			A
I_{RSM}	Non-repetitive peak reverse current per diode	$t_p = 100\ \mu\text{s}$	-	0.2			A
T_{stg}	Storage temperature		-40	150			$^\circ\text{C}$
T_j	Operating junction temperature		-	150			$^\circ\text{C}$

1 $T_{hs} \leq 125^\circ\text{C}$ for thermal stability.

2 Neglecting switching and reverse current losses.

Rectifier diodes ultrafast, rugged

BYV72EF series

ESD LIMITING VALUE

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_C	Electrostatic discharge capacitor voltage	Human body model; $C = 250 \text{ pF}$; $R = 1.5 \text{ k}\Omega$	-	8	kV

ISOLATION LIMITING VALUE & CHARACTERISTIC

$T_{hs} = 25^\circ\text{C}$ unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_{isol}	Repetitive peak voltage from all three terminals to external heatsink	R.H. $\leq 65\%$; clean and dustfree	-		2500	V
C_{isol}	Capacitance from T2 to external heatsink	$f = 1 \text{ MHz}$	-	22	-	pF

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-hs}$	Thermal resistance junction to heatsink	both diodes conducting with heatsink compound without heatsink compound per diode	- -	- -	4.0 8.0	K/W K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	with heatsink compound without heatsink compound in free air	- -	- 35	5.0 9.0 -	K/W K/W K/W

STATIC CHARACTERISTICS

$T_j = 25^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage (per diode)	$I_F = 15 \text{ A}$; $T_j = 150^\circ\text{C}$	-	0.83	0.90	V
		$I_F = 15 \text{ A}$	-	0.95	1.05	V
		$I_F = 30 \text{ A}$	-	1.00	1.20	V
I_R	Reverse current (per diode)	$V_R = V_{RWM}$; $T_j = 100^\circ\text{C}$	-	0.5	1	mA
		$V_R = V_{RWM}$	-	10	100	μA

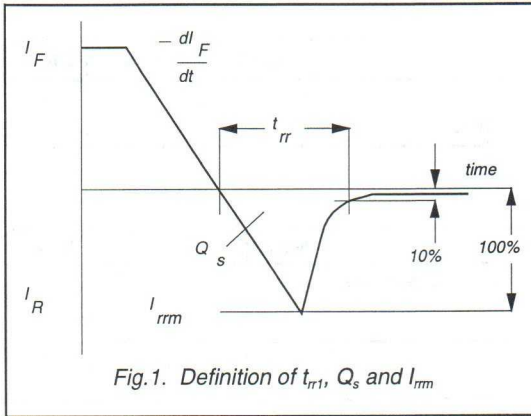
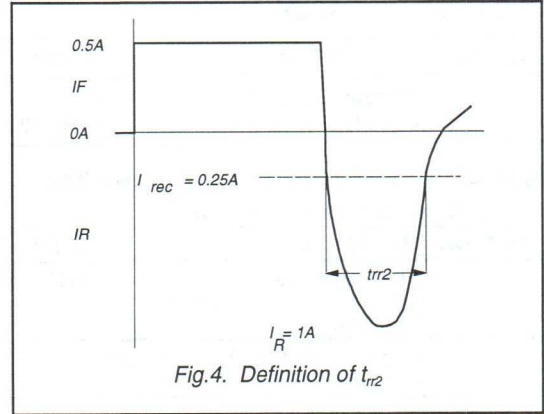
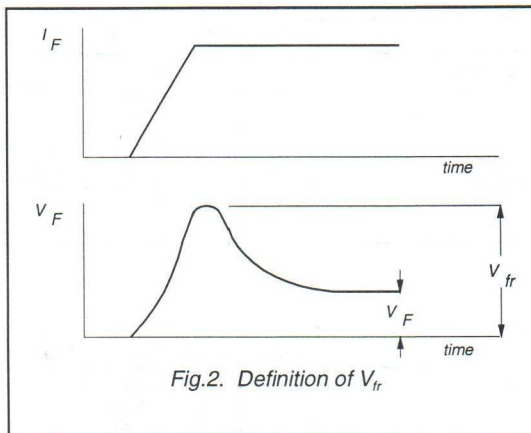
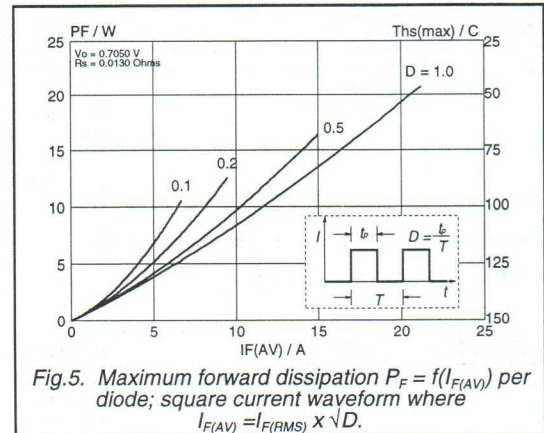
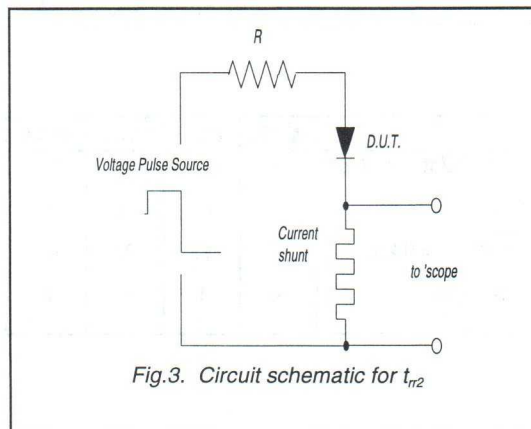
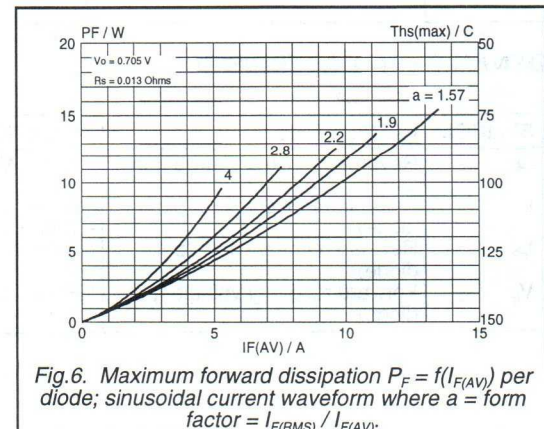
DYNAMIC CHARACTERISTICS

$T_j = 25^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Q_s	Reverse recovery charge (per diode)	$I_F = 2 \text{ A}$; $V_R \geq 30 \text{ V}$; $-di_F/dt = 20 \text{ A}/\mu\text{s}$	-	6	15	nC
t_{rr1}	Reverse recovery time (per diode)	$I_F = 1 \text{ A}$; $V_R \geq 30 \text{ V}$; $-di_F/dt = 100 \text{ A}/\mu\text{s}$	-	20	28	ns
t_{rr2}	Reverse recovery time (per diode)	$I_F = 0.5 \text{ A}$ to $I_R = 1 \text{ A}$; $I_{rec} = 0.25 \text{ A}$	-	13	22	ns
V_{fr}	Forward recovery voltage (per diode)	$I_F = 1 \text{ A}$; $di_F/dt = 10 \text{ A}/\mu\text{s}$	-	1	-	V

Rectifier diodes ultrafast, rugged

BYV72EF series

Fig.1. Definition of t_{rr1} , Q_s and I_{rim} Fig.4. Definition of t_{tr2} Fig.2. Definition of V_{fr} Fig.5. Maximum forward dissipation $P_F = f(I_{F(AV)})$ per diode; square current waveform where $I_{F(AV)} = I_{F(RMS)} \times \sqrt{D}$.Fig.3. Circuit schematic for t_{tr2} Fig.6. Maximum forward dissipation $P_F = f(I_{F(AV)})$ per diode; sinusoidal current waveform where $a = \text{form factor} = I_{F(RMS)} / I_{F(AV)}$.

Rectifier diodes ultrafast, rugged

BYV72EF series

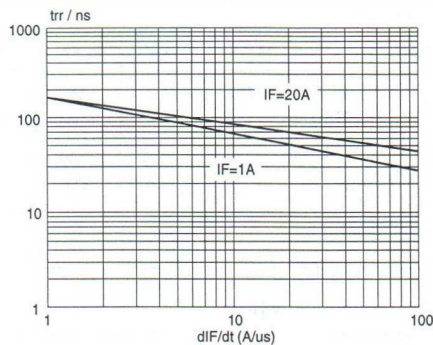


Fig. 7. Maximum t_{rr} at $T_j = 25\text{ }^{\circ}\text{C}$; per diode

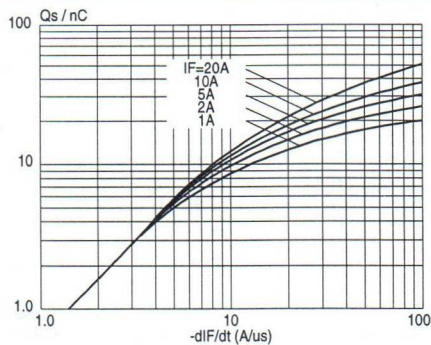


Fig. 10. Maximum Q_s at $T_j = 25\text{ }^{\circ}\text{C}$; per diode

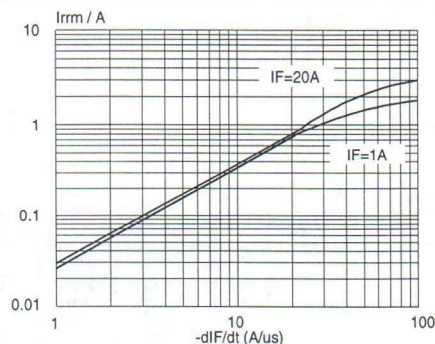


Fig. 8. Maximum I_{rms} at $T_j = 25\text{ }^{\circ}\text{C}$; per diode

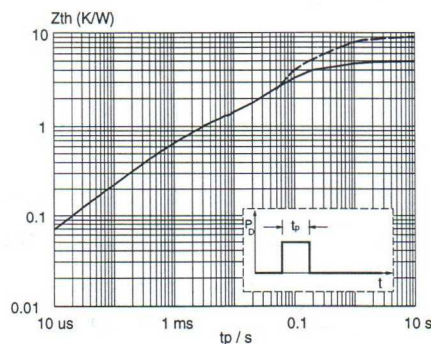


Fig. 11. Transient thermal impedance; per diode;
 $Z_{th\ j-hs} = f(t_p)$.

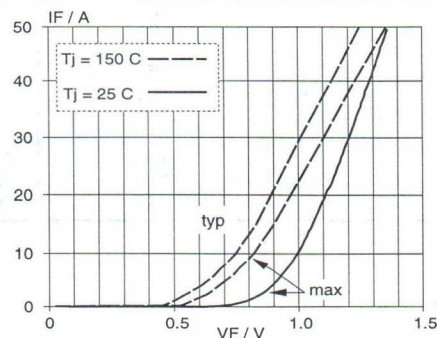


Fig. 9. Typical and maximum forward characteristic
 $I_F = f(V_F)$; parameter T_j

Rectifier diodes ultrafast

BYV72F series

GENERAL DESCRIPTION

Glass passivated, high efficiency, dual, rectifier diodes in a full pack, plastic envelope, featuring low forward voltage drop, ultra-fast recovery times and soft recovery characteristic. They are intended for use in switched mode power supplies and high frequency circuits in general where low conduction and switching losses are essential.

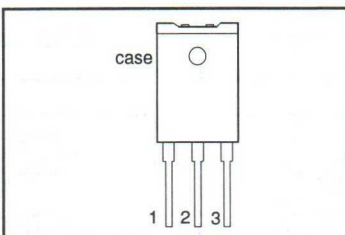
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
V_{RRM}	BYV72F- Repetitive peak reverse voltage	100 100	150 150	200 200	V
V_F	Forward voltage	0.90	0.90	0.90	V
$I_{O(AV)}$	Output current (both diodes conducting)	20	20	20	A
t_{rr}	Reverse recovery time	28	28	28	ns

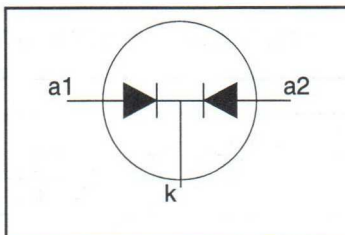
PINNING - SOT199

PIN	DESCRIPTION
1	anode 1 (a)
2	cathode (k)
3	anode 2 (a)

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{RRM}	Repetitive peak reverse voltage	square wave; $\delta = 0.5$; $T_{hs} \leq 78^\circ\text{C}$ sinusoidal; $a = 1.57$; $T_{hs} \leq 78^\circ\text{C}$	-	-100	-150	-200	V
V_{RWM}	Crest working reverse voltage		-	100	150	200	V
V_R	Continuous reverse voltage ¹		-	100	150	200	V
$I_{O(AV)}$	Output current (both diodes conducting) ²	$t = 25\ \mu\text{s}$; $\delta = 0.5$; $T_{hs} \leq 78^\circ\text{C}$ $t = 10\ \text{ms}$ $t = 8.3\ \text{ms}$ sinusoidal; with reapplied $V_{RWM(max)}$ $t = 10\ \text{ms}$	-	20			A
$I_{O(RMS)}$	RMS forward current		-	20			A
I_{FRM}	Repetitive peak forward current per diode		-	20			A
I_{FSM}	Non-repetitive peak forward current per diode		-	150			A
I_{FSM}	Non-repetitive peak forward current per diode		-	160			A
I^2t	I^2t for fusing		-	112			A ² s
T_{stg}	Storage temperature		-40	150			$^\circ\text{C}$
T_j	Operating junction temperature		-	150			$^\circ\text{C}$

1 $T_{hs} \leq 125^\circ\text{C}$ for thermal stability.

2 Neglecting switching and reverse current losses.

Rectifier diodes ultrafast

BYV72F series

ISOLATION

$T_{hs} = 25\text{ }^{\circ}\text{C}$ unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_{isol}	Repetitive peak voltage from all three terminals to external heatsink	R.H. $\leq 65\%$; clean and dustfree	-	-	2500	V
C_{isol}	Capacitance from T2 to external heatsink	$f = 1\text{ MHz}$	-	22	-	pF

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-hs}$	Thermal resistance junction to heatsink	both diodes conducting with heatsink compound without heatsink compound per diode	-	-	4.0 8.0	K/W K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	with heatsink compound without heatsink compound in free air	-	-	5.0 9.0	K/W K/W
			-	35	-	K/W

STATIC CHARACTERISTICS

$T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage (per diode)	$I_F = 15\text{ A}$; $T_j = 150\text{ }^{\circ}\text{C}$	-	0.83	0.90	V
		$I_F = 15\text{ A}$	-	0.95	1.05	V
		$I_F = 30\text{ A}$	-	1.00	1.20	V
I_R	Reverse current (per diode)	$V_R = V_{RWM}$; $T_j = 100\text{ }^{\circ}\text{C}$	-	0.5	1	mA
		$V_R = V_{RWM}$	-	10	100	μA

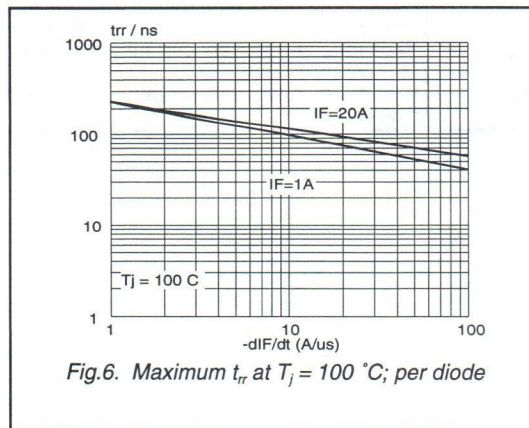
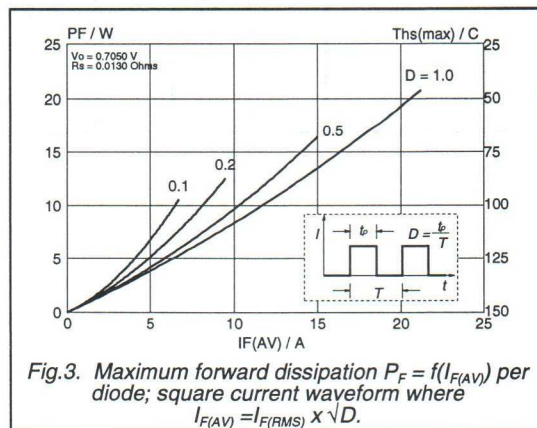
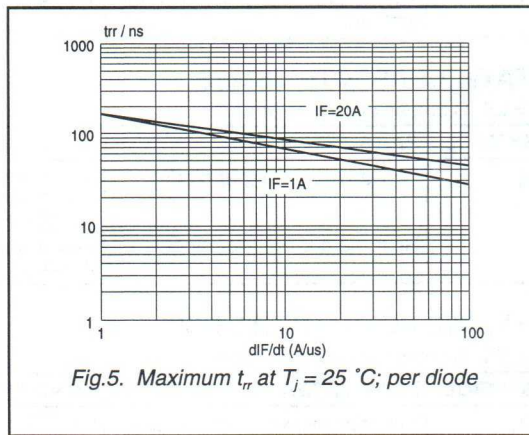
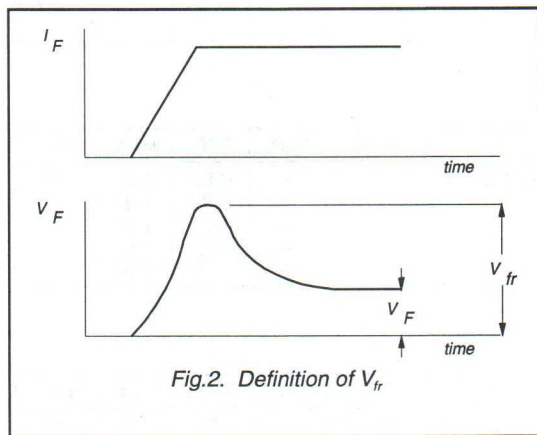
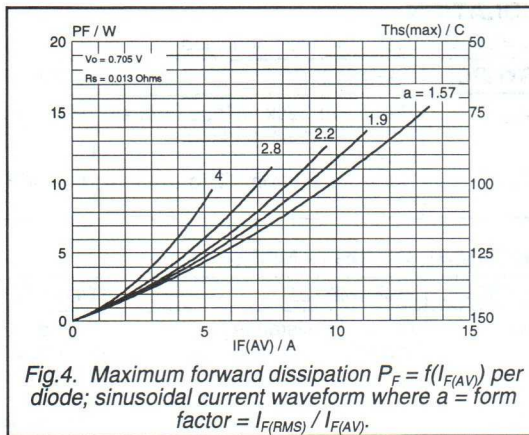
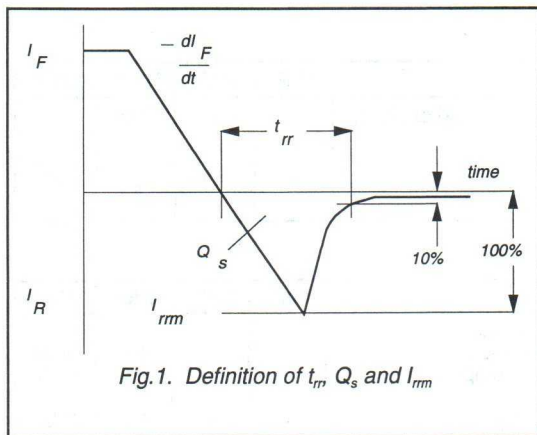
DYNAMIC CHARACTERISTICS

$T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Q_s	Reverse recovery charge (per diode)	$I_F = 2\text{ A}$; $V_R \geq 30\text{ V}$; $-di_F/dt = 20\text{ A}/\mu\text{s}$	-	6	15	nC
t_{rr}	Reverse recovery time (per diode)	$I_F = 1\text{ A}$; $V_R \geq 30\text{ V}$; $-di_F/dt = 100\text{ A}/\mu\text{s}$	-	20	28	ns
I_{rm}	Peak reverse recovery current (per diode)	$I_F = 10\text{ A}$; $V_R \geq 30\text{ V}$; $-di_F/dt = 50\text{ A}/\mu\text{s}$; $T_j = 100\text{ }^{\circ}\text{C}$	-	2	2.4	A
V_{fr}	Forward recovery voltage (per diode)	$I_F = 1\text{ A}$; $di_F/dt = 10\text{ A}/\mu\text{s}$	-	1	-	V

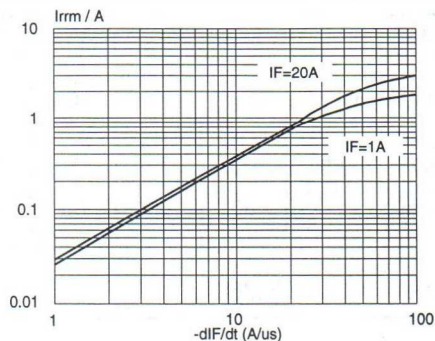
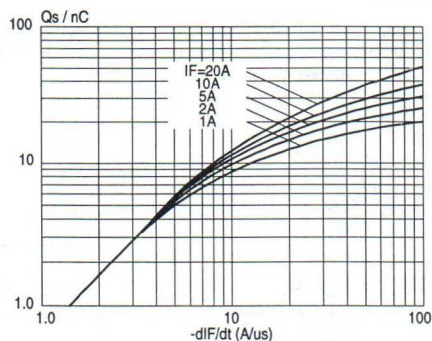
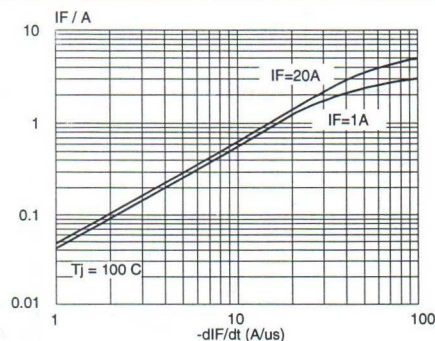
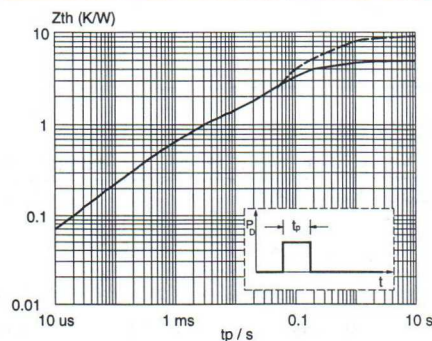
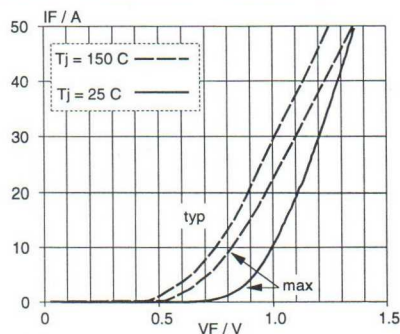
Rectifier diodes
ultrafast

BYV72F series



Rectifier diodes
ultrafast

BYV72F series

Fig. 7. Maximum I_{rms} at $T_j = 25\text{ }^{\circ}\text{C}$; per diodeFig. 10. Maximum Q_s at $T_j = 25\text{ }^{\circ}\text{C}$; per diodeFig. 8. Maximum I_{rms} at $T_j = 100\text{ }^{\circ}\text{C}$; per diodeFig. 11. Transient thermal impedance; per diode;
 $Z_{th\ j-hs} = f(t_p)$.Fig. 9. Typical and maximum forward characteristic
 $I_F = f(V_F)$; parameter T_j

Dual rectifier diodes ultrafast

BYV74 series

GENERAL DESCRIPTION

Glass passivated, high efficiency rectifier diodes in a plastic envelope featuring low forward voltage drop, ultra fast reverse recovery times and soft recovery characteristic. They are intended for use in switched mode power supplies and high frequency circuits in general, where both low conduction losses and low switching losses are essential.

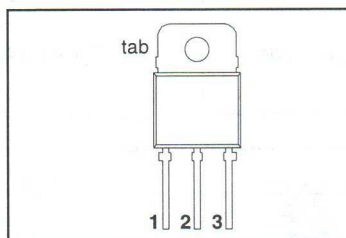
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
V_{RRM}	BYV74- Repetitive peak reverse voltage	300 300	400 400	500 500	V
V_F	Forward voltage	1.12	1.12	1.12	V
$I_{O(AV)}$	Average output current (both diodes conducting)	30	30	30	A
t_{rr}	Reverse recovery time	60	60	60	ns

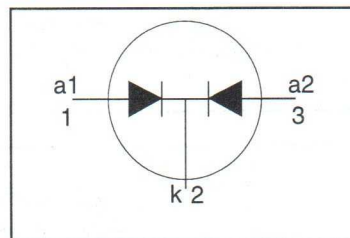
PINNING - SOT93

PIN	DESCRIPTION
1	Anode 1 (a)
2	Cathode (k)
3	Anode 2 (a)
tab	Cathode (k)

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{RRM}	Repetitive peak reverse voltage	$T_{mb} \leq 136^\circ\text{C}$	-	-300	-400	-500	V
V_{RWM}	Crest working reverse voltage		-	300	400	500	V
V_R	Continuous reverse voltage		-	300	400	500	V
$I_{O(AV)}$	Average output current (both diodes conducting) ¹	square wave; $\delta = 0.5$; $T_{mb} \leq 94^\circ\text{C}$ sinusoidal; $a = 1.57$; $T_{mb} \leq 98^\circ\text{C}$	-	30			A
$I_{O(RMS)}$	RMS output current (both diodes conducting)		-	27			A
I_{FRM}	Repetitive peak forward current per diode		-	43			A
I_{FSM}	Non-repetitive peak forward current per diode.	$t = 25\ \mu\text{s}$; $\delta = 0.5$; $T_{mb} \leq 94^\circ\text{C}$ $t = 10\ \text{ms}$ $t = 8.3\ \text{ms}$ sinusoidal; with reapplied	-	30			A
I^2t	I^2t for fusing		-	150			A ² s
T_{stg}	Storage temperature		-	160			$^\circ\text{C}$
T_j	Operating junction temperature	$V_{RRM(max)}$ $t = 10\ \text{ms}$	-40	112			$^\circ\text{C}$
			-	150			$^\circ\text{C}$

¹ Neglecting switching and reverse current losses.

For output currents in excess of 20 A, connection should be made to the exposed metal mounting base.

Dual rectifier diodes
ultrafast

BYV74 series

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-hs}$	Thermal resistance junction to heatsink	per diode	-	-	2.4	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	both diodes conducting in free air.	-	-	1.4	K/W
			-	45	-	K/W

STATIC CHARACTERISTICS

 $T_j = 25\ ^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage (per diode)	$I_F = 15\ \text{A}$; $T_j = 150\ ^\circ\text{C}$	-	0.95	1.12	V
		$I_F = 15\ \text{A}$	-	1.08	1.25	V
		$I_F = 30\ \text{A}$	-	1.15	1.36	V
I_R	Reverse current (per diode)	$V_R = V_{RRM}$	-	10	50	μA
		$V_R = V_{RRM}$; $T_j = 100\ ^\circ\text{C}$	-	0.3	0.8	mA

DYNAMIC CHARACTERISTICS

 $T_j = 25\ ^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Q_s	Reverse recovery charge (per diode)	$I_F = 2\ \text{A}$ to $V_R \geq 30\ \text{V}$; $di_F/dt = 20\ \text{A}/\mu\text{s}$	-	40	60	nC
t_{rr}	Reverse recovery time (per diode)	$I_F = 1\ \text{A}$ to $V_R \geq 30\ \text{V}$; $di_F/dt = 100\ \text{A}/\mu\text{s}$	-	50	60	ns
I_{rm}	Peak reverse recovery current (per diode)	$I_F = 10\ \text{A}$ to $V_R \geq 30\ \text{V}$; $di_F/dt = 50\ \text{A}/\mu\text{s}$; $T_j = 100\ ^\circ\text{C}$	-	4.2	5.2	A
V_{fr}	Forward recovery voltage (per diode)	$I_F = 10\ \text{A}$; $di_F/dt = 10\ \text{A}/\mu\text{s}$	-	2.5	-	V

Dual rectifier diodes ultrafast

BYV74 series

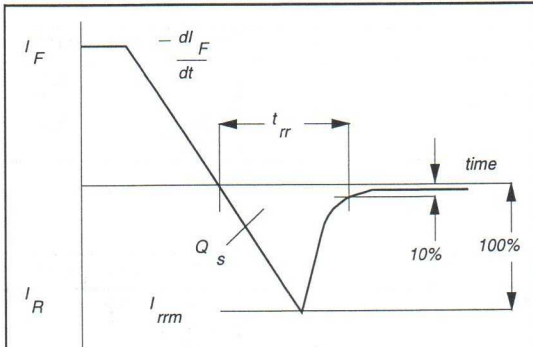


Fig. 1. Definition of t_{rr} , Q_s and I_{rms}

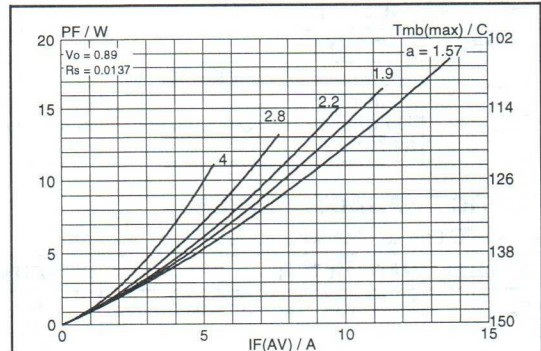


Fig. 4. Maximum forward dissipation $P_F = f(I_{F(AV)})$ per diode; sinusoidal current waveform where $a = \text{form factor} = I_{F(RMS)} / I_{F(AV)}$.

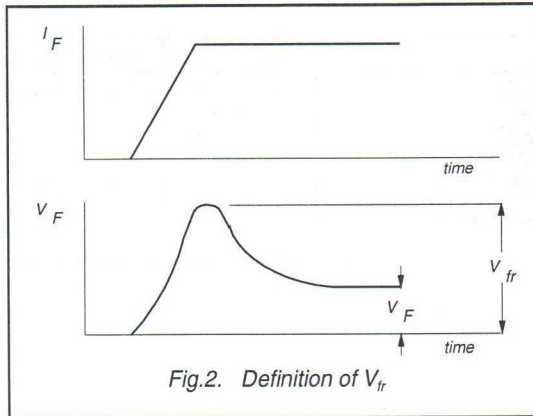


Fig. 2. Definition of V_{fr}

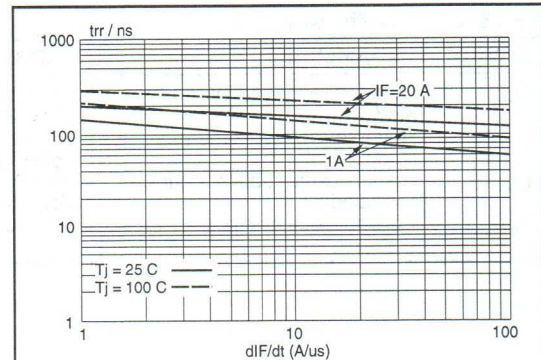


Fig. 5. Maximum t_{tr} at $T_j = 25^\circ\text{C}$ and 100°C ; per diode

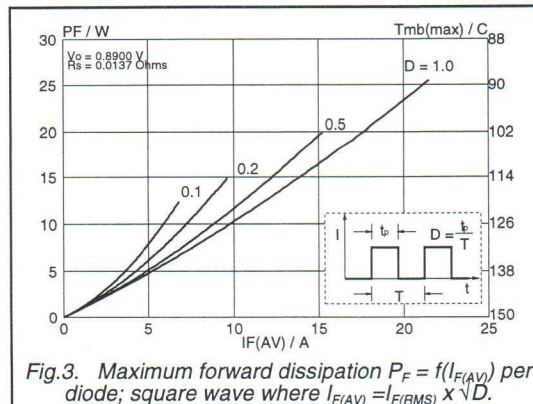


Fig. 3. Maximum forward dissipation $P_F = f(I_{F(AV)})$ per diode; square wave where $I_{F(AV)} = I_{F(RMS)} \times \sqrt{D}$.

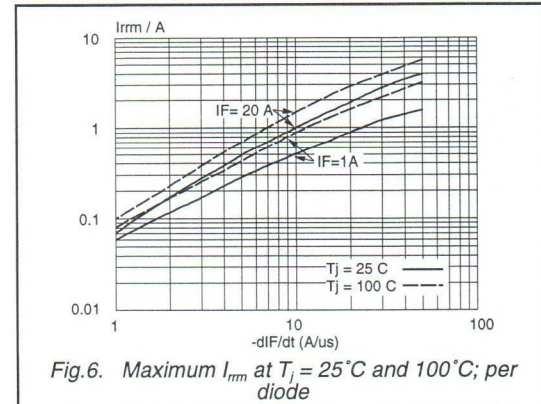


Fig. 6. Maximum I_{rms} at $T_j = 25^\circ\text{C}$ and 100°C ; per diode

Dual rectifier diodes
ultrafast

BYV74 series

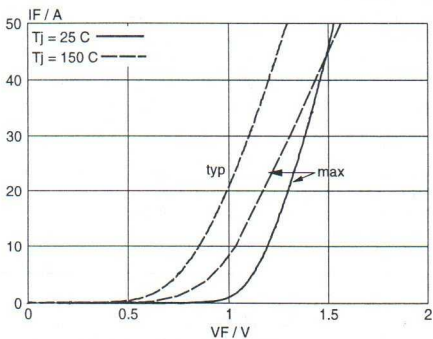


Fig.7. Typical and maximum forward characteristic
 $I_F = f(V_F)$; parameter T_J

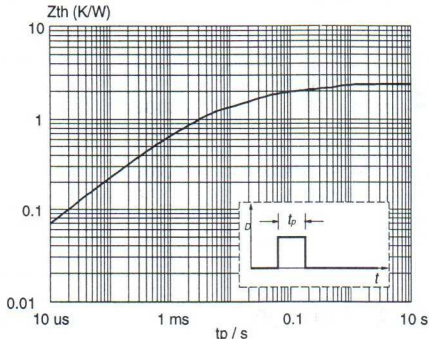


Fig.9. Transient thermal impedance per diode
 $Z_{th\ j-mb} = f(t_p)$

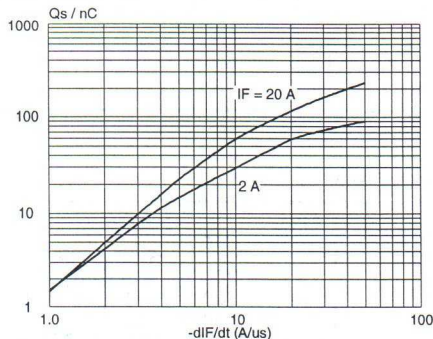


Fig.8. Maximum Q_s at $T_J = 25^\circ\text{C}$; per diode

Dual rectifier diodes ultrafast

BYV74F series

GENERAL DESCRIPTION

Glass passivated, high efficiency rectifier diodes in a full pack, plastic envelope featuring low forward voltage drop, ultra fast reverse recovery times and soft recovery characteristic. They are intended for use in switched mode power supplies and high frequency circuits in general, where both low conduction losses and low switching losses are essential.

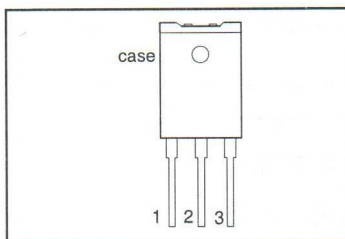
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
V_{RRM}	BYV74F- Repetitive peak reverse voltage	300 300	400 400	500 500	V
V_F	Forward voltage	1.12	1.12	1.12	V
$I_{O(AV)}$	Average output current (both diodes conducting)	20	20	20	A
t_{rr}	Reverse recovery time	60	60	60	ns

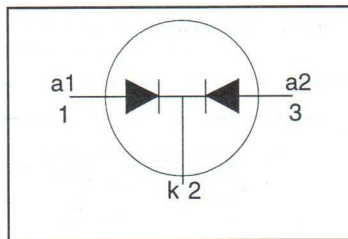
PINNING - SOT199

PIN	DESCRIPTION
1	anode 1 (a)
2	cathode (k)
3	anode 2 (a)

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{RRM}	Repetitive peak reverse voltage	$T_{mb} \leq 117^\circ\text{C}$	-	-300	-400	-500	V
V_{RWM}	Crest working reverse voltage		-	300	400	500	V
V_R	Continuous reverse voltage		-	300	400	500	V
$I_{O(AV)}$	Average output current (both diodes conducting) ¹	square wave; $\delta = 0.5$; $T_{hs} \leq 54^\circ\text{C}$ sinusoidal; $a = 1.57$; $T_{hs} \leq 54^\circ\text{C}$	-	20			A
$I_{O(RMS)}$	RMS output current (both diodes conducting)		-	20			A
I_{FRM}	Repetitive peak forward current per diode		-	20			A
I_{FSM}	Non-repetitive peak forward current per diode.	$t = 25\ \mu\text{s}$; $\delta = 0.5$; $T_{hs} \leq 54^\circ\text{C}$ $t = 10\ \text{ms}$ $t = 8.3\ \text{ms}$ sinusoidal; with reapplied $V_{RRM(max)}$ $t = 10\ \text{ms}$	-	30			A
I^2t	I^2t for fusing		-	150			A ² s
T_{stg}	Storage temperature		-40	150			$^\circ\text{C}$
T_j	Operating junction temperature		-	150			$^\circ\text{C}$

¹ Neglecting switching and reverse current losses.

Dual rectifier diodes
ultrafast

BYV74F series

ISOLATION LIMITING VALUE & CHARACTERISTIC

 $T_{hs} = 25\text{ }^{\circ}\text{C}$ unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_{isol}	Repetitive peak voltage from all three terminals to external heatsink	R.H. $\leq 65\%$; clean and dustfree	-		2500	V
C_{isol}	Capacitance from T2 to external heatsink	$f = 1\text{ MHz}$	-	22	-	pF

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-hs}$	Thermal resistance junction to heatsink	both diodes conducting with heatsink compound	-	-	4.0	K/W
		without heatsink compound per diode	-	-	8.0	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	with heatsink compound	-	-	5.0	K/W
		without heatsink compound in free air.	-	35	9.0	K/W

STATIC CHARACTERISTICS

 $T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage (per diode)	$I_F = 15\text{ A}$; $T_j = 150\text{ }^{\circ}\text{C}$	-	0.95	1.12	V
		$I_F = 15\text{ A}$	-	1.08	1.25	V
		$I_F = 30\text{ A}$	-	1.15	1.36	V
I_R	Reverse current (per diode)	$V_R = V_{RRM}$	-	10	50	μA
		$V_R = V_{RRM}$; $T_j = 100\text{ }^{\circ}\text{C}$	-	0.3	0.8	mA

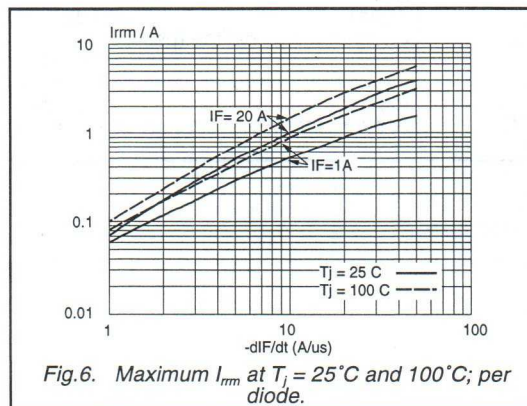
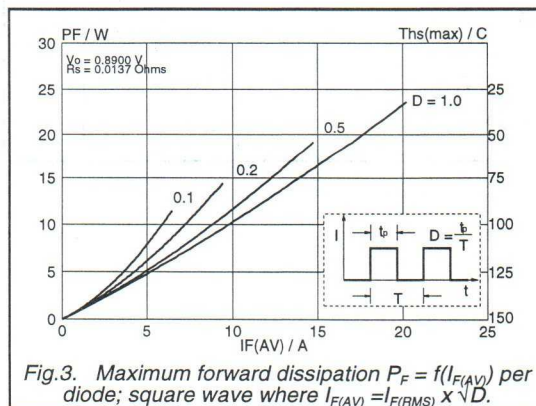
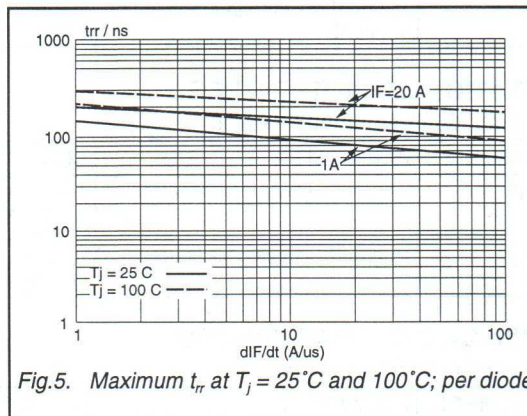
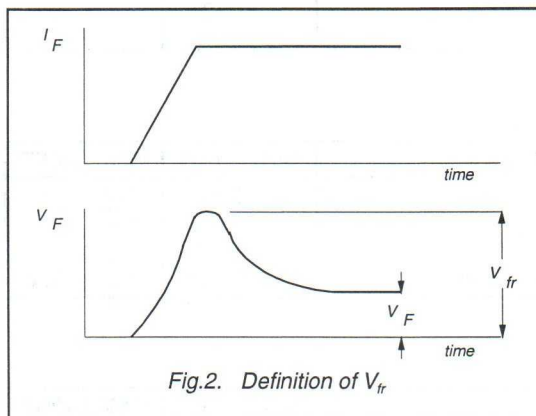
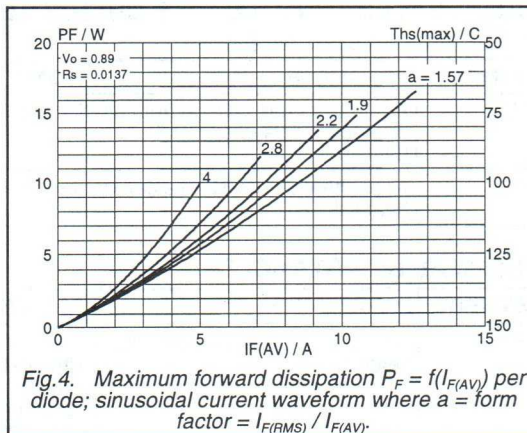
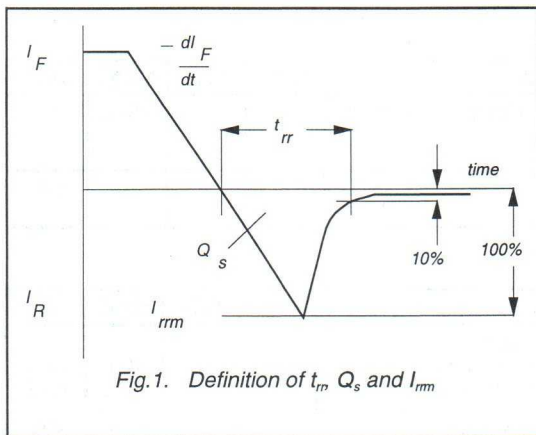
DYNAMIC CHARACTERISTICS

 $T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Q_s	Reverse recovery charge (per diode)	$I_F = 2\text{ A}$ to $V_R \geq 30\text{ V}$; $di_F/dt = 20\text{ A}/\mu\text{s}$	-	40	60	nC
t_{rr}	Reverse recovery time (per diode)	$I_F = 1\text{ A}$ to $V_R \geq 30\text{ V}$; $di_F/dt = 100\text{ A}/\mu\text{s}$	-	50	60	ns
I_{rm}	Peak reverse recovery current (per diode)	$I_F = 10\text{ A}$ to $V_R \geq 30\text{ V}$; $di_F/dt = 50\text{ A}/\mu\text{s}$; $T_j = 100\text{ }^{\circ}\text{C}$	-	4.2	5.2	A
V_{fr}	Forward recovery voltage (per diode)	$I_F = 10\text{ A}$; $di_F/dt = 10\text{ A}/\mu\text{s}$	-	2.5	-	V

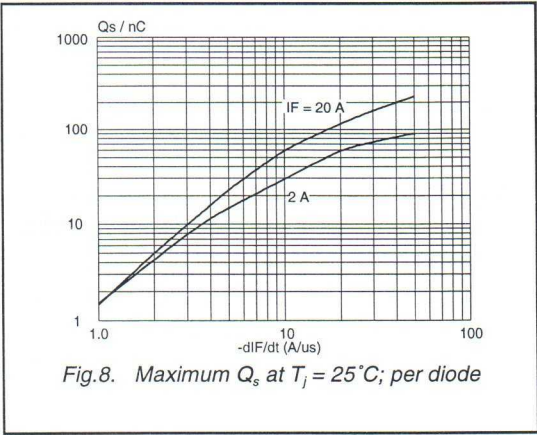
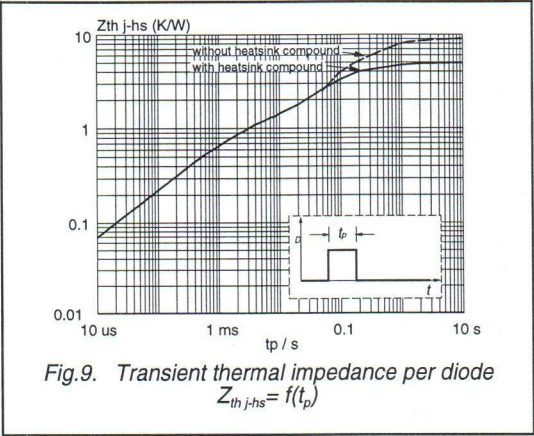
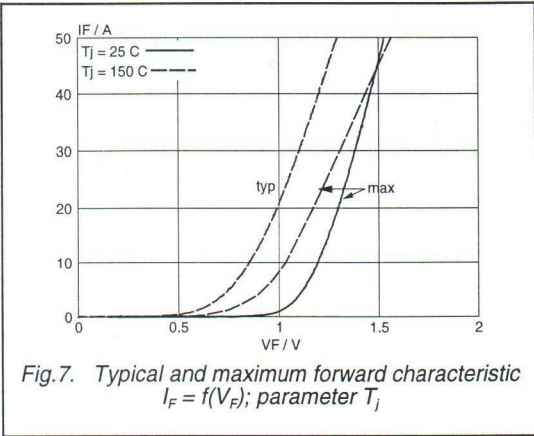
Dual rectifier diodes
ultrafast

BYV74F series



Dual rectifier diodes
ultrafast

BYV74F series



Rectifier diodes ultrafast

BYV79 series

GENERAL DESCRIPTION

Glass passivated high efficiency rectifier diodes in a plastic envelope, featuring low forward voltage drop, ultra-fast recovery times and soft recovery characteristic. They are intended for use in switched mode power supplies and high frequency circuits in general where low conduction and switching losses are essential.

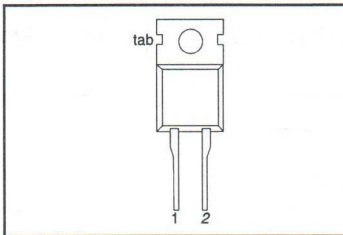
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
V_{RRM}	BYV79- Repetitive peak reverse voltage	100 100	150 150	200 200	V
V_F	Forward voltage	0.9	0.9	0.9	V
$I_{F(AV)}$	Forward current	14	14	14	A
t_{rr}	Reverse recovery time	30	30	30	ns

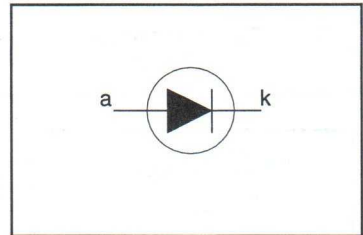
PINNING - TO220AC

PIN	DESCRIPTION
1	cathode (k)
2	anode (a)
tab	cathode (k)

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{RRM}	Repetitive peak reverse voltage	square wave; $\delta = 0.5$; $T_{mb} \leq 120^\circ\text{C}$ sinusoidal; $a = 1.57$; $T_{mb} \leq 122^\circ\text{C}$	-	-100 100	-150 150	-200 200	V
V_{RWM}	Crest working reverse voltage		-	100	150	200	V
V_R	Continuous reverse voltage		-	100	150	200	V
$I_{F(AV)}$	Average forward current ²	$t = 25\ \mu\text{s}$; $\delta = 0.5$; $T_{mb} \leq 120^\circ\text{C}$ sinusoidal; with reapplied	-	14			A
$I_{F(RMS)}$	RMS forward current		-	12.7			A
I_{FRM}	Repetitive peak forward current		-	20			A
I_{FSM}	Non-repetitive peak forward current	$t = 10\ \text{ms}$ $t = 8.3\ \text{ms}$ sinusoidal; with reapplied $V_{RWM(max)}$ $t = 10\ \text{ms}$	-	28			A
I^2t	I^2t for fusing		-	150			A ² s
T_{stg}	Storage temperature		-40	112			$^\circ\text{C}$
T_j	Operating junction temperature		-	150			$^\circ\text{C}$

1 $T_{mb} \leq 145^\circ\text{C}$ for thermal stability.

2 Neglecting switching and reverse current losses.

Rectifier diodes ultrafast

BYV79 series

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-mb}$	Thermal resistance junction to mounting base	in free air	-	-	2.0	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient		-	60	-	K/W

STATIC CHARACTERISTICS

$T_j = 25\ ^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage	$I_F = 14\ \text{A}; T_j = 150\ ^\circ\text{C}$	-	0.83	0.90	V
		$I_F = 14\ \text{A}$	-	0.95	1.05	V
I_R	Reverse current	$I_F = 50\ \text{A}$	-	1.20	1.30	V
		$V_R = V_{RWM}; T_j = 100\ ^\circ\text{C}$	-	0.5	1.3	mA
		$V_R = V_{RWM}$	-	5	50	μA

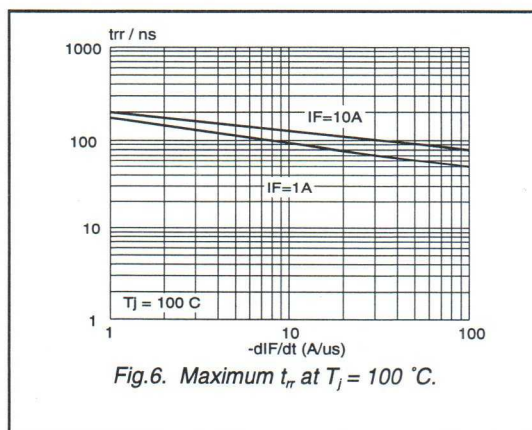
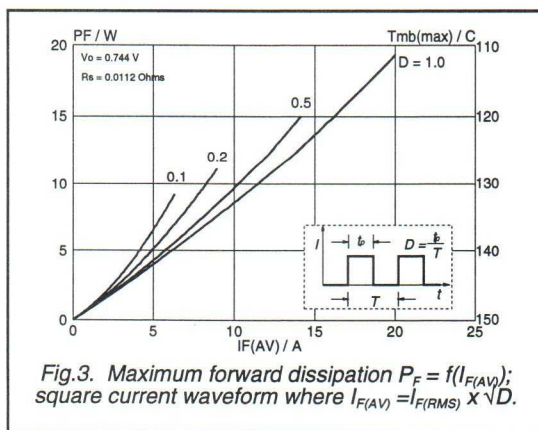
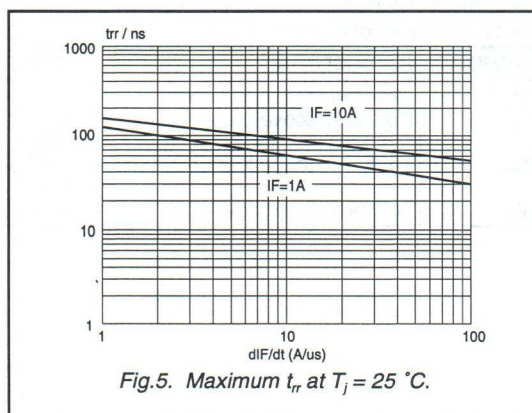
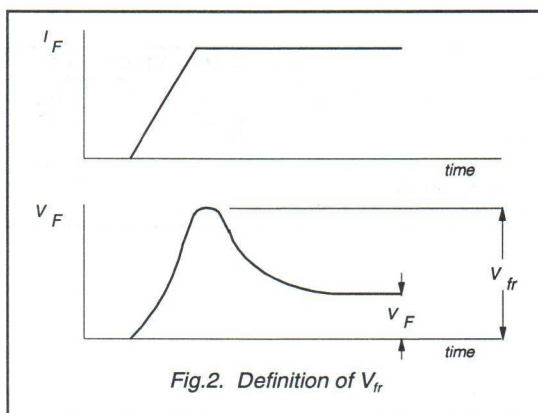
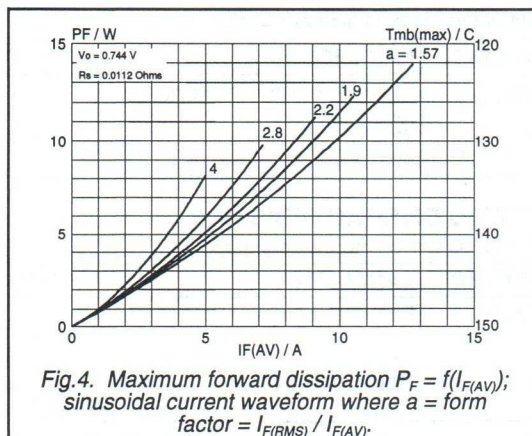
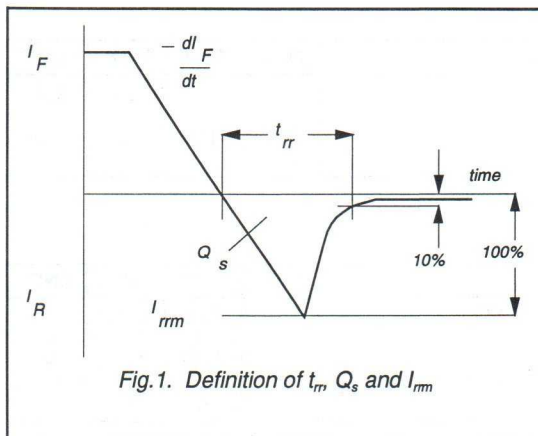
DYNAMIC CHARACTERISTICS

$T_j = 25\ ^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Q_s	Reverse recovery charge	$I_F = 2\ \text{A}; V_R \geq 30\ \text{V}; -di_F/dt = 20\ \text{A}/\mu\text{s}$	-	6	15	nC
t_{rr}	Reverse recovery time	$I_F = 1\ \text{A}; V_R \geq 30\ \text{V}; -di_F/dt = 100\ \text{A}/\mu\text{s}$	-	20	30	ns
I_{rm}	Peak reverse recovery current	$I_F = 10\ \text{A}; V_R \geq 30\ \text{V}; -di_F/dt = 50\ \text{A}/\mu\text{s}; T_j = 100\ ^\circ\text{C}$	-	3	4	A
V_{fr}	Forward recovery voltage	$I_F = 10\ \text{A}; di_F/dt = 10\ \text{A}/\mu\text{s}$	-	1	-	V

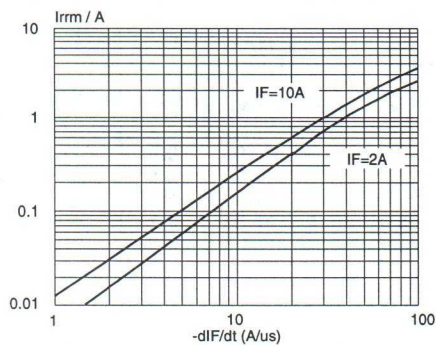
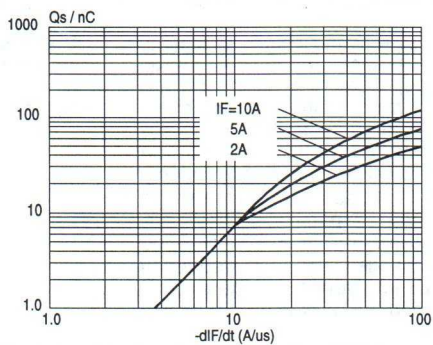
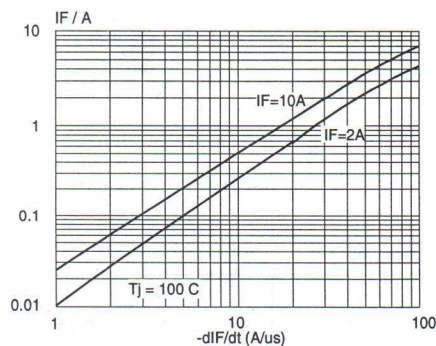
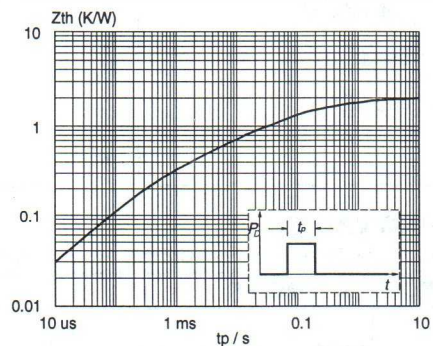
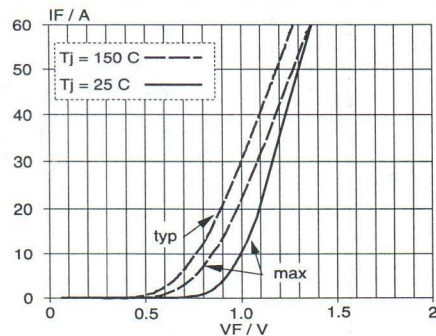
Rectifier diodes
ultrafast

BYV79 series



Rectifier diodes
ultrafast

BYV79 series

Fig.7. Maximum I_{rms} at $T_j = 25\text{ }^{\circ}\text{C}$.Fig.10. Maximum Q_s at $T_j = 25\text{ }^{\circ}\text{C}$.Fig.8. Maximum I_{rms} at $T_j = 100\text{ }^{\circ}\text{C}$.Fig.11. Transient thermal impedance; $Z_{th\ j-mb} = f(t_p)$.Fig.9. Typical and maximum forward characteristic $I_F = f(V_F)$; parameter T_j

Rectifier diodes ultrafast, rugged

BYV79E series

GENERAL DESCRIPTION

Glass passivated high efficiency rugged rectifier diodes in a plastic envelope, featuring low forward voltage drop, ultra-fast recovery times and soft recovery characteristic. These devices can withstand reverse voltage transients and have guaranteed reverse surge and ESD capability. They are intended for use in switched mode power supplies and high frequency circuits in general where low conduction and switching losses are essential.

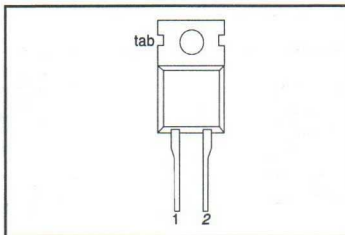
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
V_{RRM}	BYV79E- Repetitive peak reverse voltage	100 100	150 150	200 200	V
V_F	Forward voltage	0.9	0.9	0.9	V
$I_{F(AV)}$	Forward current	14	14	14	A
t_T	Reverse recovery time	30	30	30	ns
I_{RRM}	Repetitive peak reverse current	0.2	0.2	0.2	A

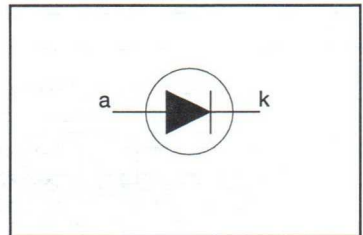
PINNING - TO220AC

PIN	DESCRIPTION
1	cathode (k)
2	anode (a)
tab	cathode (k)

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{RRM}	Repetitive peak reverse voltage		-	-100	-150	-200	V
V_{RWM}	Crest working reverse voltage		-	100	150	200	V
V_R	Continuous reverse voltage ¹		-	100	150	200	V
$I_{F(AV)}$	Average forward current ²	square wave $\delta = 0.5$; $T_{mb} \leq 120^\circ\text{C}$ sinusoidal $a = 1.57$; $T_{mb} \leq 122^\circ\text{C}$	-	14			A
$I_{F(RMS)}$	RMS forward current		-	20			A
I_{FRM}	Repetitive peak forward current	$t = 25\ \mu\text{s}$; $\delta = 0.5$; $T_{mb} \leq 120^\circ\text{C}$	-	28			A
I_{FSM}	Non-repetitive peak forward current	$t = 10\ \text{ms}$ $t = 8.3\ \text{ms}$ sinusoidal; with reapplied $V_{RWM(max)}$	-	150			A
I^2t	I^2t for fusing	$t = 10\ \text{ms}$	-	112			A ² s
I_{RRM}	Repetitive peak reverse current	$t_p = 2\ \mu\text{s}$; $\delta = 0.001$	-	0.2			A
I_{RSM}	Non-repetitive peak reverse current	$t_p = 100\ \mu\text{s}$	-	0.2			A
T_{stg}	Storage temperature		-40	150			$^\circ\text{C}$
T_j	Operating junction temperature		-	150			$^\circ\text{C}$

1 $T_{mb} \leq 145^\circ\text{C}$ for thermal stability.

2 Neglecting switching and reverse current losses.

Rectifier diodes ultrafast, rugged

BYV79E series

ESD LIMITING VALUE

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_C	Electrostatic discharge capacitor voltage	Human body model; $C = 250 \text{ pF}$; $R = 1.5 \text{ k}\Omega$	-	8	kV

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th \text{ j-mb}}$	Thermal resistance junction to mounting base	in free air	-	-	2	K/W
$R_{th \text{ j-a}}$	Thermal resistance junction to ambient		-	60	-	K/W

STATIC CHARACTERISTICS

$T_J = 25^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage	$I_F = 14 \text{ A}$; $T_J = 150^\circ\text{C}$	-	0.83	0.90	V
I_R	Reverse current	$I_F = 14 \text{ A}$	-	0.95	1.05	V
		$I_F = 50 \text{ A}$	-	1.2	1.4	V
		$V_R = V_{RWM}$; $T_J = 100^\circ\text{C}$	-	0.5	1.3	mA
		$V_R = V_{RWM}$	-	5	50	μA

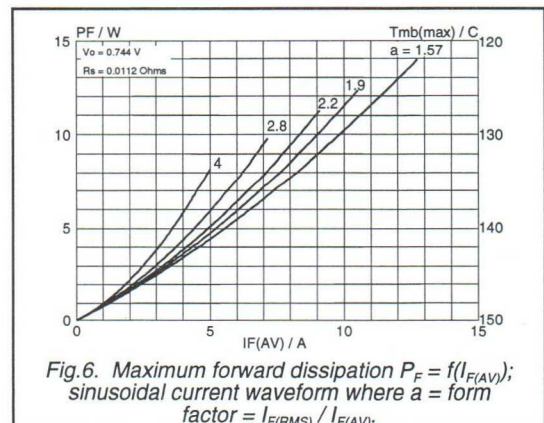
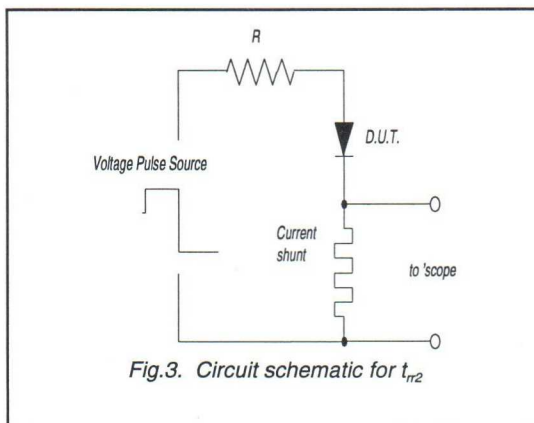
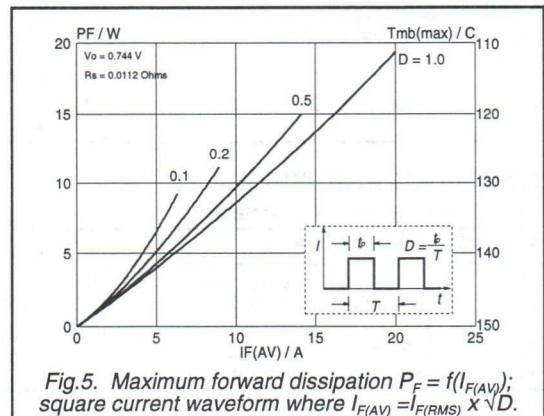
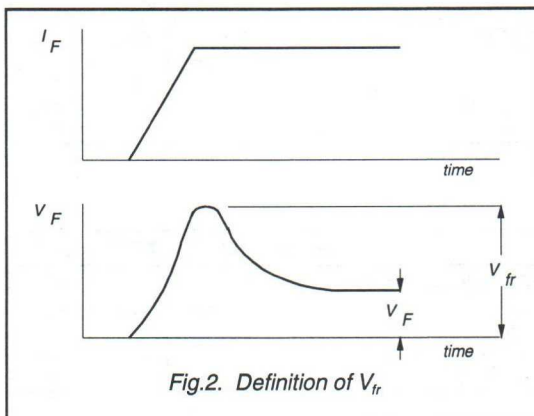
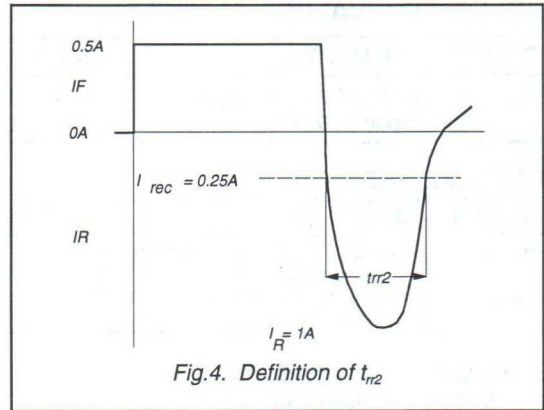
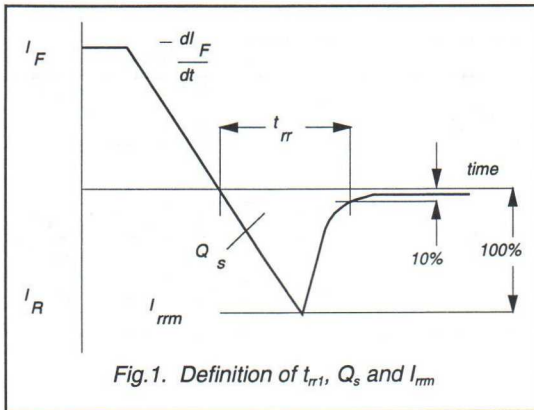
DYNAMIC CHARACTERISTICS

$T_J = 25^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Q_s	Reverse recovery charge	$I_F = 2 \text{ A}$; $V_R \geq 30 \text{ V}$; $-di_F/dt = 20 \text{ A}/\mu\text{s}$	-	6	15	nC
t_{rr1}	Reverse recovery time	$I_F = 1 \text{ A}$; $V_R \geq 30 \text{ V}$; $-di_F/dt = 100 \text{ A}/\mu\text{s}$	-	20	30	ns
t_{rr2}	Reverse recovery time	$I_F = 0.5 \text{ A}$ to $I_R = 1 \text{ A}$; $I_{rec} = 0.25 \text{ A}$	-	13	22	ns
V_{fr}	Forward recovery voltage	$I_F = 1 \text{ A}$; $di_F/dt = 10 \text{ A}/\mu\text{s}$	-	1	-	V

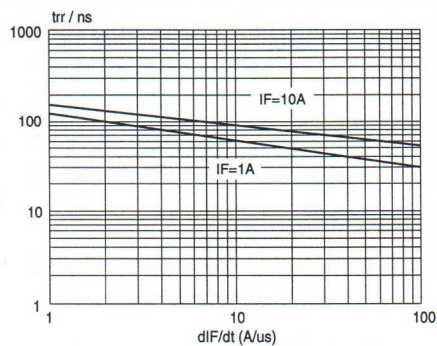
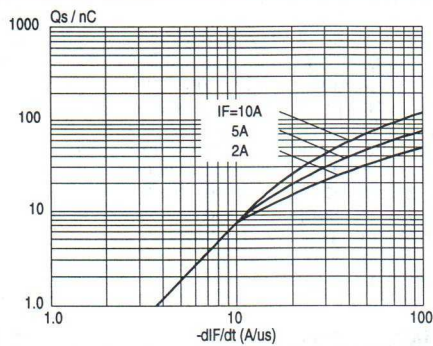
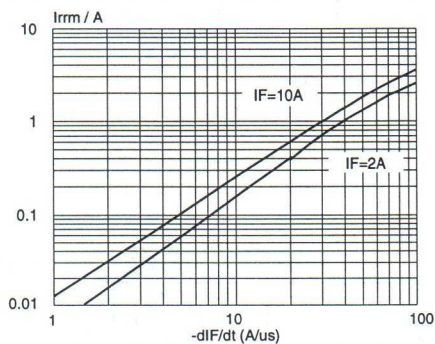
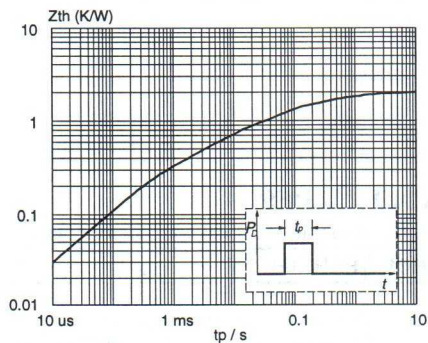
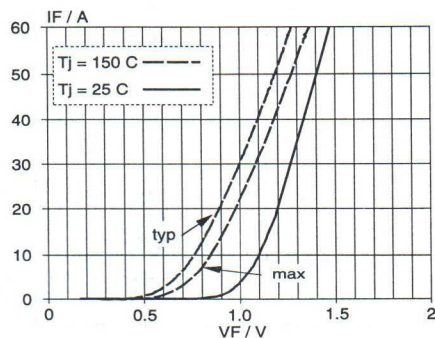
Rectifier diodes
ultrafast, rugged

BYV79E series



Rectifier diodes
ultrafast, rugged

BYV79E series

Fig. 7. Maximum t_{rr} at $T_j = 25\text{ }^{\circ}\text{C}$.Fig. 10. Maximum Q_s at $T_j = 25\text{ }^{\circ}\text{C}$.Fig. 8. Maximum I_{rrm} at $T_j = 25\text{ }^{\circ}\text{C}$.Fig. 11. Transient thermal impedance; $Z_{th\ j-mb} = f(t_p)$.Fig. 9. Typical and maximum forward characteristic $I_F = f(V_F)$; parameter T_j

Rectifier diodes ultrafast, rugged

BYV79EB series

GENERAL DESCRIPTION

Glass passivated epitaxial rectifier diodes in a plastic envelope suitable for surface mounting, featuring low forward voltage drop, ultra-fast recovery times, soft recovery characteristic and guaranteed reverse surge and ESD capability. They are intended for use in switched mode power supplies and high frequency circuits in general where low conduction and switching losses are essential.

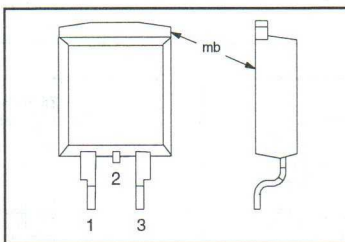
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
V_{RRM}	Repetitive peak reverse voltage	100	150	200	V
		100	150	200	
V_F	Forward voltage	0.9	0.9	0.9	V
$I_{F(AV)}$	Average forward current	14	14	14	A
t_{rr}	Reverse recovery time	30	30	30	ns
I_{RRM}	Repetitive peak reverse current	0.2	0.2	0.2	A

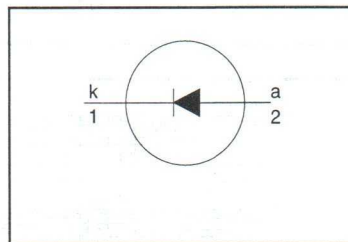
PINNING - SOT404

PIN	DESCRIPTION
1	no connection
2	cathode
3	anode
mb	cathode

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{RRM}	Repetitive peak reverse voltage	$T_{mb} \leq 145^\circ\text{C}$	-	-100	-150	-200	V
V_{RWM}	Crest working reverse voltage		-	100	150	200	V
V_R	Continuous reverse voltage		-	100	150	200	V
$I_{F(AV)}$	Average forward current ¹	square wave $\delta = 0.5$; $T_{mb} \leq 120^\circ\text{C}$ sinusoidal $a = 1.57$; $T_{mb} \leq 122^\circ\text{C}$	-	14			A
$I_{F(RMS)}$	RMS forward current		-	12.7			A
I_{FRM}	Repetitive peak forward current per diode	$t = 25\ \mu\text{s}$; $\delta = 0.5$; $T_{mb} \leq 120^\circ\text{C}$	-	20			A
I_{FSM}	Non-repetitive peak forward current	$t = 10\ \text{ms}$ $t = 8.3\ \text{ms}$ sinusoidal; with reapplied	-	28			A
I^2t	I^2t for fusing	$V_{RRM(max)}$ $t = 10\ \text{ms}$	-	150			A
I_{RRM}	Repetitive peak reverse current	$t_p = 2\ \mu\text{s}$; $\delta = 0.001$	-	160			A
I_{RSM}	Non-repetitive peak reverse current	$t_p = 100\ \mu\text{s}$	-	112			A ² s
T_{stg}	Storage temperature		-40	0.2			°C
T_j	Operating junction temperature		-	0.2			°C

¹ Neglecting switching and reverse current losses.

Rectifier diodes ultrafast, rugged

BYV79EB series

ESD LIMITING VALUE

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_C	Electrostatic discharge capacitor voltage	Human body model; $C = 250 \text{ pF}$; $R = 1.5 \text{ k}\Omega$	-	8	kV

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th \text{ j-mb}}$	Thermal resistance junction to mounting base	minimum footprint, FR4 board	-	-	2	K/W
$R_{th \text{ j-a}}$	Thermal resistance junction to ambient		-	50	-	K/W

STATIC CHARACTERISTICS

$T_J = 25^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage	$I_F = 14 \text{ A}$; $T_J = 150^\circ\text{C}$	-	0.83	0.90	V
I_R	Reverse current	$I_F = 14 \text{ A}$	-	0.95	1.05	V
		$I_F = 50 \text{ A}$	-	1.2	1.4	V
		$V_R = V_{RRM}$; $T_J = 100^\circ\text{C}$	-	0.5	1.3	mA
		$V_R = V_{RRM}$	-	5	50	μA

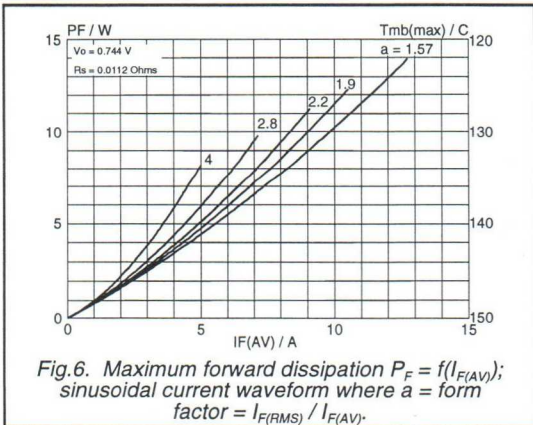
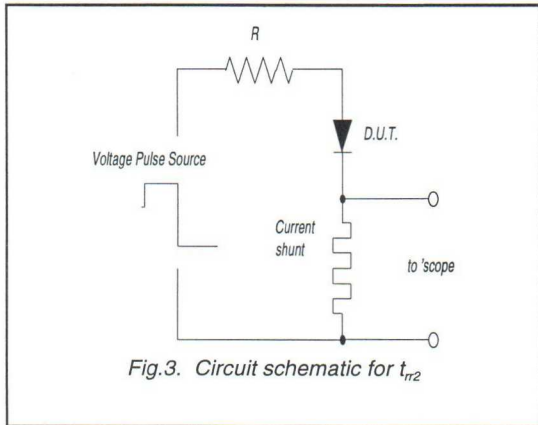
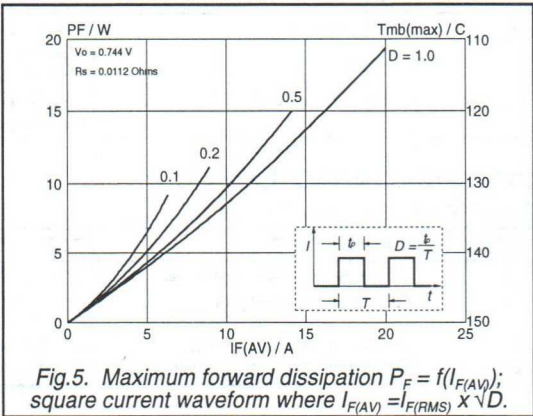
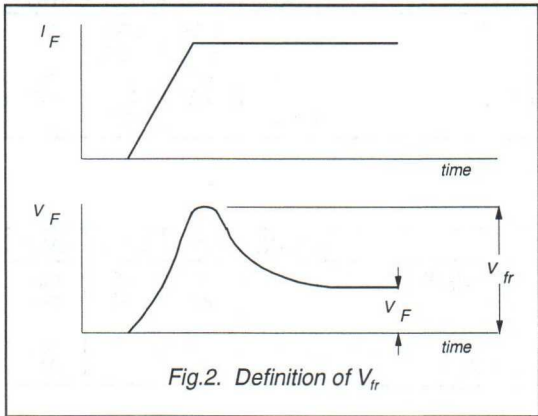
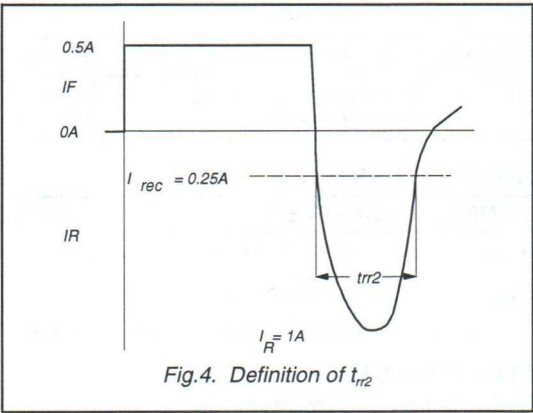
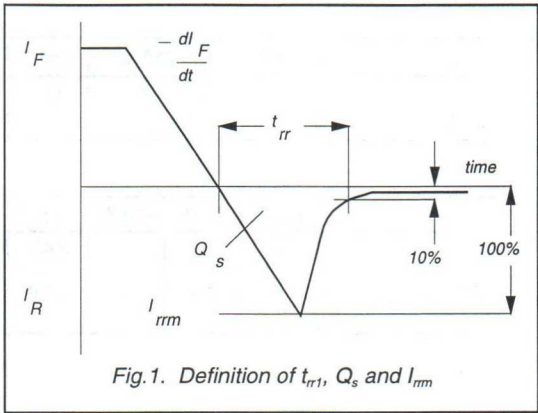
DYNAMIC CHARACTERISTICS

$T_J = 25^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Q_s	Reverse recovery charge	$I_F = 2 \text{ A}$; $V_R \geq 30 \text{ V}$; $-dI_F/dt = 20 \text{ A}/\mu\text{s}$	-	6	15	nC
t_{rr1}	Reverse recovery time	$I_F = 1 \text{ A}$; $V_R \geq 30 \text{ V}$; $-dI_F/dt = 100 \text{ A}/\mu\text{s}$	-	20	30	ns
t_{rr2}	Reverse recovery time	$I_F = 0.5 \text{ A}$ to $I_R = 1 \text{ A}$; $I_{rec} = 0.25 \text{ A}$	-	13	22	ns
V_{tr}	Forward recovery voltage	$I_F = 1 \text{ A}$; $dI_F/dt = 10 \text{ A}/\mu\text{s}$	-	1	-	V

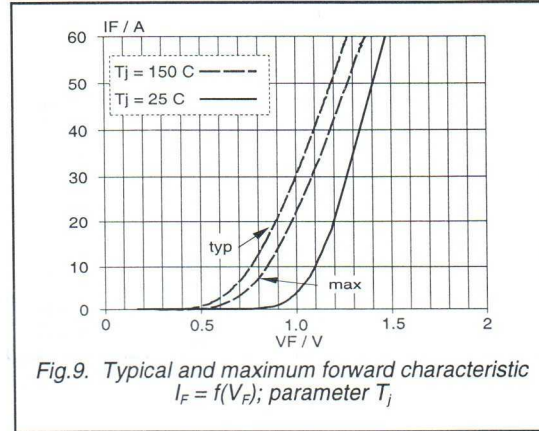
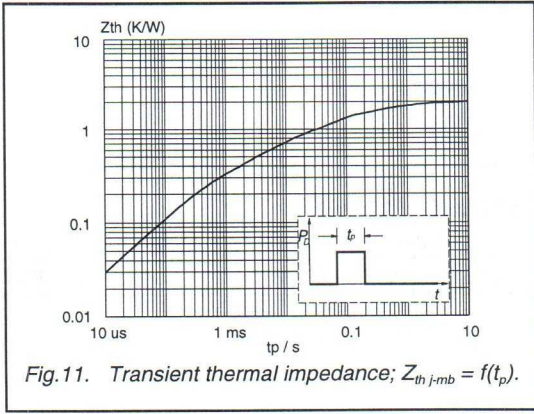
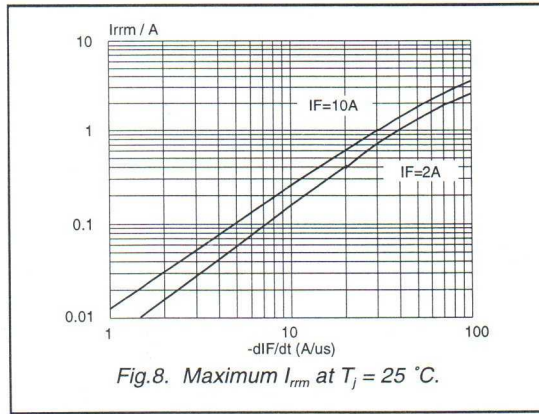
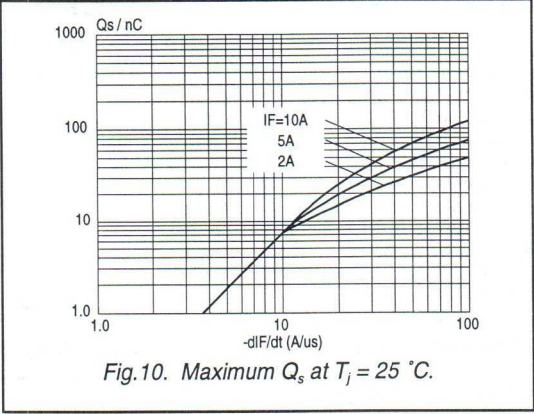
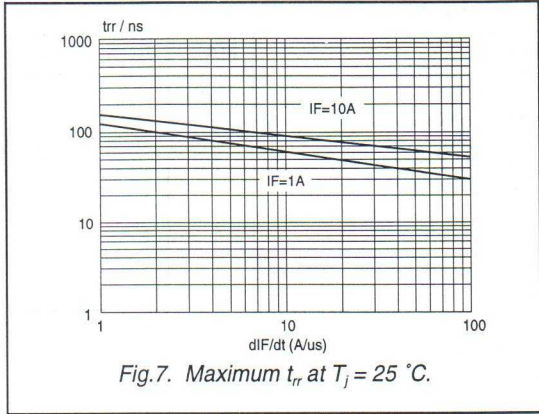
Rectifier diodes
ultrafast, rugged

BYV79EB series



Rectifier diodes
ultrafast, rugged

BYV79EB series



Rectifier diodes schottky barrier

BYV116 series

GENERAL DESCRIPTION

Dual nickel silicide schottky barrier rectifier diodes in a plastic envelope featuring low forward voltage drop and absence of stored charge. These devices can withstand reverse voltage transients and have guaranteed reverse surge capability. The devices are intended for use in switched mode power supplies with 3 V - 3.3 V outputs, or as or-ing diodes in fault tolerant power supply systems.

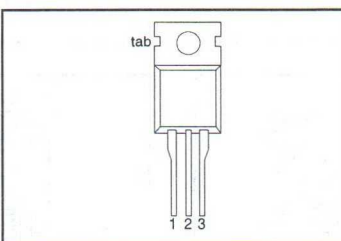
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	UNIT
V_{RRM}	Repetitive peak reverse voltage	20	25	V
V_F	Forward voltage	20	25	V
$I_{O(AV)}$	Average output current (both diodes conducting)	0.54	0.54	A
		10	10	A

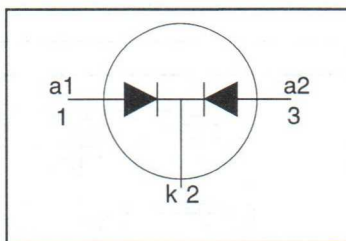
PINNING - TO220AB

PIN	DESCRIPTION
1	anode 1 (a)
2	cathode (k)
3	anode 2 (a)
tab	cathode (k)

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.		UNIT
V_{RRM}	Repetitive peak reverse voltage	$T_{mb} \leq 117\text{ }^{\circ}\text{C}$	-	-20	-25	V
V_{RWM}	Crest working reverse voltage		-	20	25	V
V_R	Continuous reverse voltage		-	20	25	V
$I_{O(AV)}$	Average output current (both diodes conducting)	square wave; $\delta = 0.5$; $T_{mb} \leq 135\text{ }^{\circ}\text{C}$	-	10		A
$I_{O(RMS)}$	RMS output current (both diodes conducting)		-	14		A
I_{FRM}	Repetitive peak forward current per diode	$t = 25\text{ }\mu\text{s}$; $\delta = 0.5$; $T_{mb} \leq 135\text{ }^{\circ}\text{C}$	-	10		A
I_{FSM}	Non-repetitive peak forward current, per diode	$t = 10\text{ ms}$	-	25		A
		$t = 8.3\text{ ms}$	-	27		A
I^2t	I^2t for fusing	sinusoidal $T_j = 125\text{ }^{\circ}\text{C}$ prior to surge; with reapplied $V_{RRM(max)}$	-	3.1		A ² s
I_{RRM}	Repetitive peak reverse current per diode	$t_p = 2\text{ }\mu\text{s}$; $\delta = 0.001$	-	1		A
I_{RSM}	Non-repetitive peak reverse current per diode	$t_p = 100\text{ }\mu\text{s}$	-	1		A
T_{sg}	Storage temperature		-65	175		$^{\circ}\text{C}$
T_j	Operating junction temperature		-	150		$^{\circ}\text{C}$

Rectifier diodes schottky barrier

BYV116 series

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-mb}$	Thermal resistance junction to mounting base	per diode	-	-	6.0	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	both diodes in free air	-	-	5.0	K/W
			-	60	-	K/W

STATIC CHARACTERISTICS

 $T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage (per diode)	$I_F = 5\text{ A}; T_j = 125\text{ }^{\circ}\text{C}$	-	0.49	0.54	V
		$I_F = 10\text{ A}; T_j = 125\text{ }^{\circ}\text{C}$	-	0.66	0.73	V
		$I_F = 5\text{ A}$	-	0.58	0.64	V
I_R	Reverse current (per diode)	$V_R = V_{RRM}$	-	0.5	3.0	mA
		$V_R = V_{RRM}; T_j = 100\text{ }^{\circ}\text{C}$	-	5	10	mA
C_d	Junction capacitance (per diode)	$f = 1\text{ MHz}; V_R = 5\text{ V}; T_j = 25\text{ }^{\circ}\text{C}$ to $125\text{ }^{\circ}\text{C}$	-	150	-	pF

Rectifier diodes schottky barrier

BYV118 series

GENERAL DESCRIPTION

Dual, low leakage, platinum barrier, schottky rectifier diodes in a plastic envelope featuring low forward voltage drop, absence of stored charge, and guaranteed reverse surge capability. The devices are intended for use in switched mode power supplies and high frequency circuits in general where low conduction and zero switching losses are important.

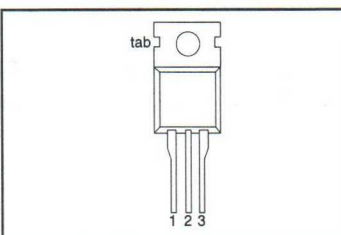
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
V_{RRM}	BYV118- Repetitive peak reverse voltage	35 35	40 40	45 45	V
V_F	Forward voltage	0.6	0.6	0.6	V
$I_{O(AV)}$	Output current (both diodes conducting)	10	10	10	A

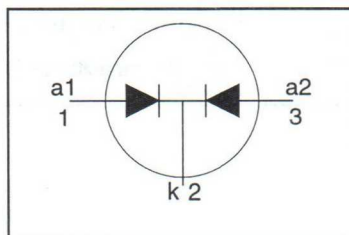
PINNING - TO220AB

PIN	DESCRIPTION
1	anode 1 (a)
2	cathode (k)
3	anode 2 (a)
tab	cathode (k)

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
				-35	-40	-45	
V_{RRM}	Repetitive peak reverse voltage	$T_{mb} \leq 133^\circ\text{C}$	-	35	40	45	V
V_{RWM}	Crest working reverse voltage		-	35	40	45	V
V_R	Continuous reverse voltage		-	35	40	45	V
$I_{O(AV)}$	Output current (both diodes conducting)	square wave; $\delta = 0.5$; $T_{mb} \leq 128^\circ\text{C}$	-	10			A
		sinusoidal; $a = 1.57$; $T_{mb} \leq 130^\circ\text{C}$	-	9			A
$I_{O(RMS)}$	RMS forward current	$t = 25 \mu\text{s}$; $\delta = 0.5$; $T_{mb} \leq 128^\circ\text{C}$	-	14			A
I_{FRM}	Repetitive peak forward current per diode.		-	10			A
I_{FSM}	Non-repetitive peak forward current per diode.	$t = 10 \text{ ms}$ $t = 8.3 \text{ ms}$ sinusoidal $T_j = 125^\circ\text{C}$ prior to surge; with reapplied $V_{RWM(max)}$	-	100			A
			-	110			A
I^2t	I^2t for fusing	$t = 10 \text{ ms}$	-	50			A ² s
I_{RRM}	Repetitive peak reverse current per diode.	$t_p = 2 \mu\text{s}$; $\delta = 0.001$	-	1			A
I_{RSM}	Non-repetitive peak reverse current per diode.	$t_p = 100 \mu\text{s}$	-	1			A
T_{stg}	Storage temperature		-65	175			$^\circ\text{C}$
T_j	Operating junction temperature		-	150			$^\circ\text{C}$

Rectifier diodes schottky barrier

BYV118 series

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-mb}$	Thermal resistance junction to mounting base	per diode	-	-	4.5	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	both diodes conducting in free air.	-	-	3.0	K/W
			-	60	-	K/W

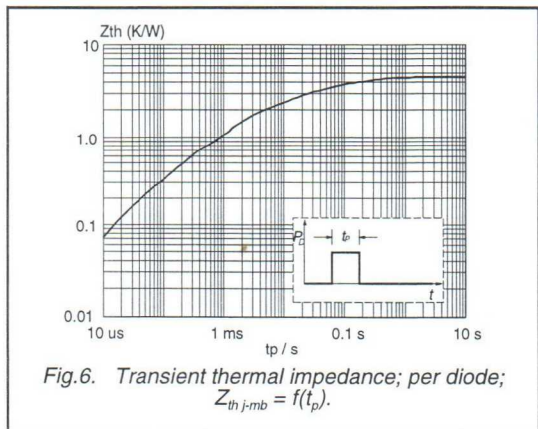
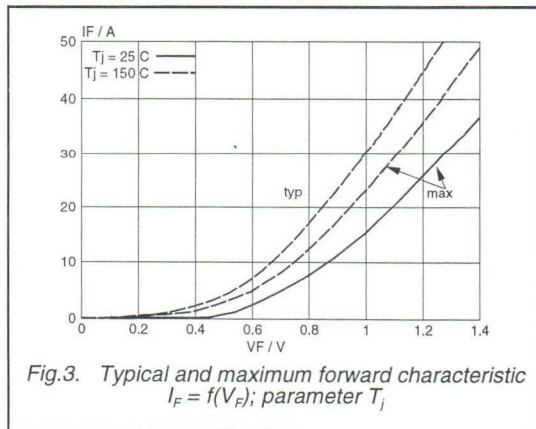
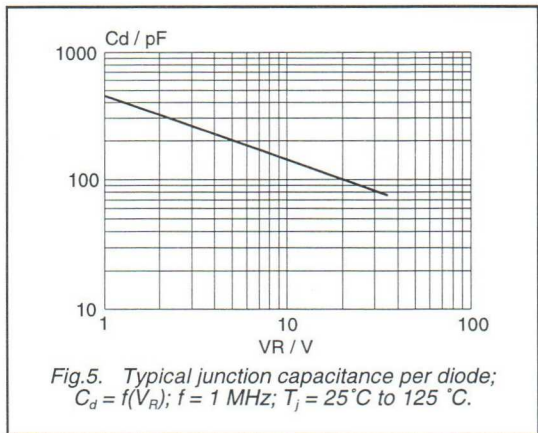
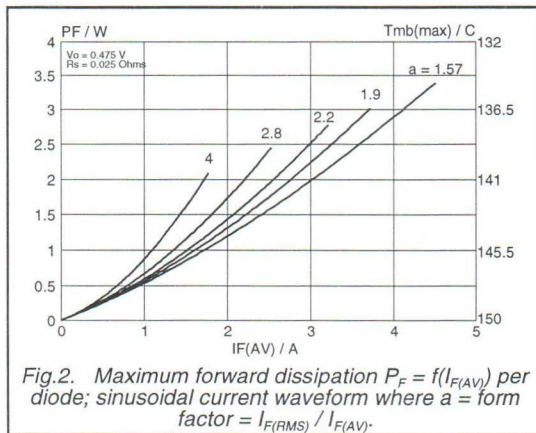
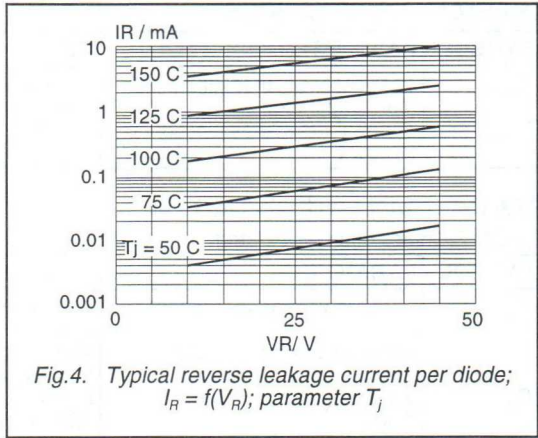
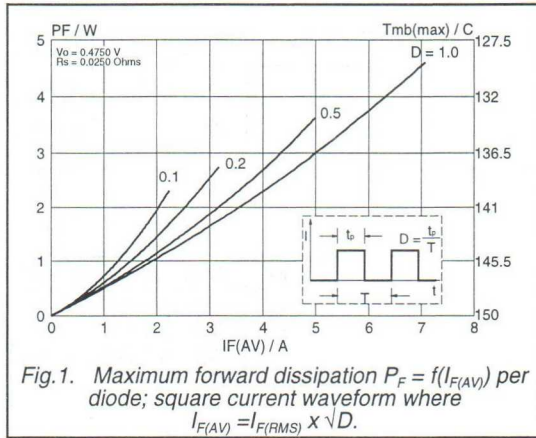
STATIC CHARACTERISTICS

$T_j = 25\ ^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage (per diode)	$I_F = 5\ \text{A}; T_j = 150\ ^\circ\text{C}$	-	0.50	0.60	V
		$I_F = 10\ \text{A}$	-	0.74	0.87	V
I_R	Reverse current (per diode)	$V_R = V_{RWM}$	-	50	100	μA
		$V_R = V_{RWM}; T_j = 125\ ^\circ\text{C}$	-	2.5	15	mA
C_d	Junction capacitance (per diode)	$f = 1\ \text{MHz}; V_R = 5\ \text{V}; T_j = 25\ ^\circ\text{C to } 125\ ^\circ\text{C}$	-	200	-	pF

Rectifier diodes schottky barrier

BYV118 series



Rectifier diodes schottky barrier

BYV118B series

GENERAL DESCRIPTION

Dual, low leakage, platinum barrier, schottky rectifier diodes in a plastic envelope suitable for surface mounting, featuring low forward voltage drop, absence of stored charge, and guaranteed reverse surge capability. The devices are intended for use in switched mode power supplies and high frequency circuits in general where low conduction and zero switching losses are important.

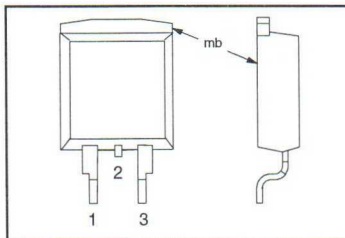
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
V_{RRM}	BYV118B- Repetitive peak reverse voltage	35 35	40 40	45 45	V
V_F	Forward voltage	0.6	0.6	0.6	V
$I_{O(AV)}$	Average output current (both diodes conducting)	10	10	10	A

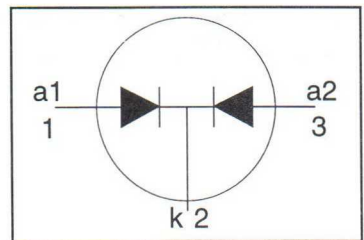
PINNING - SOT404

PIN	DESCRIPTION
1	anode 1
2	cathode
3	anode 2
mb	cathode

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{RRM}	Repetitive peak reverse voltage	$T_{mb} \leq 133^\circ\text{C}$	-	-35 35	-40 40	-45 45	V
V_{RWM}	Crest working reverse voltage		-	35	40	45	V
V_R	Continuous reverse voltage		-	35	40	45	V
$I_{O(AV)}$	Average output current (both diodes conducting)	square wave; $\delta = 0.5$; $T_{mb} \leq 128^\circ\text{C}$ sinusoidal; $a = 1.57$; $T_{mb} \leq 130^\circ\text{C}$	-	10			A
$I_{O(RMS)}$	RMS output current (both diodes conducting)		-	9			A
I_{FRM}	Repetitive peak forward current per diode.		-	14			A
I_{FSM}	Non-repetitive peak forward current per diode.	$t = 25 \mu\text{s}$; $\delta = 0.5$; $T_{mb} \leq 128^\circ\text{C}$ $t = 10 \text{ ms}$ $t = 8.3 \text{ ms}$ sinusoidal $T_j = 125^\circ\text{C}$ prior to surge; with reapplied $V_{RRM(max)}$	-	10			A
I^2t	I^2t for fusing		-	100			A
I_{RRM}	Repetitive peak reverse current per diode.		-	110			A
I_{RSM}	Non-repetitive peak reverse current per diode.	$t_p = 2 \mu\text{s}$; $\delta = 0.001$	-	50			A ² s
T_{stg}	Storage temperature	$t_p = 100 \mu\text{s}$	-	1			A
T_j	Operating junction temperature		-65	175			$^\circ\text{C}$
			-	150			$^\circ\text{C}$

Rectifier diodes schottky barrier

BYV118B series

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-mb}$	Thermal resistance junction to mounting base	per diode	-	-	4.5	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	both diodes conducting minimum footprint, FR4 board	-	-	3.0	K/W
			-	50	-	K/W

STATIC CHARACTERISTICS

$T_j = 25\text{ °C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage (per diode)	$I_F = 5\text{ A}$; $T_j = 150\text{ °C}$	-	0.50	0.60	V
		$I_F = 10\text{ A}$	-	0.74	0.87	V
I_R	Reverse current (per diode)	$V_R = V_{RRM}$	-	50	100	μA
		$V_R = V_{RRM}$; $T_j = 125\text{ °C}$	-	2.5	15	mA
C_d	Junction capacitance (per diode)	$f = 1\text{ MHz}$; $V_R = 5\text{ V}$; $T_j = 25\text{ °C}$ to 125 °C	-	200	-	pF

Rectifier diodes schottky barrier

BYV118B series

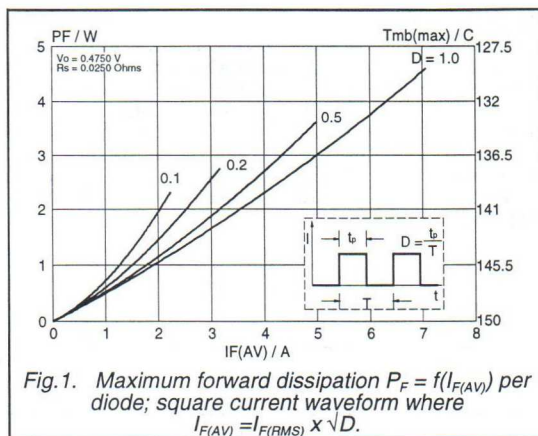


Fig.1. Maximum forward dissipation $P_F = f(I_{F(AV)})$ per diode; square current waveform where $I_{F(AV)} = I_{F(RMS)} \times \sqrt{D}$.

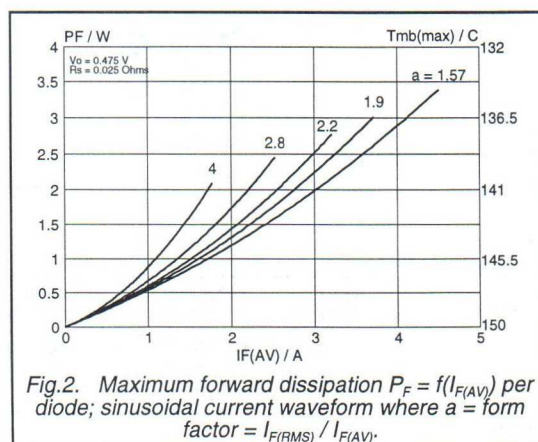


Fig.2. Maximum forward dissipation $P_F = f(I_{F(AV)})$ per diode; sinusoidal current waveform where $a = \text{form factor} = I_{F(RMS)} / I_{F(AV)}$.

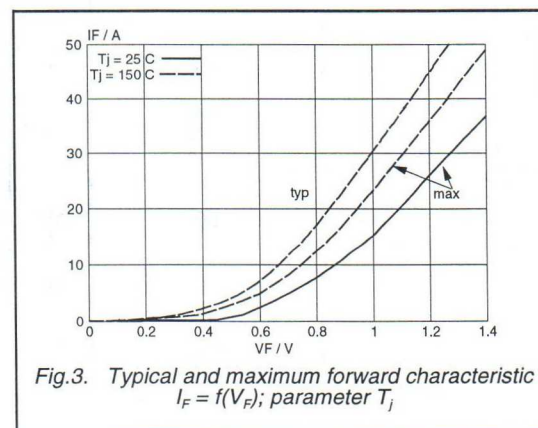


Fig.3. Typical and maximum forward characteristic $I_F = f(V_F)$; parameter T_j .

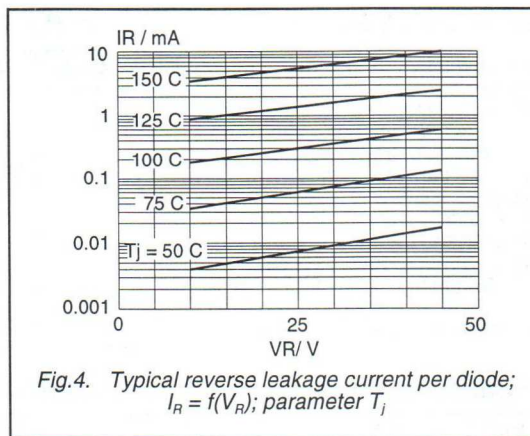


Fig.4. Typical reverse leakage current per diode; $I_R = f(V_R)$; parameter T_j .

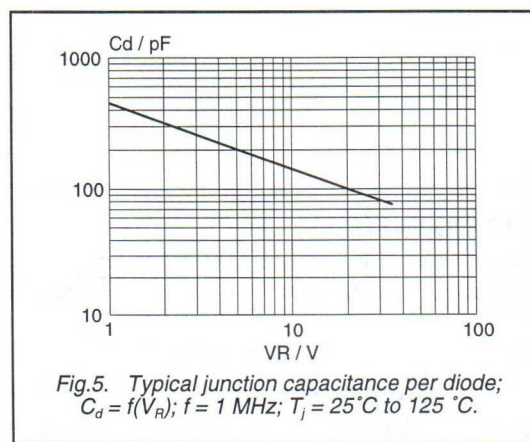


Fig.5. Typical junction capacitance per diode; $C_d = f(V_R)$; $f = 1$ MHz; $T_j = 25^\circ\text{C}$ to 125°C .

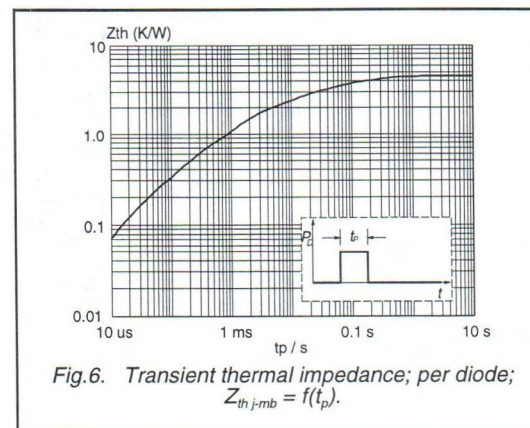


Fig.6. Transient thermal impedance; per diode; $Z_{th j-mb} = f(t_p)$.

Rectifier diodes schottky barrier

BYV118F series

GENERAL DESCRIPTION

Dual, low leakage, platinum barrier, schottky barrier rectifier diodes in a full pack plastic envelope featuring low forward voltage drop and absence of stored charge. These devices can withstand reverse voltage transients and have guaranteed reverse surge capability. The devices are intended for use in switched mode power supplies and high frequency circuits in general where low conduction and zero switching losses are important.

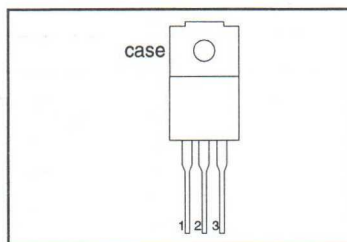
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
V_{RRM}	BYV118F- Repetitive peak reverse voltage	35 35	40 40	45 45	V
V_F	Forward voltage	0.6	0.6	0.6	V
$I_{O(AV)}$	Output current (both diodes conducting)	10	10	10	A

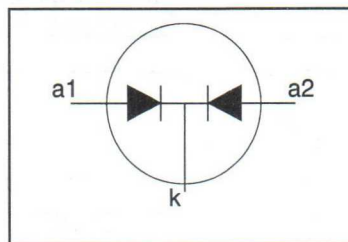
PINNING - SOT186

PIN	DESCRIPTION
1	anode 1 (a)
2	cathode (k)
3	anode 2 (a)

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{RRM}	Repetitive peak reverse voltage	$T_{hs} \leq 123^\circ\text{C}$	-	-35 35	-40 40	-45 45	V
V_{RWM}	Crest working reverse voltage		-	35	40	45	V
V_R	Continuous reverse voltage		-	35	40	45	V
$I_{O(AV)}$	Output current (both diodes conducting)	square wave; $\delta = 0.5$; $T_{hs} \leq 110^\circ\text{C}$ sinusoidal; $a = 1.57$; $T_{hs} \leq 113^\circ\text{C}$	-	10			A
$I_{O(RMS)}$	RMS forward current		-	9			A
I_{FRM}	Repetitive peak forward current per diode	$t = 25\ \mu\text{s}$; $\delta = 0.5$; $T_{hs} \leq 110^\circ\text{C}$	-	14			A
I_{FSM}	Non-repetitive peak forward current per diode.	$t = 10\ \text{ms}$ $t = 8.3\ \text{ms}$ sinusoidal; $T_j = 125^\circ\text{C}$ prior to surge; with reapplied $V_{RWM(max)}$	-	100			A
I^2t	I^2t for fusing	$t = 10\ \text{ms}$	-	50			A ² s
I_{RRM}	Repetitive peak reverse current per diode.	$t_p = 2\ \mu\text{s}$; $\delta = 0.001$	-	1			A
I_{RSM}	Non-repetitive peak reverse current per diode.	$t_p = 100\ \mu\text{s}$	-	1			A
T_{stg}	Storage temperature		-65	175			$^\circ\text{C}$
T_j	Operating junction temperature		-	150			$^\circ\text{C}$

Rectifier diodes schottky barrier

BYV118F series

ISOLATION

 $T_{hs} = 25\text{ }^{\circ}\text{C}$ unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_{isol}	Repetitive peak voltage from all three terminals to external heatsink	R.H. $\leq 65\%$; clean and dustfree	-	-	1500	V
C_{isol}	Capacitance from T2 to external heatsink	$f = 1\text{ MHz}$	-	12	-	pF

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-hs}$	Thermal resistance junction to heatsink	per diode	-	-	6.5	K/W
		both diodes	-	-	5.5	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	(with heatsink compound) in free air.	-	55	-	K/W

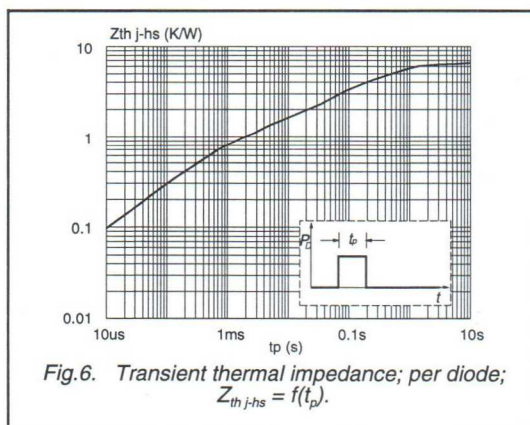
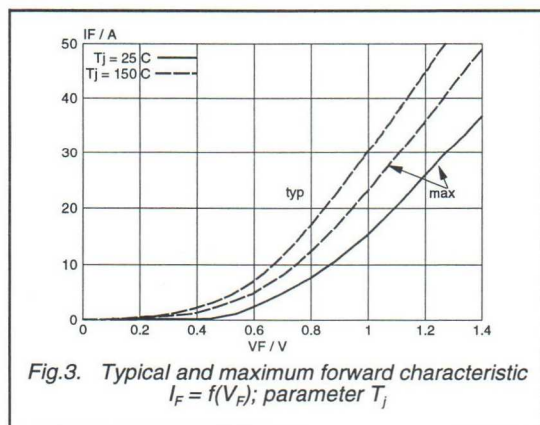
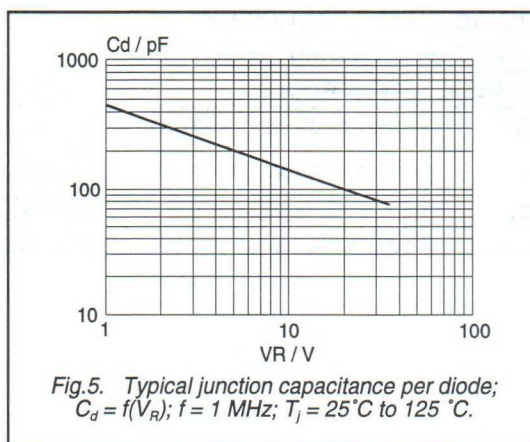
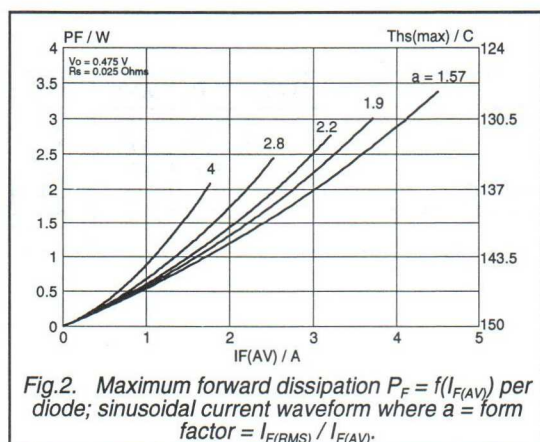
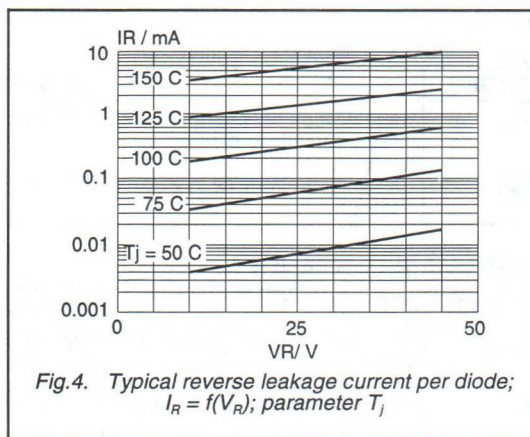
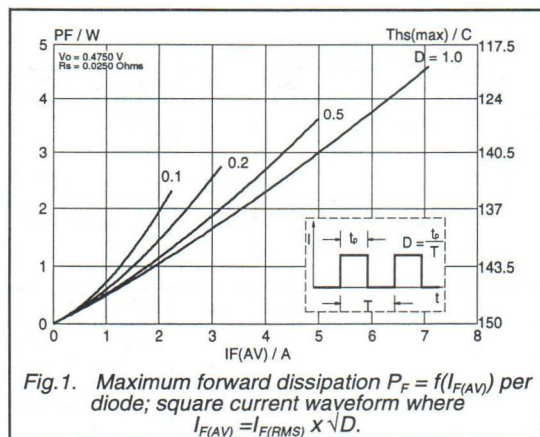
STATIC CHARACTERISTICS

 $T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage (per diode)	$I_F = 5\text{ A}$; $T_j = 150\text{ }^{\circ}\text{C}$	-	0.50	0.60	V
		$I_F = 10\text{ A}$	-	0.74	0.87	V
I_R	Reverse current (per diode)	$V_R = V_{RWM}$	-	50	100	μA
		$V_R = V_{RWM}$; $T_j = 125\text{ }^{\circ}\text{C}$	-	2.5	15	mA
C_d	Junction capacitance (per diode)	$f = 1\text{ MHz}$; $V_R = 5\text{ V}$; $T_j = 25\text{ }^{\circ}\text{C}$ to $125\text{ }^{\circ}\text{C}$	-	200	-	pF

Rectifier diodes schottky barrier

BYV118F series



Rectifier diodes schottky barrier

BYV118X series

GENERAL DESCRIPTION

Dual, low leakage, platinum barrier, schottky rectifier diodes in a full pack plastic envelope featuring low forward voltage drop, absence of stored charge, and guaranteed reverse surge capability. The devices are intended for use in switched mode power supplies and high frequency circuits in general where low conduction and zero switching losses are important.

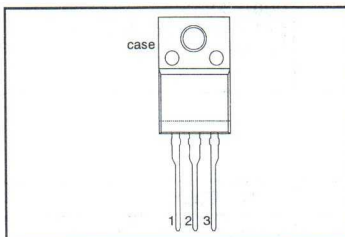
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
V_{RRM}	Repetitive peak reverse voltage	35	40	45	V
		35	40	45	
V_F	Forward voltage	0.6	0.6	0.6	V
$I_{O(AV)}$	Average output current (both diodes conducting)	10	10	10	A

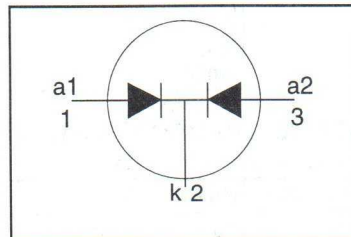
PINNING - SOT186A

PIN	DESCRIPTION
1	anode 1 (a)
2	cathode (k)
3	anode 2 (a)
case	isolated

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
				-35	-40	-45	
V_{RRM}	Repetitive peak reverse voltage	$T_{hs} \leq 123\text{ }^{\circ}\text{C}$	-	35	40	45	V
V_{RWM}	Crest working reverse voltage		-	35	40	45	V
V_R	Continuous reverse voltage		-	35	40	45	V
$I_{O(AV)}$	Average output current (both diodes conducting)	square wave; $\delta = 0.5$; $T_{hs} \leq 110\text{ }^{\circ}\text{C}$	-	10			A
$I_{O(RMS)}$	RMS output current (both diodes conducting)		-	14			A
I_{FRM}	Repetitive peak forward current per diode.	$t = 25\text{ }\mu\text{s}$; $\delta = 0.5$; $T_{mb} \leq 110\text{ }^{\circ}\text{C}$	-	10			A
I_{FSM}	Non-repetitive peak forward current, per diode	$t = 10\text{ ms}$	-	100			A
		$t = 8.3\text{ ms}$ sinusoidal $T_j = 125\text{ }^{\circ}\text{C}$ prior to surge; with reapplied $V_{RRM(max)}$	-	110			A
I^2t	I^2t for fusing	$t = 10\text{ ms}$	-	50			A ² s
I_{RRM}	Repetitive peak reverse current per diode.	$t_p = 2\text{ }\mu\text{s}$; $\delta = 0.001$	-	1			A
I_{RSM}	Non-repetitive peak reverse current per diode.	$t_p = 100\text{ }\mu\text{s}$	-	1			A
T_{stg}	Storage temperature		-65	175			$^{\circ}\text{C}$
T_j	Operating junction temperature		-	150			$^{\circ}\text{C}$

Rectifier diodes schottky barrier

BYV118X series

ISOLATION LIMITING VALUE & CHARACTERISTIC

 $T_{hs} = 25\text{ }^{\circ}\text{C}$ unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_{isol}	R.M.S. isolation voltage from all three terminals to external heatsink	$f = 50\text{--}60\text{ Hz}$; sinusoidal waveform; $R.H. \leq 65\%$; clean and dustfree	-		2500	V
C_{isol}	Capacitance from T2 to external heatsink	$f = 1\text{ MHz}$	-	10	-	pF

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-hs}$	Thermal resistance junction to heatsink	per diode both diodes (with heatsink compound)	-	-	6.5	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	in free air.	-	55	-	K/W

STATIC CHARACTERISTICS

 $T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage (per diode)	$I_F = 5\text{ A}$; $T_j = 150\text{ }^{\circ}\text{C}$	-	0.50	0.60	V
I_R	Reverse current (per diode)	$I_F = 10\text{ A}$	-	0.74	0.87	V
		$V_R = V_{RRM}$	-	50	100	μA
C_d	Junction capacitance (per diode)	$V_R = V_{RRM}$; $T_j = 125\text{ }^{\circ}\text{C}$ $f = 1\text{ MHz}$; $V_R = 5\text{ V}$; $T_j = 25\text{ }^{\circ}\text{C}$ to $125\text{ }^{\circ}\text{C}$	-	2.5	15	mA
			-	200	-	pF

Rectifier diodes schottky barrier

BYV118X series

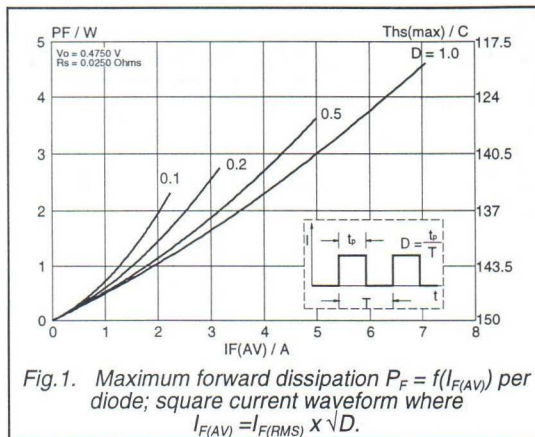


Fig.1. Maximum forward dissipation $P_F = f(I_{F(AV)})$ per diode; square current waveform where $I_{F(AV)} = I_{F(RMS)} \times \sqrt{D}$.

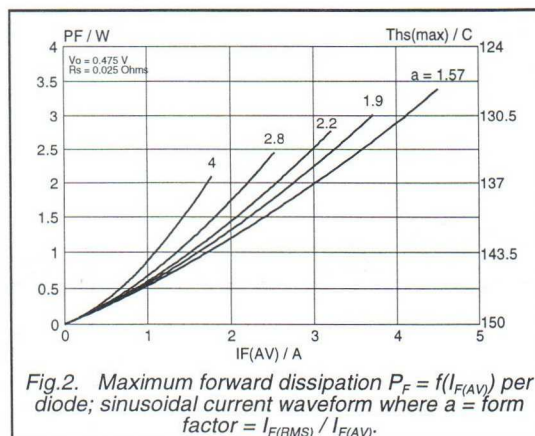


Fig.2. Maximum forward dissipation $P_F = f(I_{F(AV)})$ per diode; sinusoidal current waveform where $a = \text{form factor} = I_{F(RMS)} / I_{F(AV)}$.

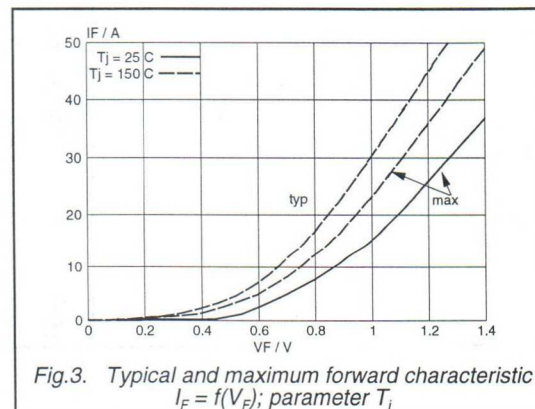


Fig.3. Typical and maximum forward characteristic $I_F = f(V_F)$; parameter T_j .

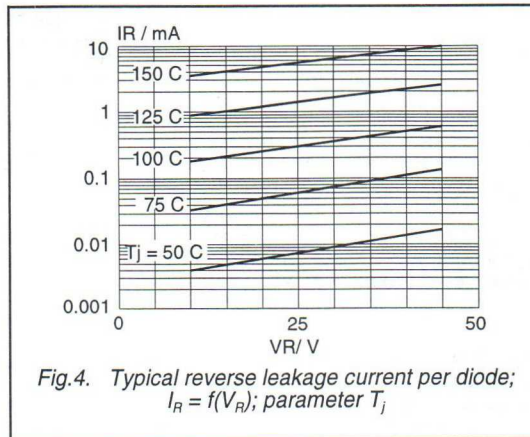


Fig.4. Typical reverse leakage current per diode; $I_R = f(V_R)$; parameter T_j .

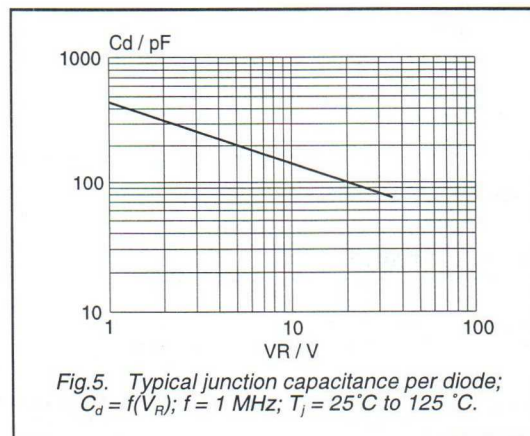


Fig.5. Typical junction capacitance per diode; $C_d = f(V_R)$; $f = 1$ MHz; $T_j = 25^\circ\text{C}$ to 125°C .

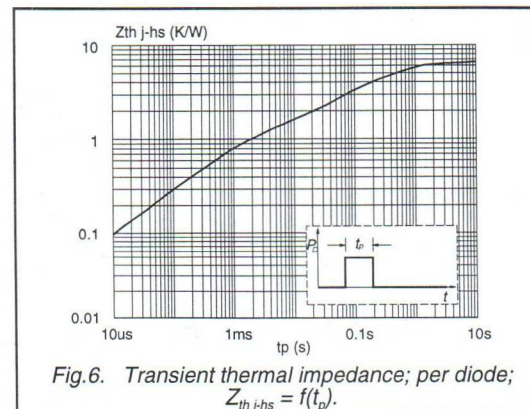


Fig.6. Transient thermal impedance; per diode; $Z_{th j-hs} = f(t_p)$.

Rectifier diodes schottky barrier

BYV133 series

GENERAL DESCRIPTION

Dual, low leakage, platinum barrier, schottky rectifier diodes in a plastic envelope featuring low forward voltage drop and absence of stored charge. These devices can withstand reverse voltage transients and have guaranteed reverse surge capability. The devices are intended for use in switched mode power supplies and high frequency circuits in general where low conduction and zero switching losses are important.

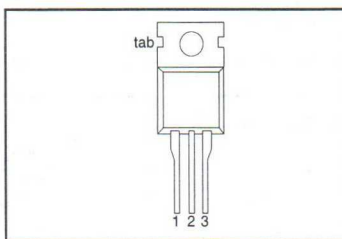
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
V_{RRM}	BYV133- Repetitive peak reverse voltage	35 35	40 40	45 45	V
V_F	Forward voltage	0.60	0.60	0.60	V
$I_{O(AV)}$	Output current (both diodes conducting)	20	20	20	A

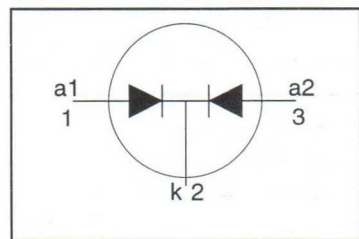
PINNING - TO220AB

PIN	DESCRIPTION
1	anode 1 (a)
2	cathode (k)
3	anode 2 (a)
tab	cathode (k)

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{RRM}	Repetitive peak reverse voltage	$T_{mb} \leq 145^\circ\text{C}$	-	-35 35	-40 40	-45 45	V
V_{RWM}	Crest working reverse voltage		-	35	40	45	V
V_R	Continuous reverse voltage		-	35	40	45	V
$I_{O(AV)}$	Output current (both diodes conducting) ¹	square wave; $\delta = 0.5$; $T_{mb} \leq 122^\circ\text{C}$	-	20			A
		sinusoidal; $a = 1.57$; $T_{mb} \leq 123^\circ\text{C}$	-	18			A
$I_{O(RMS)}$	RMS forward current	$t = 25\ \mu\text{s}$; $\delta = 0.5$; $T_{mb} \leq 122^\circ\text{C}$	-	28			A
I_{FRM}	Repetitive peak forward current per diode		-	20			A
I_{FSM}	Non-repetitive peak forward current per diode		-	100			A
		$t = 8.3\ \text{ms}$ sinusoidal $T_j = 125^\circ\text{C}$ prior to surge; with reapplied $V_{RWM(max)}$	-	110			A
I^2t	I^2t for fusing	$t = 10\ \text{ms}$	-	50			A ² s
I_{RRM}	Repetitive peak reverse current per diode.	$t_p = 2\ \mu\text{s}$; $\delta = 0.001$	-	1			A
I_{RSM}	Non-repetitive peak reverse current per diode.	$t_p = 100\ \mu\text{s}$	-	1			A
T_{stg}	Storage temperature		-65	175			$^\circ\text{C}$
T_j	Operating junction temperature		-	150			$^\circ\text{C}$

¹ For output currents in excess of 20A, connection should be made to the exposed metal mounting base.

Rectifier diodes schottky barrier

BYV133 series

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-mb}$	Thermal resistance junction to mounting base	per diode	-	-	2.6	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	both diodes in free air.	-	-	1.6	K/W
			-	60	-	K/W

STATIC CHARACTERISTICS

 $T_j = 25\ ^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage (per diode)	$I_F = 7\ \text{A}$; $T_j = 150\ ^\circ\text{C}$	-	0.55	0.60	V
		$I_F = 20\ \text{A}$	-	0.88	0.94	V
I_R	Reverse current (per diode)	$V_R = V_{RWM}$	-	50	100	μA
		$V_R = V_{RWM}$; $T_j = 125\ ^\circ\text{C}$	-	4	15	mA
C_d	Junction capacitance (per diode)	$f = 1\ \text{MHz}$; $V_R = 5\ \text{V}$; $T_j = 25\ ^\circ\text{C}$ to $125\ ^\circ\text{C}$	-	300	-	pF

Rectifier diodes schottky barrier

BYV133 series

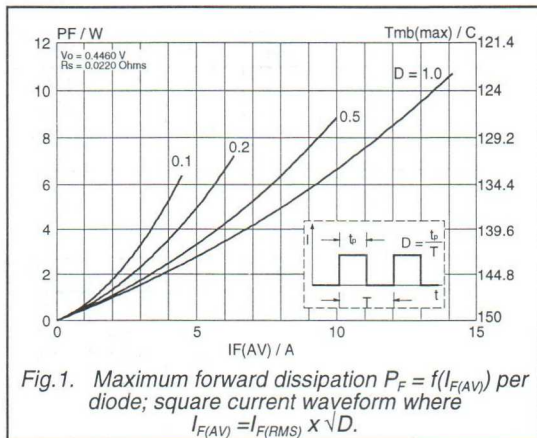


Fig.1. Maximum forward dissipation $P_F = f(I_{F(AV)})$ per diode; square current waveform where $I_{F(AV)} = I_{F(RMS)} \times \sqrt{D}$.

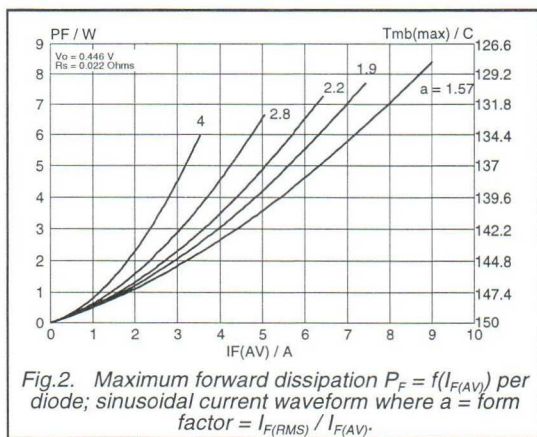


Fig.2. Maximum forward dissipation $P_F = f(I_{F(AV)})$ per diode; sinusoidal current waveform where $a = \text{form factor} = I_{F(RMS)} / I_{F(AV)}$.

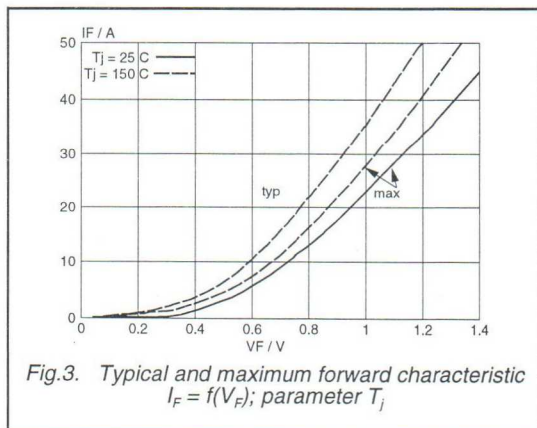


Fig.3. Typical and maximum forward characteristic $I_F = f(V_F)$; parameter T_J .

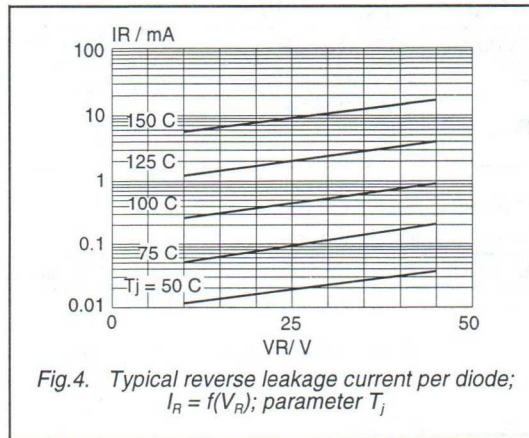


Fig.4. Typical reverse leakage current per diode; $I_R = f(V_R)$; parameter T_J .

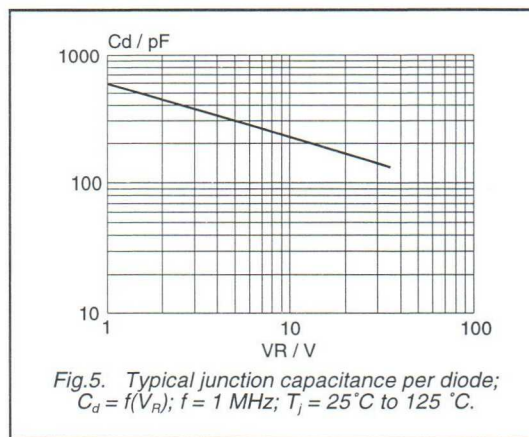


Fig.5. Typical junction capacitance per diode; $C_d = f(V_R)$; $f = 1$ MHz; $T_J = 25^\circ\text{C}$ to 125°C .

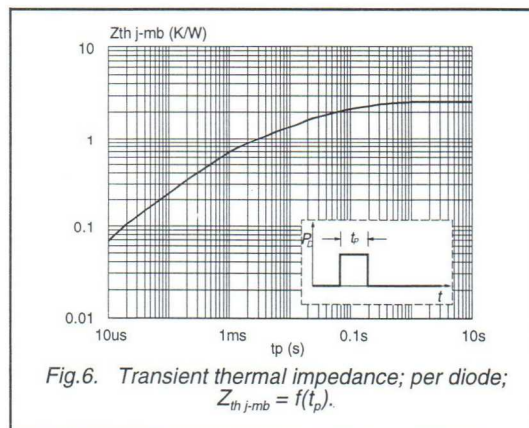


Fig.6. Transient thermal impedance; per diode; $Z_{th j-mb} = f(t_p)$.

Rectifier diodes schottky barrier

BYV133F series

GENERAL DESCRIPTION

Dual, low leakage, platinum barrier, schottky rectifier diodes in a full pack plastic envelope featuring low forward voltage drop, absence of stored charge, and guaranteed reverse surge capability. The devices are intended for use in switched mode power supplies and high frequency circuits in general where low conduction and zero switching losses are important.

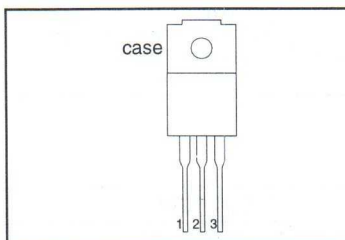
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
V_{RRM}	BYV133F- Repetitive peak reverse voltage	35 35	40 40	45 45	V
V_F	Forward voltage	0.60	0.60	0.60	V
$I_{O(AV)}$	Average output current (both diodes conducting)	20	20	20	A

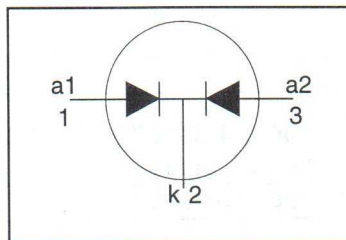
PINNING - SOT186

PIN	DESCRIPTION
1	anode 1 (a)
2	cathode (k)
3	anode 2 (a)

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{RRM}	Repetitive peak reverse voltage	$T_{hs} \leq 112\text{ }^{\circ}\text{C}$	-	-35	-40	-45	V
V_{RWM}	Crest working reverse voltage		-	35	40	45	V
V_R	Continuous reverse voltage		-	35	40	45	V
$I_{O(AV)}$	Average output current (both diodes conducting)	square wave; $\delta = 0.5$; $T_{hs} \leq 61\text{ }^{\circ}\text{C}$	-	20			A
$I_{O(RMS)}$	RMS output current (both diodes conducting)		-	20			A
I_{FRM}	Repetitive peak forward current per diode	$t = 25\text{ }\mu\text{s}$; $\delta = 0.5$; $T_{hs} \leq 61\text{ }^{\circ}\text{C}$	-	20			A
I_{FSM}	Non-repetitive peak forward current, per diode	$t = 10\text{ ms}$	-	100			A
		$t = 8.3\text{ ms}$ sinusoidal $T_j = 125\text{ }^{\circ}\text{C}$ prior to surge; with reapplied $V_{RRM(max)}$	-	110			A
I^2t	I^2t for fusing	$t = 10\text{ ms}$	-	50			A ² s
I_{RRM}	Repetitive peak reverse current per diode.	$t_p = 2\text{ }\mu\text{s}$; $\delta = 0.001$	-	1			A
I_{RSM}	Non-repetitive peak reverse current per diode.	$t_p = 100\text{ }\mu\text{s}$	-	1			A
T_{stg}	Storage temperature		-65	175			$^{\circ}\text{C}$
T_j	Operating junction temperature		-	150			$^{\circ}\text{C}$

Rectifier diodes schottky barrier

BYV133F series

ISOLATION LIMITING VALUE & CHARACTERISTIC

$T_{hs} = 25\text{ }^{\circ}\text{C}$ unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_{isol}	Repetitive peak voltage from all three terminals to external heatsink	R.H. $\leq 65\%$; clean and dustfree	-		1500	V
C_{isol}	Capacitance from T2 to external heatsink	$f = 1\text{ MHz}$	-	12	-	pF

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-hs}$	Thermal resistance junction to heatsink	per diode	-	-	6	K/W
		both diodes	-	-	5	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	(with heatsink compound) in free air.	-	55	-	K/W

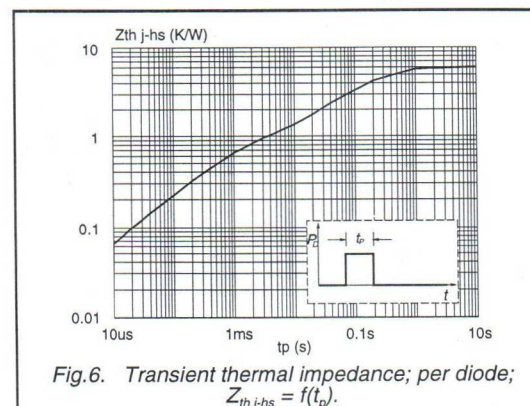
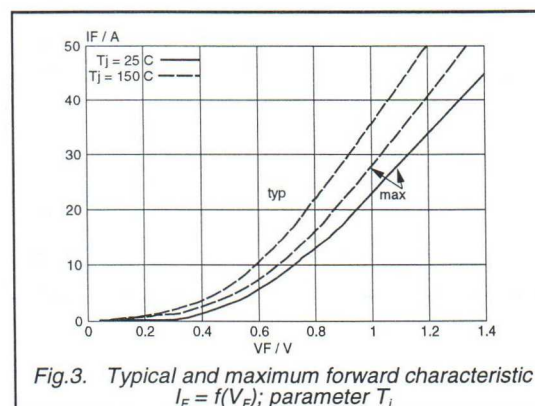
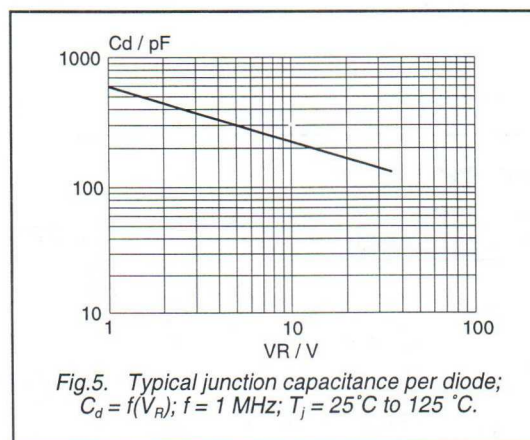
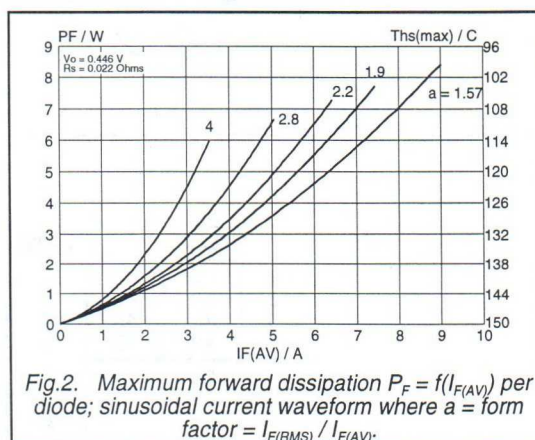
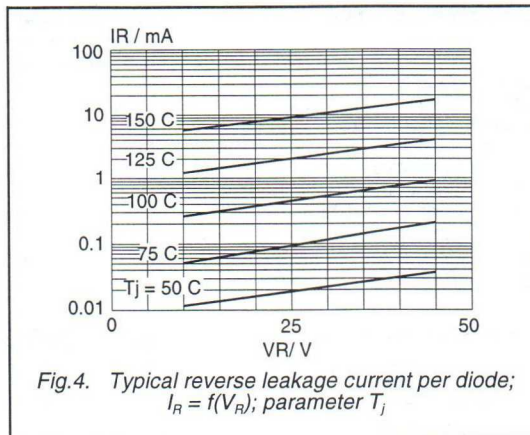
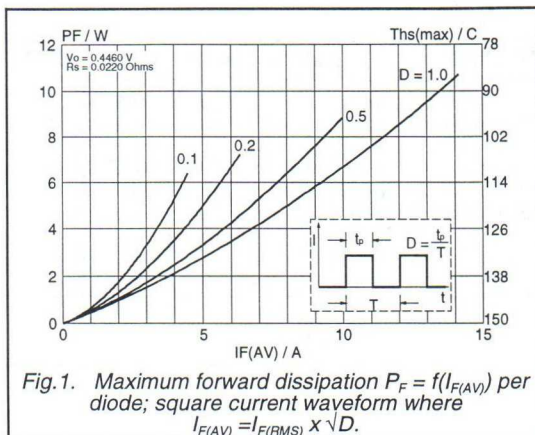
STATIC CHARACTERISTICS

$T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage (per diode)	$I_F = 7\text{ A}$; $T_j = 150\text{ }^{\circ}\text{C}$	-	0.55	0.60	V
		$I_F = 20\text{ A}$	-	0.88	0.94	V
I_R	Reverse current (per diode)	$V_R = V_{RRM}$	-	50	100	μA
		$V_R = V_{RRM}$; $T_j = 125\text{ }^{\circ}\text{C}$	-	4	15	mA
C_d	Junction capacitance (per diode)	$f = 1\text{ MHz}$; $V_R = 5\text{ V}$; $T_j = 25\text{ }^{\circ}\text{C}$ to $125\text{ }^{\circ}\text{C}$	-	300	-	pF

Rectifier diodes schottky barrier

BYV133F series



Rectifier diodes schottky barrier

BYV133X series

GENERAL DESCRIPTION

Dual, low leakage, platinum barrier, schottky rectifier diodes in a full pack plastic envelope featuring low forward voltage drop, absence of stored charge, and guaranteed reverse surge capability. The devices are intended for use in switched mode power supplies and high frequency circuits in general where low conduction and zero switching losses are important.

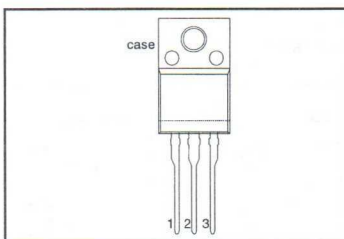
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
V_{RRM}	BYV133X- Repetitive peak reverse voltage	35 35	40 40	45 45	V
V_F	Forward voltage	0.60	0.60	0.60	V
$I_{O(AV)}$	Average output current (both diodes conducting)	20	20	20	A

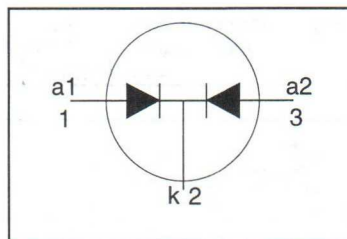
PINNING - SOT186A

PIN	DESCRIPTION
1	anode 1 (a)
2	cathode (k)
3	anode 2 (a)
case	isolated

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{RRM}	Repetitive peak reverse voltage	$T_{hs} \leq 112\text{ }^{\circ}\text{C}$	-	-35	-40	-45	V
V_{RWM}	Crest working reverse voltage		-	35	40	45	V
V_R	Continuous reverse voltage		-	35	40	45	V
$I_{O(AV)}$	Average output current (both diodes conducting)	square wave; $\delta = 0.5$; $T_{hs} \leq 61\text{ }^{\circ}\text{C}$	-	20			A
$I_{O(RMS)}$	RMS output current (both diodes conducting)		-	20			A
I_{FRM}	Repetitive peak forward current per diode	$t = 25\text{ }\mu\text{s}$; $\delta = 0.5$; $T_{hs} \leq 61\text{ }^{\circ}\text{C}$	-	20			A
I_{FSM}	Non-repetitive peak forward current, per diode	$t = 10\text{ ms}$ $t = 8.3\text{ ms}$ sinusoidal $T_J = 125\text{ }^{\circ}\text{C}$ prior to surge; with reapplied	-	100			A
			-	110			A
I^2t	I^2t for fusing	$V_{RRM(max)}$ $t = 10\text{ ms}$	-	50			A ² s
I_{RRM}	Repetitive peak reverse current per diode.	$t_p = 2\text{ }\mu\text{s}$; $\delta = 0.001$	-	1			A
I_{RSM}	Non-repetitive peak reverse current per diode.	$t_p = 100\text{ }\mu\text{s}$	-	1			A
T_{stg}	Storage temperature		-65	175			$^{\circ}\text{C}$
T_J	Operating junction temperature		-	150			$^{\circ}\text{C}$

Rectifier diodes
schottky barrier

BYV133X series

ISOLATION LIMITING VALUE & CHARACTERISTIC

 $T_{hs} = 25\text{ }^{\circ}\text{C}$ unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_{isol}	R.M.S. isolation voltage from all three terminals to external heatsink	$f = 50\text{-}60\text{ Hz}$; sinusoidal waveform; $R.H. \leq 65\%$; clean and dustfree	-		2500	V
C_{isol}	Capacitance from T2 to external heatsink	$f = 1\text{ MHz}$	-	10	-	pF

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-hs}$	Thermal resistance junction to heatsink	per diode	-	-	6	K/W
		both diodes	-	-	5	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	(with heatsink compound) in free air.	-	55	-	K/W

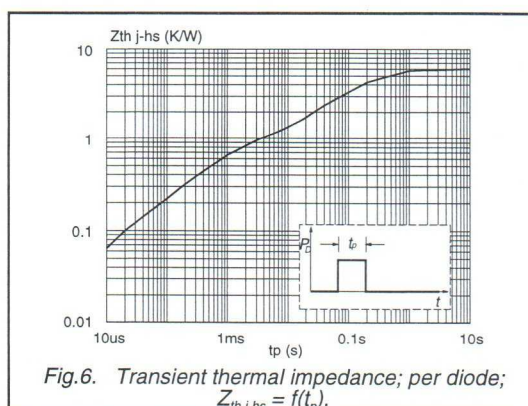
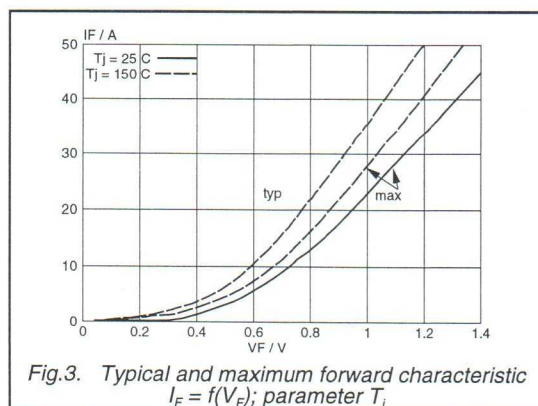
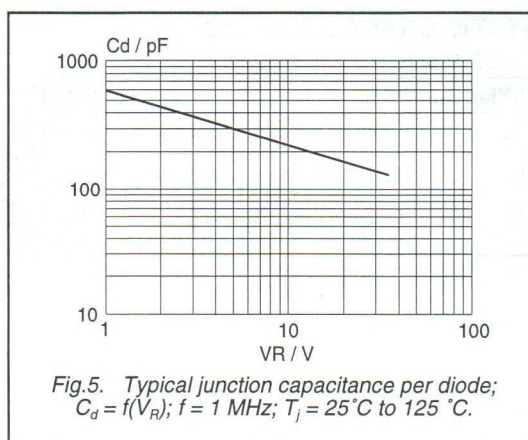
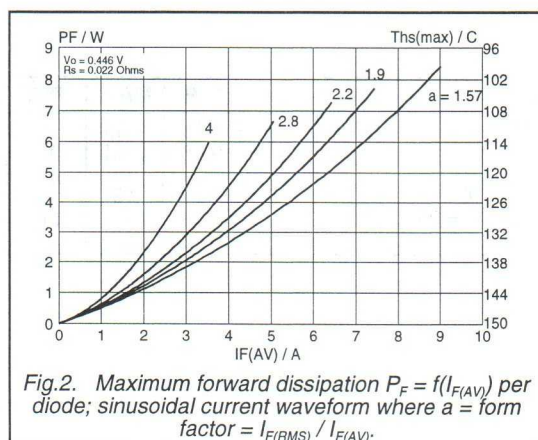
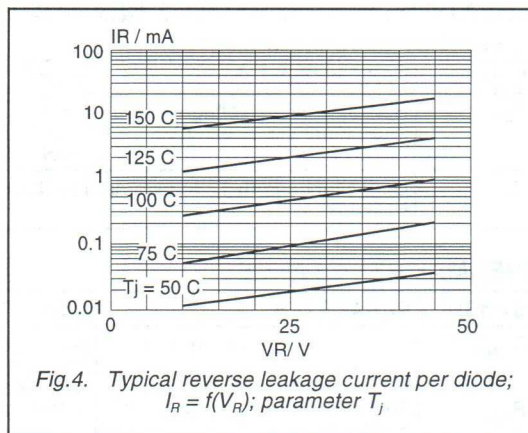
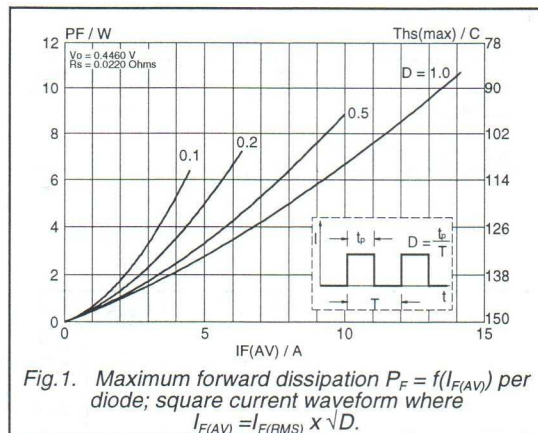
STATIC CHARACTERISTICS

 $T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage (per diode)	$I_F = 7\text{ A}$; $T_j = 150\text{ }^{\circ}\text{C}$	-	0.55	0.60	V
		$I_F = 20\text{ A}$	-	0.88	0.94	V
I_R	Reverse current (per diode)	$V_R = V_{RRM}$	-	50	100	μA
		$V_R = V_{RRM}$; $T_j = 125\text{ }^{\circ}\text{C}$	-	4	15	mA
C_d	Junction capacitance (per diode)	$f = 1\text{ MHz}$; $V_R = 5\text{ V}$; $T_j = 25\text{ }^{\circ}\text{C}$ to $125\text{ }^{\circ}\text{C}$	-	300	-	pF

Rectifier diodes schottky barrier

BYV133X series



Rectifier diodes schottky barrier

BYV143 series

GENERAL DESCRIPTION

Dual, low leakage, platinum barrier, schottky rectifier diodes in a plastic envelope featuring low forward voltage drop and absence of stored charge. These devices can withstand reverse voltage transients and have guaranteed reverse surge capability. The devices are intended for use in switched mode power supplies and high frequency circuits in general where low conduction and zero switching losses are important.

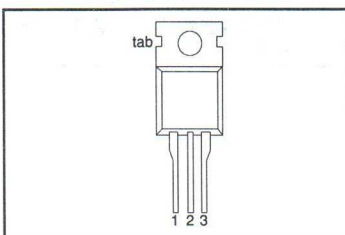
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
V_{RRM}	BYV143- Repetitive peak reverse voltage	35	40	45	V
V_F	Forward voltage	0.60	0.60	0.60	V
$I_{O(AV)}$	Output current (both diodes conducting)	30	30	30	A

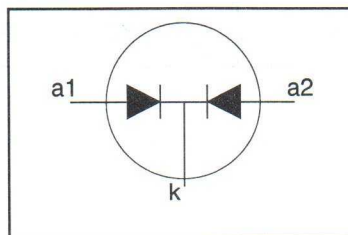
PINNING - TO220AB

PIN	DESCRIPTION
1	anode 1 (a)
2	cathode (k)
3	anode 2 (a)
tab	cathode (k)

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{RRM}	Repetitive peak reverse voltage		-	-35	-40	-45	V
V_{RWM}	Crest working reverse voltage		-	35	40	45	V
V_R	Continuous reverse voltage	$T_{mb} \leq 135^\circ\text{C}$	-	35	40	45	V
$I_{O(AV)}$	Output current (both diodes conducting) ¹	square wave; $\delta = 0.5$; $T_{mb} \leq 117^\circ\text{C}$ sinusoidal; $a = 1.57$; $T_{mb} \leq 119^\circ\text{C}$	-	30			A
$I_{F(RMS)}$	RMS forward current		-	43			A
I_{FRM}	Repetitive peak forward current per diode	$t = 25 \mu\text{s}$; $\delta = 0.5$; $T_{mb} \leq 117^\circ\text{C}$	-	30			A
I_{FSM}	Non-repetitive peak forward current, both diodes conducting.	$t = 10 \text{ ms}$ $t = 8.3 \text{ ms}$ sinusoidal $T_j = 125^\circ\text{C}$ prior to surge; with reapplied $V_{RWM(max)}$	-	200			A
I^2t	I^2t for fusing	$t = 10 \text{ ms}$	-	200			A ² s
I_{RRM}	Repetitive peak reverse current per diode.	$t_p = 2 \mu\text{s}$; $\delta = 0.001$	-	2			A
I_{RSM}	Non-repetitive peak reverse current per diode.	$t_p = 100 \mu\text{s}$	-	2			A
T_{stg}	Storage temperature		-65	175			$^\circ\text{C}$
T_j	Operating junction temperature		-	150			$^\circ\text{C}$

¹ For output currents in excess of 20A, connection should be made to the exposed metal mounting base.

Rectifier diodes schottky barrier

BYV143 series

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-mb}$	Thermal resistance junction to mounting base	per diode	-	-	2.3	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	both diodes in free air.	-	60	1.4	K/W
					-	K/W

STATIC CHARACTERISTICS

 $T_j = 25\ ^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage (per diode)	$I_F = 15\ \text{A}; T_j = 150\ ^\circ\text{C}$	-	0.55	0.60	V
		$I_F = 20\ \text{A}$	-	0.71	0.77	V
I_R	Reverse current (per diode)	$V_R = V_{RWM}$	-	10	200	μA
		$V_R = V_{RWM}; T_j = 125\ ^\circ\text{C}$	-	10	30	μA
C_d	Junction capacitance (per diode)	$f = 1\ \text{MHz}; V_R = 5\ \text{V}; T_j = 25\ ^\circ\text{C}$ to $125\ ^\circ\text{C}$	-	500	-	pF

Rectifier diodes schottky barrier

BYV143 series

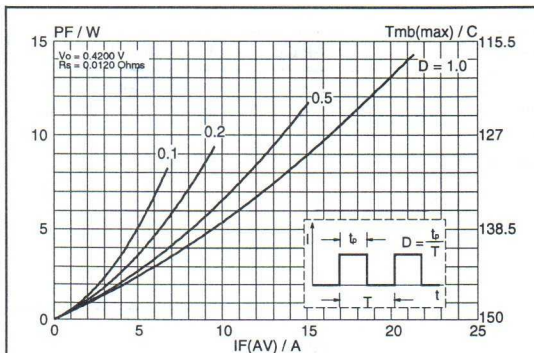


Fig.1. Maximum forward dissipation $P_F = f(I_F(AV))$ per diode; square current waveform where $I_F(AV) = I_F(RMS) \times \sqrt{D}$.

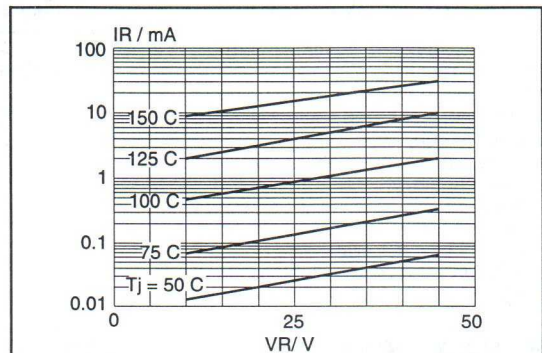


Fig.4. Typical reverse leakage current per diode; $I_R = f(V_R)$; parameter T_j

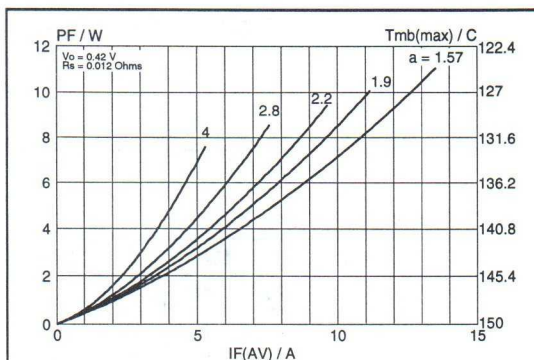


Fig.2. Maximum forward dissipation $P_F = f(I_F(AV))$ per diode; sinusoidal current waveform where $a = \text{form factor} = I_F(RMS) / I_F(AV)$.

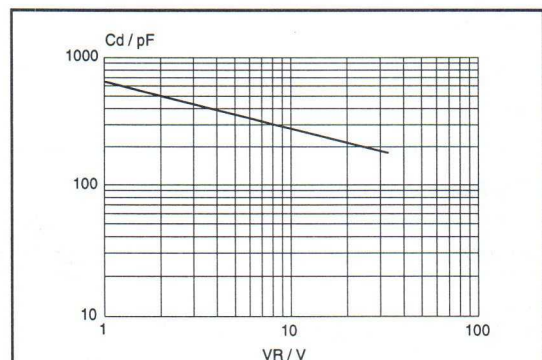


Fig.5. Typical junction capacitance per diode; $C_d = f(V_R)$; $f = 1$ MHz; $T_j = 25^\circ\text{C}$ to 125°C .

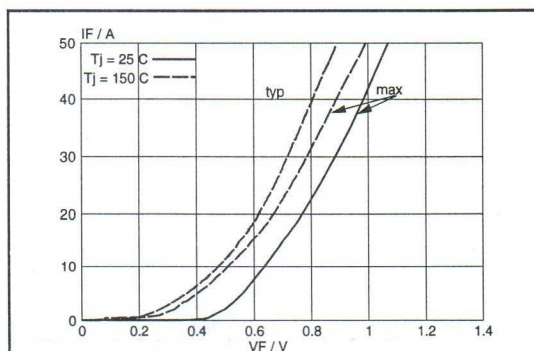


Fig.3. Typical and maximum forward characteristic $I_F = f(V_F)$; parameter T_j

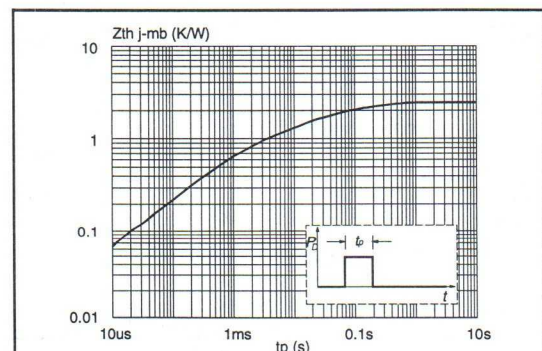


Fig.6. Transient thermal impedance; per diode; $Z_{th j-mb} = f(t_p)$.

Rectifier diodes schottky barrier

BYV143B series

GENERAL DESCRIPTION

Dual, low leakage, platinum barrier, schottky rectifier diodes in a plastic envelope suitable for surface mounting, featuring low forward voltage drop, absence of stored charge, and guaranteed reverse surge capability. The devices are intended for use in switched mode power supplies and high frequency circuits in general where low conduction and zero switching losses are important.

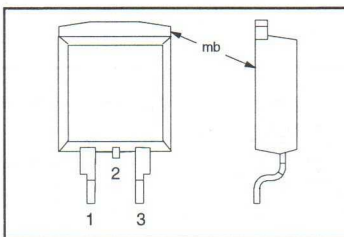
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
V_{RRM}	BYV143B- Repetitive peak reverse voltage	35	40	45	V
V_F	Forward voltage	0.60	0.60	0.60	V
$I_{O(AV)}$	Output current (both diodes conducting)	30	30	30	A

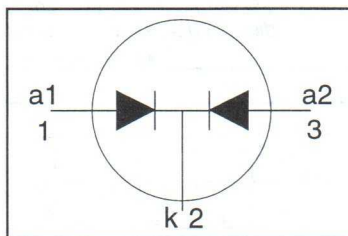
PINNING - SOT404

PIN	DESCRIPTION
1	anode 1
2	cathode
3	anode 2
mb	cathode

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{RRM}	Repetitive peak reverse voltage	$T_{mb} \leq 135^\circ\text{C}$	-	-35	-40	-45	V
V_{RWM}	Crest working reverse voltage		-	35	40	45	V
V_R	Continuous reverse voltage		-	35	40	45	V
$I_{O(AV)}$	Output current (both diodes conducting)	square wave; $\delta = 0.5$; $T_{mb} \leq 117^\circ\text{C}$	-	30			A
		sinusoidal; $a = 1.57$; $T_{mb} \leq 119^\circ\text{C}$	-	27			A
$I_{F(RMS)}$	RMS forward current	$t = 25 \mu\text{s}$; $\delta = 0.5$; $T_{mb} \leq 117^\circ\text{C}$	-	43			A
I_{FRM}	Repetitive peak forward current per diode		-	30			A
I_{FSM}	Non-repetitive peak forward current, both diodes conducting.		-	200			A
		$t = 8.3 \text{ ms}$ sinusoidal $T_j = 125^\circ\text{C}$ prior to surge; with reapplied	-	220			A
I^2t	I^2t for fusing	$V_{RRM(max)}$ $t = 10 \text{ ms}$	-	200			A ² s
I_{RRM}	Repetitive peak reverse current per diode.	$t_p = 2 \mu\text{s}$; $\delta = 0.001$	-	2			A
I_{RSM}	Non-repetitive peak reverse current per diode.	$t_p = 100 \mu\text{s}$	-	2			A
T_{stg}	Storage temperature		-65	175			$^\circ\text{C}$
T_j	Operating junction temperature		-	150			$^\circ\text{C}$

Rectifier diodes schottky barrier

BYV143B series

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-mb}$	Thermal resistance junction to mounting base	per diode	-	-	2.3	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	both diodes minimum footprint, FR4 board	-	50	1.4	K/W

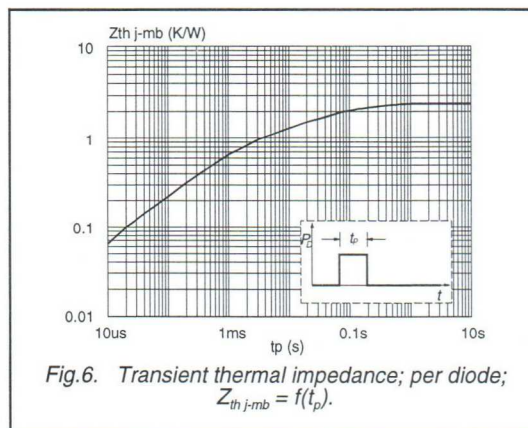
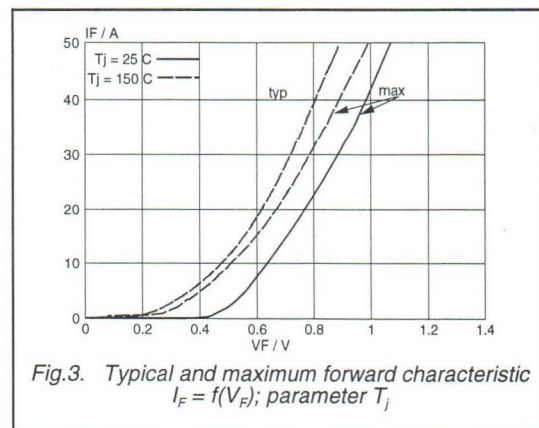
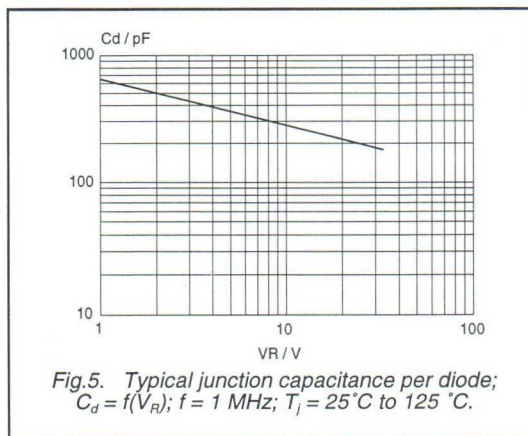
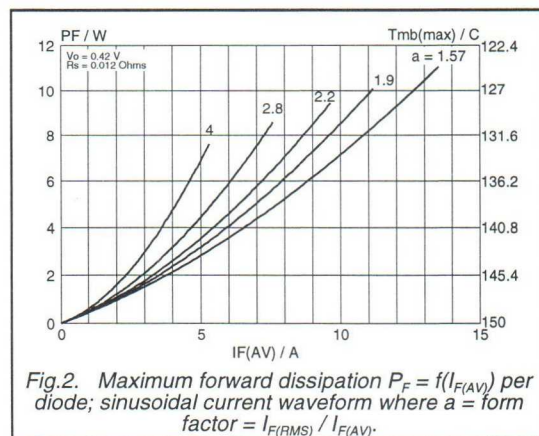
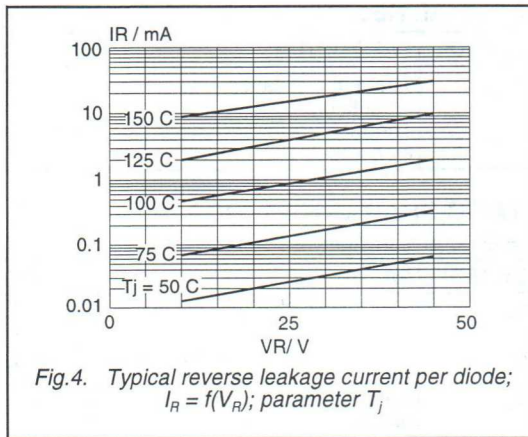
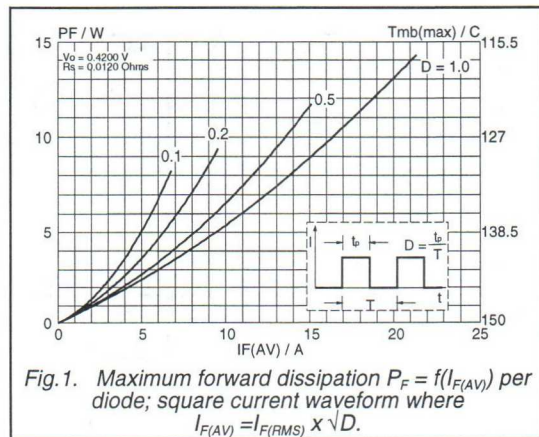
STATIC CHARACTERISTICS

$T_j = 25\ ^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage (per diode)	$I_F = 15\ \text{A}; T_j = 150\ ^\circ\text{C}$	-	0.55	0.60	V
		$I_F = 20\ \text{A}$	-	0.71	0.77	V
I_R	Reverse current (per diode)	$V_R = V_{RRM}$	-	10	200	μA
		$V_R = V_{RRM}; T_j = 125\ ^\circ\text{C}$	-	10	30	mA
C_d	Junction capacitance (per diode)	$f = 1\ \text{MHz}; V_R = 5\ \text{V}; T_j = 25\ ^\circ\text{C}$ to $125\ ^\circ\text{C}$	-	500	-	pF

Rectifier diodes schottky barrier

BYV143B series



Rectifier diodes schottky barrier

BYV143F series

GENERAL DESCRIPTION

Dual, low leakage, platinum barrier, schottky rectifier diodes in a full pack plastic envelope, featuring low forward voltage drop, absence of stored charge, and guaranteed reverse surge capability. The devices are intended for use in switched mode power supplies and high frequency circuits in general where low conduction and zero switching losses are important.

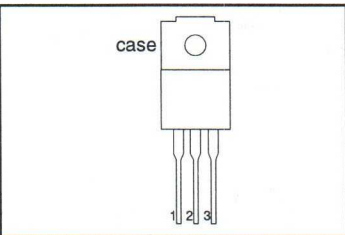
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
V_{RRM} V_F $I_{O(AV)}$	BYV143F- Repetitive peak reverse voltage	35 35	40 40	45 45	V
	Forward voltage	0.62	0.62	0.62	V
	Average output current (both diodes conducting)	20	20	20	A

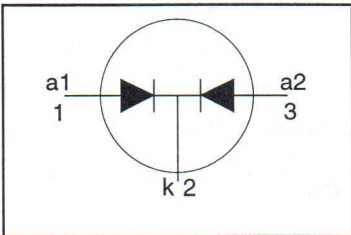
PINNING - SOT186

PIN	DESCRIPTION
1	anode 1 (a)
2	cathode (k)
3	anode 2 (a)

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{RRM}	Repetitive peak reverse voltage	$T_{hs} \leq 112\text{ }^{\circ}\text{C}$	-	-35	-40	-45	V
V_{RWM}	Crest working reverse voltage		-	35	40	45	V
V_R	Continuous reverse voltage		-	35	40	45	V
$I_{O(AV)}$	Average output current (both diodes conducting)	square wave; $\delta = 0.5$; $T_{hs} \leq 87\text{ }^{\circ}\text{C}$	-	20			A
$I_{O(RMS)}$	RMS output current (both diodes conducting)		-	20			A
I_{FRM}	Repetitive peak forward current per diode	$t = 25\text{ }\mu\text{s}$; $\delta = 0.5$; $T_{hs} \leq 87\text{ }^{\circ}\text{C}$	-	30			A
I_{FSM}	Non-repetitive peak forward current, per diode	$t = 10\text{ ms}$	-	100			A
		$t = 8.3\text{ ms}$ sinusoidal $T_i = 125\text{ }^{\circ}\text{C}$ prior to surge; with reapplied	-	110			A
I^2t	I^2t for fusing	$V_{RRM(max)}$ $t = 10\text{ ms}$	-	50			A ² s
I_{RRM}	Repetitive peak reverse current per diode.	$t_p = 2\text{ }\mu\text{s}$; $\delta = 0.001$	-	1			A
I_{RSM}	Non-repetitive peak reverse current per diode.	$t_p = 100\text{ }\mu\text{s}$	-	1			A
T_{stg}	Storage temperature		-65	175			$^{\circ}\text{C}$
T_j	Operating junction temperature		-	150			$^{\circ}\text{C}$

Rectifier diodes schottky barrier

BYV143F series

ISOLATION LIMITING VALUE & CHARACTERISTIC

$T_{hs} = 25\text{ }^{\circ}\text{C}$ unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_{isol}	Repetitive peak voltage from all three terminals to external heatsink	R.H. $\leq 65\%$; clean and dustfree	-		1500	V
C_{isol}	Capacitance from T2 to external heatsink	$f = 1\text{ MHz}$	-	12	-	pF

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-hs}$	Thermal resistance junction to heatsink	per diode both diodes (with heatsink compound)	-	-	5.7 4.8	K/W K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	in free air.	-	55	-	K/W

STATIC CHARACTERISTICS

$T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage (per diode)	$I_F = 15\text{ A}$; $T_j = 150\text{ }^{\circ}\text{C}$	-	0.55	0.62	V
		$I_F = 20\text{ A}$	-	0.76	0.80	V
I_R	Reverse current (per diode)	$V_R = V_{RRM}$	-	10	200	μA
		$V_R = V_{RRM}$; $T_j = 125\text{ }^{\circ}\text{C}$	-	10	30	mA
C_d	Junction capacitance (per diode)	$f = 1\text{ MHz}$; $V_R = 5\text{ V}$; $T_j = 25\text{ }^{\circ}\text{C}$ to $125\text{ }^{\circ}\text{C}$	-	500	-	pF

Rectifier diodes schottky barrier

BYV143F series

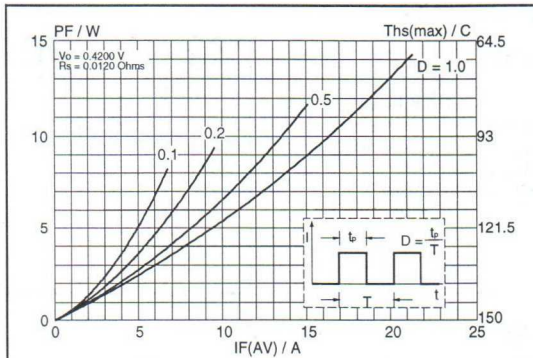


Fig.1. Maximum forward dissipation $P_F = f(I_F(AV))$ per diode; square current waveform where $I_F(AV) = I_F(RMS) \times \sqrt{D}$.

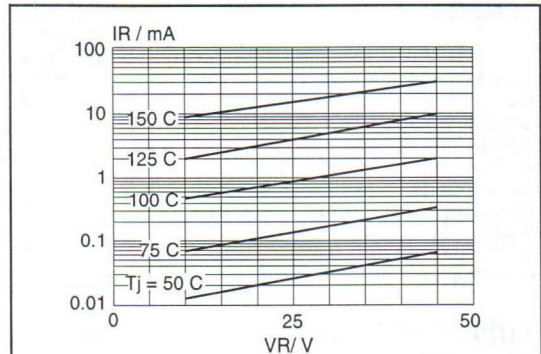


Fig.4. Typical reverse leakage current per diode; $I_R = f(V_R)$; parameter T_j

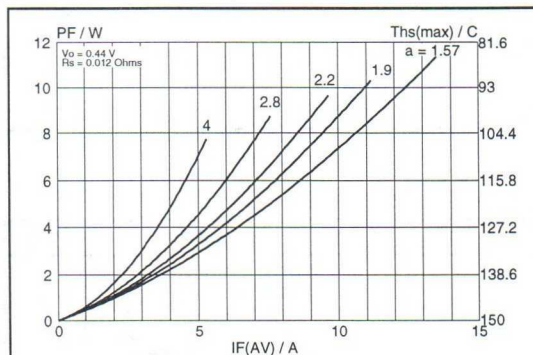


Fig.2. Maximum forward dissipation $P_F = f(I_F(AV))$ per diode; sinusoidal current waveform where $a =$ form factor $= I_F(RMS) / I_F(AV)$.

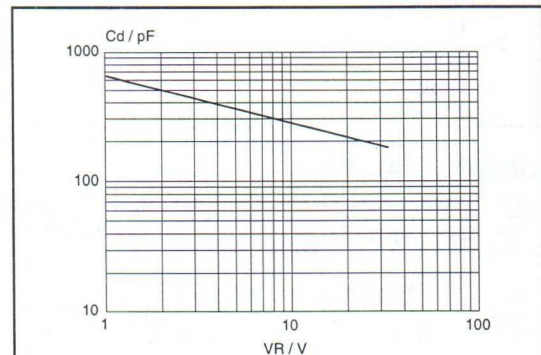


Fig.5. Typical junction capacitance per diode; $C_d = f(V_R)$; $f = 1$ MHz; $T_j = 25^\circ\text{C}$ to 125°C .

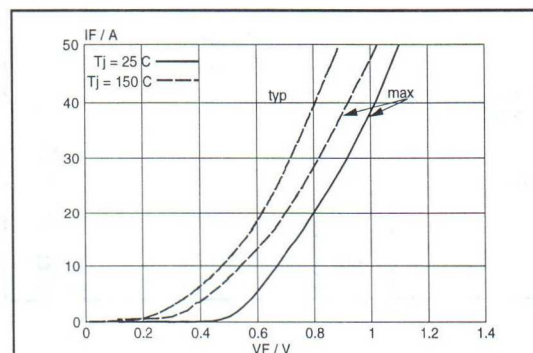


Fig.3. Typical and maximum forward characteristic $I_F = f(V_F)$; parameter T_j

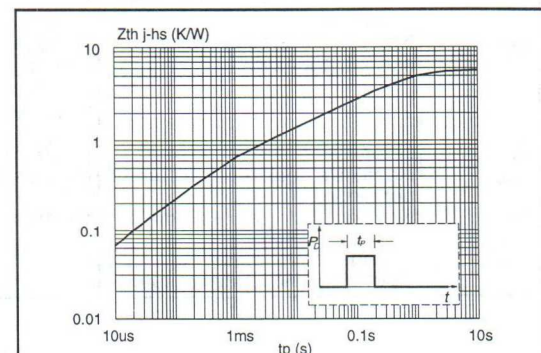


Fig.6. Transient thermal impedance; per diode; $Z_{th(j-hs)} = f(t_p)$.

Rectifier diodes schottky barrier

BYV143X series

GENERAL DESCRIPTION

Dual, low leakage, platinum barrier, schottky rectifier diodes in a full pack plastic envelope, featuring low forward voltage drop, absence of stored charge, and guaranteed reverse surge capability. The devices are intended for use in switched mode power supplies and high frequency circuits in general where low conduction and zero switching losses are important.

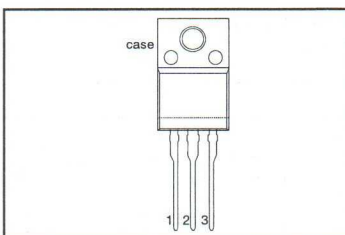
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
V_{RRM}	BYV143X- Repetitive peak reverse voltage	35 35	40 40	45 45	V
V_F	Forward voltage	0.62	0.62	0.62	V
$I_{O(AV)}$	Average output current (both diodes conducting)	20	20	20	A

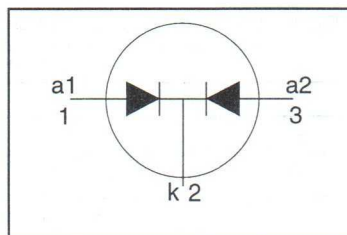
PINNING - SOT186A

PIN	DESCRIPTION
1	anode 1 (a)
2	cathode (k)
3	anode 2 (a)
case	isolated

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{RRM}	Repetitive peak reverse voltage	$T_{hs} \leq 112\text{ }^{\circ}\text{C}$	-	-35	-40	-45	V
V_{RWM}	Crest working reverse voltage		-	35	40	45	V
V_R	Continuous reverse voltage		-	35	40	45	V
$I_{O(AV)}$	Average output current (both diodes conducting)	square wave; $\delta = 0.5$; $T_{hs} \leq 87\text{ }^{\circ}\text{C}$	-	20			A
$I_{O(RMS)}$	RMS output current (both diodes conducting)		-	20			A
I_{FRM}	Repetitive peak forward current per diode	$t = 25\text{ }\mu\text{s}$; $\delta = 0.5$; $T_{hs} \leq 87\text{ }^{\circ}\text{C}$	-	30			A
I_{FSM}	Non-repetitive peak forward current, per diode	$t = 10\text{ ms}$	-	100			A
		$t = 8.3\text{ ms}$ sinusoidal $T_j = 125\text{ }^{\circ}\text{C}$ prior to surge; with reapplied $V_{RRM(max)}$	-	110			A
I^2t	I^2t for fusing	$t = 10\text{ ms}$	-	50			A ² s
I_{RRM}	Repetitive peak reverse current per diode.	$t_p = 2\text{ }\mu\text{s}$; $\delta = 0.001$	-	1			A
I_{RSM}	Non-repetitive peak reverse current per diode.	$t_p = 100\text{ }\mu\text{s}$	-	1			A
T_{stg}	Storage temperature		-65	175			$^{\circ}\text{C}$
T_j	Operating junction temperature		-	150			$^{\circ}\text{C}$

Rectifier diodes schottky barrier

BYV143X series

ISOLATION LIMITING VALUE & CHARACTERISTIC

 $T_{\text{HS}} = 25\text{ }^{\circ}\text{C}$ unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_{isol}	R.M.S. isolation voltage from all three terminals to external heatsink	$f = 50\text{--}60\text{ Hz}$; sinusoidal waveform; $R.H. \leq 65\%$; clean and dustfree	-		2500	V
C_{isol}	Capacitance from T2 to external heatsink	$f = 1\text{ MHz}$	-	10	-	pF

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{\text{th j-hs}}$	Thermal resistance junction to heatsink	per diode both diodes (with heatsink compound)	-	-	5.7	K/W
$R_{\text{th j-a}}$	Thermal resistance junction to ambient	in free air.	-	55	-	K/W

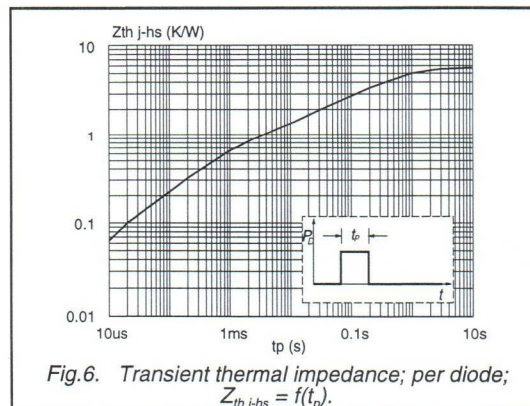
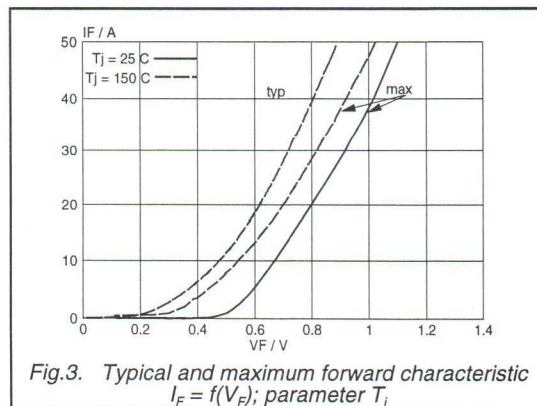
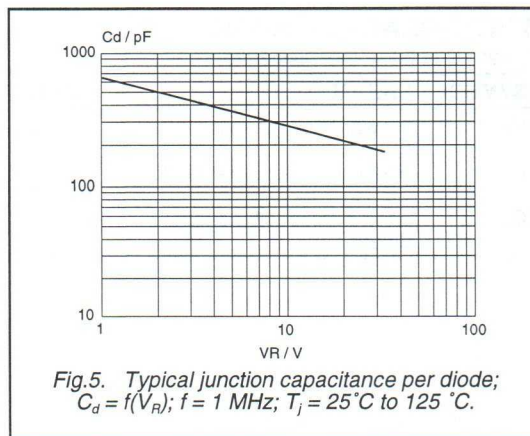
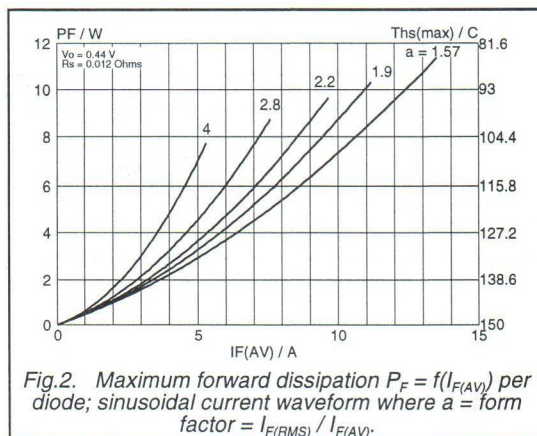
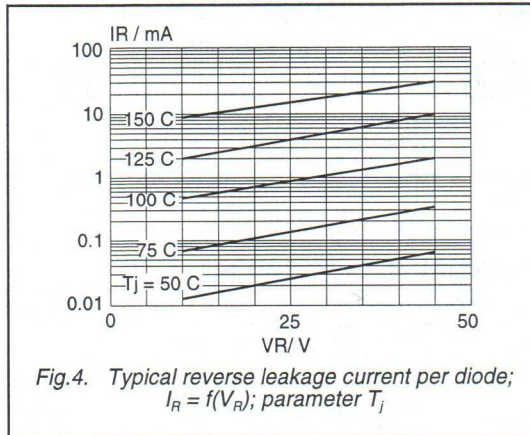
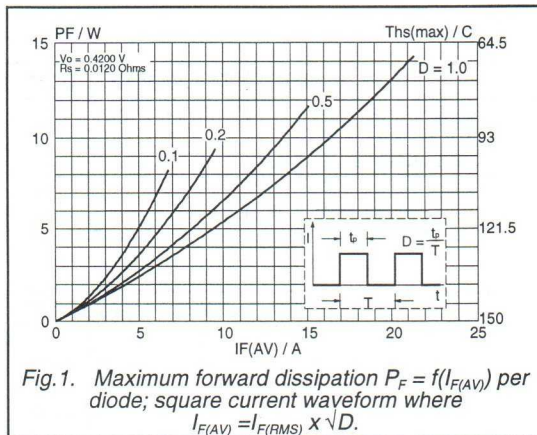
STATIC CHARACTERISTICS

 $T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage (per diode)	$I_F = 15\text{ A}$; $T_j = 150\text{ }^{\circ}\text{C}$	-	0.55	0.62	V
		$I_F = 20\text{ A}$	-	0.76	0.80	V
I_R	Reverse current (per diode)	$V_R = V_{\text{RRM}}$	-	10	200	μA
		$V_R = V_{\text{RRM}}$; $T_j = 125\text{ }^{\circ}\text{C}$	-	10	30	mA
C_d	Junction capacitance (per diode)	$f = 1\text{ MHz}$; $V_R = 5\text{ V}$; $T_j = 25\text{ }^{\circ}\text{C}$ to $125\text{ }^{\circ}\text{C}$	-	500	-	pF

Rectifier diodes schottky barrier

BYV143X series



Rectifier diodes ultrafast

BYW29 series

GENERAL DESCRIPTION

Glass passivated high efficiency rectifier diodes in a plastic envelope, featuring low forward voltage drop, ultra-fast recovery times and soft recovery characteristic. They are intended for use in switched mode power supplies and high frequency circuits in general where low conduction and switching losses are essential.

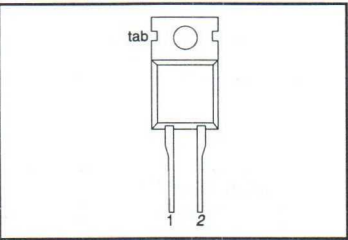
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
	BYW29-	100	150	200	
V_{RRM}	Repetitive peak reverse voltage	100	150	200	V
V_F	Forward voltage	0.895	0.895	0.895	V
$I_{F(AV)}$	Forward current	8	8	8	A
t_{rr}	Reverse recovery time	25	25	25	ns

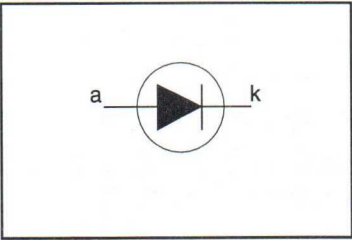
PINNING - TO220AC

PIN	DESCRIPTION
1	cathode (k)
2	anode (a)
tab	cathode (k)

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{RRM}	Repetitive peak reverse voltage		-	-100	-150	-200	V
V_{RWM}	Crest working reverse voltage		-	100	150	200	V
V_R	Continuous reverse voltage		-	100	150	200	V
$I_{F(AV)}$	Average forward current ¹	square wave; $\delta = 0.5$; $T_{mb} \leq 128^\circ\text{C}$	-	8			A
		sinusoidal; $a = 1.57$; $T_{mb} \leq 130^\circ\text{C}$	-	7.3			A
$I_{F(RMS)}$	RMS forward current		-	11.3			A
I_{FRM}	Repetitive peak forward current	$t = 25 \mu\text{s}$; $\delta = 0.5$; $T_{mb} \leq 128^\circ\text{C}$	-	16			A
I_{FSM}	Non-repetitive peak forward current	$t = 10 \text{ ms}$	-	80			A
		$t = 8.3 \text{ ms}$	-	88			A
		sinusoidal; with reapplied $V_{RWM(max)}$	-	32			A ² s
I^2t	I^2t for fusing	$t = 10 \text{ ms}$	-	150			°C
T_{stg}	Storage temperature		-40	150			°C
T_j	Operating junction temperature		-	150			°C

¹ Neglecting switching and reverse current losses

Rectifier diodes
ultrafast

BYW29 series

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-mb}$	Thermal resistance junction to mounting base	in free air	-	-	2.7	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient		-	60	-	K/W

STATIC CHARACTERISTICS

 $T_j = 25\ ^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage	$I_F = 8\ \text{A}; T_j = 150\ ^\circ\text{C}$	-	0.80	0.895	V
		$I_F = 8\ \text{A}$	-	0.92	1.05	V
		$I_F = 20\ \text{A}$	-	1.1	1.3	V
I_R	Reverse current	$V_R = V_{RWM}; T_j = 100\ ^\circ\text{C}$	-	0.3	0.6	mA
		$V_R = V_{RWM}$	-	2	10	μA

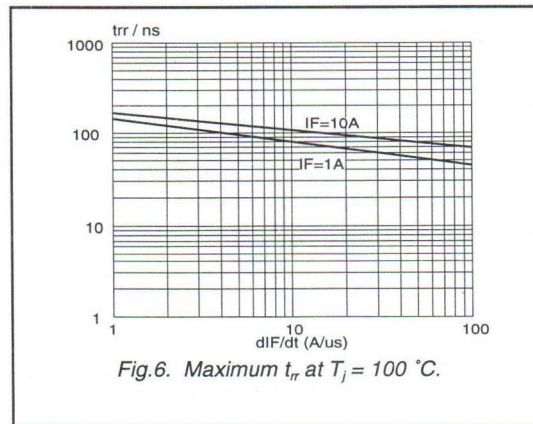
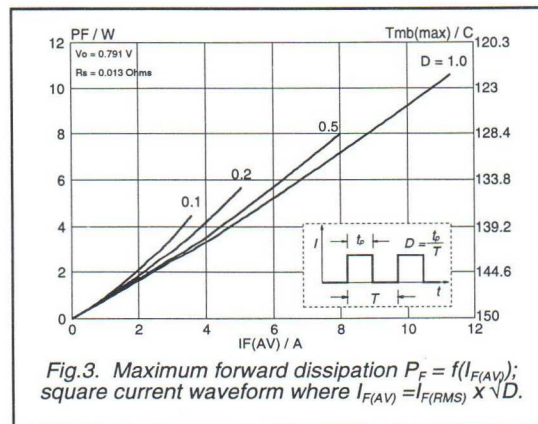
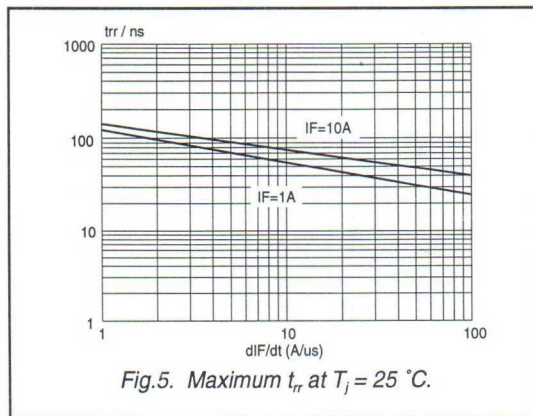
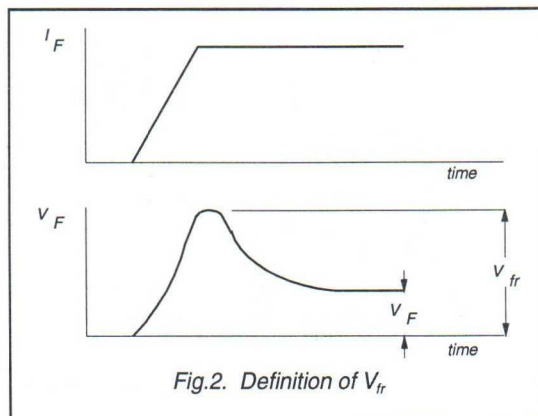
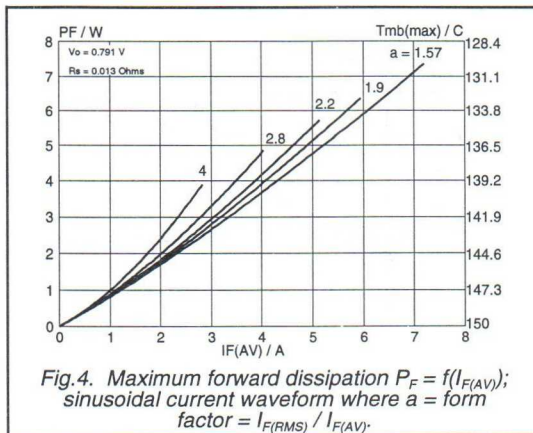
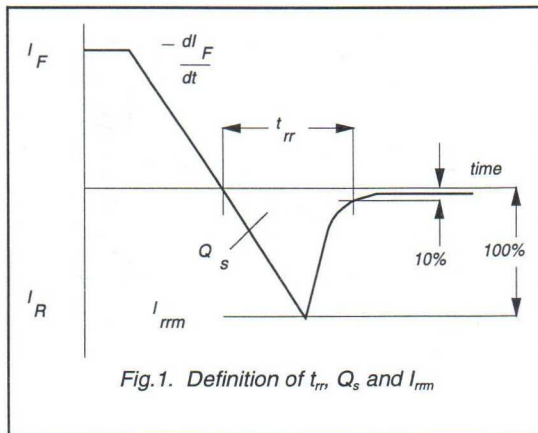
DYNAMIC CHARACTERISTICS

 $T_j = 25\ ^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Q_s	Reverse recovery charge	$I_F = 2\ \text{A}; V_R \geq 30\ \text{V}; -di_F/dt = 20\ \text{A}/\mu\text{s}$	-	4	11	nC
t_{rr}	Reverse recovery time	$I_F = 1\ \text{A}; V_R \geq 30\ \text{V}; -di_F/dt = 100\ \text{A}/\mu\text{s}$	-	20	25	ns
I_{rrm}	Peak reverse recovery current	$I_F = 10\ \text{A}; V_R \geq 30\ \text{V}; T_j = 100\ ^\circ\text{C}; -di_F/dt = 50\ \text{A}/\mu\text{s}$	-	1	2	A
V_{fr}	Forward recovery voltage	$I_F = 1\ \text{A}; di_F/dt = 10\ \text{A}/\mu\text{s}$	-	1	-	V

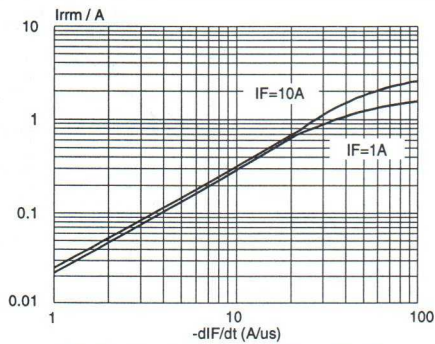
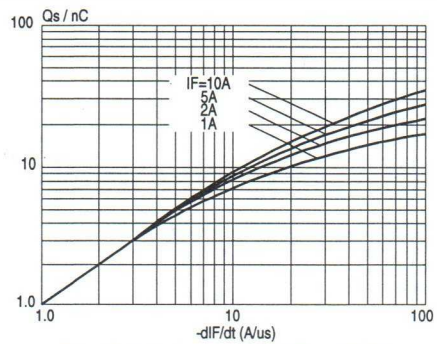
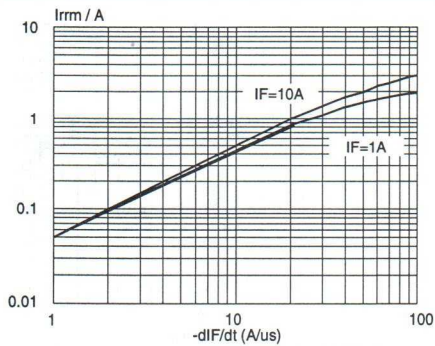
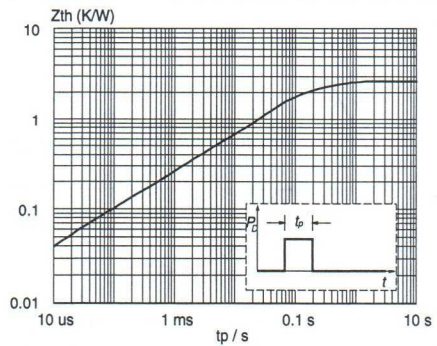
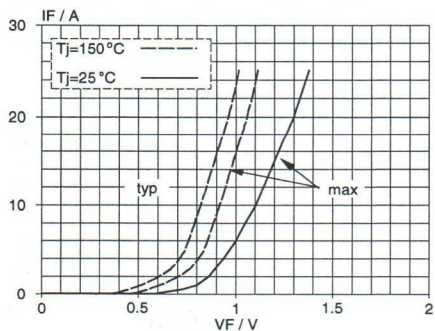
Rectifier diodes ultrafast

BYW29 series



Rectifier diodes
ultrafast

BYW29 series

Fig.7. Maximum I_{rm} at $T_j = 25\text{ }^{\circ}\text{C}$.Fig.10. Maximum Q_s at $T_j = 25\text{ }^{\circ}\text{C}$.Fig.8. Maximum I_{rm} at $T_j = 100\text{ }^{\circ}\text{C}$.Fig.11. Transient thermal impedance; $Z_{th\ j-mb} = f(t_p)$.Fig.9. Typical and maximum forward characteristic $I_F = f(V_F)$; parameter T_j

Rectifier diodes ultrafast, rugged

BYW29E series

GENERAL DESCRIPTION

Glass passivated high efficiency rugged rectifier diodes in a plastic envelope, featuring low forward voltage drop, ultra-fast recovery times and soft recovery characteristic. These devices can withstand reverse voltage transients and have guaranteed reverse surge and ESD capability. They are intended for use in switched mode power supplies and high frequency circuits in general where low conduction and switching losses are essential.

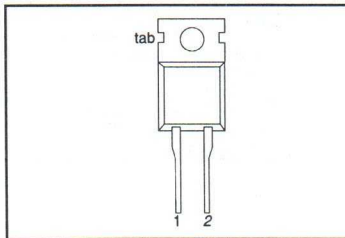
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
V_{RRM}	BYW29E- Repetitive peak reverse voltage	100 100	150 150	200 200	V
V_F	Forward voltage	0.895	0.895	0.895	V
$I_{F(AV)}$	Forward current	8	8	8	A
t_{π}	Reverse recovery time	25	25	25	ns
I_{RRM}	Repetitive peak reverse current	0.2	0.2	0.2	A

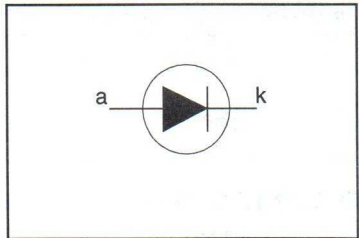
PINNING - TO220AC

PIN	DESCRIPTION
1	cathode (k)
2	anode (a)
tab	cathode (k)

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{RRM}	Repetitive peak reverse voltage		-	-100	-150	-200	V
V_{RWM}	Crest working reverse voltage		-	100	150	200	V
V_R	Continuous reverse voltage		-	100	150	200	V
$I_{F(AV)}$	Average forward current ¹	square wave; $\delta = 0.5$; $T_{mb} \leq 128^\circ\text{C}$ sinusoidal; $a = 1.57$; $T_{mb} \leq 130^\circ\text{C}$	-	8			A
$I_{F(RMS)}$	RMS forward current		-	7.3			A
I_{FRM}	Repetitive peak forward current	$t = 25 \mu\text{s}$; $\delta = 0.5$; $T_{mb} \leq 128^\circ\text{C}$	-	11.3			A
I_{FSM}	Non-repetitive peak forward current	$t = 10 \text{ ms}$ $t = 8.3 \text{ ms}$ sinusoidal; with reapplied $V_{RWM(max)}$	-	80			A
I^2t	I^2t for fusing	$t = 10 \text{ ms}$	-	32			A ² s
I_{RRM}	Repetitive peak reverse current	$t_p = 2 \mu\text{s}$; $\delta = 0.001$	-	0.2			A
I_{RSM}	Non-repetitive peak reverse current	$t_p = 100 \mu\text{s}$	-	0.2			A
T_{stg}	Storage temperature		-40	150			$^\circ\text{C}$
T_j	Operating junction temperature		-	150			$^\circ\text{C}$

¹ Neglecting switching and reverse current losses

Rectifier diodes ultrafast, rugged

BYW29E series

ESD LIMITING VALUE

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_C	Electrostatic discharge capacitor voltage	Human body model; $C = 250 \text{ pF}$; $R = 1.5 \text{ k}\Omega$	-	8	kV

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th \text{ j-mb}}$	Thermal resistance junction to mounting base	in free air	-	-	2.7	K/W
$R_{th \text{ j-a}}$	Thermal resistance junction to ambient		-	60	-	K/W

STATIC CHARACTERISTICS

$T_j = 25^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage	$I_F = 8 \text{ A}$; $T_j = 150^\circ\text{C}$	-	0.80	0.895	V
		$I_F = 8 \text{ A}$	-	0.92	1.05	V
		$I_F = 20 \text{ A}$	-	1.1	1.3	V
I_R	Reverse current	$V_R = V_{RWM}$; $T_j = 100^\circ\text{C}$	-	0.2	0.6	mA
		$V_R = V_{RWM}$	-	2	10	μA

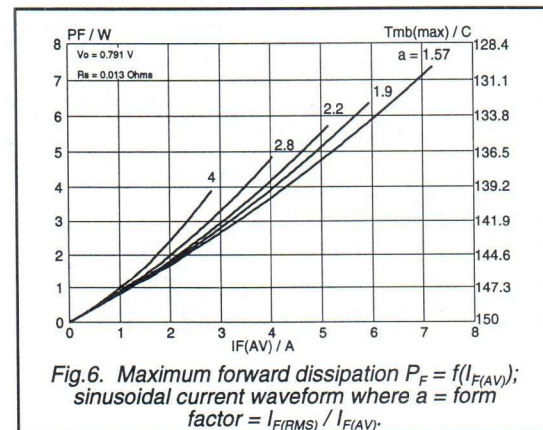
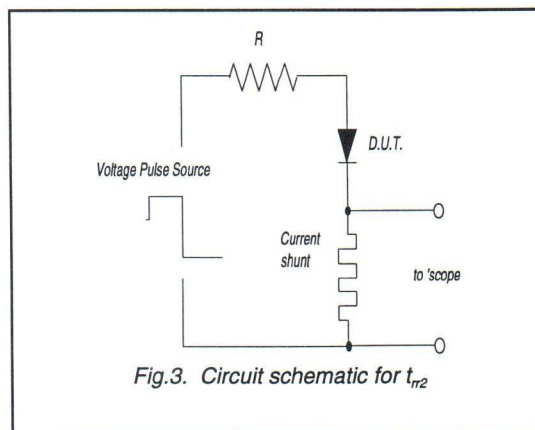
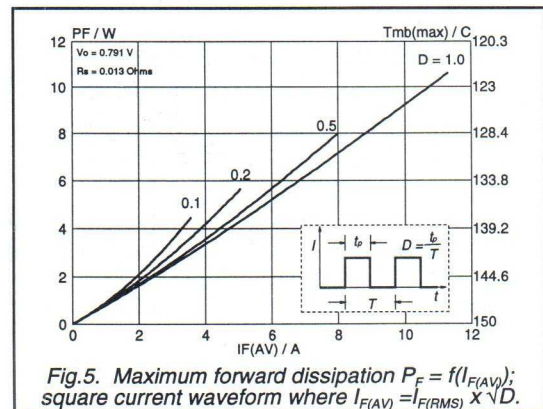
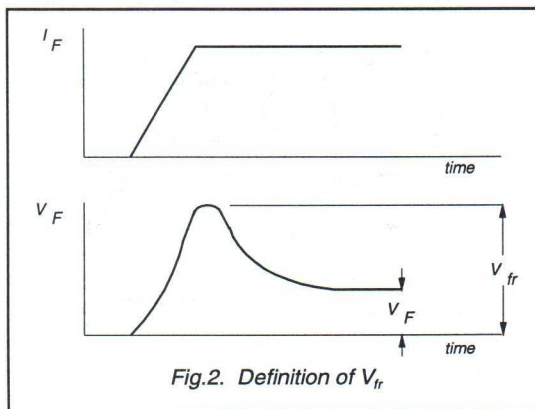
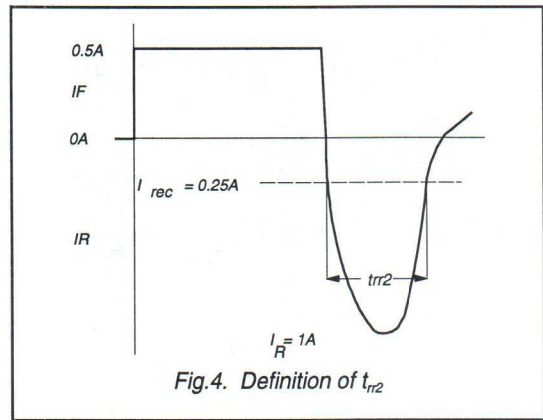
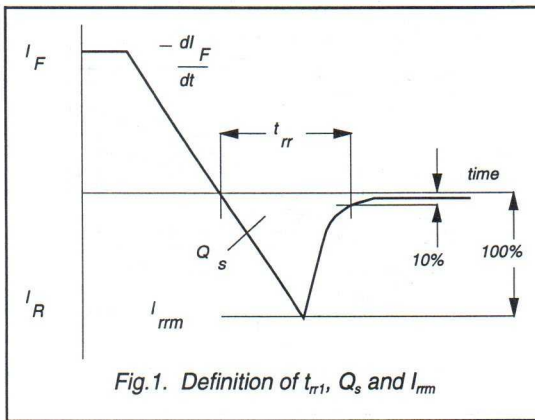
DYNAMIC CHARACTERISTICS

$T_j = 25^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Q_s	Reverse recovery charge	$I_F = 2 \text{ A}$; $V_R \geq 30 \text{ V}$; $-di_F/dt = 20 \text{ A}/\mu\text{s}$	-	4	11	nC
t_{rr1}	Reverse recovery time	$I_F = 1 \text{ A}$; $V_R \geq 30 \text{ V}$; $-di_F/dt = 100 \text{ A}/\mu\text{s}$	-	20	25	ns
t_{rr2}	Reverse recovery time	$I_F = 0.5 \text{ A}$ to $I_R = 1 \text{ A}$; $I_{rec} = 0.25 \text{ A}$	-	15	20	ns
V_{fr}	Forward recovery voltage	$I_F = 1 \text{ A}$; $di_F/dt = 10 \text{ A}/\mu\text{s}$	-	1	-	V

Rectifier diodes
ultrafast, rugged

BYW29E series



Rectifier diodes ultrafast, rugged

BYW29E series

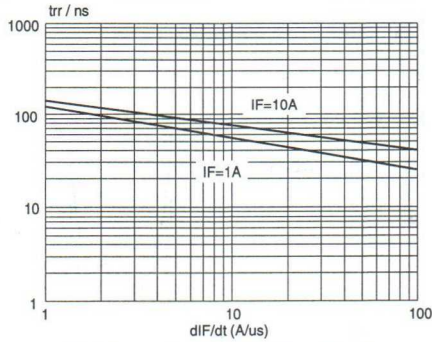


Fig. 7. Maximum t_{rr} at $T_j = 25\text{ }^{\circ}\text{C}$.

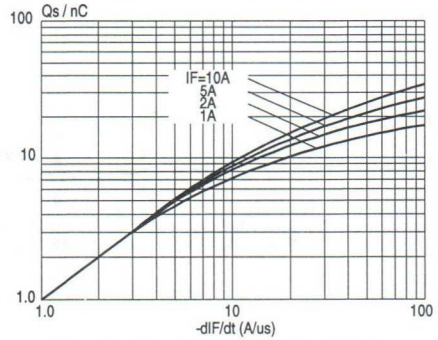


Fig. 10. Maximum Q_s at $T_j = 25\text{ }^{\circ}\text{C}$.

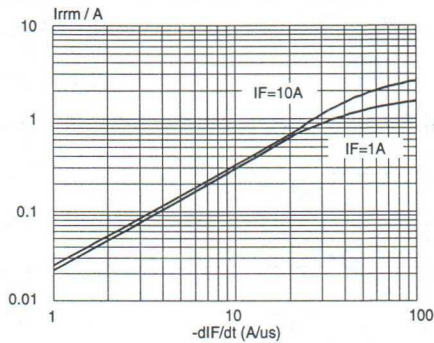


Fig. 8. Maximum I_{rm} at $T_j = 25\text{ }^{\circ}\text{C}$.

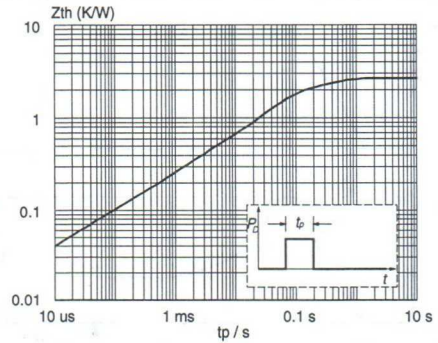


Fig. 11. Transient thermal impedance; $Z_{th-jmb} = f(t_p)$.

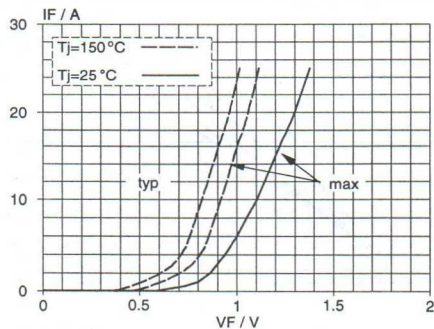


Fig. 9. Typical and maximum forward characteristic $I_F = f(V_F)$; parameter T_j

Rectifier diodes ultrafast, rugged

BYW29EB series

GENERAL DESCRIPTION

Glass passivated epitaxial rectifier diodes in a plastic envelope suitable for surface mounting, featuring low forward voltage drop, ultra-fast recovery times, soft recovery characteristic and guaranteed reverse surge and ESD capability. They are intended for use in switched mode power supplies and high frequency circuits in general where low conduction and switching losses are essential.

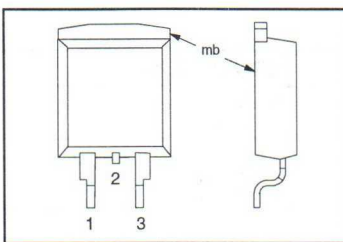
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
V_{RRM} V_F $I_{F(AV)}$ t_{rr} I_{RRM}	BYW29EB- Repetitive peak reverse voltage	100 100	150 150	200 200	V
	Forward voltage	0.895	0.895	0.895	V
	Average forward current	8	8	8	A
	Reverse recovery time	25	25	25	ns
	Repetitive peak reverse current	0.2	0.2	0.2	A

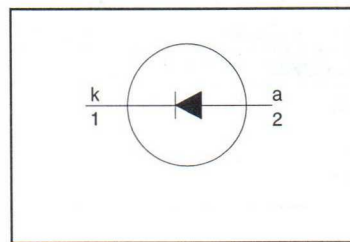
PINNING - SOT404

PIN	DESCRIPTION
1	no connection
2	cathode
3	anode
mb	cathode

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{RRM}	Repetitive peak reverse voltage		-	-100	-150	-200	V
V_{RWM}	Crest working reverse voltage		-	100	150	200	V
V_R	Continuous reverse voltage		-	100	150	200	V
$I_{F(AV)}$	Average forward current ¹	square wave; $\delta = 0.5$; $T_{mb} \leq 128^\circ\text{C}$ sinusoidal; $a = 1.57$; $T_{mb} \leq 130^\circ\text{C}$	-	8			A
$I_{F(RMS)}$	RMS forward current		-	7			A
I_{FRM}	Repetitive peak forward current	$t = 25 \mu\text{s}$; $\delta = 0.5$; $T_{mb} \leq 128^\circ\text{C}$	-	11			A
I_{FSM}	Non-repetitive peak forward current	$t = 10 \text{ ms}$	-	80			A
		$t = 8.3 \text{ ms}$ sinusoidal; with reapplied $V_{RRM(max)}$	-	88			A
I^2t	I^2t for fusing	$t = 10 \text{ ms}$	-	32			A ² s
I_{RRM}	Repetitive peak reverse current	$t_p = 2 \mu\text{s}$; $\delta = 0.001$	-	0.2			A
I_{RSM}	Non-repetitive peak reverse current	$t_p = 100 \mu\text{s}$	-	0.2			A
T_{stg}	Storage temperature		-40	150			$^\circ\text{C}$
T_j	Operating junction temperature		-	150			$^\circ\text{C}$

¹ Neglecting switching and reverse current losses

Rectifier diodes ultrafast, rugged

BYW29EB series

ESD LIMITING VALUE

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_C	Electrostatic discharge capacitor voltage	Human body model; $C = 250 \text{ pF}$; $R = 1.5 \text{ k}\Omega$	-	8	kV

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th \text{ j-mb}}$	Thermal resistance junction to mounting base	minimum footprint, FR4 board	-	-	2.7	K/W
$R_{th \text{ j-a}}$	Thermal resistance junction to ambient		-	50	-	K/W

STATIC CHARACTERISTICS

$T_j = 25 \text{ }^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage	$I_F = 8 \text{ A}$; $T_j = 150 \text{ }^\circ\text{C}$	-	0.80	0.895	V
I_R	Reverse current	$I_F = 8 \text{ A}$	-	0.92	1.05	V
		$I_F = 20 \text{ A}$	-	1.1	1.3	V
		$V_R = V_{RRM}$; $T_j = 100 \text{ }^\circ\text{C}$	-	0.2	0.6	mA
		$V_R = V_{RRM}$	-	2	10	μA

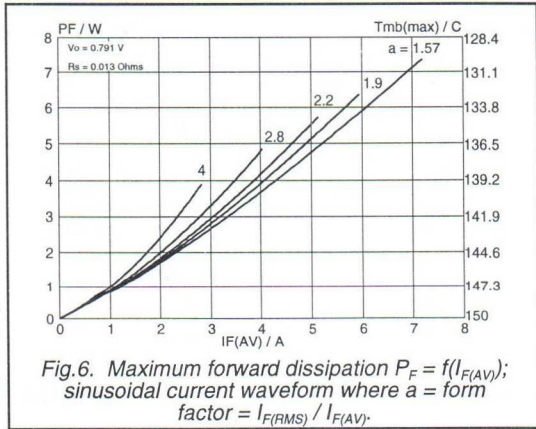
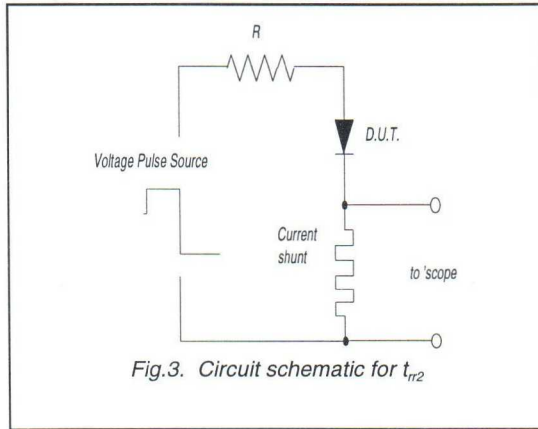
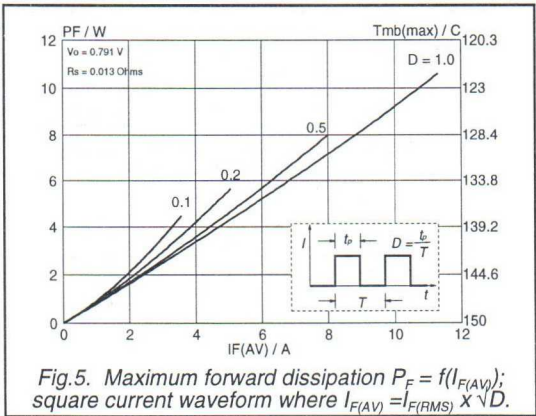
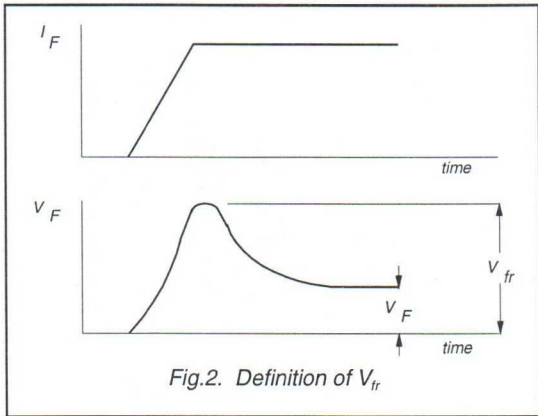
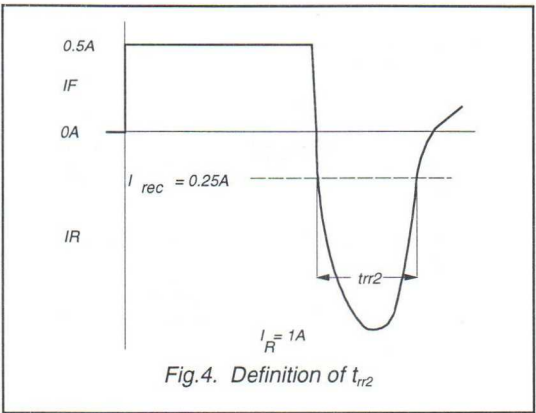
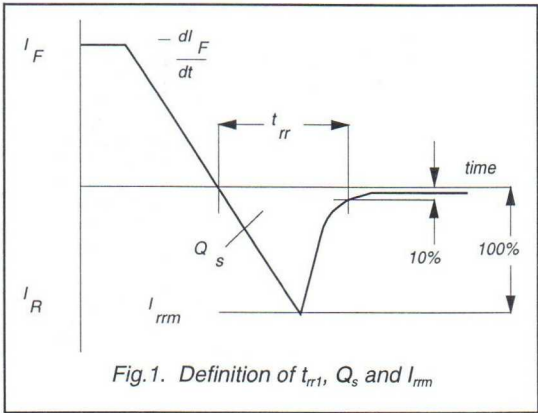
DYNAMIC CHARACTERISTICS

$T_j = 25 \text{ }^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Q_s	Reverse recovery charge	$I_F = 2 \text{ A}$; $V_R \geq 30 \text{ V}$; $-di_F/dt = 20 \text{ A}/\mu\text{s}$	-	4	11	nC
t_{rr1}	Reverse recovery time	$I_F = 1 \text{ A}$; $V_R \geq 30 \text{ V}$; $-di_F/dt = 100 \text{ A}/\mu\text{s}$	-	20	25	ns
t_{rr2}	Reverse recovery time	$I_F = 0.5 \text{ A}$ to $I_R = 1 \text{ A}$; $I_{rec} = 0.25 \text{ A}$	-	15	20	ns
V_{rr}	Forward recovery voltage	$I_F = 1 \text{ A}$; $di_F/dt = 10 \text{ A}/\mu\text{s}$	-	1	-	V

Rectifier diodes ultrafast, rugged

BYW29EB series



Rectifier diodes ultrafast, rugged

BYW29EB series

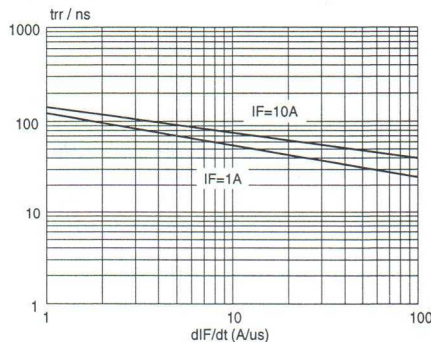


Fig. 7. Maximum t_{rr} at $T_j = 25\text{ }^{\circ}\text{C}$.

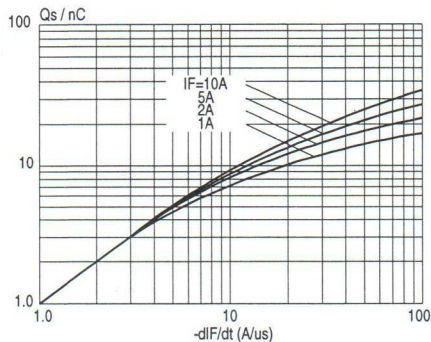


Fig. 10. Maximum Q_s at $T_j = 25\text{ }^{\circ}\text{C}$.

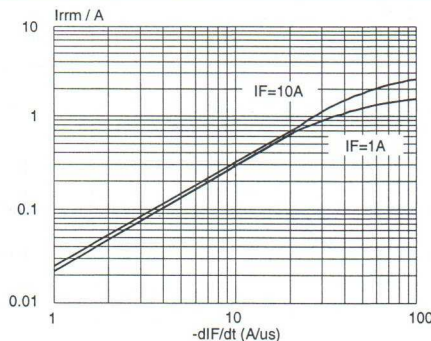


Fig. 8. Maximum I_{rms} at $T_j = 25\text{ }^{\circ}\text{C}$.

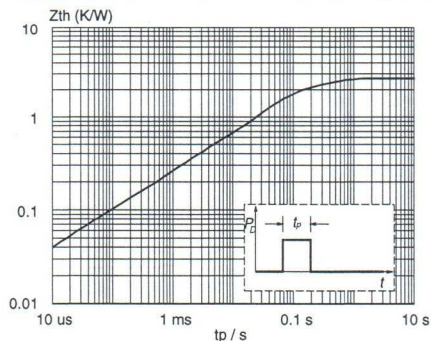


Fig. 11. Transient thermal impedance; $Z_{th\ j-mb} = f(t_p)$.

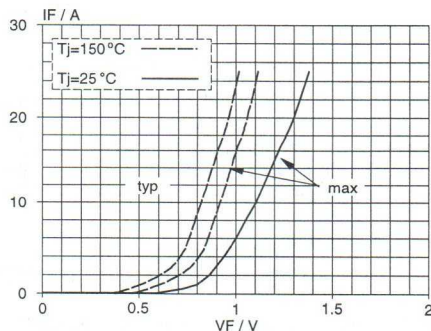


Fig. 9. Typical and maximum forward characteristic $I_F = f(V_F)$; parameter T_j

Rectifier diodes ultrafast, rugged

BYW29EX series

GENERAL DESCRIPTION

Glass passivated epitaxial rectifier diodes in a full pack plastic envelope, featuring low forward voltage drop, ultra-fast recovery times, soft recovery characteristic and guaranteed reverse surge and ESD capability. They are intended for use in switched mode power supplies and high frequency circuits in general where low conduction and switching losses are essential.

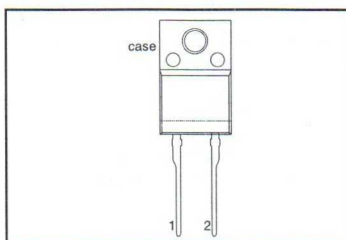
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
V_{RRM}	Repetitive peak reverse voltage	100	150	200	V
		100	150	200	
V_F	Forward voltage	0.895	0.895	0.895	V
$I_{F(AV)}$	Forward current	8	8	8	A
t_{rr}	Reverse recovery time	25	25	25	ns
I_{RRM}	Repetitive peak reverse current	0.2	0.2	0.2	A

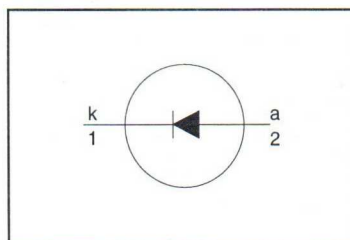
PINNING - SOD113

PIN	DESCRIPTION
1	cathode
2	anode
case	isolated

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
				-100	-150	-200	
V_{RRM}	Repetitive peak reverse voltage	square wave; $\delta = 0.5$; $T_{hs} \leq 106^\circ\text{C}$ sinusoidal; $a = 1.57$; $T_{hs} \leq 109^\circ\text{C}$	-	100	150	200	V
V_{RWM}	Crest working reverse voltage		-	100	150	200	V
V_R	Continuous reverse voltage		-	100	150	200	V
$I_{F(AV)}$	Average forward current ¹	$t = 25\ \mu\text{s}$; $\delta = 0.5$; $T_{hs} \leq 106^\circ\text{C}$	-	8			A
$I_{F(RMS)}$	RMS forward current		-	7.3			A
I_{FRM}	Repetitive peak forward current		-	11.3			A
I_{FSM}	Non-repetitive peak forward current	$t = 10\ \text{ms}$ $t = 8.3\ \text{ms}$ sinusoidal; with reapplied	-	80			A
I^2t	I^2t for fusing	$V_{RWM(max)}$ $t = 10\ \text{ms}$	-	32			A ² s
I_{RRM}	Repetitive peak reverse current	$t_p = 2\ \mu\text{s}$; $\delta = 0.001$	-	0.2			A
I_{RSM}	Non-repetitive peak reverse current	$t_p = 100\ \mu\text{s}$	-	0.2			A
T_{stg}	Storage temperature	-	-40	150			$^\circ\text{C}$
T_j	Operating junction temperature	-	-	150			$^\circ\text{C}$

¹ Neglecting switching and reverse current losses

Rectifier diodes ultrafast, rugged

BYW29EX series

ESD LIMITING VALUE

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_C	Electrostatic discharge capacitor voltage	Human body model; $C = 250 \text{ pF}$; $R = 1.5 \text{ k}\Omega$	-	8	kV

ISOLATION LIMITING VALUE & CHARACTERISTIC

$T_{hs} = 25^\circ\text{C}$ unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_{isol}	R.M.S. isolation voltage from both terminals to external heatsink	$f = 50\text{-}60 \text{ Hz}$; sinusoidal waveform; $R.H. \leq 65\%$; clean and dustfree	-		2500	V
C_{isol}	Capacitance from both terminals to external heatsink	$f = 1 \text{ MHz}$	-	10	-	pF

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th \text{ j-hs}}$	Thermal resistance junction to heatsink	with heatsink compound	-	-	5.5	K/W
$R_{th \text{ j-a}}$	Thermal resistance junction to ambient	without heatsink compound in free air	-	55	7.2	K/W

STATIC CHARACTERISTICS

$T_j = 25^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage	$I_F = 8 \text{ A}$; $T_j = 150^\circ\text{C}$	-	0.80	0.895	V
		$I_F = 8 \text{ A}$	-	0.92	1.05	V
		$I_F = 20 \text{ A}$	-	1.1	1.3	V
I_R	Reverse current	$V_R = V_{RWM}$; $T_j = 100^\circ\text{C}$	-	0.2	0.6	mA
		$V_R = V_{RWM}$	-	2	10	μA

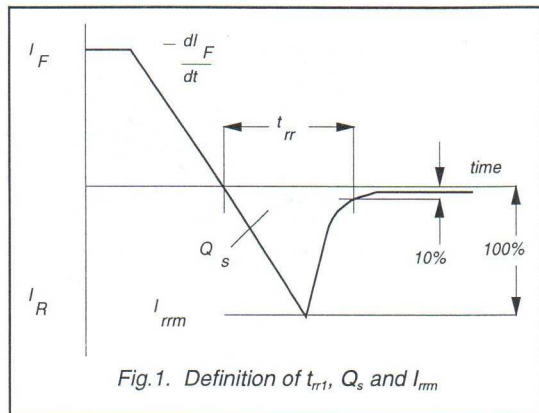
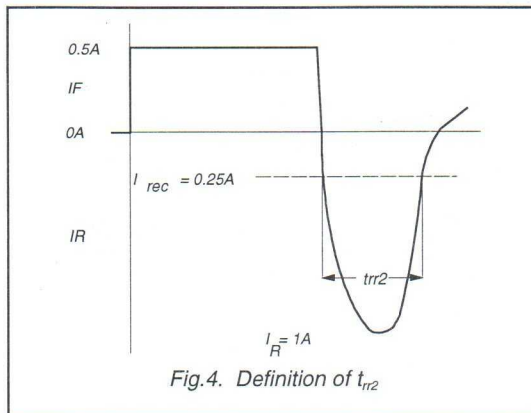
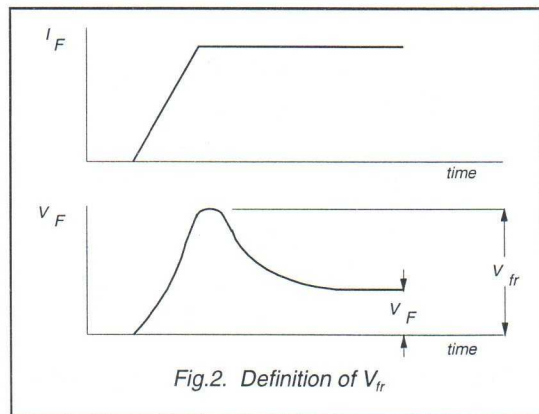
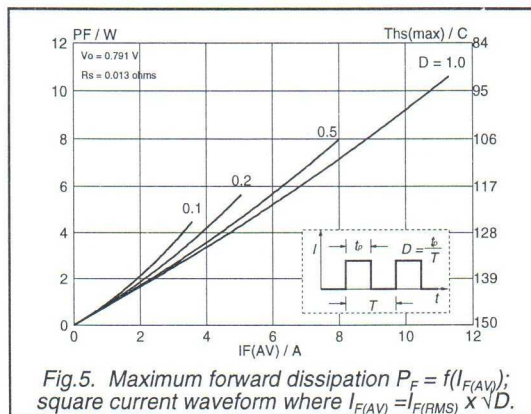
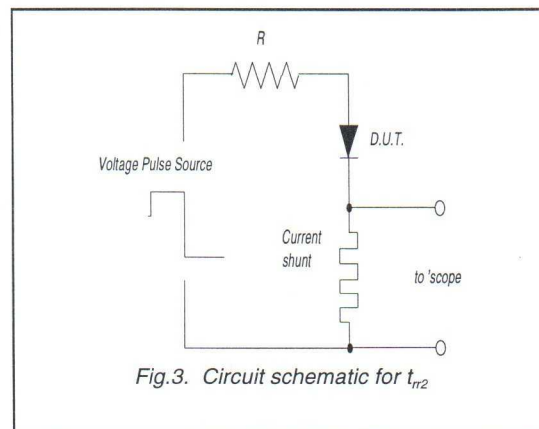
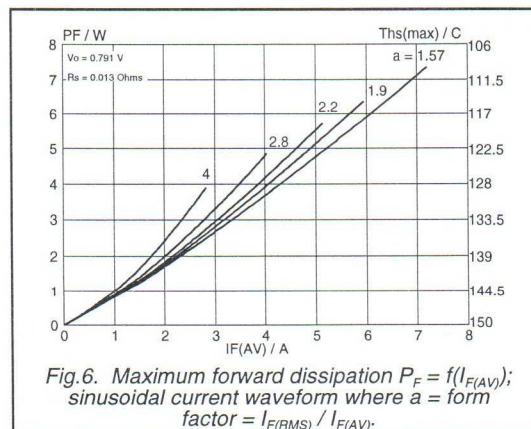
DYNAMIC CHARACTERISTICS

$T_j = 25^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Q_s	Reverse recovery charge	$I_F = 2 \text{ A}$; $V_R \geq 30 \text{ V}$; $-dI_F/dt = 20 \text{ A}/\mu\text{s}$	-	4	11	nC
t_{rr1}	Reverse recovery time	$I_F = 1 \text{ A}$; $V_R \geq 30 \text{ V}$; $-dI_F/dt = 100 \text{ A}/\mu\text{s}$	-	20	25	ns
t_{rr2}	Reverse recovery time	$I_F = 0.5 \text{ A}$ to $I_R = 1 \text{ A}$; $I_{rec} = 0.25 \text{ A}$	-	15	20	ns
V_{fr}	Forward recovery voltage	$I_F = 1 \text{ A}$; $dI_F/dt = 10 \text{ A}/\mu\text{s}$	-	1	-	V

Rectifier diodes ultrafast, rugged

BYW29EX series

Fig.1. Definition of t_{rr} , Q_s and I_{rrm} Fig.4. Definition of t_{tr2} Fig.2. Definition of V_{fr} Fig.5. Maximum forward dissipation $P_F = f(I_F(AV))$; square current waveform where $I_F(AV) = I_F(RMS) \times D$.Fig.3. Circuit schematic for t_{tr2} Fig.6. Maximum forward dissipation $P_F = f(I_F(AV))$; sinusoidal current waveform where $a = \text{form factor} = I_F(RMS) / I_F(AV)$.

Rectifier diodes ultrafast, rugged

BYW29EX series

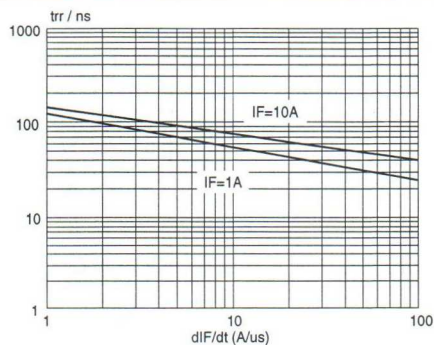


Fig. 7. Maximum t_{rr} at $T_j = 25\text{ }^{\circ}\text{C}$.

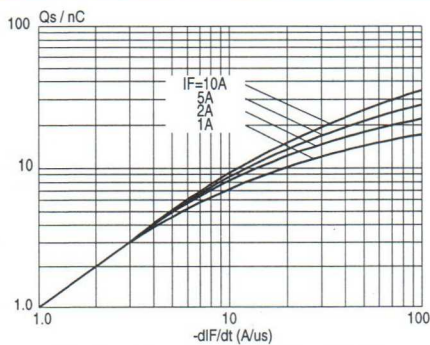


Fig. 10. Maximum Q_s at $T_j = 25\text{ }^{\circ}\text{C}$.

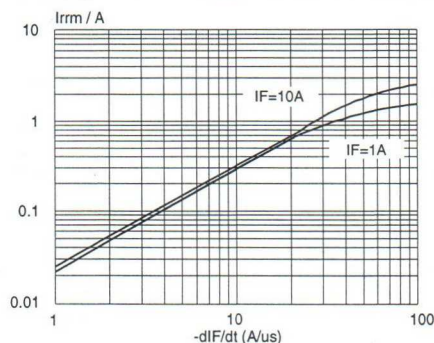


Fig. 8. Maximum I_{rms} at $T_j = 25\text{ }^{\circ}\text{C}$.

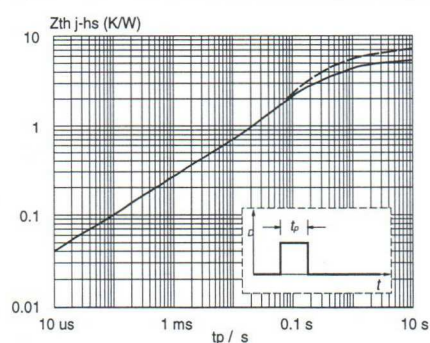


Fig. 11. Transient thermal impedance; $Z_{th\ j-hs} = f(t_p)$.

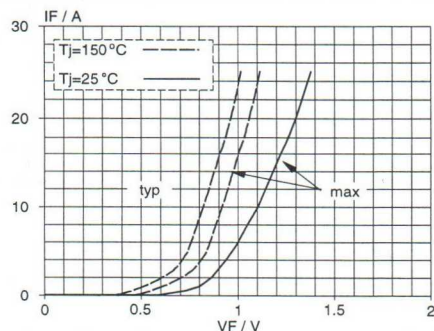


Fig. 9. Typical and maximum forward characteristic $I_F = f(V_F)$; parameter T_j

Rectifier diodes ultrafast

BYW29F series

GENERAL DESCRIPTION

Glass passivated high efficiency rectifier diodes in full pack, plastic envelopes, featuring low forward voltage drop, ultra-fast recovery times and soft recovery characteristic. They are intended for use in switched mode power supplies and high frequency circuits in general where low conduction and switching losses are essential.

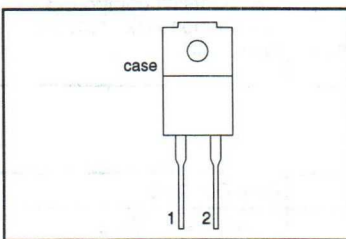
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
V_{RRM}	BYW29F- Repetitive peak reverse voltage	100 100	150 150	200 200	V
V_F	Forward voltage	0.895	0.895	0.895	V
$I_{F(AV)}$	Forward current	8	8	8	A
t_{rr}	Reverse recovery time	25	25	25	ns

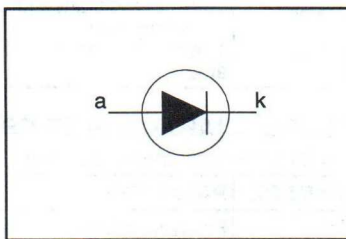
PINNING - SOD100

PIN	DESCRIPTION
1	cathode
2	anode
case	isolated

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{RRM}	Repetitive peak reverse voltage		-	-100	-150	-200	V
V_{RWM}	Crest working reverse voltage		-	100	150	200	V
V_R	Continuous reverse voltage		-	100	150	200	V
$I_{F(AV)}$	Average forward current ²	square wave; $\delta = 0.5$; $T_{hs} \leq 106^\circ\text{C}$	-	8			A
		sinusoidal; $a = 1.57$; $T_{hs} \leq 109^\circ\text{C}$	-	7.3			A
$I_{F(RMS)}$	RMS forward current		-	11.3			A
I_{FRM}	Repetitive peak forward current	$t = 25\ \mu\text{s}$; $\delta = 0.5$; $T_{hs} \leq 109^\circ\text{C}$	-	16			A
I_{FSM}	Non-repetitive peak forward current	$t = 10\ \text{ms}$ $t = 8.3\ \text{ms}$ sinusoidal; with reapplied	-	80			A
			-	88			A
I^2t	I^2t for fusing	$V_{RWM(max)}$ $t = 10\ \text{ms}$	-	32			A ² s
T_{stg}	Storage temperature		-40	150			$^\circ\text{C}$
T_j	Operating junction temperature		-	150			$^\circ\text{C}$

¹ $T_{hs} \leq 141^\circ\text{C}$ for thermal stability.

² Neglecting switching and reverse current losses

Rectifier diodes ultrafast

BYW29F series

ISOLATION

$T_{hs} = 25\text{ }^{\circ}\text{C}$ unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_{isol}	Repetitive peak voltage from both terminals to external heatsink	R.H. $\leq 65\%$; clean and dustfree	-	-	1500	V
C_{isol}	Capacitance from cathode to external heatsink	$f = 1\text{ MHz}$	-	12	-	pF

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-hs}$	Thermal resistance junction to mounting base	with heatsink compound	-	-	5.5	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	without heatsink compound in free air	-	-	7.2	K/W
			-	55	-	K/W

STATIC CHARACTERISTICS

$T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage	$I_F = 8\text{ A}$; $T_j = 150\text{ }^{\circ}\text{C}$	-	0.80	0.895	V
		$I_F = 8\text{ A}$	-	0.92	1.05	V
		$I_F = 20\text{ A}$	-	1.1	1.3	V
I_R	Reverse current	$V_R = V_{RWM}$; $T_j = 100\text{ }^{\circ}\text{C}$	-	0.3	0.6	mA
		$V_R = V_{RWM}$	-	2	10	μA

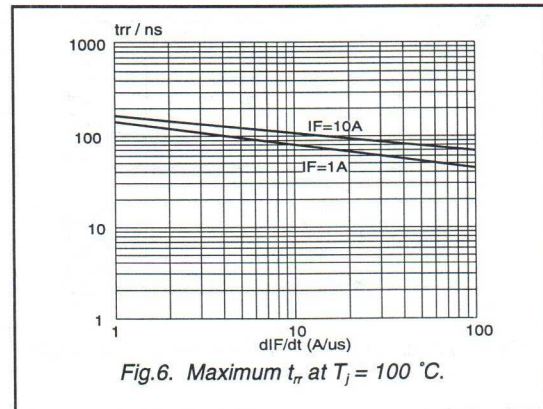
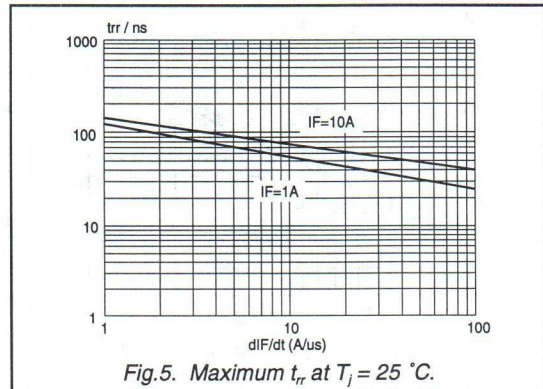
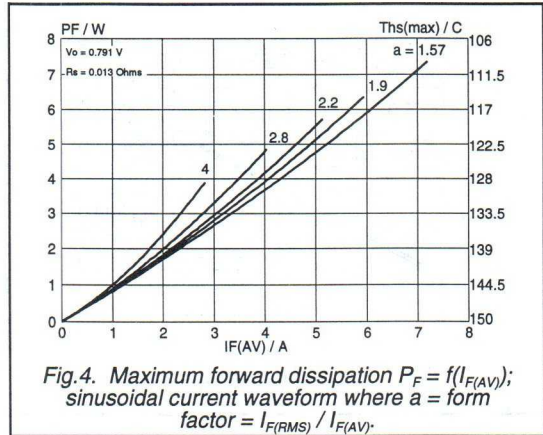
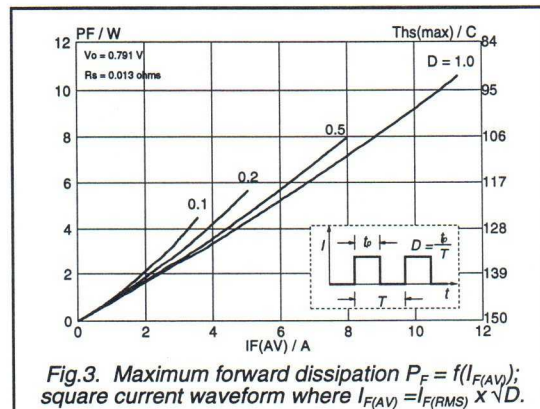
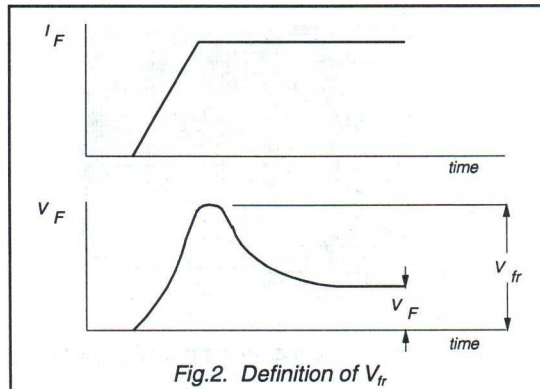
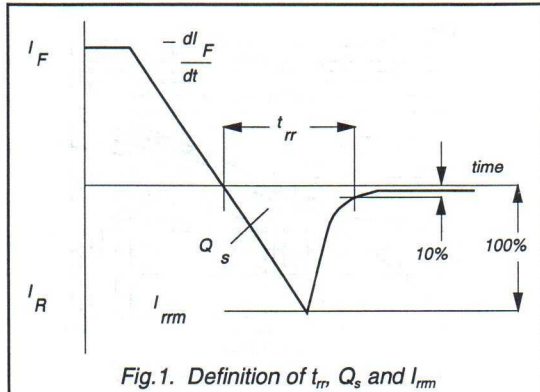
DYNAMIC CHARACTERISTICS

$T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Q_s	Reverse recovery charge	$I_F = 2\text{ A}$; $V_R \geq 30\text{ V}$; $-di_F/dt = 20\text{ A}/\mu\text{s}$	-	4	11	nC
t_{rr}	Reverse recovery time	$I_F = 1\text{ A}$; $V_R \geq 30\text{ V}$; $-di_F/dt = 100\text{ A}/\mu\text{s}$	-	20	25	ns
I_{rm}	Peak reverse recovery current	$I_F = 10\text{ A}$; $V_R \geq 30\text{ V}$; $T_j = 100\text{ }^{\circ}\text{C}$; $-di_F/dt = 50\text{ A}/\mu\text{s}$	-	1	2	A
V_{fr}	Forward recovery voltage	$I_F = 1\text{ A}$; $di_F/dt = 10\text{ A}/\mu\text{s}$	-	1	-	V

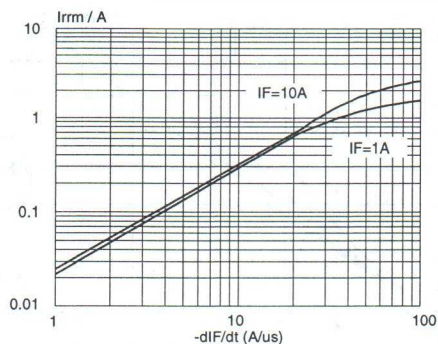
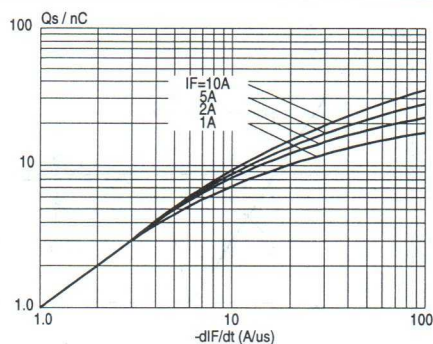
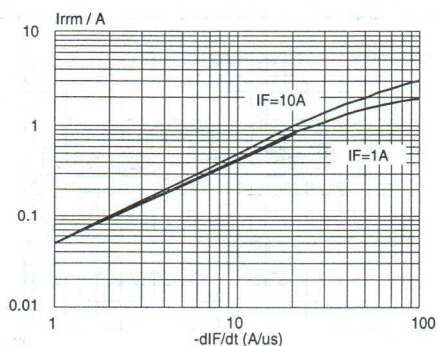
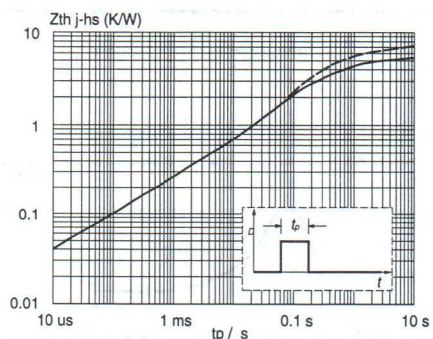
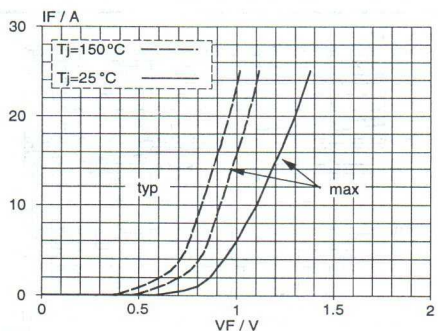
Rectifier diodes ultrafast

BYW29F series



Rectifier diodes
ultrafast

BYW29F series

Fig. 7. Maximum I_{rms} at $T_j = 25\text{ °C}$.Fig. 10. Maximum Q_s at $T_j = 25\text{ °C}$.Fig. 8. Maximum I_{rms} at $T_j = 100\text{ °C}$.Fig. 11. Transient thermal impedance; $Z_{th\ j-hs} = f(t_p)$.Fig. 9. Typical and maximum forward characteristic $I_F = f(V_F)$; parameter T_j

Rectifier diodes schottky barrier

PBYR225CT series

GENERAL DESCRIPTION

Dual nickel silicide schottky barrier rectifier diodes in a plastic envelope suitable for surface mounting, featuring low forward voltage drop and absence of stored charge. These devices can withstand reverse voltage transients and have guaranteed reverse surge capability. The devices are intended for use in switched mode power supplies with 3 V - 3.3 V outputs, or as or-ing diodes in fault tolerant power supply systems.

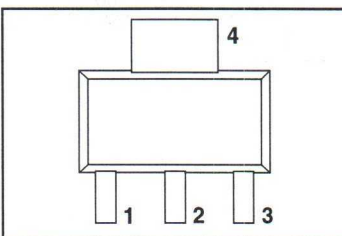
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	UNIT
	PBYR2-	20CT	25CT	
V_{RRM}	Repetitive peak reverse voltage	20	25	V
V_F	Forward voltage	0.33	0.33	V
$I_{O(AV)}$	Output current (both diodes conducting)	2	2	A

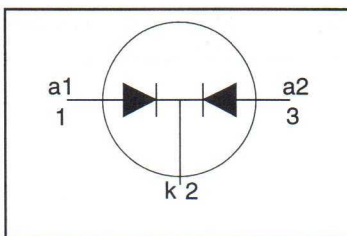
PINNING - SOT223

PIN	DESCRIPTION
1	anode 1 (a)
2	cathode (k)
3	anode 2 (a)
4	cathode (k)

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{RRM}	Repetitive peak reverse voltage	$T_b \leq 97\text{ }^{\circ}\text{C}$	-	-20	V
V_{RWM}	Crest working reverse voltage		-	20	V
V_R	Continuous reverse voltage		-	20	V
$I_{O(AV)}$	Output current (both diodes conducting)	square wave; $\delta = 0.5$; $T_b \leq 138\text{ }^{\circ}\text{C}$	-	2	A
$I_{O(RMS)}$	RMS forward current	$t = 25\mu\text{s}$; $\delta = 0.5$; $T_b \leq 138\text{ }^{\circ}\text{C}$	-	2.8	A
I_{FRM}	Repetitive forward peak current per diode		-	2	A
I_{FSM}	Non-repetitive peak forward current per diode.		-	6	A
I^2t	I^2t for fusing	$t = 10\text{ ms}$	-	6.6	A
I_{RRM}	Repetitive peak reverse current per diode.	$t = 8.3\text{ ms}$ sinusoidal $T_j = 125\text{ }^{\circ}\text{C}$ prior to surge; with reappplied $V_{RWM(max)}$	-	0.18	A ² s
I_{RSM}	Non-repetitive peak reverse current per diode.	$t_p = 2\text{ }\mu\text{s}$; $\delta = 0.001$	-	1	A
T_{stg}	Storage temperature	$t_p = 100\text{ }\mu\text{s}$	-	1	A
T_j	Operating junction temperature		-40	150	$^{\circ}\text{C}$
			-	150	$^{\circ}\text{C}$

Rectifier diodes schottky barrier

PBYR225CT series

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-sp}$	Thermal resistance junction to solder point	one or both diodes conducting	-	-	15	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	pcb mounted; minimum footprint	-	156	-	K/W
		pcb mounted; pad area as in fig:1	-	70	-	K/W

STATIC CHARACTERISTICS

$T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage (per diode)	$I_F = 1\text{ A}$; $T_j = 125\text{ }^{\circ}\text{C}$	-	0.28	0.33	V
		$I_F = 2\text{ A}$	-	0.42	0.51	V
I_R	Reverse current (per diode)	$V_R = V_{RWM}$	-	0.5	3	mA
		$V_R = V_{RWM}$; $T_j = 100\text{ }^{\circ}\text{C}$	-	5	10	mA
C_d	Junction capacitance (per diode)	$f = 1\text{ MHz}$; $V_R = 5\text{ V}$; $T_j = 25\text{ }^{\circ}\text{C}$ to $125\text{ }^{\circ}\text{C}$	-	150	-	pF

Dimensions in mm.

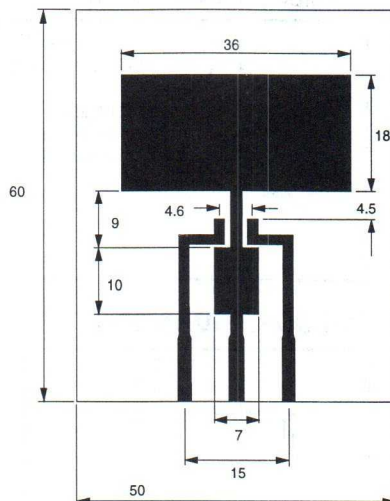


Fig.1. PCB for thermal resistance and power rating for SOT223.
PCB: FR4 epoxy glass (1.6 mm thick), copper laminate (35 μm thick).

Rectifier diodes schottky barrier

PBYR245CT series

GENERAL DESCRIPTION

Dual, low leakage, platinum barrier, schottky rectifier diodes in a plastic envelope suitable for surface mounting, featuring low forward voltage drop and absence of stored charge. These devices can withstand reverse voltage transients and have guaranteed reverse surge capability. The devices are intended for use in switched mode power supplies and high frequency circuits in general where low conduction and zero switching losses are important.

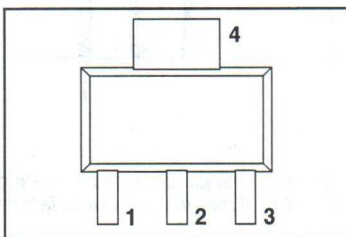
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
V_{RRM}	PBYR2- Repetitive peak reverse voltage Forward voltage Output current (both diodes conducting)	35CT 35	40CT 40	45CT 45	V
V_F		0.45	0.45	0.45	V
$I_{O(AV)}$		2	2	2	A

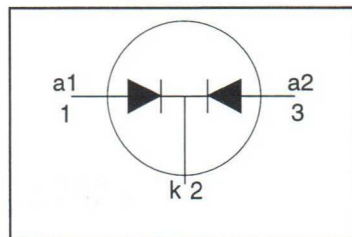
PINNING - SOT223

PIN	DESCRIPTION
1	anode 1 (a)
2	cathode (k)
3	anode 2 (a)
4	cathode (k)

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
				-35	-40	-45	
V _{RRM}	Repetitive peak reverse voltage	T _{sp} ≤ 99 °C	-	35	40	45	V
V _{RWM}	Crest working reverse voltage		-	35	40	45	V
V _R	Continuous reverse voltage		-	35	40	45	V
I _{O(AV)}	Output current (both diodes conducting)	square wave; δ = 0.5; T _{sp} ≤ 133 °C	-	2			A
I _{O(RMS)}	RMS forward current	t = 25μs; δ = 0.5; T _{sp} ≤ 133 °C t = 10 ms t = 8.3 ms sinusoidal T _j = 125 °C prior to surge; with reapplied V _{RWM(max)} t = 10 ms t _p = 2 μs; δ = 0.001	-	2.8			A
I _{FRM}	Repetitive forward peak current per diode		-	2			A
I _{FSM}	Non-repetitive peak forward current per diode.		-	6			A
			-	6.6			A
I ² t	I ² t for fusing		-	0.18			A ² s
I _{RRM}	Repetitive peak reverse current per diode.	t _p = 2 μs; δ = 0.001	-	1			A
I _{RSM}	Non-repetitive peak reverse current per diode.	t _p = 100 μs	-	1			A
T _{stg}	Storage temperature		-40	150			°C
T _j	Operating junction temperature		-	150			°C

Rectifier diodes schottky barrier

PBYR245CT series

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-sp}$	Thermal resistance junction to solder point	one or both diodes conducting	-	-	15	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	pcb mounted; minimum footprint pcb mounted; pad area as in fig:7	- -	156 70	- -	K/W K/W

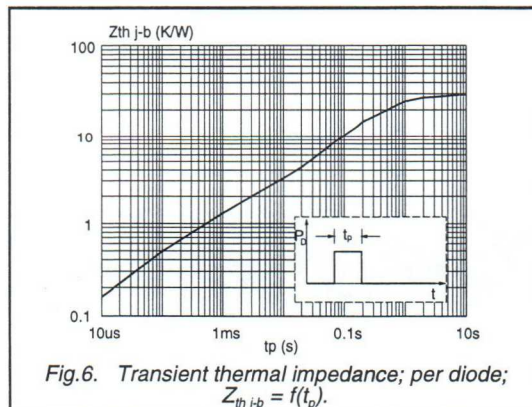
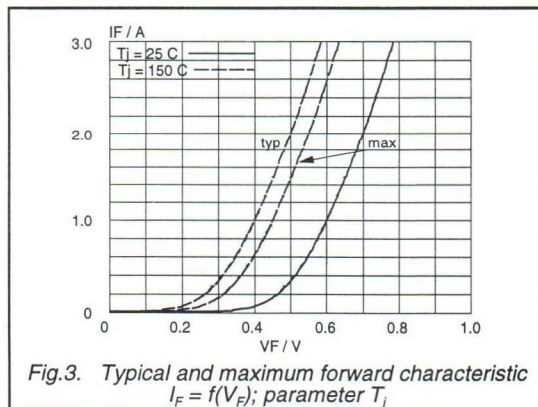
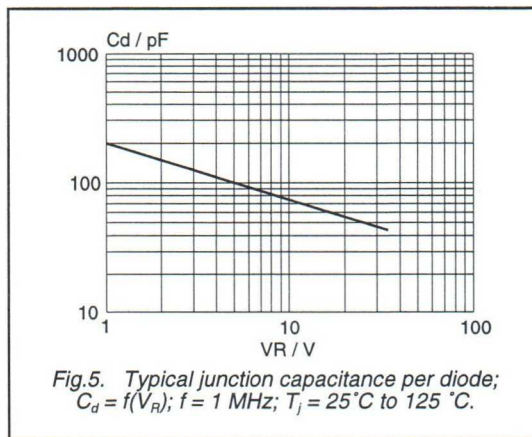
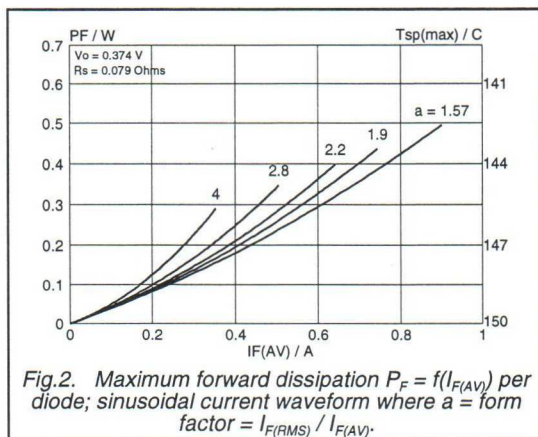
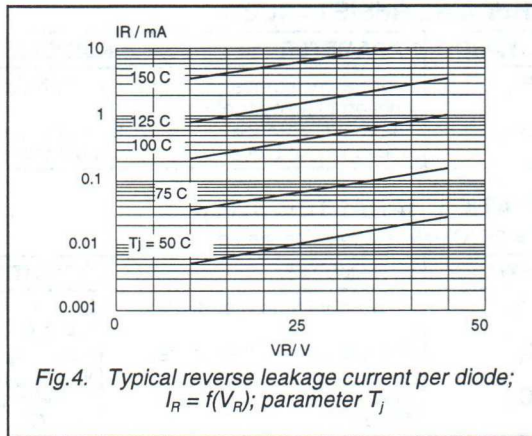
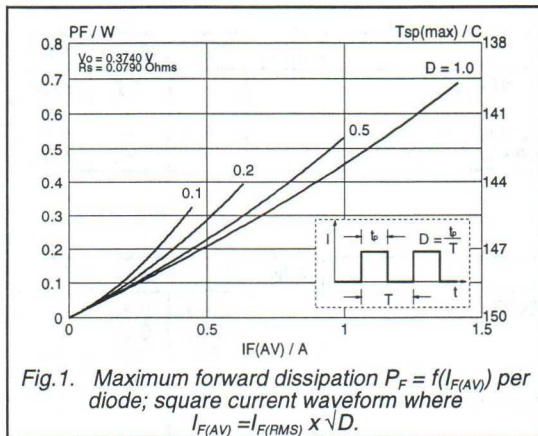
STATIC CHARACTERISTICS

$T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage (per diode)	$I_F = 1\text{ A}$; $T_j = 150\text{ }^{\circ}\text{C}$	-	0.40	0.45	V
		$I_F = 2\text{ A}$	-	0.61	0.70	V
I_R	Reverse current (per diode)	$V_R = V_{RWM}$	-	50	100	μA
		$V_R = V_{RWM}$; $T_j = 125\text{ }^{\circ}\text{C}$	-	3.5	10	mA
C_d	Junction capacitance (per diode)	$f = 1\text{ MHz}$; $V_R = 5\text{ V}$; $T_j = 25\text{ }^{\circ}\text{C}$ to $125\text{ }^{\circ}\text{C}$	-	100	-	pF

Rectifier diodes
schottky barrier

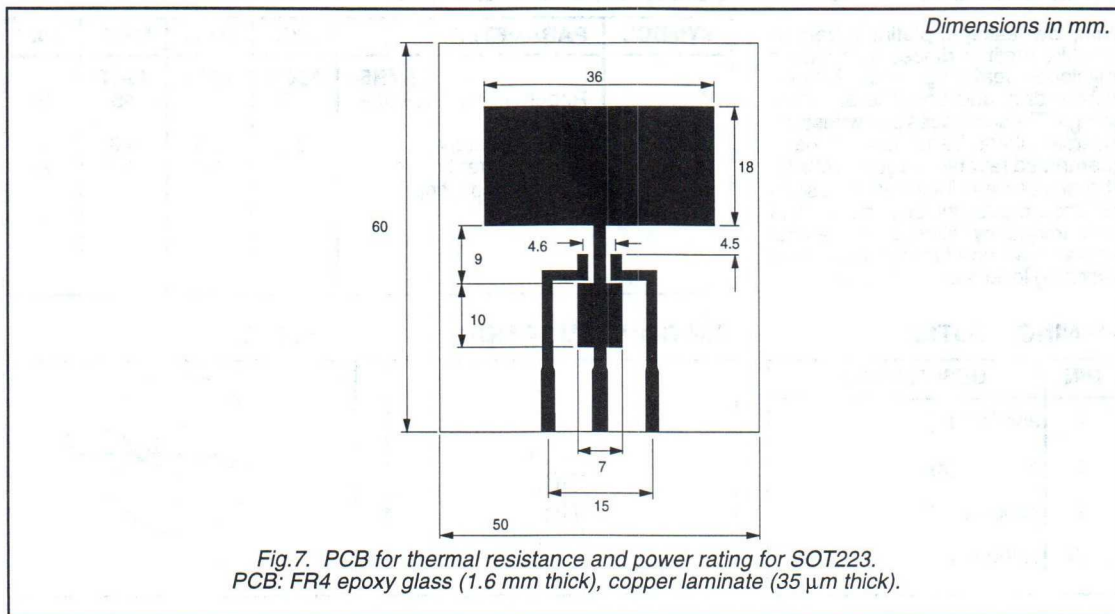
PBYR245CT series



Rectifier diodes
schottky barrier

PBYR245CT series

PRINTED CIRCUIT BOARD



Rectifier diodes schottky barrier

PBYR645CT series

GENERAL DESCRIPTION

Dual, low leakage, platinum barrier, schottky rectifier diodes in a plastic envelope featuring low forward voltage drop and absence of stored charge. These devices can withstand reverse voltage transients and have guaranteed reverse surge capability. The devices are intended for use in switched mode power supplies and high frequency circuits in general where low conduction and zero switching losses are important.

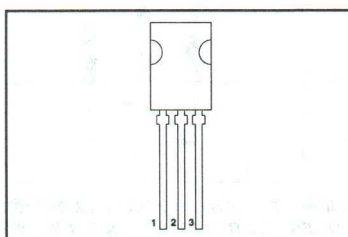
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
		35CT	40CT	45CT	
V_{RRM}	Repetitive peak reverse voltage	35	40	45	V
V_F	Forward voltage	0.6	0.6	0.6	V
$I_{O(AV)}$	Output current (both diodes conducting)	10	10	10	A

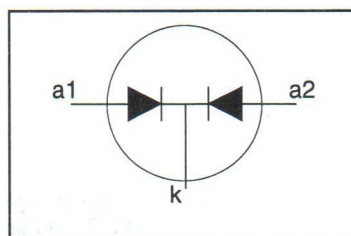
PINNING - SOT82

PIN	DESCRIPTION
1	anode 1 (a)
2	cathode (k)
3	anode 2 (a)
tab	cathode (k)

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{RRM}	Repetitive peak reverse voltage	$T_{mb} \leq 128\text{ }^{\circ}\text{C}$	-	-35	-40	-45	V
V_{RWM}	Crest working reverse voltage		-	35	40	45	V
V_R	Continuous reverse voltage		-	35	40	45	V
$I_{O(AV)}$	Output current (both diodes conducting)	square wave; $\delta = 0.5$; $T_{mb} \leq 121\text{ }^{\circ}\text{C}$	-	10			A
$I_{O(RMS)}$	RMS forward current	$t = 25\text{ }\mu\text{s}$; $\delta = 0.5$; $T_{mb} \leq 121\text{ }^{\circ}\text{C}$	-	14			A
I_{FRM}	Repetitive peak forward current per diode		-	10			A
I_{FSM}	Non-repetitive peak forward current per diode.	$t = 10\text{ ms}$ $t = 8.3\text{ ms}$ sinusoidal $T_j = 125\text{ }^{\circ}\text{C}$ prior to surge; with reapplied $V_{RWM(max)}$	-	80			A
			-	88			A
I^2t	I^2t for fusing	$t = 10\text{ ms}$	-	32			A ² s
I_{RRM}	Repetitive peak reverse current per diode.	$t_p = 2\text{ }\mu\text{s}$; $\delta = 0.001$	-	1			A
I_{RSM}	Non-repetitive peak reverse current per diode.	$t_p = 100\text{ }\mu\text{s}$	-	1			A
T_{stg}	Storage temperature		-40	150			$^{\circ}\text{C}$
T_j	Operating junction temperature		-	150			$^{\circ}\text{C}$

Rectifier diodes schottky barrier

PBYR645CT series

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-mb}$	Thermal resistance junction to mounting base	per diode	-	-	5.0	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	both diodes in free air.	-	-	4.0	K/W
			-	100	-	K/W

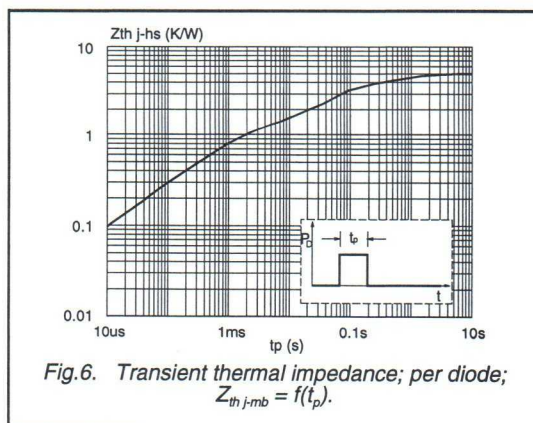
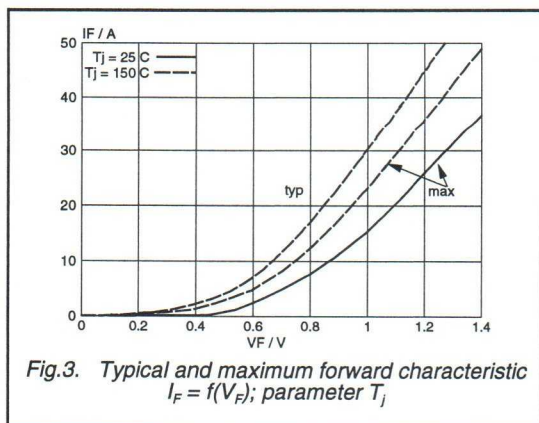
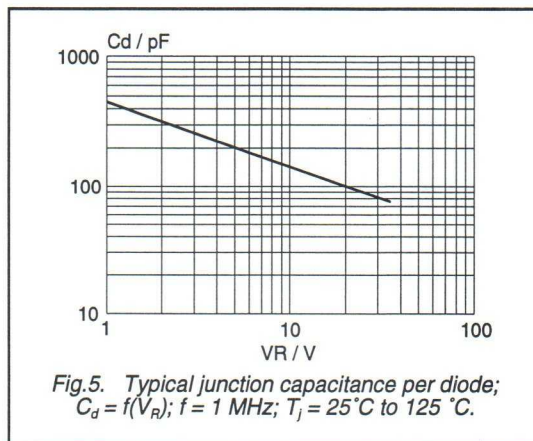
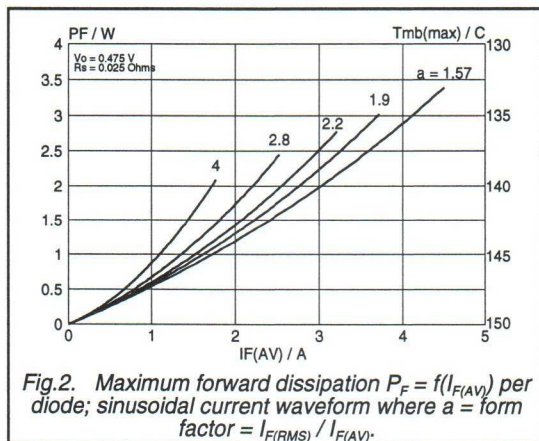
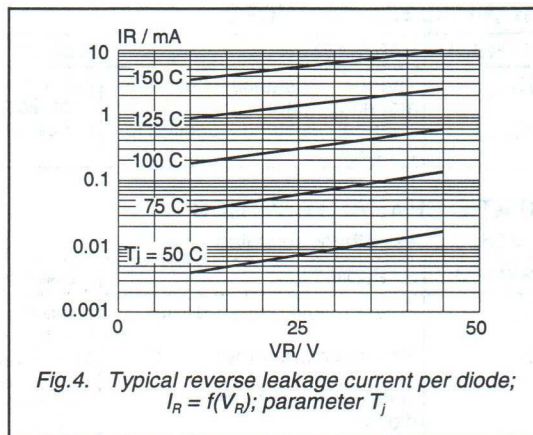
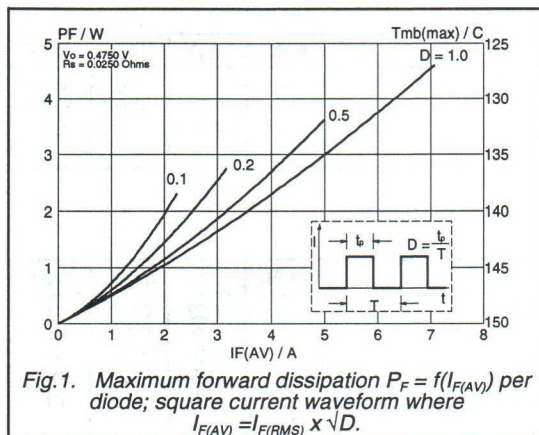
STATIC CHARACTERISTICS

$T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage (per diode)	$I_F = 5\text{ A}$; $T_j = 150\text{ }^{\circ}\text{C}$	-	0.52	0.60	V
		$I_F = 10\text{ A}$	-	0.76	0.87	V
I_R	Reverse current (per diode)	$V_R = V_{RWM}$	-	50	100	μA
		$V_R = V_{RWM}$; $T_j = 125\text{ }^{\circ}\text{C}$	-	2.5	15	mA
C_d	Junction capacitance (per diode)	$f = 1\text{ MHz}$; $V_R = 5\text{ V}$; $T_j = 25\text{ }^{\circ}\text{C}$ to $125\text{ }^{\circ}\text{C}$	-	200	-	pF

Rectifier diodes schottky barrier

PBYR645CT series



Rectifier diodes
schottky barrier

PBYR745 series

GENERAL DESCRIPTION

Low leakage, platinum barrier schottky rectifier diodes in a plastic envelope featuring low forward voltage drop and absence of stored charge. These devices can withstand reverse voltage transients and have guaranteed reverse surge capability. The devices are intended for use in switched mode power supplies and high frequency circuits in general where low conduction and zero switching losses are important.

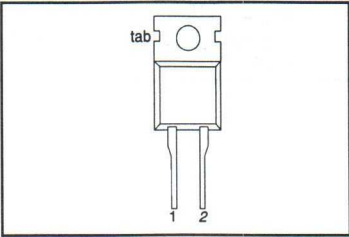
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
V_{RRM}	PBYR7- Repetitive peak reverse voltage	35	40	45	V
		35	40	45	
V_F	Forward voltage	0.57	0.57	0.57	V
$I_{F(AV)}$	Forward current	7.5	7.5	7.5	A

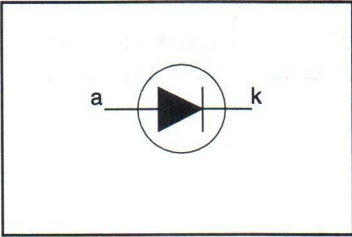
PINNING - TO220AC

PIN	DESCRIPTION
1	cathode (k)
2	anode (a)
tab	cathode (k)

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{RRM}	Repetitive peak reverse voltage	$T_{mb} \leq 139\text{ }^{\circ}\text{C}$	-	-35	-40	-45	V
V_{RWM}	Crest working reverse voltage		-	35	40	45	V
V_R	Continuous reverse voltage		-	35	40	45	V
$I_{F(AV)}$	Average forward current	square wave; $\delta = 0.5$; $T_{mb} \leq 136\text{ }^{\circ}\text{C}$	-	7.5			A
$I_{F(RMS)}$	RMS forward current	$t = 25\text{ }\mu\text{s}$; $\delta = 0.5$; $T_{mb} \leq 136\text{ }^{\circ}\text{C}$	-	10.6			A
I_{FRM}	Repetitive peak forward current		-	15			A
I_{FSM}	Non-repetitive peak forward current		-	135			A
		$t = 10\text{ ms}$	-	150			A
		$t = 8.3\text{ ms}$	-				
		sinusoidal; $T_j = 125\text{ }^{\circ}\text{C}$ prior to surge; with reapplied	-				
I^2t	I^2t for fusing	$V_{RWM(max)}$ $t = 10\text{ ms}$	-	91			A ² s
I_{RRM}	Repetitive peak reverse current	$t_p = 2\text{ }\mu\text{s}$; $\delta = 0.001$	-	1			A
I_{RSM}	Non-repetitive peak reverse current	$t_p = 100\text{ }\mu\text{s}$	-	1			A
T_{stg}	Storage temperature		-65	175			$^{\circ}\text{C}$
T_j	Operating junction temperature		-	150			$^{\circ}\text{C}$

Rectifier diodes schottky barrier

PBYR745 series

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-mb}$	Thermal resistance junction to mounting base	in free air.	-	-	3.0	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient		-	60	-	K/W

STATIC CHARACTERISTICS

$T_j = 25\ ^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage	$I_F = 7.5\ \text{A}; T_j = 125\ ^\circ\text{C}$	-	0.50	0.57	V
		$I_F = 15\ \text{A}; T_j = 125\ ^\circ\text{C}$	-	0.62	0.72	V
		$I_F = 15\ \text{A}$	-	0.74	0.84	V
I_R	Reverse current	$V_R = V_{RWM}$	-	50	100	μA
		$V_R = V_{RWM}; T_j = 125\ ^\circ\text{C}$	-	12	22	mA
C_d	Junction capacitance	$f = 1\ \text{MHz}; V_R = 5\ \text{V}; T_j = 25\ ^\circ\text{C}$ to $125\ ^\circ\text{C}$	-	350	-	pF

Rectifier diodes schottky barrier

PBYR745 series

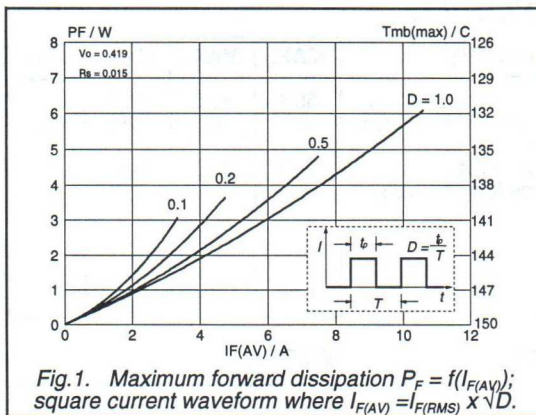


Fig. 1. Maximum forward dissipation $P_F = f(I_F(AV))$; square current waveform where $I_F(AV) = I_F(RMS) \times D$.

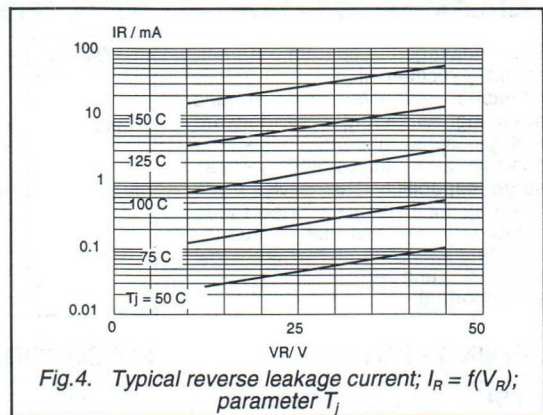


Fig. 4. Typical reverse leakage current; $I_R = f(V_R)$; parameter T_J .

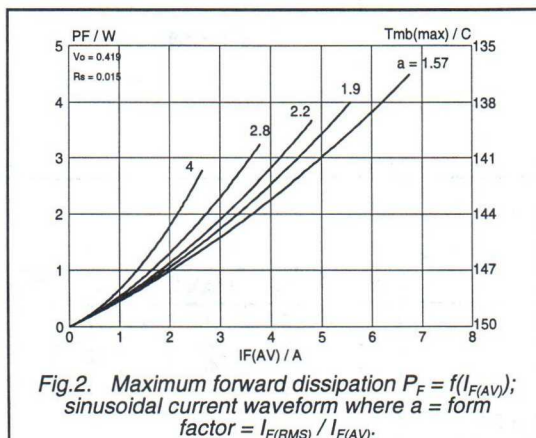


Fig. 2. Maximum forward dissipation $P_F = f(I_F(AV))$; sinusoidal current waveform where $a = \text{form factor} = I_F(RMS) / I_F(AV)$.

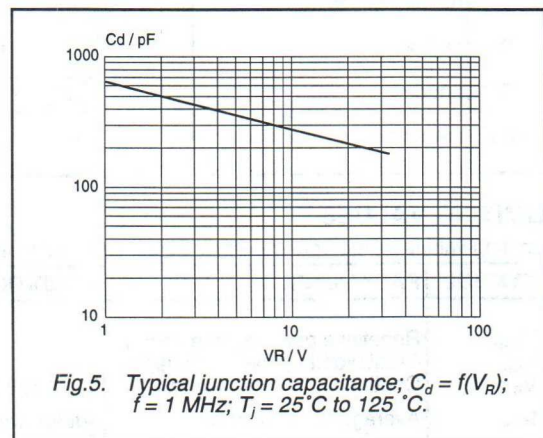


Fig. 5. Typical junction capacitance; $C_d = f(V_R)$; $f = 1 \text{ MHz}$; $T_J = 25^\circ\text{C}$ to 125°C .

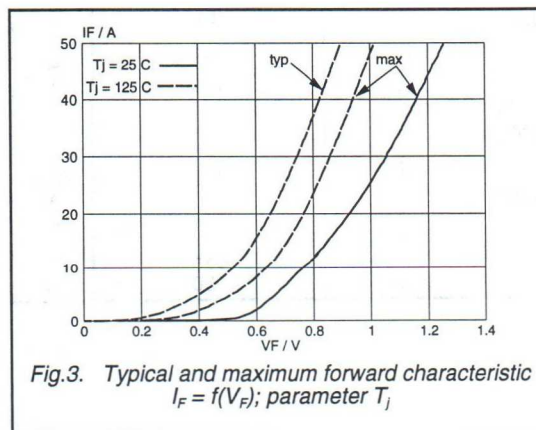


Fig. 3. Typical and maximum forward characteristic $I_F = f(V_F)$; parameter T_J .

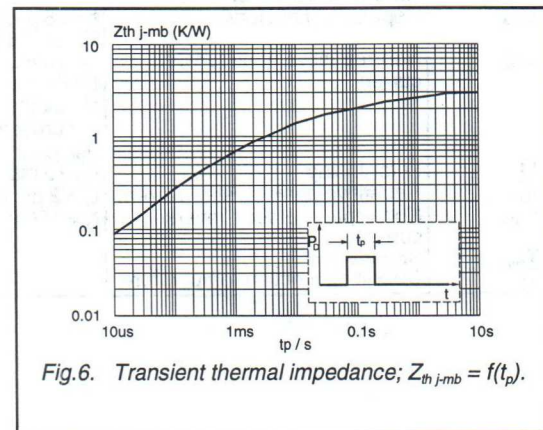


Fig. 6. Transient thermal impedance; $Z_{th j-mb} = f(t_p)$.

Rectifier diodes schottky barrier

PBYR745B series

GENERAL DESCRIPTION

Low leakage, platinum barrier, schottky rectifier diodes in a plastic envelope suitable for surface mounting, featuring low forward voltage drop, absence of stored charge, and guaranteed reverse surge capability. The devices are intended for use in switched mode power supplies and high frequency circuits in general where low conduction and zero switching losses are important.

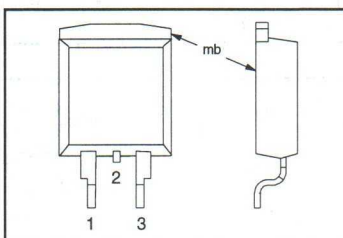
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
V_{RRM} V_F $I_{F(AV)}$	PBYR7- Repetitive peak reverse voltage	35B 35	40B 40	45B 45	V
	Forward voltage	0.57	0.57	0.57	V
	Average forward current	7.5	7.5	7.5	A

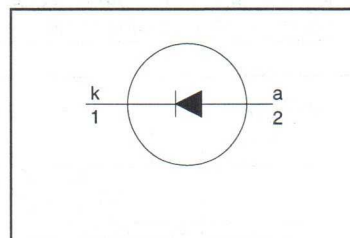
PINNING - SOT404

PIN	DESCRIPTION
1	no connection
2	cathode
3	anode
mb	cathode

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{RRM}	Repetitive peak reverse voltage	$T_{mb} \leq 139\text{ }^{\circ}\text{C}$	-	-35 35	-40 40	-45 45	V
V_{RWM}	Crest working reverse voltage		-	35	40	45	V
V_R	Continuous reverse voltage		-	35	40	45	V
$I_{F(AV)}$	Average forward current	square wave; $\delta = 0.5$; $T_{mb} \leq 136\text{ }^{\circ}\text{C}$	-	7.5			A
$I_{F(RMS)}$	RMS forward current	$t = 25\text{ }\mu\text{s}$; $\delta = 0.5$; $T_{mb} \leq 136\text{ }^{\circ}\text{C}$	-	11			A
I_{FRM}	Repetitive peak forward current		-	15			A
I_{FSM}	Non-repetitive peak forward current		-	135			A
		$t = 10\text{ ms}$	-	150			A
		$t = 8.3\text{ ms}$	-				
		sinusoidal; $T_j = 125\text{ }^{\circ}\text{C}$ prior to surge; with reapplied $V_{RRM(max)}$	-				
I^2t	I^2t for fusing	$t = 10\text{ ms}$	-	91			A ² s
I_{RRM}	Repetitive peak reverse current	$t_p = 2\text{ }\mu\text{s}$; $\delta = 0.001$	-	1			A
I_{RSM}	Non-repetitive peak reverse current	$t_p = 100\text{ }\mu\text{s}$	-	1			A
T_{stg}	Storage temperature		-65	175			$^{\circ}\text{C}$
T_j	Operating junction temperature		-	150			$^{\circ}\text{C}$

Rectifier diodes schottky barrier

PBYR745B series

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-mb}$	Thermal resistance junction to mounting base	minimum footprint, FR4 board	-	-	3.0	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient		-	50	-	K/W

STATIC CHARACTERISTICS

$T_j = 25\ ^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage	$I_F = 7.5\ \text{A}; T_j = 125\ ^\circ\text{C}$	-	0.50	0.57	V
		$I_F = 15\ \text{A}; T_j = 125\ ^\circ\text{C}$	-	0.62	0.72	V
		$I_F = 15\ \text{A}$	-	0.74	0.84	V
I_R	Reverse current	$V_R = V_{RRM}$	-	50	100	μA
		$V_R = V_{RRM}; T_j = 125\ ^\circ\text{C}$	-	12	22	mA
C_d	Junction capacitance	$f = 1\ \text{MHz}; V_R = 5\ \text{V}; T_j = 25\ ^\circ\text{C}$ to $125\ ^\circ\text{C}$	-	350	-	pF

Rectifier diodes
schottky barrier

PBYR745B series

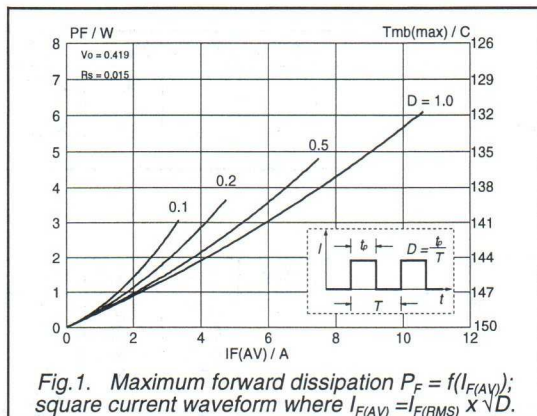


Fig.1. Maximum forward dissipation $P_F = f(I_F(AV))$; square current waveform where $I_F(AV) = I_F(RMS) \times D$.

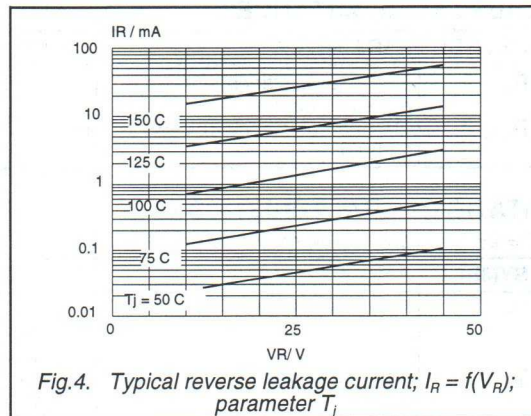


Fig.4. Typical reverse leakage current; $I_R = f(V_R)$; parameter T_j .

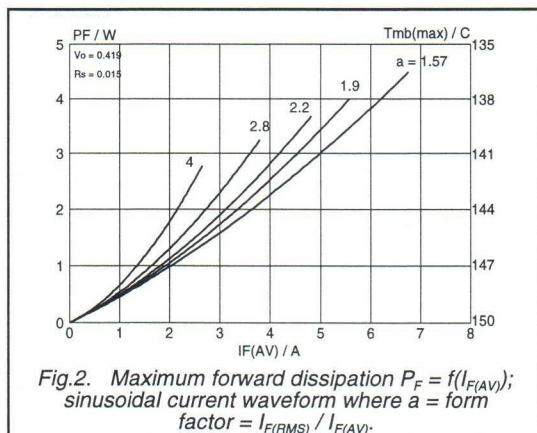


Fig.2. Maximum forward dissipation $P_F = f(I_F(AV))$; sinusoidal current waveform where $a = \text{form factor} = I_F(RMS) / I_F(AV)$.

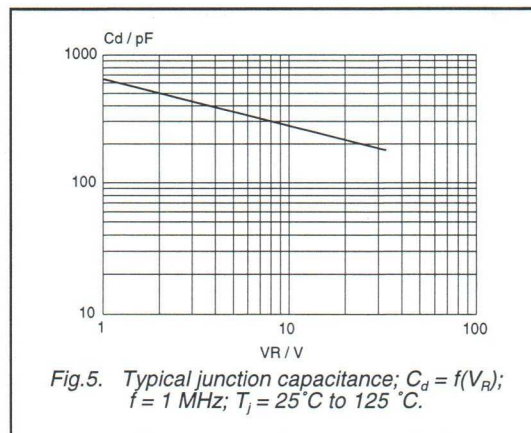


Fig.5. Typical junction capacitance; $C_d = f(V_R)$; $f = 1$ MHz; $T_j = 25^\circ\text{C}$ to 125°C .

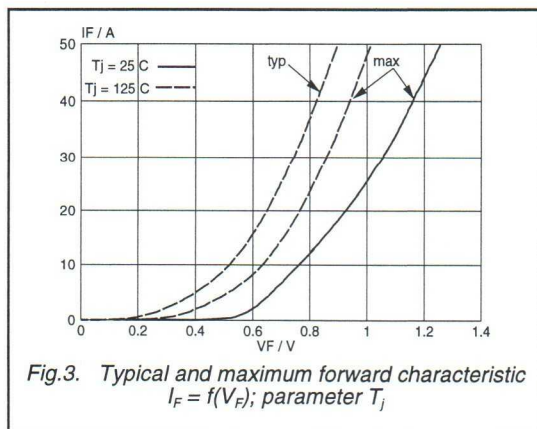


Fig.3. Typical and maximum forward characteristic $I_F = f(V_F)$; parameter T_j .

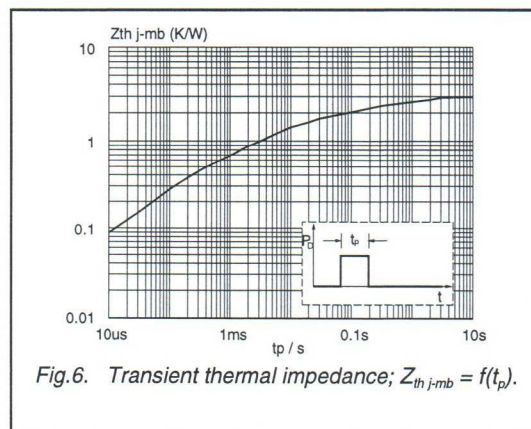


Fig.6. Transient thermal impedance; $Z_{th j-mb} = f(t_p)$.

Rectifier diodes
schottky barrier

PBYR745F series

GENERAL DESCRIPTION

Low leakage, platinum barrier, schottky rectifier diodes in a full pack, plastic envelope featuring low forward voltage drop and absence of stored charge. These devices can withstand reverse voltage transients and have guaranteed reverse surge capability. The devices are intended for use in switched mode power supplies and high frequency circuits in general where low conduction and zero switching losses are important.

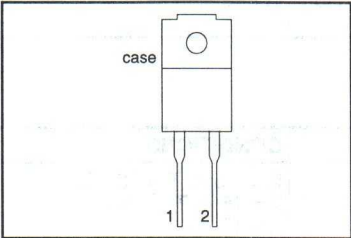
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
	PBYR7-	35F	40F	45F	
V_{RRM}	Repetitive peak reverse voltage	35	40	45	V
V_F	Forward voltage	0.57	0.57	0.57	V
$I_{F(AV)}$	Forward current	7.5	7.5	7.5	A

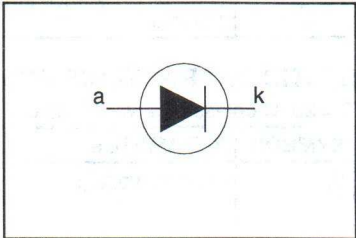
PINNING - SOD100

PIN	DESCRIPTION
1	cathode
2	anode
case	isolated

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{RRM}	Repetitive peak reverse voltage	$T_{hs} \leq 128\text{ }^{\circ}\text{C}$	-	-35	-40	-45	V
V_{RWM}	Crest working reverse voltage		-	35	40	45	V
V_R	Continuous reverse voltage		-	35	40	45	V
$I_{F(AV)}$	Average forward current	square wave; $\delta = 0.5$; $T_{hs} \leq 123\text{ }^{\circ}\text{C}$	-	7.5			A
$I_{F(RMS)}$	RMS forward current	$t = 25\text{ }\mu\text{s}$; $\delta = 0.5$; $T_{hs} \leq 123\text{ }^{\circ}\text{C}$	-	10.6			A
I_{FRM}	Repetitive peak forward current		-	15			A
I_{FSM}	Non-repetitive peak forward current		-	100			A
		$t = 8.3\text{ ms}$	-	110			A
		sinusoidal; $T_j = 125\text{ }^{\circ}\text{C}$ prior to surge; with reapplied					
I^2t	I^2t for fusing	$V_{RWM(max)}$ $t = 10\text{ ms}$	-	50			A ² s
I_{RRM}	Repetitive peak reverse current	$t_p = 2\text{ }\mu\text{s}$; $\delta = 0.001$	-	1			A
I_{RSM}	Non-repetitive peak reverse current	$t_p = 100\text{ }\mu\text{s}$	-	1			A
T_{stg}	Storage temperature		-65	175			$^{\circ}\text{C}$
T_j	Operating junction temperature		-	150			$^{\circ}\text{C}$

Rectifier diodes schottky barrier

PBYR745F series

ISOLATION

$T_{hs} = 25\text{ }^{\circ}\text{C}$ unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_{isol}	Repetitive peak voltage from both terminals to external heatsink	R.H. $\leq 65\%$; clean and dustfree	-	-	1500	V
C_{isol}	Capacitance from cathode to external heatsink	$f = 1\text{ MHz}$	-	12	-	pF

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-hs}$	Thermal resistance junction to heatsink	with heatsink compound	-	-	5.5	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	in free air.	-	55	-	K/W

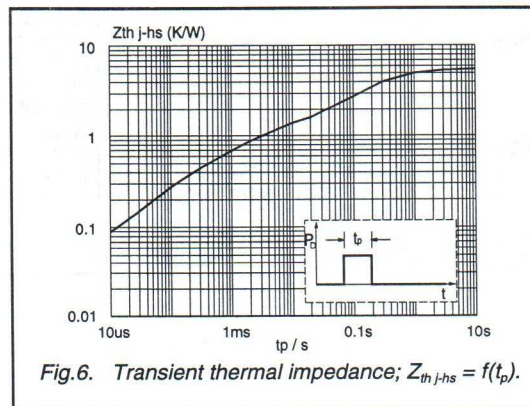
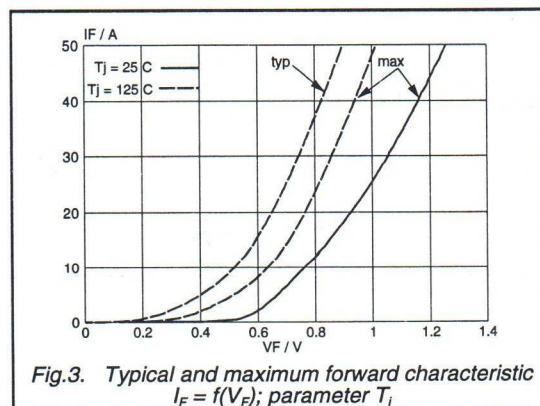
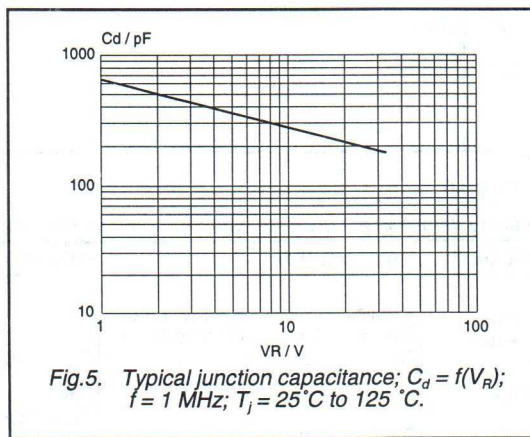
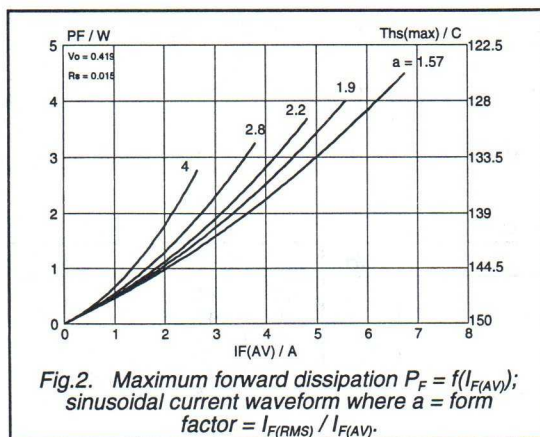
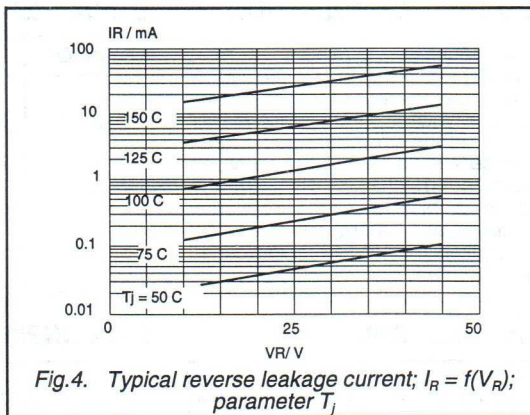
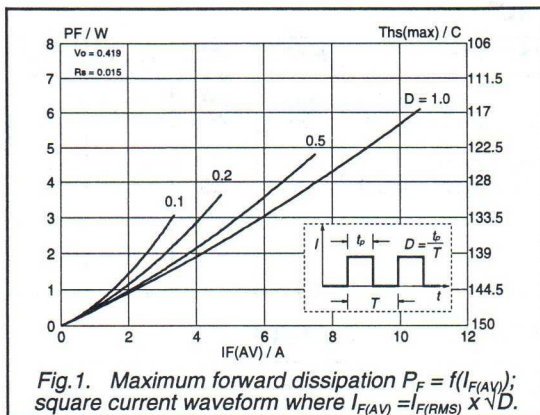
STATIC CHARACTERISTICS

$T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage	$I_F = 7.5\text{ A}; T_j = 125\text{ }^{\circ}\text{C}$	-	0.50	0.57	V
		$I_F = 15\text{ A}; T_j = 125\text{ }^{\circ}\text{C}$	-	0.62	0.72	V
		$I_F = 15\text{ A}$	-	0.78	0.84	V
I_R	Reverse current	$V_R = V_{RWM}$	-	50	100	μA
		$V_R = V_{RWM}; T_j = 125\text{ }^{\circ}\text{C}$	-	12	22	mA
C_d	Junction capacitance	$f = 1\text{ MHz}; V_R = 5\text{ V}; T_j = 25\text{ }^{\circ}\text{C}$ to $125\text{ }^{\circ}\text{C}$	-	350	-	pF

Rectifier diodes schottky barrier

PBYR745F series



Rectifier diodes schottky barrier

PBYR745X series

GENERAL DESCRIPTION

Low leakage, platinum barrier, schottky rectifier diodes in a full pack plastic envelope featuring low forward voltage drop, absence of stored charge, and guaranteed reverse surge capability. The devices are intended for use in switched mode power supplies and high frequency circuits in general where low conduction and zero switching losses are important.

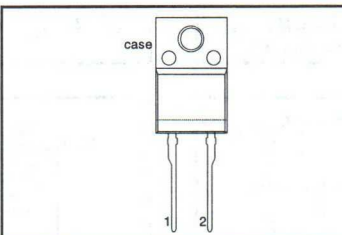
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
V_{RRM}	PBYR7- Repetitive peak reverse voltage	35X 35	40X 40	45X 45	V
V_F	Forward voltage	0.57	0.57	0.57	V
$I_{F(AV)}$	Average forward current	7.5	7.5	7.5	A

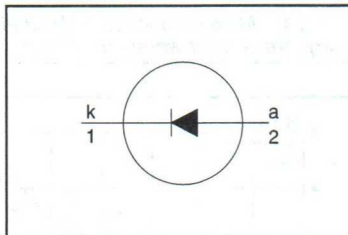
PINNING - SOD113

PIN	DESCRIPTION
1	cathode
2	anode
case	isolated

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{RRM}	Repetitive peak reverse voltage	$T_{hs} \leq 128\text{ }^{\circ}\text{C}$	-	-35	-40	-45	V
V_{RWM}	Crest working reverse voltage		-	35	40	45	V
V_R	Continuous reverse voltage		-	35	40	45	V
$I_{F(AV)}$	Average forward current	square wave; $\delta = 0.5$; $T_{hs} \leq 123\text{ }^{\circ}\text{C}$	-	7.5			A
$I_{F(RMS)}$	RMS output current	$t = 25\text{ }\mu\text{s}$; $\delta = 0.5$; $T_{hs} \leq 123\text{ }^{\circ}\text{C}$	-	10.6			A
I_{FRM}	Repetitive peak forward current		-	15			A
I_{FSM}	Non-repetitive peak forward current		-	100			A
		$t = 8.3\text{ ms}$	-	110			A
		sinusoidal $T_i = 125\text{ }^{\circ}\text{C}$ prior to surge; with reapplied $V_{RRM(max)}$					
I^2t	I^2t for fusing	$t = 10\text{ ms}$	-	50			A ² s
I_{RRM}	Repetitive peak reverse current	$t_p = 2\text{ }\mu\text{s}$; $\delta = 0.001$	-	1			A
I_{RSM}	Non-repetitive peak reverse current	$t_p = 100\text{ }\mu\text{s}$	-	1			A
T_{stg}	Storage temperature		-65	175			$^{\circ}\text{C}$
T_j	Operating junction temperature		-	150			$^{\circ}\text{C}$

Rectifier diodes
schottky barrier

PBYR745X series

ISOLATION LIMITING VALUE & CHARACTERISTIC

 $T_{hs} = 25\text{ }^{\circ}\text{C}$ unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_{isol}	R.M.S. isolation voltage from all three terminals to external heatsink	$f = 50\text{-}60\text{ Hz}$; sinusoidal waveform; $R.H. \leq 65\%$; clean and dustfree	-		2500	V
C_{isol}	Capacitance from T2 to external heatsink	$f = 1\text{ MHz}$	-	10	-	pF

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-hs}$	Thermal resistance junction to heatsink	with heatsink compound	-	-	5.5	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	in free air.	-	55	-	K/W

STATIC CHARACTERISTICS

 $T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage	$I_F = 7.5\text{ A}$; $T_j = 125\text{ }^{\circ}\text{C}$	-	0.50	0.59	V
		$I_F = 15\text{ A}$; $T_j = 125\text{ }^{\circ}\text{C}$	-	0.62	0.72	V
		$I_F = 15\text{ A}$	-	0.78	0.84	V
I_R	Reverse current	$V_R = V_{RRM}$	-	50	100	μA
		$V_R = V_{RRM}$; $T_j = 125\text{ }^{\circ}\text{C}$	-	13	22	mA
C_d	Junction capacitance	$f = 1\text{ MHz}$; $V_R = 5\text{ V}$; $T_j = 25\text{ }^{\circ}\text{C}$ to $125\text{ }^{\circ}\text{C}$	-	350	-	pF

Rectifier diodes schottky barrier

PBYR745X series

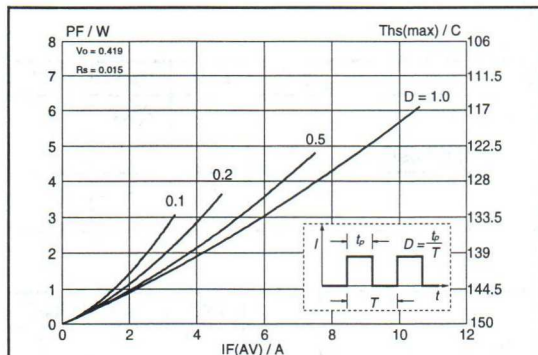


Fig.1. Maximum forward dissipation $P_F = f(I_{F(AV)})$; square current waveform where $I_{F(AV)} = I_{F(RMS)} \times D$.

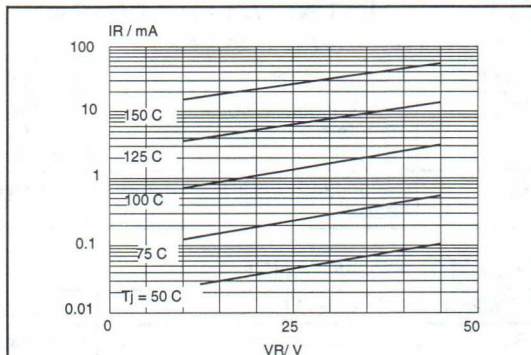


Fig.4. Typical reverse leakage current; $I_R = f(V_R)$; parameter T_J .

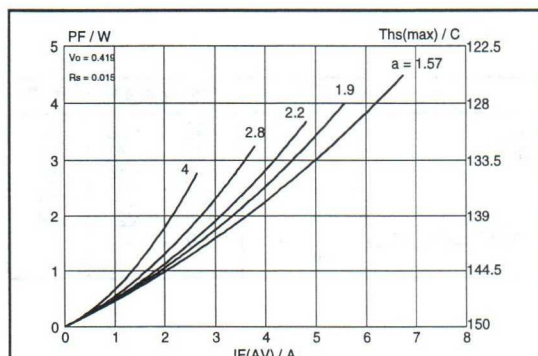


Fig.2. Maximum forward dissipation $P_F = f(I_{F(AV)})$; sinusoidal current waveform where $a = \text{form factor} = I_{F(RMS)} / I_{F(AV)}$.

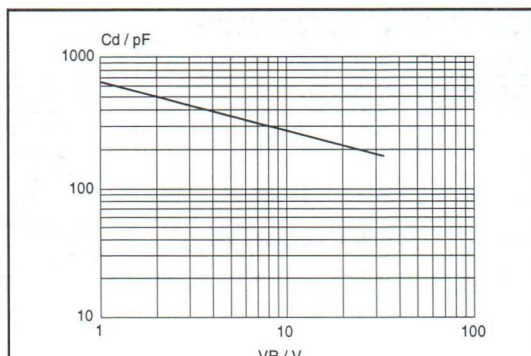


Fig.5. Typical junction capacitance; $C_d = f(V_R)$; $f = 1 \text{ MHz}$; $T_J = 25^\circ\text{C}$ to 125°C .

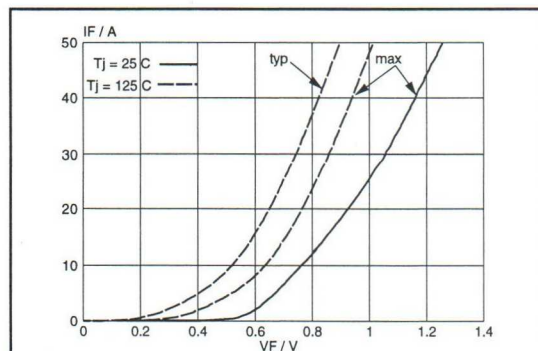


Fig.3. Typical and maximum forward characteristic $I_F = f(V_F)$; parameter T_J .

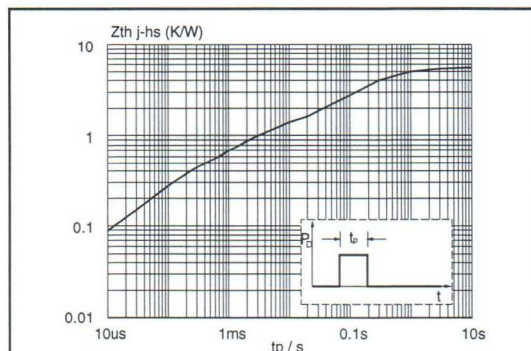


Fig.6. Transient thermal impedance; $Z_{th j-hs} = f(t_p)$.

Rectifier diodes schottky barrier

PBYR1025 series

GENERAL DESCRIPTION

Nickel silicide schottky barrier rectifier diodes in a plastic envelope featuring low forward voltage drop and absence of stored charge. These devices can withstand reverse voltage transients and have guaranteed reverse surge capability. The devices are intended for use in switched mode power supplies with 3 V - 3.3 V outputs, or as or-ing diodes in fault tolerant power supply systems.

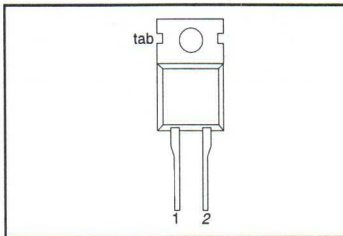
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	UNIT
V_{RRM}	PBYR10- Repetitive peak reverse voltage	20 20	25 25	V
V_F	Forward voltage	0.41	0.41	V
$I_{F(AV)}$	Average forward current	10	10	A

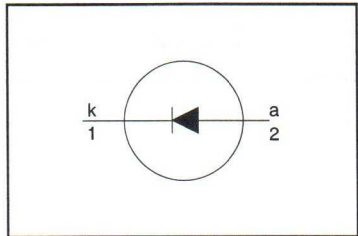
PINNING - TO220AC

PIN	DESCRIPTION
1	cathode (k)
2	anode (a)
tab	cathode (k)

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.		UNIT
V_{RRM}	Repetitive peak reverse voltage	$T_{mb} \leq 120\text{ }^{\circ}\text{C}$	-	-20	-25	V
V_{RWM}	Crest working reverse voltage		-	20	25	V
V_R	Continuous reverse voltage		-	20	25	V
$I_{F(AV)}$	Average forward current	square wave; $\delta = 0.5$; $T_{mb} \leq 140\text{ }^{\circ}\text{C}$	-	10		A
$I_{F(RMS)}$	RMS forward current	$t = 25\text{ }\mu\text{s}$; $\delta = 0.5$; $T_{mb} \leq 140\text{ }^{\circ}\text{C}$	-	14		A
I_{FRM}	Repetitive peak forward current		-	20		A
I_{FSM}	Non-repetitive peak forward current		-	135		A
		$t = 10\text{ ms}$	-	150		A
		$t = 8.3\text{ ms}$	-			
		sinusoidal $T_j = 125\text{ }^{\circ}\text{C}$ prior to surge; with reapplied				
I^2t	I^2t for fusing	$V_{RRM(max)}$ $t = 10\text{ ms}$	-	91		A ² s
I_{RRM}	Repetitive peak reverse current	$t_p = 2\text{ }\mu\text{s}$; $\delta = 0.001$	-	1		A
I_{RSM}	Non-repetitive peak reverse current	$t_p = 100\text{ }\mu\text{s}$	-	1		A
T_{stg}	Storage temperature		-65	175		$^{\circ}\text{C}$
T_j	Operating junction temperature		-	150		$^{\circ}\text{C}$

Rectifier diodes schottky barrier

PBYR1025 series

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-mb}$	Thermal resistance junction to mounting base	in free air	-	-	2.0	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient		-	60	-	K/W

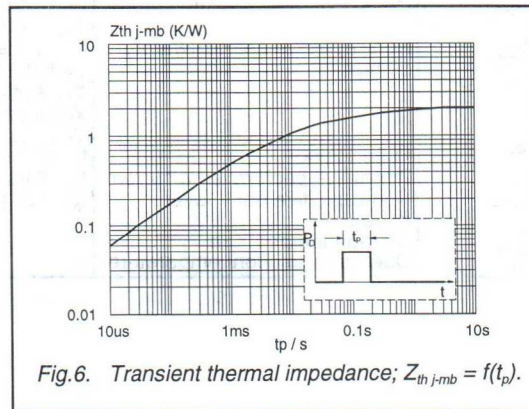
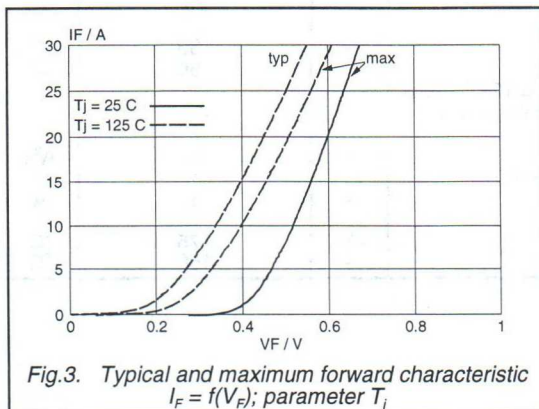
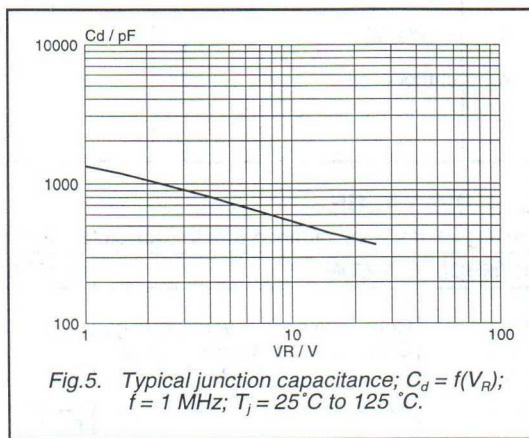
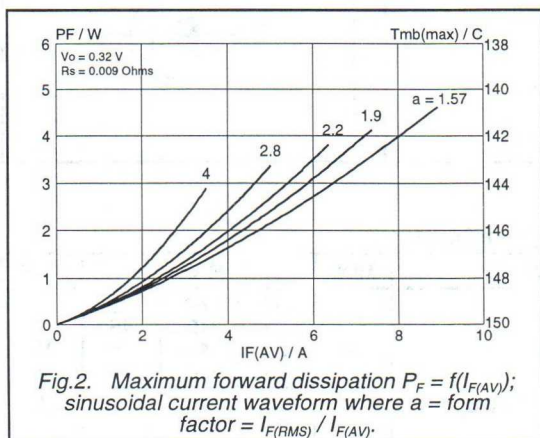
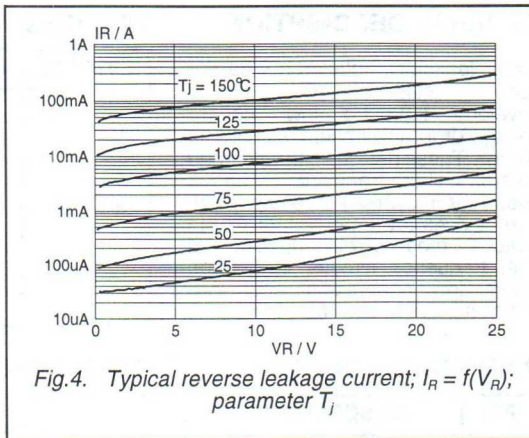
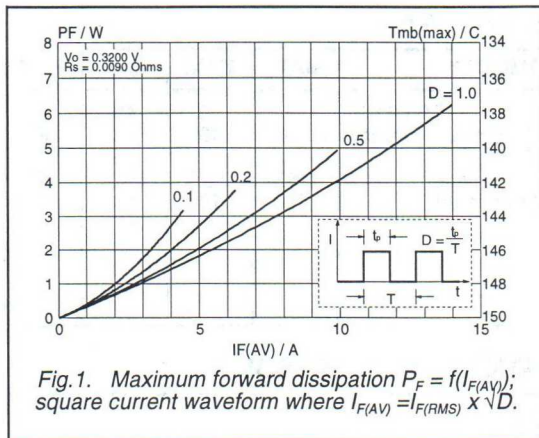
STATIC CHARACTERISTICS

$T_j = 25\ ^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage	$I_F = 10\ \text{A}; T_j = 125\ ^\circ\text{C}$	-	0.33	0.41	V
		$I_F = 20\ \text{A}; T_j = 125\ ^\circ\text{C}$	-	0.43	0.50	V
		$I_F = 20\ \text{A}$	-	0.51	0.60	V
I_R	Reverse current	$V_R = V_{RRM}$	-	1.0	5.0	mA
		$V_R = V_{RRM}; T_j = 100\ ^\circ\text{C}$	-	22	40	mA
C_d	Junction capacitance	$f = 1\ \text{MHz}; V_R = 5\ \text{V}; T_j = 25\ ^\circ\text{C}$ to $125\ ^\circ\text{C}$	-	700	-	pF

Rectifier diodes schottky barrier

PBYR1025 series



Rectifier diodes schottky barrier

PBYR1045 series

GENERAL DESCRIPTION

Low leakage, platinum barrier schottky rectifier diodes in a plastic envelope featuring low forward voltage drop and absence of stored charge. These devices can withstand reverse voltage transients and have guaranteed reverse surge capability. The devices are intended for use in switched mode power supplies and high frequency circuits in general where low conduction and zero switching losses are important.

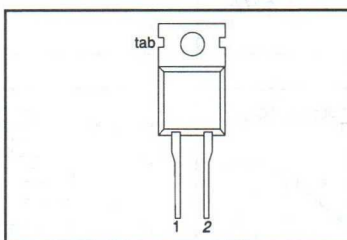
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
V_{RRM}	Repetitive peak reverse voltage	PBYR10- 35	40	45	V
		35	40	45	
V_F	Forward voltage	0.57	0.57	0.57	V
$I_{F(AV)}$	Forward current	10	10	10	A

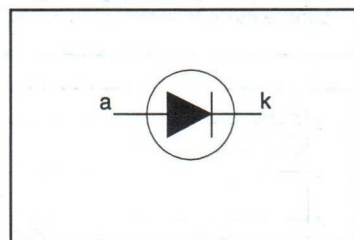
PINNING - TO220AC

PIN	DESCRIPTION
1	cathode (k)
2	anode (a)
tab	cathode (k)

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{RRM}	Repetitive peak reverse voltage	$T_{mb} \leq 143\text{ }^{\circ}\text{C}$	-	-35	-40	-45	V
V_{RWM}	Crest working reverse voltage		-	35	40	45	V
V_R	Continuous reverse voltage		-	35	40	45	V
$I_{F(AV)}$	Average forward current	square wave; $\delta = 0.5$; $T_{mb} \leq 136\text{ }^{\circ}\text{C}$	-	10			A
$I_{F(RMS)}$	RMS forward current	$t = 25\text{ }\mu\text{s}$; $\delta = 0.5$; $T_{mb} \leq 136\text{ }^{\circ}\text{C}$	-	14			A
I_{FRM}	Repetitive peak forward current		-	20			A
I_{FSM}	Non-repetitive peak forward current		-	135			A
		$t = 10\text{ ms}$	-	150			A
		$t = 8.3\text{ ms}$	-				
		sinusoidal; $T_j = 125\text{ }^{\circ}\text{C}$ prior to surge; with reapplied	-				
I^2t	I^2t for fusing	$V_{RWM(max)}$ $t = 10\text{ ms}$	-	91			A ² s
I_{RRM}	Repetitive peak reverse current	$t_p = 2\text{ }\mu\text{s}$; $\delta = 0.001$	-	1			A
I_{RSM}	Non-repetitive peak reverse current	$t_p = 100\text{ }\mu\text{s}$	-	1			A
T_{stg}	Storage temperature		-65	175			$^{\circ}\text{C}$
T_j	Operating junction temperature		-	150			$^{\circ}\text{C}$

Rectifier diodes schottky barrier

PBYR1045 series

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-mb}$	Thermal resistance junction to mounting base	in free air.	-	-	2.0	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient		-	60	-	K/W

STATIC CHARACTERISTICS

 $T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage	$I_F = 10\text{ A}; T_j = 125\text{ }^{\circ}\text{C}$	-	0.50	0.57	V
		$I_F = 20\text{ A}; T_j = 125\text{ }^{\circ}\text{C}$	-	0.62	0.72	V
		$I_F = 20\text{ A}$	-	0.74	0.84	V
I_R	Reverse current	$V_R = V_{RWM}$	-	50	100	μA
		$V_R = V_{RWM}; T_j = 125\text{ }^{\circ}\text{C}$	-	13	26	mA
C_d	Junction capacitance	$f = 1\text{ MHz}; V_R = 5\text{ V}; T_j = 25\text{ }^{\circ}\text{C}$ to $125\text{ }^{\circ}\text{C}$	-	400	-	pF

Rectifier diodes
schottky barrier

PBYR1045 series

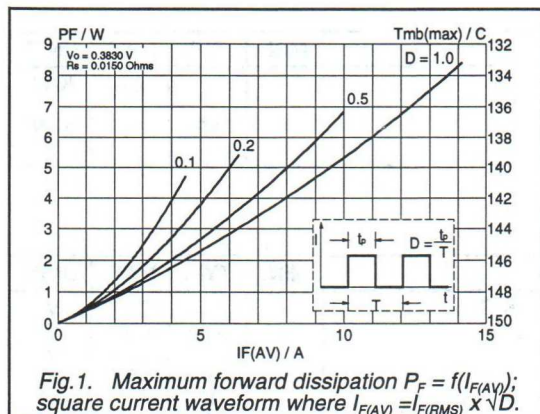


Fig.1. Maximum forward dissipation $P_F = f(I_F(AV))$; square current waveform where $I_F(AV) = I_F(RMS) \times \sqrt{D}$.

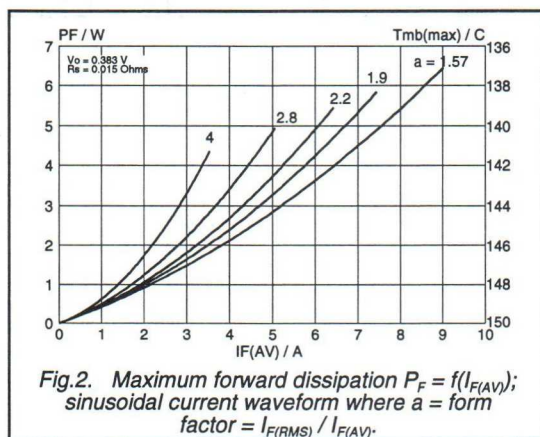


Fig.2. Maximum forward dissipation $P_F = f(I_F(AV))$; sinusoidal current waveform where $a =$ form factor $= I_F(RMS) / I_F(AV)$.

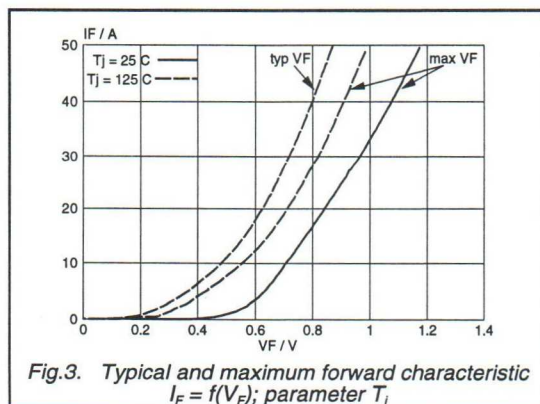


Fig.3. Typical and maximum forward characteristic $I_F = f(V_F)$; parameter T_J .

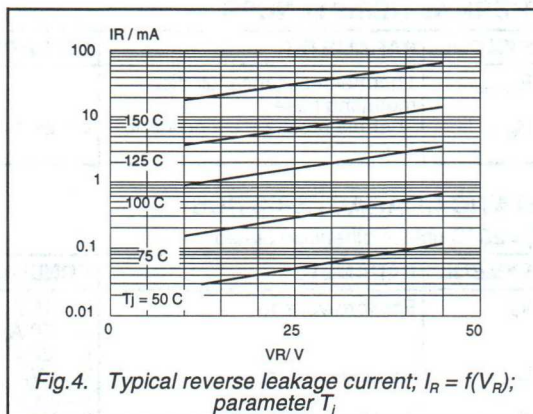


Fig.4. Typical reverse leakage current; $I_R = f(V_R)$; parameter T_J .

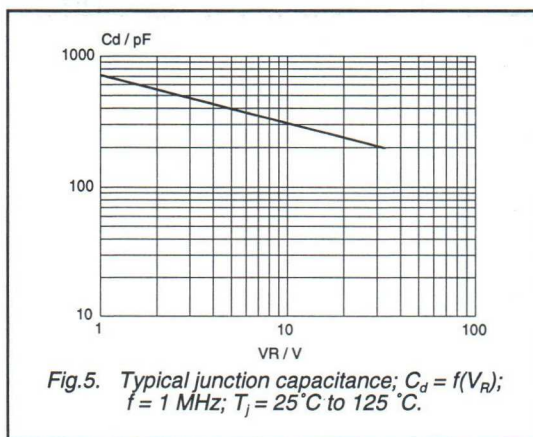


Fig.5. Typical junction capacitance; $C_d = f(V_R)$; $f = 1$ MHz; $T_J = 25^\circ\text{C}$ to 125°C .

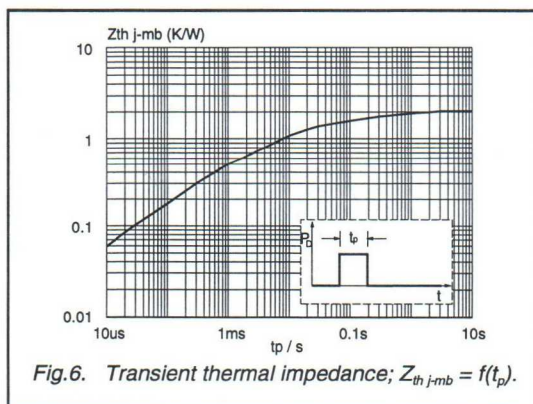


Fig.6. Transient thermal impedance; $Z_{th j-mb} = f(t_p)$.

Rectifier diodes
schottky barrier

PBYR1045B series

GENERAL DESCRIPTION

Low leakage, platinum barrier, schottky rectifier diodes in a plastic envelope suitable for surface mounting, featuring low forward voltage drop, absence of stored charge, and guaranteed reverse surge capability. The devices are intended for use in switched mode power supplies and high frequency circuits in general where low conduction and zero switching losses are important.

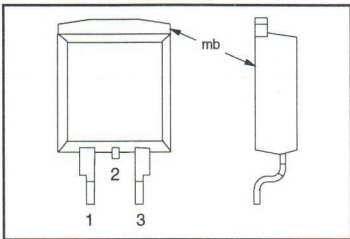
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
V_{RRM}	PBYR10- Repetitive peak reverse voltage	35B 35	40B 40	45B 45	V
V_F	Forward voltage	0.57	0.57	0.57	V
$I_{F(AV)}$	Average forward current	10	10	10	A

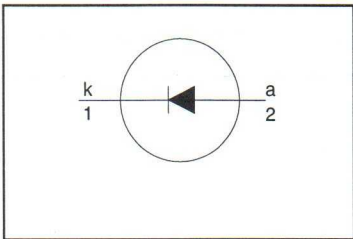
PINNING - SOT404

PIN	DESCRIPTION
1	no connection
2	cathode
3	anode
mb	cathode

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{RRM}	Repetitive peak reverse voltage	$T_{mb} \leq 143\text{ }^{\circ}\text{C}$	-	-35 35	-40 40	-45 45	V
V_{RWM}	Crest working reverse voltage		-	35	40	45	V
V_R	Continuous reverse voltage		-	35	40	45	V
$I_{F(AV)}$	Average forward current	square wave; $\delta = 0.5$; $T_{mb} \leq 136\text{ }^{\circ}\text{C}$	-	10			A
$I_{F(RMS)}$	RMS forward current	$t = 25\text{ }\mu\text{s}$; $\delta = 0.5$; $T_{mb} \leq 136\text{ }^{\circ}\text{C}$	-	14			A
I_{FRM}	Repetitive peak forward current		-	20			A
I_{FSM}	Non-repetitive peak forward current		-	135			A
		$t = 8.3\text{ ms}$	-	150			A
		sinusoidal; $T_1 = 125\text{ }^{\circ}\text{C}$ prior to surge; with reapplied					
I^2t	I^2t for fusing	$V_{RRM(max)}$ $t = 10\text{ ms}$	-	91			A ² s
I_{RRM}	Repetitive peak reverse current	$t_p = 2\text{ }\mu\text{s}$; $\delta = 0.001$	-	1			A
I_{RSM}	Non-repetitive peak reverse current	$t_p = 100\text{ }\mu\text{s}$	-	1			A
T_{stg}	Storage temperature		-65	175			$^{\circ}\text{C}$
T_j	Operating junction temperature		-	150			$^{\circ}\text{C}$

Rectifier diodes
schottky barrier

PBYR1045B series

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-mb}$	Thermal resistance junction to mounting base	minimum footprint, FR4 board	-	-	2.0	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient		-	50	-	K/W

STATIC CHARACTERISTICS

 $T_j = 25\ ^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage	$I_F = 10\ \text{A}; T_j = 125\ ^\circ\text{C}$	-	0.50	0.57	V
		$I_F = 20\ \text{A}; T_j = 125\ ^\circ\text{C}$	-	0.62	0.72	V
		$I_F = 20\ \text{A}$	-	0.74	0.84	V
I_R	Reverse current	$V_R = V_{RRM}$	-	50	100	μA
		$V_R = V_{RRM}; T_j = 125\ ^\circ\text{C}$	-	13	26	mA
C_d	Junction capacitance	$f = 1\ \text{MHz}; V_R = 5\ \text{V}; T_j = 25\ ^\circ\text{C}$ to $125\ ^\circ\text{C}$	-	400	-	pF

Rectifier diodes schottky barrier

PBYR1045B series

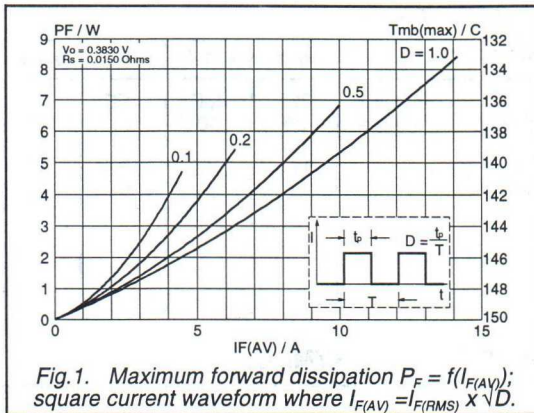


Fig.1. Maximum forward dissipation $P_F = f(I_F(AV))$; square current waveform where $I_F(AV) = I_F(RMS) \times \sqrt{D}$.

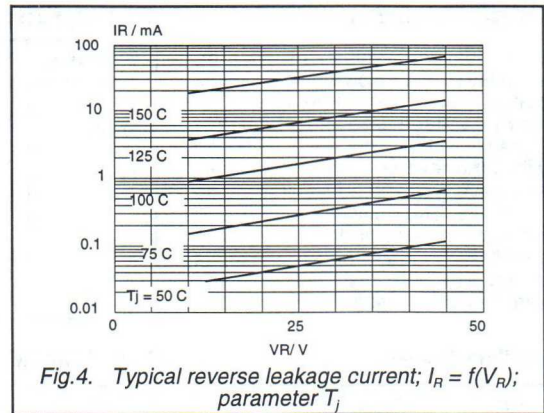


Fig.4. Typical reverse leakage current; $I_R = f(V_R)$; parameter T_J .

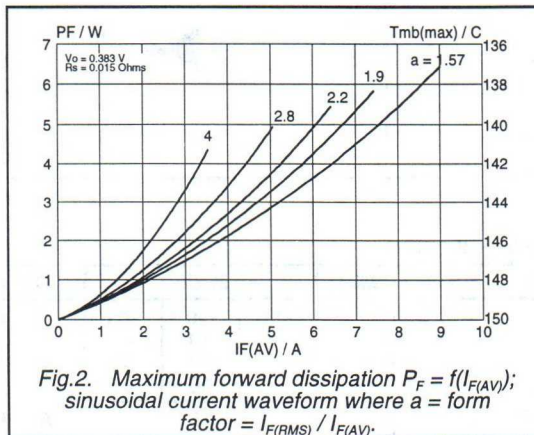


Fig.2. Maximum forward dissipation $P_F = f(I_F(AV))$; sinusoidal current waveform where $a = \text{form factor} = I_F(RMS) / I_F(AV)$.

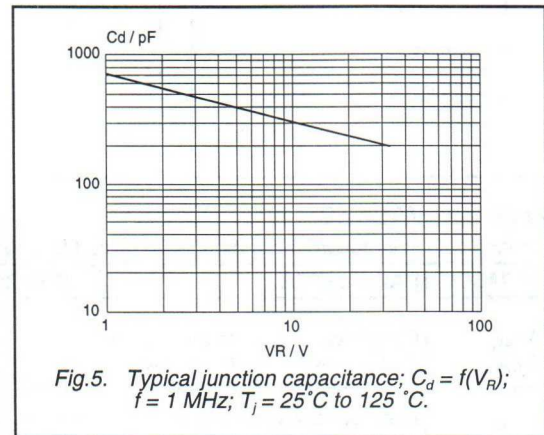


Fig.5. Typical junction capacitance; $C_d = f(V_R)$; $f = 1$ MHz; $T_J = 25^\circ\text{C}$ to 125°C .

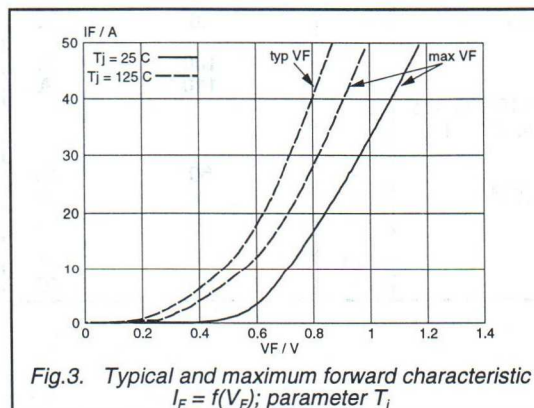


Fig.3. Typical and maximum forward characteristic $I_F = f(V_F)$; parameter T_J .

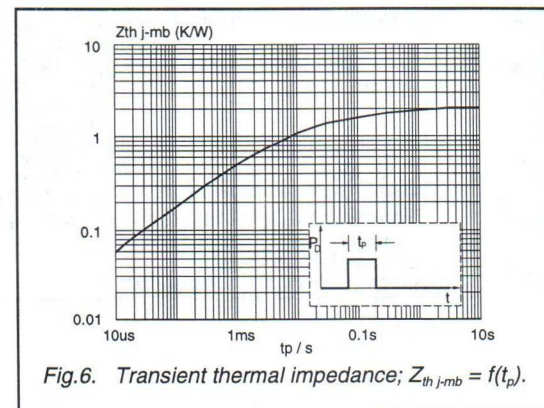


Fig.6. Transient thermal impedance; $Z_{th j-mb} = f(t_p)$.

Rectifier diodes schottky barrier

PBYR1045F series

GENERAL DESCRIPTION

Low leakage, platinum barrier, schottky rectifier diodes in a full pack, plastic envelope featuring low forward voltage drop and absence of stored charge. These devices can withstand reverse voltage transients and have guaranteed reverse surge capability. The devices are intended for use in switched mode power supplies and high frequency circuits in general where low conduction and zero switching losses are important.

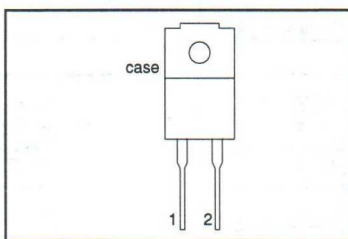
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
V_{RRM}	PBYR10- Repetitive peak reverse voltage	35F 35	40F 40	45F 45	V
V_F	Forward voltage	0.59	0.59	0.59	V
$I_{F(AV)}$	Forward current	10	10	10	A

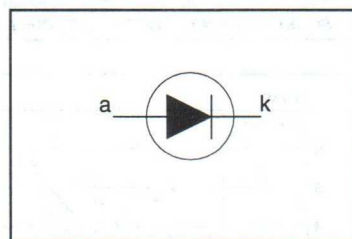
PINNING - SOD100

PIN	DESCRIPTION
1	cathode
2	anode
case	isolated

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{RRM}	Repetitive peak reverse voltage	$T_{hs} \leq 125^\circ\text{C}$	-	-35 35	-40 40	-45 45	V
V_{RRM}	Crest working reverse voltage		-	35	40	45	V
V_R	Continuous reverse voltage		-	35	40	45	V
$I_{F(AV)}$	Average forward current	square wave; $\delta = 0.5$; $T_{hs} \leq 112^\circ\text{C}$	-	10			A
$I_{F(RMS)}$	RMS forward current	$t = 25\ \mu\text{s}$; $\delta = 0.5$; $T_{hs} \leq 112^\circ\text{C}$	-	14			A
I_{FRM}	Repetitive peak forward current		-	20			A
I_{FSM}	Non-repetitive peak forward current	$t = 10\ \text{ms}$ $t = 8.3\ \text{ms}$ sinusoidal; $T_j = 125^\circ\text{C}$ prior to surge; with reapplied	-	100			A
			-	110			A
I^2t	I^2t for fusing	$V_{RWM(max)}$ $t = 10\ \text{ms}$	-	50			A ² s
I_{RRM}	Repetitive peak reverse current	$t_p = 2\ \mu\text{s}$; $\delta = 0.001$	-	1			A
I_{RSM}	Non-repetitive peak reverse current	$t_p = 100\ \mu\text{s}$	-	1			A
T_{stg}	Storage temperature		-65	175			$^\circ\text{C}$
T_j	Operating junction temperature		-	150			$^\circ\text{C}$

Rectifier diodes schottky barrier

PBYR1045F series

ISOLATION

$T_{hs} = 25\text{ }^{\circ}\text{C}$ unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_{isol}	Repetitive peak voltage from both terminals to external heatsink	R.H. $\leq 65\%$; clean and dustfree	-	-	1500	V
C_{isol}	Capacitance from cathode to external heatsink	$f = 1\text{ MHz}$	-	12	-	pF

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-hs}$	Thermal resistance junction to heatsink	with heatsink compound	-	-	5.5	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	in free air.	-	55	-	K/W

STATIC CHARACTERISTICS

$T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage	$I_F = 10\text{ A}$; $T_j = 125\text{ }^{\circ}\text{C}$	-	0.50	0.59	V
		$I_F = 20\text{ A}$; $T_j = 125\text{ }^{\circ}\text{C}$	-	0.62	0.75	V
		$I_F = 20\text{ A}$	-	0.78	0.87	V
I_R	Reverse current	$V_R = V_{RWM}$	-	50	100	μA
		$V_R = V_{RWM}$; $T_j = 125\text{ }^{\circ}\text{C}$	-	13	26	mA
C_d	Junction capacitance	$f = 1\text{ MHz}$; $V_R = 5\text{ V}$; $T_j = 25\text{ }^{\circ}\text{C}$ to $125\text{ }^{\circ}\text{C}$	-	400	-	pF

Rectifier diodes schottky barrier

PBYR1045F series

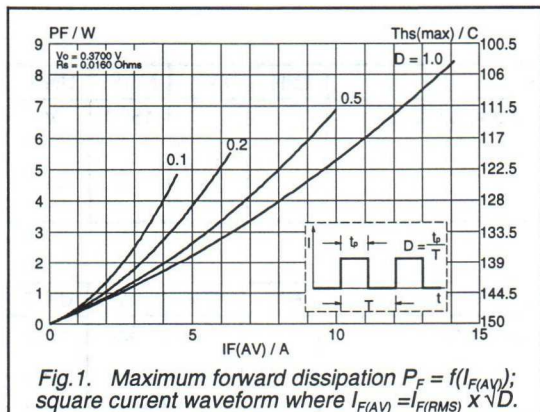


Fig.1. Maximum forward dissipation $P_F = f(I_F(AV))$; square current waveform where $I_F(AV) = I_{F(RMS)} \times \sqrt{D}$.

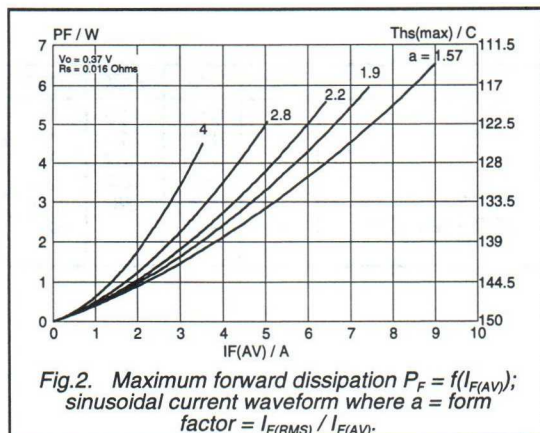


Fig.2. Maximum forward dissipation $P_F = f(I_F(AV))$; sinusoidal current waveform where $a = \text{form factor} = I_{F(RMS)} / I_{F(AV)}$.

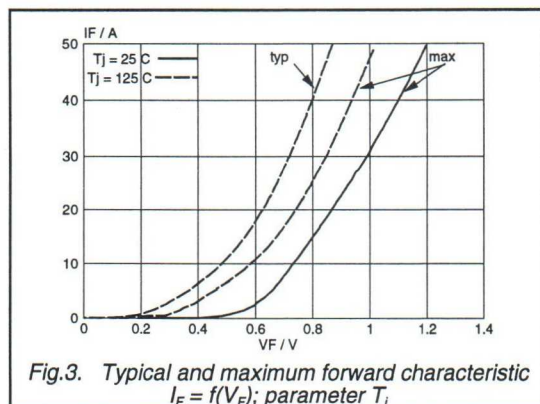


Fig.3. Typical and maximum forward characteristic $I_F = f(V_F)$; parameter T_j

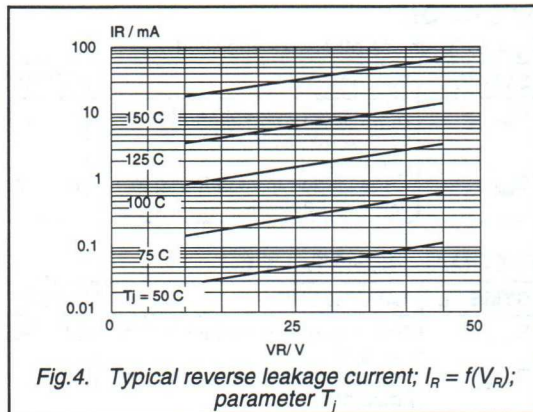


Fig.4. Typical reverse leakage current; $I_R = f(V_R)$; parameter T_j

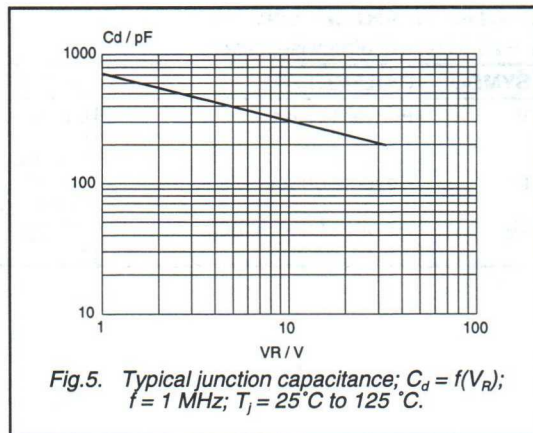


Fig.5. Typical junction capacitance; $C_d = f(V_R)$; $f = 1$ MHz; $T_j = 25^\circ\text{C}$ to 125°C .

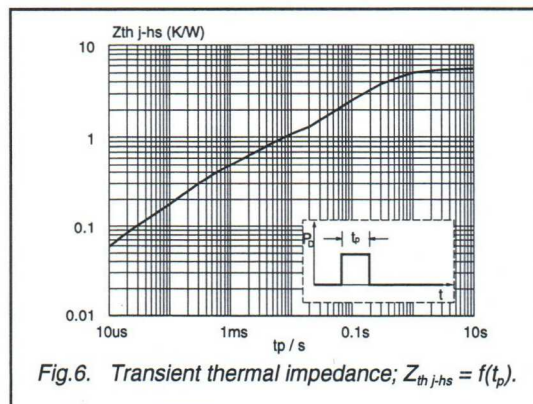


Fig.6. Transient thermal impedance; $Z_{th j-hs} = f(t_p)$.

Rectifier diodes schottky barrier

PBYR1045X series

GENERAL DESCRIPTION

Low leakage, platinum barrier, schottky rectifier diodes in a full pack plastic envelope, featuring low forward voltage drop, absence of stored charge, and guaranteed reverse surge capability. The devices are intended for use in switched mode power supplies and high frequency circuits in general where low conduction and zero switching losses are important.

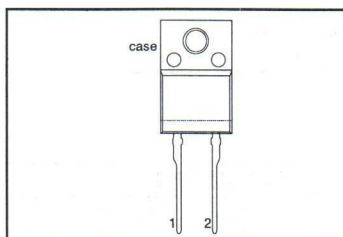
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
V_{RRM}	PBYR10- Repetitive peak reverse voltage	35X 35	40X 40	45X 45	V
V_F	Forward voltage	0.59	0.59	0.59	V
$I_{F(AV)}$	Average forward current	10	10	10	A

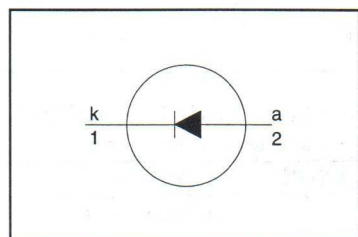
PINNING - SOD113

PIN	DESCRIPTION
1	cathode
2	anode
case	isolated

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{RRM}	Repetitive peak reverse voltage	$T_{hs} \leq 125\text{ }^{\circ}\text{C}$	-	-35 35	-40 40	-45 45	V
V_{RWM}	Crest working reverse voltage		-	35	40	45	V
V_R	Continuous reverse voltage		-	35	40	45	V
$I_{F(AV)}$	Average forward current	square wave; $\delta = 0.5$; $T_{hs} \leq 112\text{ }^{\circ}\text{C}$	-	10			A
$I_{F(RMS)}$	RMS output current	$t = 25\text{ }\mu\text{s}$; $\delta = 0.5$; $T_{hs} \leq 112\text{ }^{\circ}\text{C}$	-	14			A
I_{FRM}	Repetitive peak forward current		-	20			A
I_{FSM}	Non-repetitive peak forward current	$t = 10\text{ ms}$ $t = 8.3\text{ ms}$ sinusoidal $T_j = 125\text{ }^{\circ}\text{C}$ prior to surge; with reapplied $V_{RRM(max)}$	-	100			A
I^2t	I^2t for fusing	$t = 10\text{ ms}$	-	50			A ² s
I_{RRM}	Repetitive peak reverse current	$t_p = 2\text{ }\mu\text{s}$; $\delta = 0.001$	-	1			A
I_{RSM}	Non-repetitive peak reverse current	$t_p = 100\text{ }\mu\text{s}$	-	1			A
T_{stg}	Storage temperature		-65	175			$^{\circ}\text{C}$
T_j	Operating junction temperature		-	150			$^{\circ}\text{C}$

Rectifier diodes schottky barrier

PBYR1045X series

ISOLATION LIMITING VALUE & CHARACTERISTIC

$T_{hs} = 25\text{ }^{\circ}\text{C}$ unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_{isol}	R.M.S. isolation voltage from all three terminals to external heatsink	$f = 50\text{--}60\text{ Hz}$; sinusoidal waveform; $R.H. \leq 65\%$; clean and dustfree	-		2500	V
C_{isol}	Capacitance from T2 to external heatsink	$f = 1\text{ MHz}$	-	10	-	pF

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-hs}$	Thermal resistance junction to heatsink	with heatsink compound	-	-	5.5	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	in free air.	-	55	-	K/W

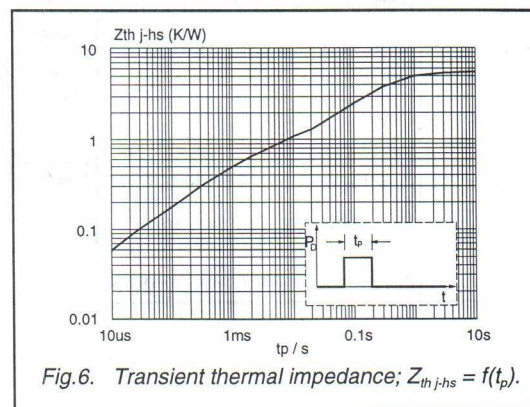
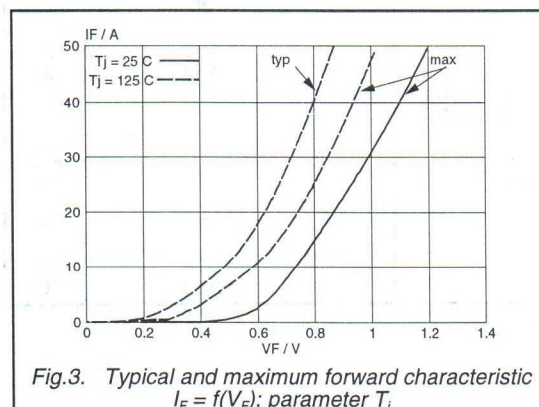
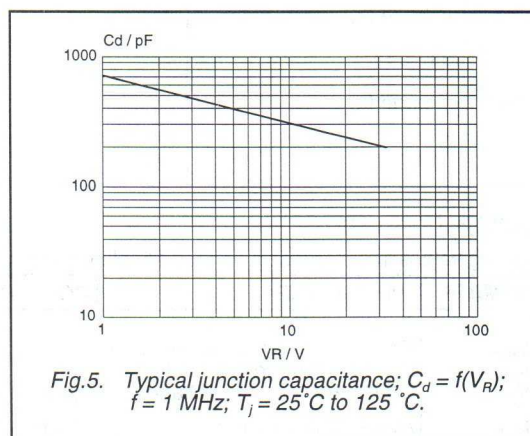
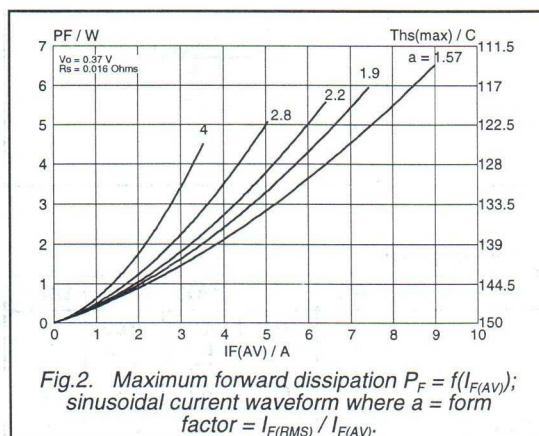
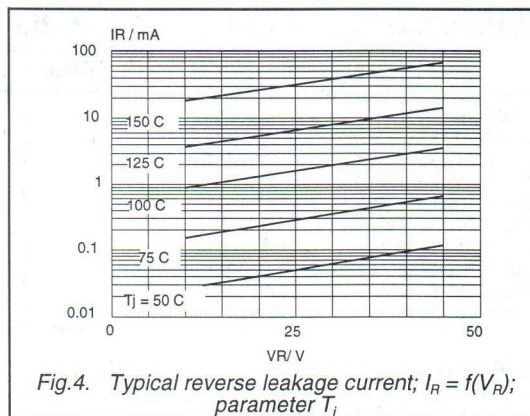
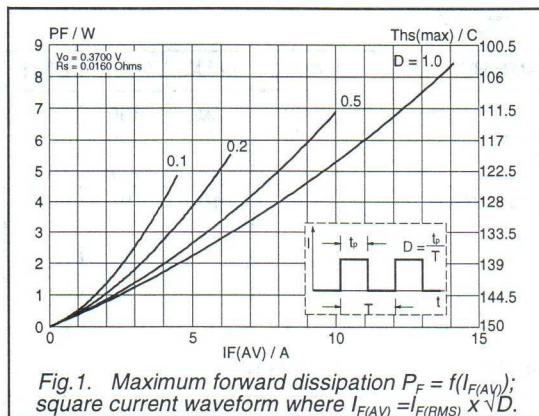
STATIC CHARACTERISTICS

$T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage	$I_F = 10\text{ A}$; $T_j = 125\text{ }^{\circ}\text{C}$	-	0.50	0.59	V
		$I_F = 20\text{ A}$; $T_j = 125\text{ }^{\circ}\text{C}$	-	0.62	0.75	V
		$I_F = 20\text{ A}$	-	0.78	0.87	V
I_R	Reverse current	$V_R = V_{RRM}$	-	50	100	μA
		$V_R = V_{RRM}$; $T_j = 125\text{ }^{\circ}\text{C}$	-	13	26	mA
C_d	Junction capacitance	$f = 1\text{ MHz}$; $V_R = 5\text{ V}$; $T_j = 25\text{ }^{\circ}\text{C}$ to $125\text{ }^{\circ}\text{C}$	-	400	-	pF

Rectifier diodes schottky barrier

PBYR1045X series



Rectifier diodes schottky barrier

PBYR10100 series

GENERAL DESCRIPTION

Low leakage, platinum barrier schottky rectifier diodes in a plastic envelope featuring low forward voltage drop and absence of stored charge. These devices can withstand reverse voltage transients and have guaranteed reverse surge capability. The devices are intended for use in switched mode power supplies and high frequency circuits in general where low conduction and zero switching losses are important.

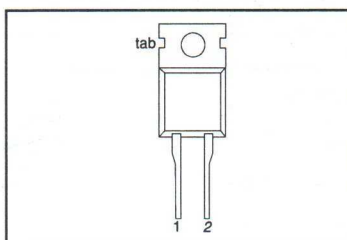
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
V_{RRM}	PBYR10- Repetitive peak reverse voltage	60 60	80 80	100 100	V
V_F	Forward voltage	0.7	0.7	0.7	V
$I_{F(AV)}$	Forward current	10	10	10	A

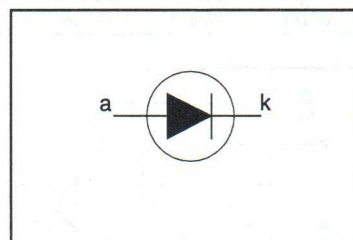
PINNING - TO220AC

PIN	DESCRIPTION
1	cathode (k)
2	anode (a)
tab	cathode (k)

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{RRM}	Repetitive peak reverse voltage	$T_{mb} \leq 139\text{ }^{\circ}\text{C}$	-	-60 60	-80 80	-100 100	V
V_{RWM}	Crest working reverse voltage		-	60	80	100	V
V_R	Continuous reverse voltage		-	60	80	100	V
$I_{F(AV)}$	Average forward current	square wave; $\delta = 0.5$; $T_{mb} \leq 133\text{ }^{\circ}\text{C}$	-	10			A
I_{FRM}	Repetitive peak forward current	$t = 25\text{ }\mu\text{s}$; $\delta = 0.5$; $T_{mb} \leq 133\text{ }^{\circ}\text{C}$	-	20			A
I_{FSM}	Non-repetitive peak forward current	$t = 10\text{ ms}$	-	135			A
		$t = 8.3\text{ ms}$ sinusoidal; $T_j = 125\text{ }^{\circ}\text{C}$ prior to surge; with reapplied	-	150			A
I^2t	I^2t for fusing	$V_{RWM(max)}$ $t = 10\text{ ms}$	-	91			A ² s
I_{RRM}	Repetitive peak reverse current	$t_p = 2\text{ }\mu\text{s}$; $\delta = 0.001$	-	1			A
I_{RSM}	Non-repetitive peak reverse current	$t_p = 100\text{ }\mu\text{s}$	-	1			A
T_{stg}	Storage temperature		-65	175			$^{\circ}\text{C}$
T_j	Operating junction temperature		-	150			$^{\circ}\text{C}$

Rectifier diodes
schottky barrier

PBYR10100 series

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-mb}$	Thermal resistance junction to mounting base	in free air.	-	-	2.0	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient		-	60	-	K/W

STATIC CHARACTERISTICS

 $T_j = 25\ ^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage	$I_F = 10\ \text{A}; T_j = 125\ ^\circ\text{C}$	-	0.61	0.70	V
		$I_F = 20\ \text{A}; T_j = 125\ ^\circ\text{C}$	-	0.74	0.85	V
		$I_F = 20\ \text{A}; T_j = 25\ ^\circ\text{C}$	-	0.88	0.95	V
I_R	Reverse current	$V_R = V_{RWM}; T_j = 25\ ^\circ\text{C}$	-	5.0	150	μA
		$V_R = V_{RWM}; T_j = 125\ ^\circ\text{C}$	-	5.0	15	mA
C_d	Junction capacitance	$f = 1\ \text{MHz}; V_R = 5\ \text{V}; T_j = 25\ ^\circ\text{C}$ to $125\ ^\circ\text{C}$	-	420	-	pF

Rectifier diodes
schottky barrier

PBYR10100 series

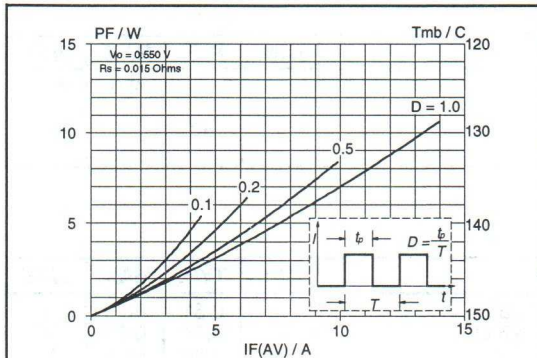


Fig. 1. Maximum forward dissipation $P_F = f(I_F(AV))$; square current waveform where $I_F(AV) = I_F(RMS) \times \sqrt{D}$.

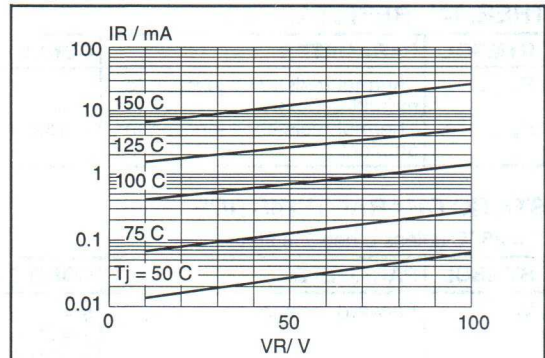


Fig. 4. Typical reverse leakage current; $I_R = f(V_R)$; parameter T_j .

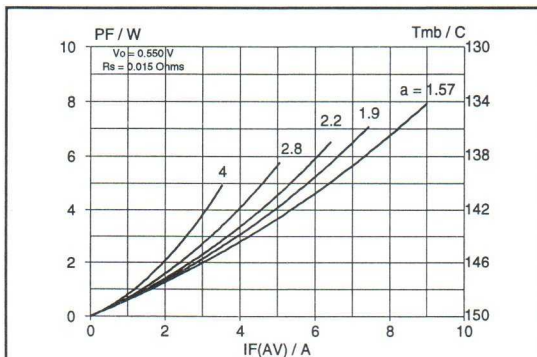


Fig. 2. Maximum forward dissipation $P_F = f(I_F(AV))$; sinusoidal current waveform where $a = \text{form factor} = I_{F(RMS)} / I_{F(AV)}$.

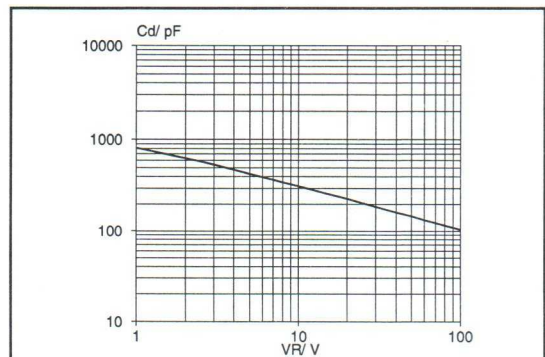


Fig. 5. Typical junction capacitance; $C_d = f(V_R)$; $f = 1$ MHz; $T_j = 25^\circ\text{C}$ to 125°C .

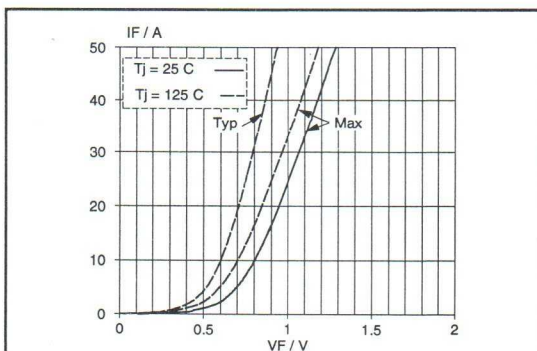


Fig. 3. Typical and maximum forward characteristic $I_F = f(V_F)$; parameter T_j .

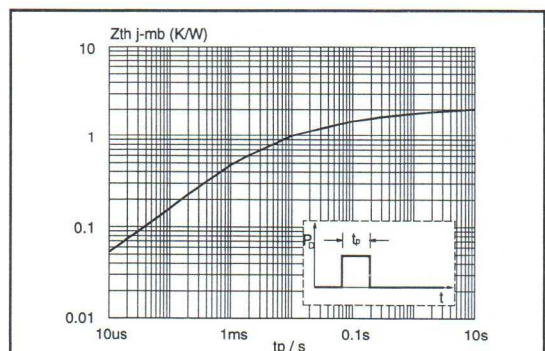


Fig. 6. Transient thermal impedance; $Z_{th\ j-mb} = f(t_p)$.

Rectifier diodes
schottky barrier

PBYR10100B series

GENERAL DESCRIPTION

Low leakage, platinum barrier, schottky rectifier diodes in a plastic envelope suitable for surface mounting, featuring low forward voltage drop, absence of stored charge, and guaranteed reverse surge capability. The devices are intended for use in switched mode power supplies and high frequency circuits in general where low conduction and zero switching losses are important.

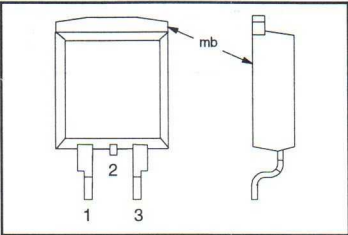
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
	PBYR10-	60B	80B	100B	
V_{RRM}	Repetitive peak reverse voltage	60	80	100	V
V_F	Forward voltage	0.7	0.7	0.7	V
$I_{F(AV)}$	Average forward current	10	10	10	A

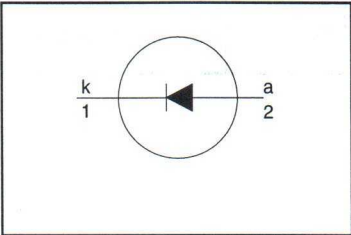
PINNING - SOT404

PIN	DESCRIPTION
1	no connection
2	cathode
3	anode
mb	cathode

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{RRM}	Repetitive peak reverse voltage	$T_{mb} \leq 139\text{ }^{\circ}\text{C}$	-	-60	-80	-100	V
V_{RWM}	Crest working reverse voltage		-	60	80	100	V
V_R	Continuous reverse voltage		-	60	80	100	V
$I_{F(AV)}$	Average forward current	square wave; $\delta = 0.5$; $T_{mb} \leq 133\text{ }^{\circ}\text{C}$	-	10			A
$I_{F(RMS)}$	RMS forward current	$t = 25\text{ }\mu\text{s}$; $\delta = 0.5$;	-	14			A
I_{FRM}	Repetitive peak forward current	$T_{mb} \leq 133\text{ }^{\circ}\text{C}$	-	20			A
I_{FSM}	Non-repetitive peak forward current	$t = 10\text{ ms}$	-	135			A
		$t = 8.3\text{ ms}$	-	150			A
I^2t	I^2t for fusing	sinusoidal; $T_j = 125\text{ }^{\circ}\text{C}$ prior to surge; with reapplied $V_{RRM(max)}$	-	91			A^2s
I_{RRM}	Repetitive peak reverse current	$t = 10\text{ ms}$	-	1			A
I_{RSM}	Non-repetitive peak reverse current	$t_p = 2\text{ }\mu\text{s}$; $\delta = 0.001$	-	1			A
T_{stg}	Storage temperature	$t_p = 100\text{ }\mu\text{s}$	-65	175			$^{\circ}\text{C}$
T_j	Operating junction temperature		-	150			$^{\circ}\text{C}$

Rectifier diodes schottky barrier

PBYR10100B series

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-mb}$	Thermal resistance junction to mounting base	pcb mounted, minimum footprint	-	-	2.0	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient		-	50	-	K/W

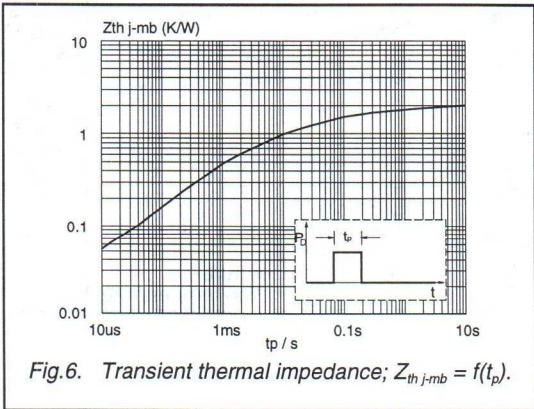
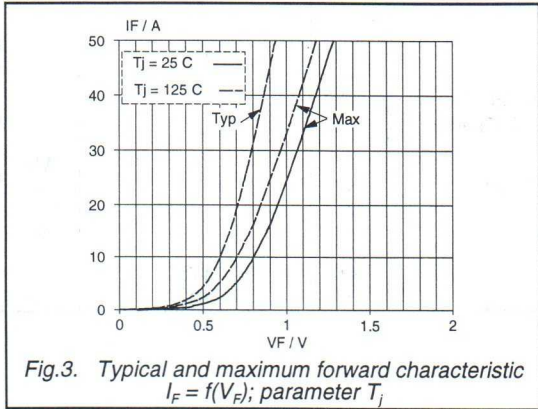
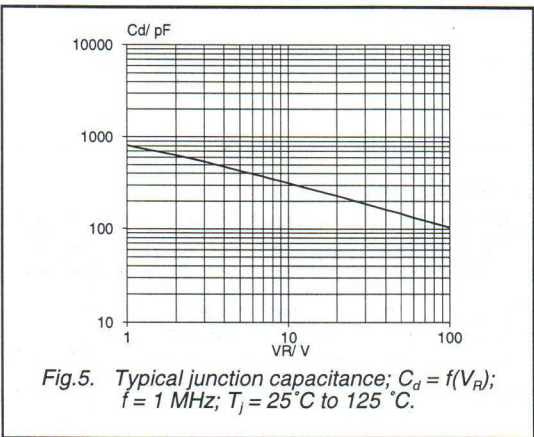
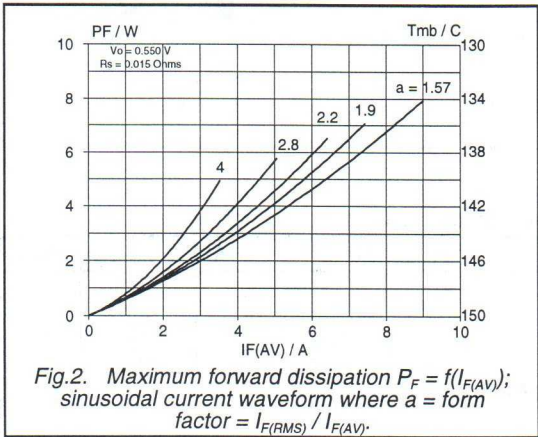
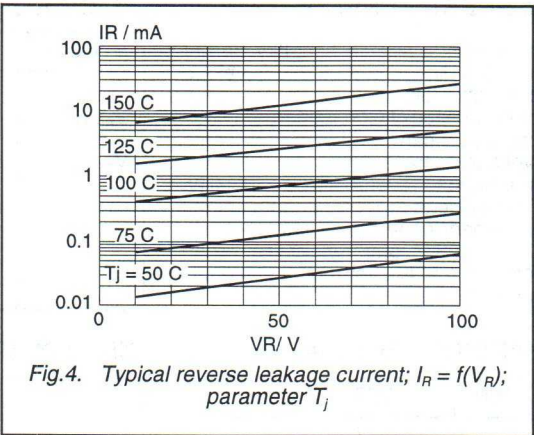
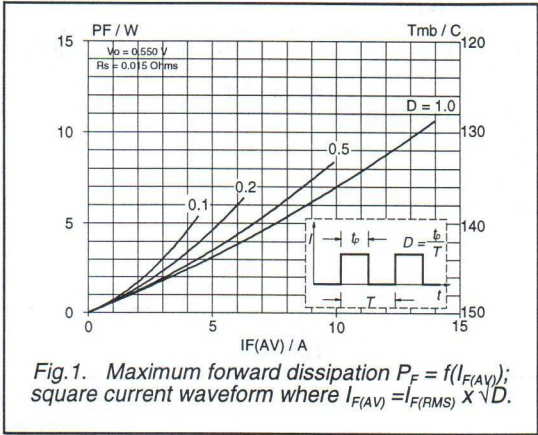
STATIC CHARACTERISTICS

$T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage	$I_F = 10\text{ A}; T_j = 125\text{ }^{\circ}\text{C}$	-	0.61	0.70	V
		$I_F = 20\text{ A}; T_j = 125\text{ }^{\circ}\text{C}$	-	0.74	0.85	V
		$I_F = 20\text{ A}; T_j = 25\text{ }^{\circ}\text{C}$	-	0.88	0.95	V
I_R	Reverse current	$V_R = V_{RRM}; T_j = 25\text{ }^{\circ}\text{C}$	-	5.0	150	μA
		$V_R = V_{RRM}; T_j = 125\text{ }^{\circ}\text{C}$	-	5.0	15	mA
C_d	Junction capacitance	$f = 1\text{ MHz}; V_R = 5\text{ V}; T_j = 25\text{ }^{\circ}\text{C}$ to $125\text{ }^{\circ}\text{C}$	-	420	-	pF

Rectifier diodes
schottky barrier

PBYR10100B series



Rectifier diodes schottky barrier

PBYR1525CT series

GENERAL DESCRIPTION

Dual nickel silicide schottky barrier rectifier diodes in a plastic envelope featuring low forward voltage drop and absence of stored charge. These devices can withstand reverse voltage transients and have guaranteed reverse surge capability. The devices are intended for use in switched mode power supplies with 3 V - 3.3 V outputs, or as or-ing diodes in fault tolerant power supply systems.

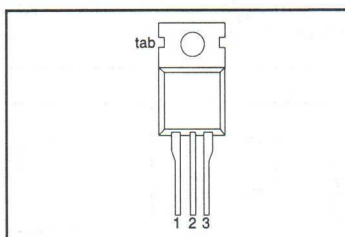
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	UNIT
	PBYR15-	20CT	25CT	
V_{RRM}	Repetitive peak reverse voltage	20	25	V
V_F	Forward voltage	0.41	0.41	V
$I_{O(AV)}$	Average output current (both diodes conducting)	15	15	A

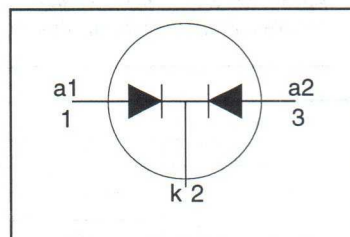
PINNING - TO220AB

PIN	DESCRIPTION
1	anode 1 (a)
2	cathode (k)
3	anode 2 (a)
tab	cathode (k)

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.		UNIT
V_{RRM}	Repetitive peak reverse voltage	$T_{mb} \leq 120\text{ }^{\circ}\text{C}$	-	-20 20	-25 25	V
V_{RWM}	Crest working reverse voltage		-	20	25	V
V_R	Continuous reverse voltage		-	20	25	V
$I_{O(AV)}$	Average output current (both diodes conducting)	square wave; $\delta = 0.5$; $T_{mb} \leq 135\text{ }^{\circ}\text{C}$	-	15		A
$I_{O(RMS)}$	RMS output current (both diodes conducting)		-	21		A
I_{FRM}	Repetitive peak forward current per diode	$t = 25\text{ }\mu\text{s}$; $\delta = 0.5$; $T_{mb} \leq 135\text{ }^{\circ}\text{C}$	-	15		A
I_{FSM}	Non-repetitive peak forward current, per diode	$t = 10\text{ ms}$	-	135		A
		$t = 8.3\text{ ms}$ sinusoidal $T_j = 125\text{ }^{\circ}\text{C}$ prior to surge; with reapplied $V_{RRM(max)}$	-	150		A
I^2t	I^2t for fusing	$t = 10\text{ ms}$	-	91		A ² s
I_{RRM}	Repetitive peak reverse current per diode	$t_p = 2\text{ }\mu\text{s}$; $\delta = 0.001$	-	1		A
I_{RSM}	Non-repetitive peak reverse current per diode	$t_p = 100\text{ }\mu\text{s}$	-	1		A
T_{stg}	Storage temperature		-65	175		$^{\circ}\text{C}$
T_j	Operating junction temperature		-	150		$^{\circ}\text{C}$

Rectifier diodes schottky barrier

PBYR1525CT series

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-mb}$	Thermal resistance junction to mounting base	per diode	-	-	3.0	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	both diodes in free air	-	60	2.0	K/W
			-		-	K/W

STATIC CHARACTERISTICS

$T_j = 25\ ^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage (per diode)	$I_F = 7.5\ \text{A}; T_j = 125\ ^\circ\text{C}$	-	0.32	0.41	V
		$I_F = 15\ \text{A}; T_j = 125\ ^\circ\text{C}$	-	0.42	0.50	V
		$I_F = 15\ \text{A}$	-	0.49	0.60	V
I_R	Reverse current (per diode)	$V_R = V_{RRM}$	-	1.0	5.0	mA
		$V_R = V_{RRM}; T_j = 100\ ^\circ\text{C}$	-	20	30	mA
C_d	Junction capacitance (per diode)	$f = 1\ \text{MHz}; V_R = 5\ \text{V}; T_j = 25\ ^\circ\text{C}$ to $125\ ^\circ\text{C}$	-	600	-	pF

Rectifier diodes schottky barrier

PBYR1525CT series

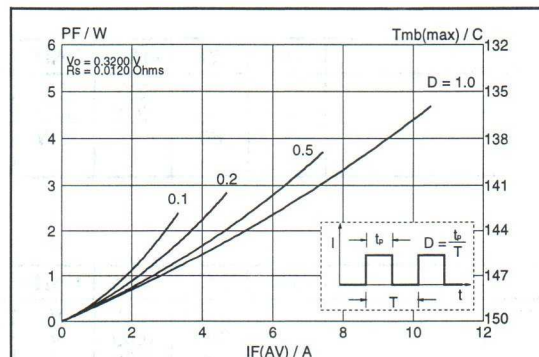


Fig.1. Maximum forward dissipation $P_F = f(I_F(AV))$ per diode; square current waveform where $I_F(AV) = I_F(RMS) \times \sqrt{D}$.

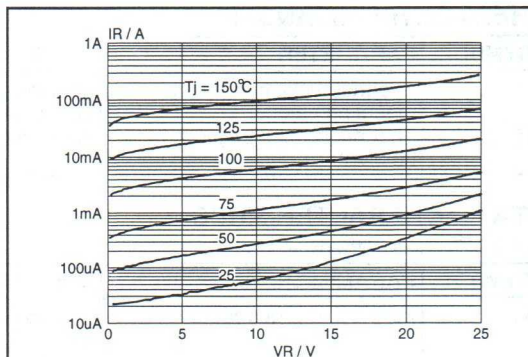


Fig.4. Typical reverse leakage current per diode; $I_R = f(V_R)$; parameter T_j

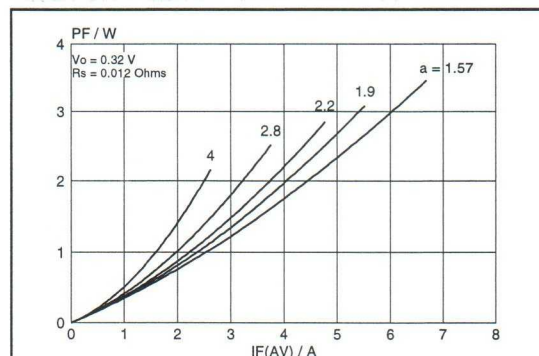


Fig.2. Maximum forward dissipation $P_F = f(I_F(AV))$ per diode; sinusoidal current waveform where $a =$ form factor $= I_F(RMS) / I_F(AV)$.

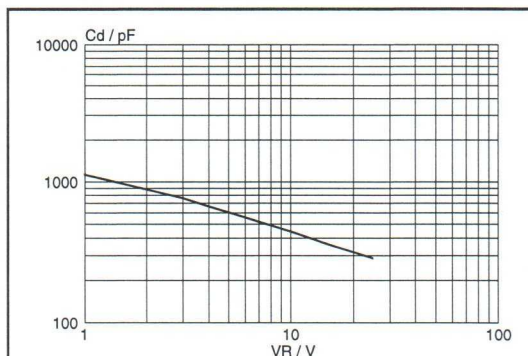


Fig.5. Typical junction capacitance per diode; $C_d = f(V_R)$; $f = 1$ MHz; $T_j = 25^\circ\text{C}$ to 125°C .

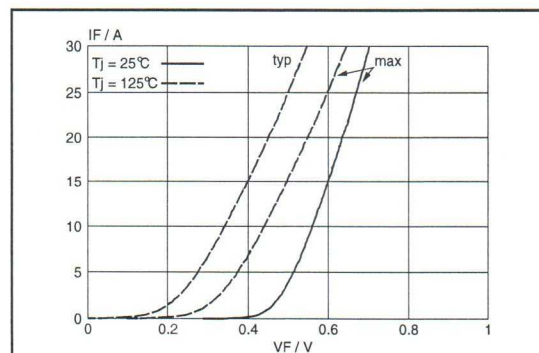


Fig.3. Typical and maximum forward characteristic $I_F = f(V_F)$; parameter T_j

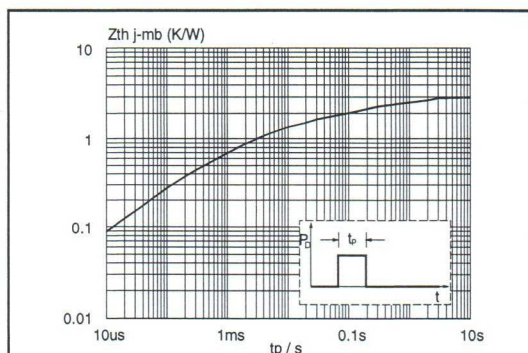


Fig.6. Transient thermal impedance per diode; $Z_{th-j-mb} = f(t_p)$.

Rectifier diodes schottky barrier

PBYR1545CT series

GENERAL DESCRIPTION

Dual, low leakage, platinum barrier, schottky rectifier diodes in a plastic envelope featuring low forward voltage drop and absence of stored charge. These devices can withstand reverse voltage transients and have guaranteed reverse surge capability. The devices are intended for use in switched mode power supplies and high frequency circuits in general where low conduction and zero switching losses are important.

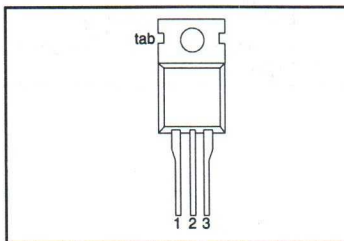
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
V_{RRM}	PBYR15- Repetitive peak reverse voltage	35CT 35	40CT 40	45CT 45	V
V_F	Forward voltage	0.57	0.57	0.57	V
$I_{O(AV)}$	Output current (both diodes conducting)	15	15	15	A

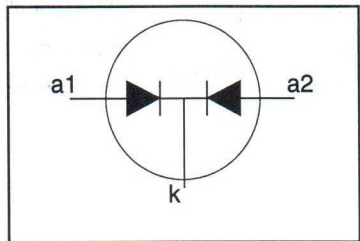
PINNING - TO220AB

PIN	DESCRIPTION
1	anode 1 (a)
2	cathode (k)
3	anode 2 (a)
tab	cathode (k)

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{RRM}	Repetitive peak reverse voltage	$T_{mb} \leq 134\text{ }^{\circ}\text{C}$	-	-35	-40	-45	V
V_{RWM}	Crest working reverse voltage		-	35	40	45	V
V_R	Continuous reverse voltage		-	35	40	45	V
$I_{O(AV)}$	Output current (both diodes conducting)	square wave; $\delta = 0.5$; $T_{mb} \leq 131\text{ }^{\circ}\text{C}$	-	15			A
$I_{O(RMS)}$	RMS forward current	$t = 25\text{ }\mu\text{s}$; $\delta = 0.5$; $T_{mb} \leq 131\text{ }^{\circ}\text{C}$	-	21			A
I_{FRM}	Repetitive peak forward current per diode		-	15			A
I_{FSM}	Non-repetitive peak forward current per diode	$t = 10\text{ ms}$ $t = 8.3\text{ ms}$ sinusoidal $T_j = 125\text{ }^{\circ}\text{C}$ prior to surge; with reapplied $V_{RWM(max)}$	-	135			A
I^2t	I^2t for fusing	$t = 10\text{ ms}$	-	91			A ² s
I_{RRM}	Repetitive peak reverse current per diode.	$t_p = 2\text{ }\mu\text{s}$; $\delta = 0.001$	-	1			A
I_{RSM}	Non-repetitive peak reverse current per diode.	$t_p = 100\text{ }\mu\text{s}$	-	1			A
T_{stg}	Storage temperature		-65	175			$^{\circ}\text{C}$
T_j	Operating junction temperature		-	150			$^{\circ}\text{C}$

Rectifier diodes schottky barrier

PBYR1545CT series

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-mb}$	Thermal resistance junction to mounting base	per diode	-	-	3.0	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	both diodes in free air.	-	-	2.0	K/W
			-	60	-	K/W

STATIC CHARACTERISTICS

$T_j = 25\ ^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage (per diode)	$I_F = 7.5\ \text{A}; T_j = 125\ ^\circ\text{C}$	-	0.50	0.57	V
		$I_F = 15\ \text{A}; T_j = 125\ ^\circ\text{C}$	-	0.62	0.72	V
		$I_F = 15\ \text{A}$	-	0.74	0.84	V
I_R	Reverse current (per diode)	$V_R = V_{RWM}$	-	50	100	μA
		$V_R = V_{RWM}; T_j = 125\ ^\circ\text{C}$	-	12	22	mA
C_d	Junction capacitance (per diode)	$f = 1\ \text{MHz}; V_R = 5\ \text{V}; T_j = 25\ ^\circ\text{C}$ to $125\ ^\circ\text{C}$	-	350	-	pF

Rectifier diodes schottky barrier

PBYR1545CT series

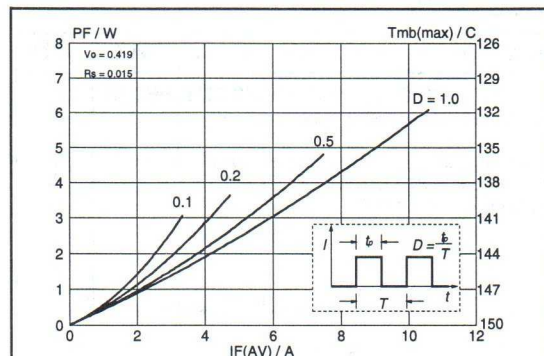


Fig. 1. Maximum forward dissipation $P_F = f(I_{F(AV)})$ per diode; square current waveform where $I_{F(AV)} = I_{F(RMS)} \times \sqrt{D}$.

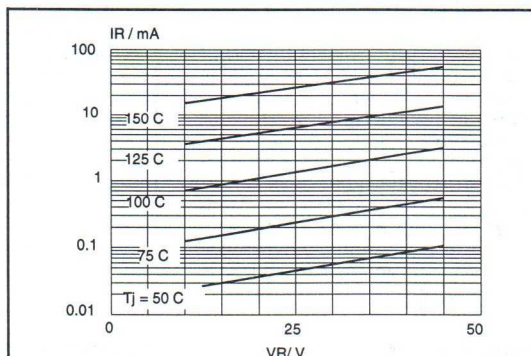


Fig. 4. Typical reverse leakage current per diode; $I_R = f(V_R)$; parameter T_j

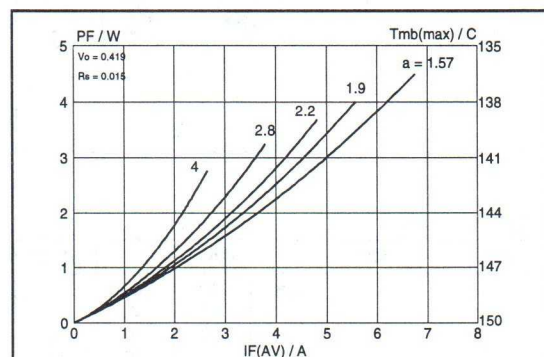


Fig. 2. Maximum forward dissipation $P_F = f(I_{F(AV)})$ per diode; sinusoidal current waveform where $a =$ form factor $= I_{F(RMS)} / I_{F(AV)}$.

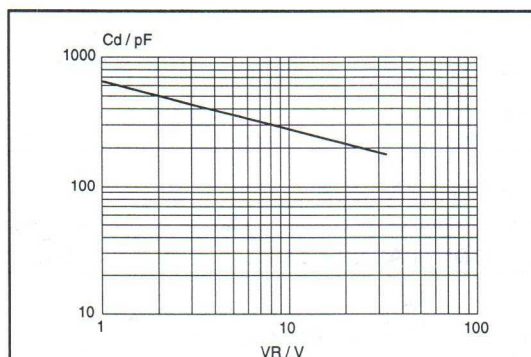


Fig. 5. Typical junction capacitance per diode; $C_d = f(V_R)$; $f = 1\text{ MHz}$; $T_j = 25^\circ\text{C}$ to 125°C .

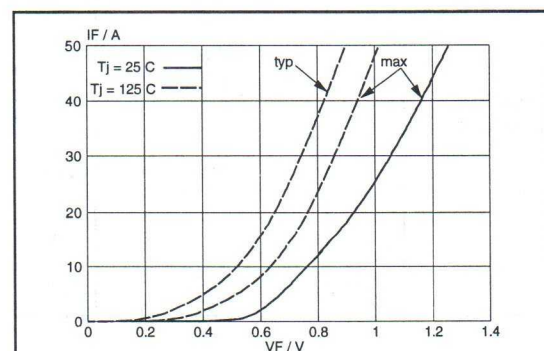


Fig. 3. Typical and maximum forward characteristic $I_F = f(V_F)$; parameter T_j

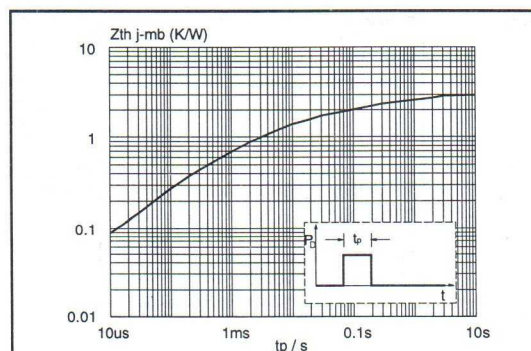


Fig. 6. Transient thermal impedance per diode; $Z_{th-j-mb} = f(t_p)$.

Rectifier diodes schottky barrier

PBYR1545CTB series

GENERAL DESCRIPTION

Dual low leakage, platinum barrier, schottky rectifier diodes in a plastic envelope suitable for surface mounting, featuring low forward voltage drop, absence of stored charge, and guaranteed reverse surge capability. The devices are intended for use in switched mode power supplies and high frequency circuits in general where low conduction and zero switching losses are important.

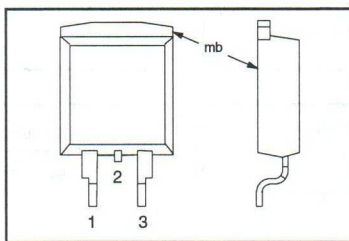
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
		35CTB	40CTB	45CTB	
V_{RRM}	Repetitive peak reverse voltage	35	40	45	V
V_F	Forward voltage	0.57	0.57	0.57	V
$I_{O(AV)}$	Average output current (both diodes conducting)	15	15	15	A

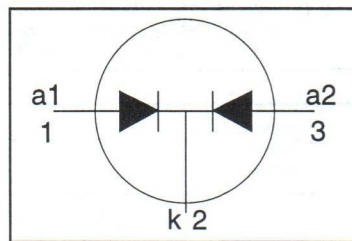
PINNING - SOT404

PIN	DESCRIPTION
1	anode 1
2	cathode
3	anode 2
mb	cathode

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{RRM}	Repetitive peak reverse voltage	$T_{mb} \leq 134\text{ }^{\circ}\text{C}$	-	-35 35	-40 40	-45 45	V
V_{RWM}	Crest working reverse voltage		-	35	40	45	V
V_R	Continuous reverse voltage		-	35	40	45	V
$I_{O(AV)}$	Average output current (both diodes conducting)	square wave; $\delta = 0.5$; $T_{mb} \leq 131\text{ }^{\circ}\text{C}$	-	15			A
$I_{O(RMS)}$	RMS output current (both diodes conducting)		-	21			A
I_{FRM}	Repetitive peak forward current per diode	$t = 25\text{ }\mu\text{s}$; $\delta = 0.5$; $T_{mb} \leq 131\text{ }^{\circ}\text{C}$	-	15			A
I_{FSM}	Non-repetitive peak forward current per diode	$t = 10\text{ ms}$	-	135			A
		$t = 8.3\text{ ms}$ sinusoidal $T_j = 125\text{ }^{\circ}\text{C}$ prior to surge; with reapplied $V_{RRM(max)}$	-	150			A
I^2t	I^2t for fusing	$t = 10\text{ ms}$	-	91			A ² s
I_{RRM}	Repetitive peak reverse current per diode.	$t_p = 2\text{ }\mu\text{s}$; $\delta = 0.001$	-	1			A
I_{RSM}	Non-repetitive peak reverse current per diode.	$t_p = 100\text{ }\mu\text{s}$	-	1			A
T_{stg}	Storage temperature		-65	175			$^{\circ}\text{C}$
T_j	Operating junction temperature		-	150			$^{\circ}\text{C}$

Rectifier diodes schottky barrier

PBYR1545CTB series

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-mb}$	Thermal resistance junction to mounting base	per diode	-	-	3.0	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	both diodes minimum footprint, FR4 board	-	50	2.0	K/W
					-	K/W

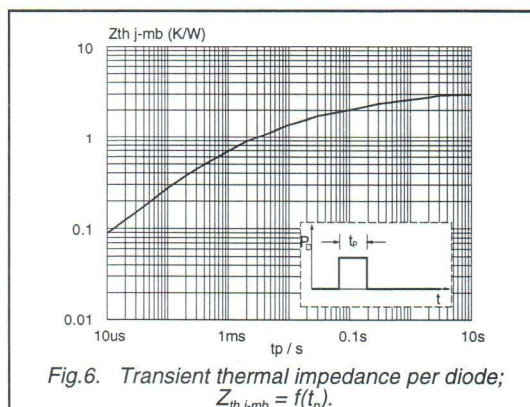
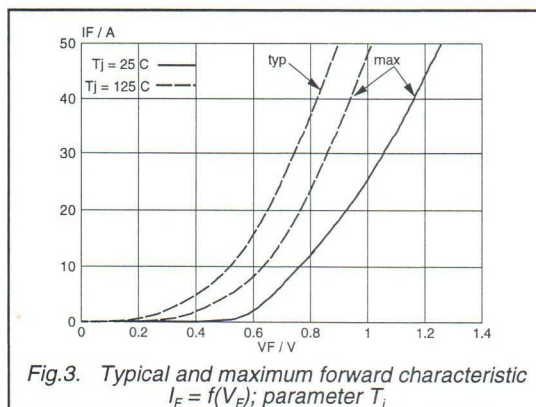
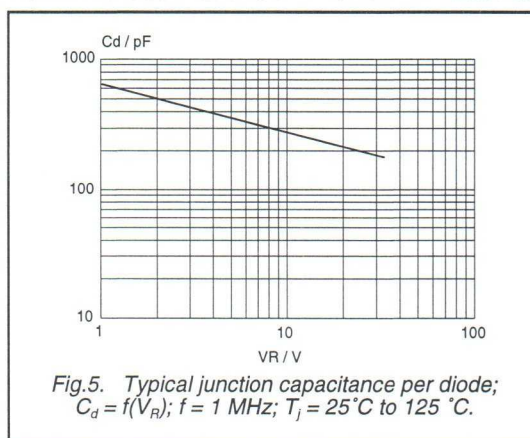
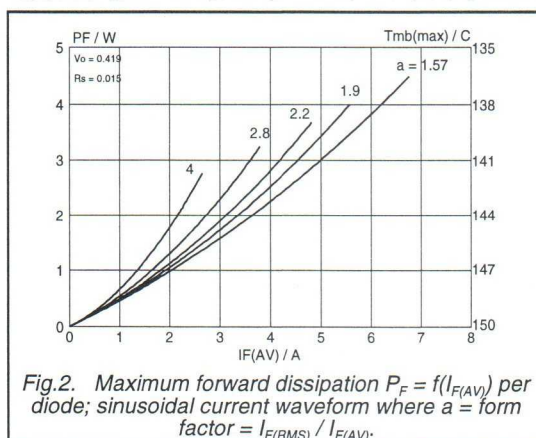
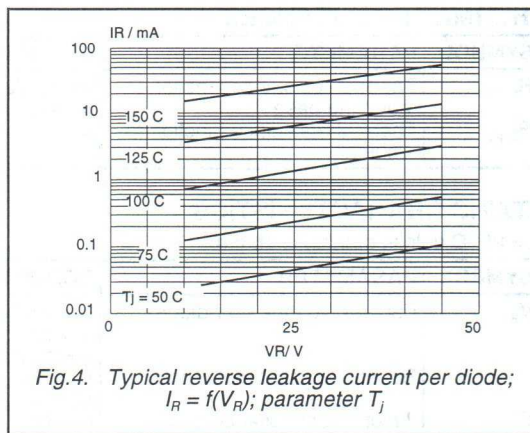
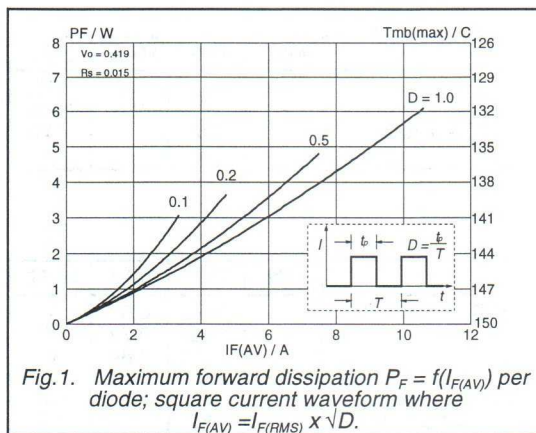
STATIC CHARACTERISTICS

$T_j = 25\text{ °C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage (per diode)	$I_F = 7.5\text{ A}; T_j = 125\text{ °C}$	-	0.50	0.57	V
		$I_F = 15\text{ A}; T_j = 125\text{ °C}$	-	0.62	0.72	V
		$I_F = 15\text{ A}$	-	0.74	0.84	V
I_R	Reverse current (per diode)	$V_R = V_{RRM}$	-	50	100	μA
		$V_R = V_{RRM}; T_j = 125\text{ °C}$	-	12	22	mA
C_d	Junction capacitance (per diode)	$f = 1\text{ MHz}; V_R = 5\text{ V}; T_j = 25\text{ °C to }125\text{ °C}$	-	350	-	pF

Rectifier diodes schottky barrier

PBYR1545CTB series



Rectifier diodes schottky barrier

PBYR1545CTF series

GENERAL DESCRIPTION

Dual low leakage, platinum barrier, schottky rectifier diodes in a full pack plastic envelope, featuring low forward voltage drop, absence of stored charge, and guaranteed reverse surge capability. The devices are intended for use in switched mode power supplies and high frequency circuits in general where low conduction and zero switching losses are important.

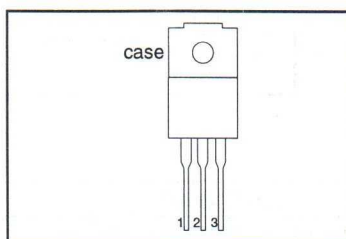
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
V_{RRM}	PBYR15- Repetitive peak reverse voltage	35CTF 35	40CTF 40	45CTF 45	V
V_F	Forward voltage	0.57	0.57	0.57	V
$I_{O(AV)}$	Average output current (both diodes conducting)	15	15	15	A

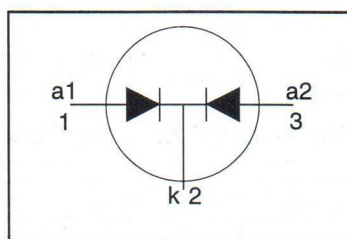
PINNING - SOT186

PIN	DESCRIPTION
1	anode 1 (a)
2	cathode (k)
3	anode 2 (a)

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{RRM}	Repetitive peak reverse voltage	$T_{hs} \leq 117\text{ }^{\circ}\text{C}$	-	-35 35	-40 40	-45 45	V
V_{RWM}	Crest working reverse voltage		-	35	40	45	V
V_R	Continuous reverse voltage		-	35	40	45	V
$I_{O(AV)}$	Average output current (both diodes conducting)	square wave; $\delta = 0.5$; $T_{hs} \leq 100\text{ }^{\circ}\text{C}$	-	15			A
$I_{O(RMS)}$	RMS output current (both diodes conducting)		-	20			A
I_{FRM}	Repetitive peak forward current per diode	$t = 25\text{ }\mu\text{s}$; $\delta = 0.5$; $T_{hs} \leq 100\text{ }^{\circ}\text{C}$	-	15			A
I_{FSM}	Non-repetitive peak forward current, per diode	$t = 10\text{ ms}$ $t = 8.3\text{ ms}$ sinusoidal $T_j = 125\text{ }^{\circ}\text{C}$ prior to surge; with reapplied	-	100			A
			-	110			A
I^2t	I^2t for fusing	$V_{RRM(max)}$ $t = 10\text{ ms}$	-	50			A ² s
I_{RRM}	Repetitive peak reverse current per diode.	$t_p = 2\text{ }\mu\text{s}$; $\delta = 0.001$	-	1			A
I_{RSM}	Non-repetitive peak reverse current per diode.	$t_p = 100\text{ }\mu\text{s}$	-	1			A
T_{stg}	Storage temperature		-65	175			$^{\circ}\text{C}$
T_j	Operating junction temperature		-	150			$^{\circ}\text{C}$

Rectifier diodes schottky barrier

PBYR1545CTF series

ISOLATION LIMITING VALUE & CHARACTERISTIC

$T_{hs} = 25\text{ }^{\circ}\text{C}$ unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_{isol}	Repetitive peak voltage from all three terminals to external heatsink	R.H. $\leq 65\%$; clean and dustfree	-		1500	V
C_{isol}	Capacitance from T2 to external heatsink	$f = 1\text{ MHz}$	-	12	-	pF

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-hs}$	Thermal resistance junction to heatsink	per diode both diodes (with heatsink compound)	-	-	6.1	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	in free air.	-	55	-	K/W

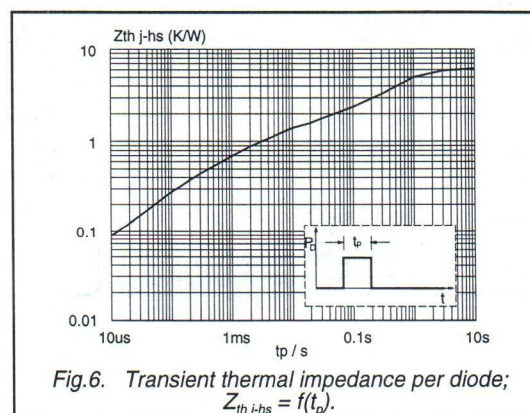
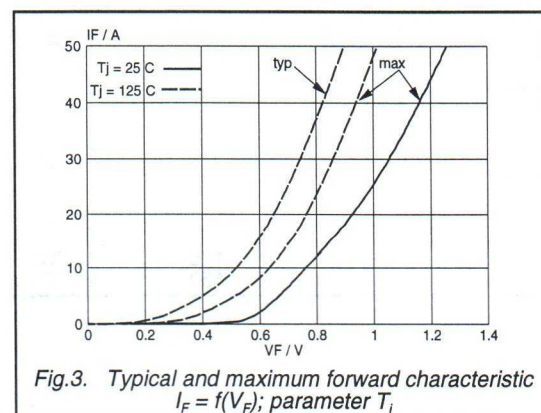
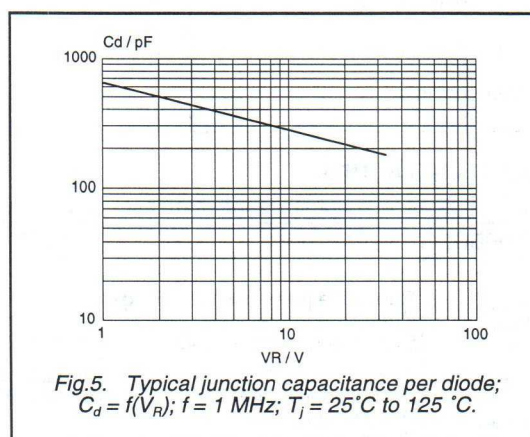
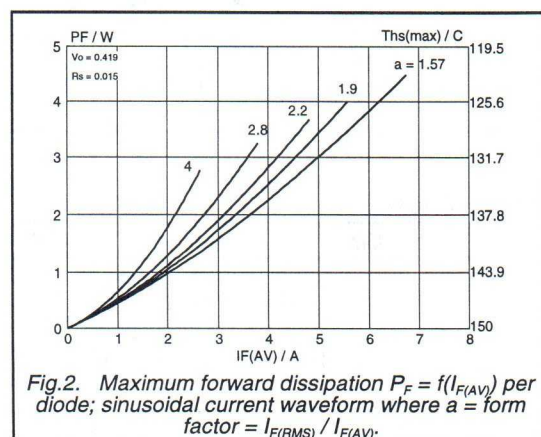
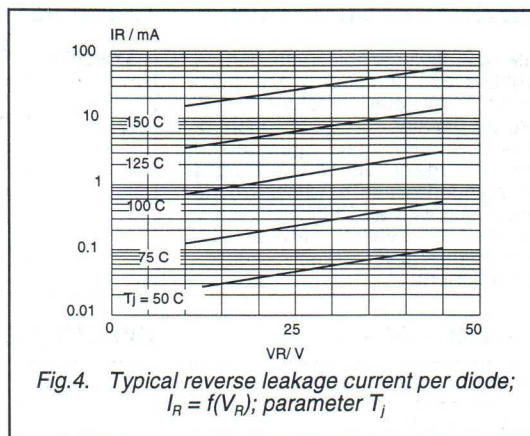
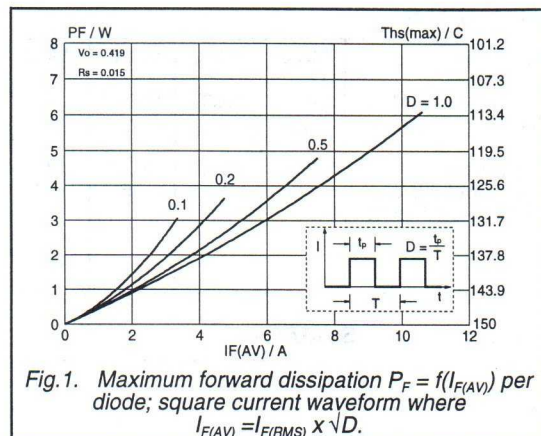
STATIC CHARACTERISTICS

$T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage (per diode)	$I_F = 7.5\text{ A}$; $T_j = 125\text{ }^{\circ}\text{C}$	-	0.50	0.57	V
		$I_F = 15\text{ A}$; $T_j = 125\text{ }^{\circ}\text{C}$	-	0.62	0.72	V
		$I_F = 15\text{ A}$	-	0.74	0.84	V
I_R	Reverse current (per diode)	$V_R = V_{RRM}$	-	50	100	μA
		$V_R = V_{RRM}$; $T_j = 125\text{ }^{\circ}\text{C}$	-	12	22	mA
C_d	Junction capacitance (per diode)	$f = 1\text{ MHz}$; $V_R = 5\text{ V}$; $T_j = 25\text{ }^{\circ}\text{C}$ to $125\text{ }^{\circ}\text{C}$	-	350	-	pF

Rectifier diodes schottky barrier

PBYR1545CTF series



Rectifier diodes schottky barrier

PBYR1545CTX series

GENERAL DESCRIPTION

Dual low leakage, platinum barrier, schottky rectifier diodes in a full pack plastic envelope, featuring low forward voltage drop, absence of stored charge, and guaranteed reverse surge capability. The devices are intended for use in switched mode power supplies and high frequency circuits in general where low conduction and zero switching losses are important.

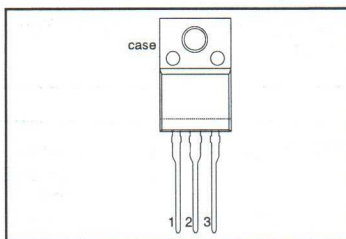
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
	PBYR15-	35CTX	40CTX	45CTX	
V_{RRM}	Repetitive peak reverse voltage	35	40	45	V
V_F	Forward voltage	0.57	0.57	0.57	V
$I_{O(AV)}$	Average output current (both diodes conducting)	15	15	15	A

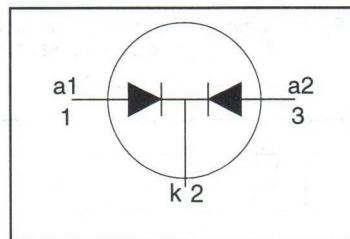
PINNING - SOT186A

PIN	DESCRIPTION
1	anode 1 (a)
2	cathode (k)
3	anode 2 (a)
case	isolated

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{RRM}	Repetitive peak reverse voltage	$T_{hs} \leq 117\text{ }^{\circ}\text{C}$	-	-35	-40	-45	V
V_{RWM}	Crest working reverse voltage		-	35	40	45	V
V_R	Continuous reverse voltage		-	35	40	45	V
$I_{O(AV)}$	Average output current (both diodes conducting)	square wave; $\delta = 0.5$; $T_{hs} \leq 100\text{ }^{\circ}\text{C}$	-	15			A
$I_{O(RMS)}$	RMS output current (both diodes conducting)		-	20			A
I_{FRM}	Repetitive peak forward current per diode	$t = 25\text{ }\mu\text{s}$; $\delta = 0.5$; $T_{hs} \leq 100\text{ }^{\circ}\text{C}$	-	15			A
I_{FSM}	Non-repetitive peak forward current, per diode	$t = 10\text{ ms}$ $t = 8.3\text{ ms}$ sinusoidal $T_j = 125\text{ }^{\circ}\text{C}$ prior to surge; with reapplied	-	100			A
			-	110			A
I^2t	I^2t for fusing	$V_{RRM(max)}$ $t = 10\text{ ms}$	-	50			A ² s
I_{RRM}	Repetitive peak reverse current per diode.	$t_p = 2\text{ }\mu\text{s}$; $\delta = 0.001$	-	1			A
I_{RSM}	Non-repetitive peak reverse current per diode.	$t_p = 100\text{ }\mu\text{s}$	-	1			A
T_{stg}	Storage temperature		-65	175			$^{\circ}\text{C}$
T_j	Operating junction temperature		-	150			$^{\circ}\text{C}$

Rectifier diodes schottky barrier

PBYR1545CTX series

ISOLATION LIMITING VALUE & CHARACTERISTIC

$T_{hs} = 25\text{ }^{\circ}\text{C}$ unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_{isol}	R.M.S. isolation voltage from all three terminals to external heatsink	$f = 50\text{--}60\text{ Hz}$; sinusoidal waveform; $R.H. \leq 65\%$; clean and dustfree	-		2500	V
C_{isol}	Capacitance from T2 to external heatsink	$f = 1\text{ MHz}$	-	10	-	pF

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-hs}$	Thermal resistance junction to heatsink	per diode both diodes (with heatsink compound)	-	-	6.1	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	in free air.	-	55	-	K/W

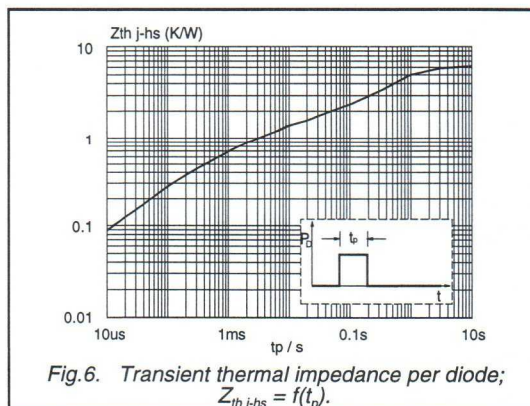
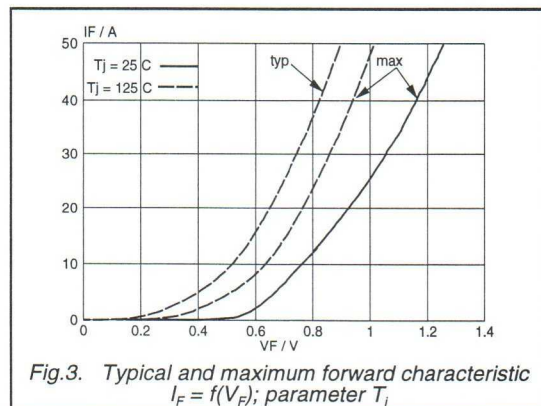
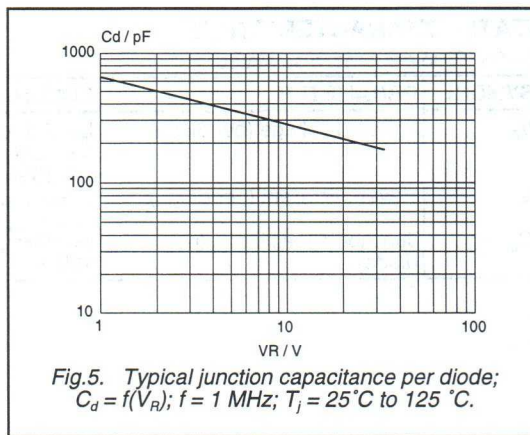
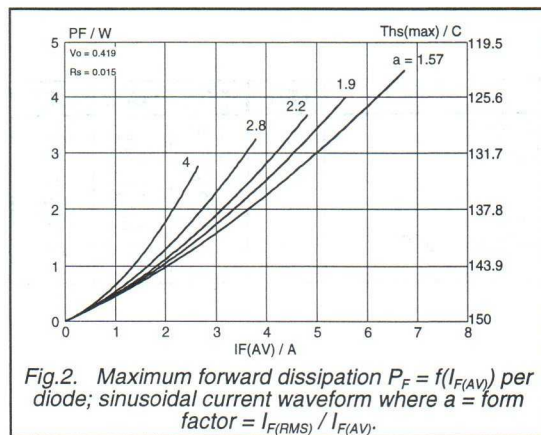
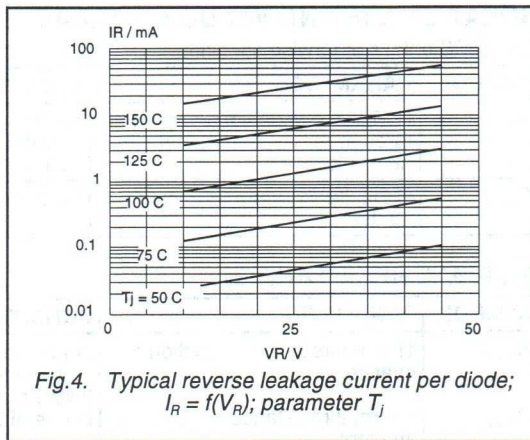
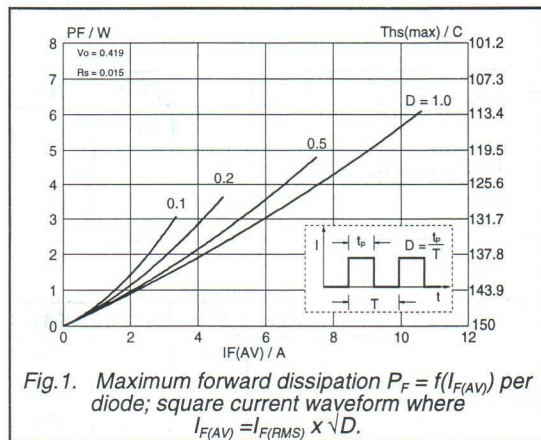
STATIC CHARACTERISTICS

$T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage (per diode)	$I_F = 7.5\text{ A}$; $T_j = 125\text{ }^{\circ}\text{C}$ $I_F = 15\text{ A}$; $T_j = 125\text{ }^{\circ}\text{C}$ $I_F = 15\text{ A}$	-	0.50 0.62 0.74	0.57 0.72 0.84	V V V
I_R	Reverse current (per diode)	$V_R = V_{RRM}$ $V_R = V_{RRM}$; $T_j = 125\text{ }^{\circ}\text{C}$	-	50 12	100 22	μA mA
C_d	Junction capacitance (per diode)	$f = 1\text{ MHz}$; $V_R = 5\text{ V}$; $T_j = 25\text{ }^{\circ}\text{C}$ to $125\text{ }^{\circ}\text{C}$	-	350	-	pF

Rectifier diodes
schottky barrier

PBYR1545CTX series



Rectifier diodes schottky barrier

PBYR1645 series

GENERAL DESCRIPTION

Low leakage, platinum barrier schottky rectifier diodes in a plastic envelope featuring low forward voltage drop and absence of stored charge. These devices can withstand reverse voltage transients and have guaranteed reverse surge capability. The devices are intended for use in switched mode power supplies and high frequency circuits in general where low conduction and zero switching losses are important.

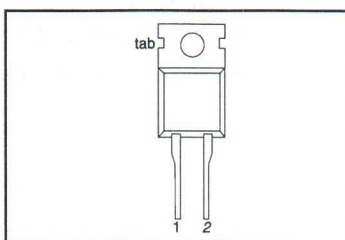
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
V_{RRM} V_F $I_{F(AV)}$	PBYR16- Repetitive peak reverse voltage	35 35	40 40	45 45	V
	Forward voltage	0.57	0.57	0.57	V
	Forward current	16	16	16	A

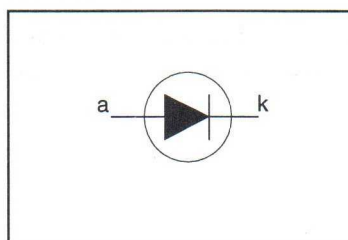
PINNING - TO220AC

PIN	DESCRIPTION
1	cathode (k)
2	anode (a)
tab	cathode (k)

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{RRM}	Repetitive peak reverse voltage	$T_{mb} \leq 141\text{ }^{\circ}\text{C}$	-	-35 35	-40 40	-45 45	V
V_{RWM}	Crest working reverse voltage		-	35	40	45	V
V_R	Continuous reverse voltage		-	35	40	45	V
$I_{F(AV)}$	Average forward current	square wave; $\delta = 0.5$; $T_{mb} \leq 134\text{ }^{\circ}\text{C}$	-	16			A
$I_{F(RMS)}$	RMS forward current	$t = 25\text{ }\mu\text{s}$; $\delta = 0.5$; $T_{mb} \leq 134\text{ }^{\circ}\text{C}$	-	22.6			A
I_{FRM}	Repetitive peak forward current		-	32			A
I_{FSM}	Non-repetitive peak forward current	$t = 10\text{ ms}$ $t = 8.3\text{ ms}$ sinusoidal; $T_j = 125\text{ }^{\circ}\text{C}$ prior to surge; with reapplied	-	135			A
			-	150			A
I^2t	I^2t for fusing	$V_{RWM(max)}$ $t = 10\text{ ms}$	-	91			A ² s
I_{RRM}	Repetitive peak reverse current	$t_p = 2\text{ }\mu\text{s}$; $\delta = 0.001$	-	1			A
I_{RSM}	Non-repetitive peak reverse current	$t_p = 100\text{ }\mu\text{s}$	-	1			A
T_{stg}	Storage temperature		-65	175			$^{\circ}\text{C}$
T_j	Operating junction temperature		-	150			$^{\circ}\text{C}$

Rectifier diodes schottky barrier

PBYR1645 series

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-mb}$	Thermal resistance junction to mounting base	in free air.	-	-	1.5	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient		-	60	-	K/W

STATIC CHARACTERISTICS

$T_j = 25\ ^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage	$I_F = 16\ \text{A}; T_j = 125\ ^\circ\text{C}$	-	0.50	0.57	V
		$I_F = 16\ \text{A}$	-	0.58	0.63	V
I_R	Reverse current	$V_R = V_{RWM}$	-	100	200	μA
		$V_R = V_{RWM}; T_j = 125\ ^\circ\text{C}$	-	12	40	mA
C_d	Junction capacitance	$f = 1\ \text{MHz}; V_R = 5\ \text{V}; T_j = 25\ ^\circ\text{C}$ to $125\ ^\circ\text{C}$	-	800	-	pF

Rectifier diodes schottky barrier

PBYR1645 series

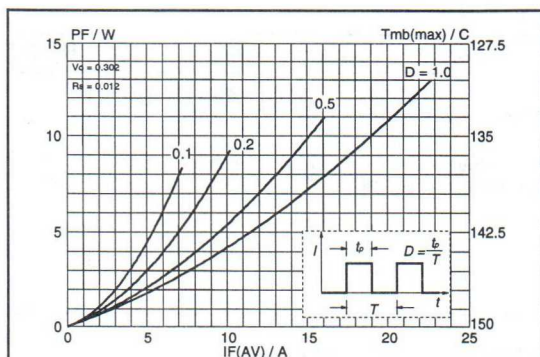


Fig. 1. Maximum forward dissipation $P_F = f(I_{F(AV)})$; square current waveform where $I_{F(AV)} = I_{F(RMS)} \times \sqrt{D}$.

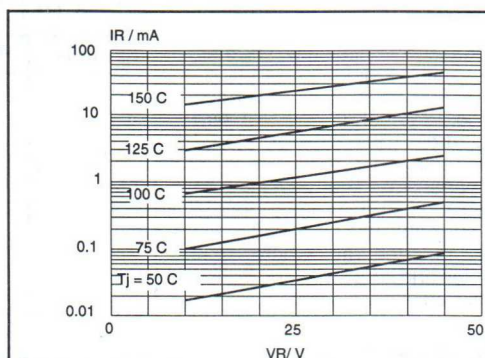


Fig. 4. Typical reverse leakage current; $I_R = f(V_R)$; parameter T_J .

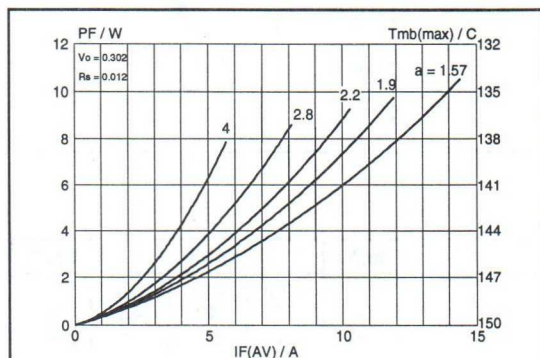


Fig. 2. Maximum forward dissipation $P_F = f(I_{F(AV)})$; sinusoidal current waveform where $a = \text{form factor} = I_{F(RMS)} / I_{F(AV)}$.

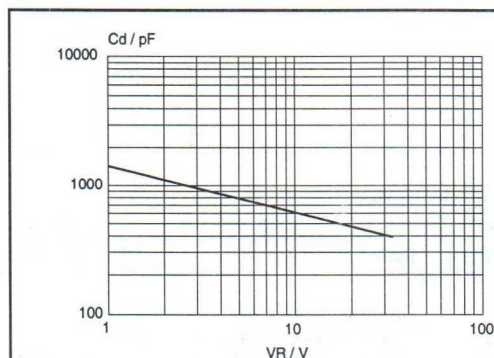


Fig. 5. Typical junction capacitance; $C_d = f(V_R)$; $f = 1 \text{ MHz}$; $T_J = 25^\circ\text{C}$ to 125°C .

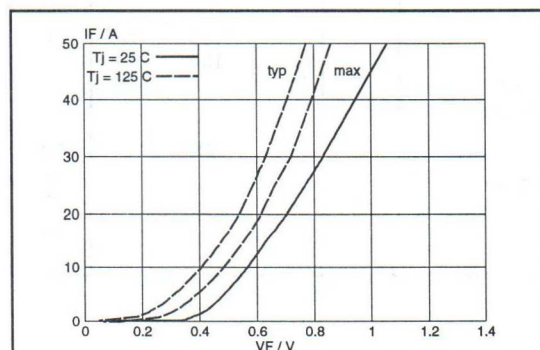


Fig. 3. Typical and maximum forward characteristic $I_F = f(V_F)$; parameter T_J .

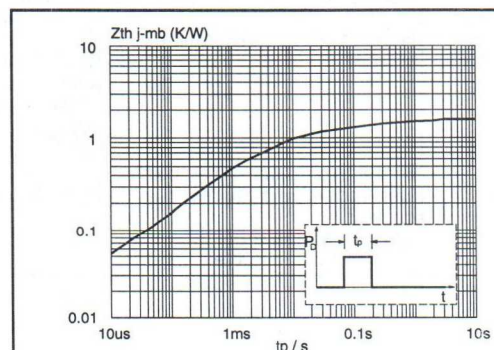


Fig. 6. Transient thermal impedance; $Z_{th j-mb} = f(t_p)$.

Rectifier diodes schottky barrier

PBYR1645B series

GENERAL DESCRIPTION

Low leakage, platinum barrier, schottky rectifier diodes in a plastic envelope suitable for surface mounting, featuring low forward voltage drop, absence of stored charge, and guaranteed reverse surge capability. The devices are intended for use in switched mode power supplies and high frequency circuits in general where low conduction and zero switching losses are important.

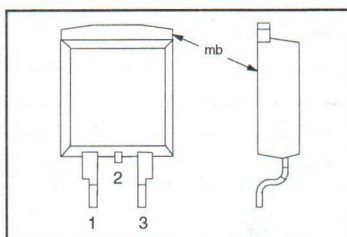
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
	PBYR16-	35B	40B	45B	
V_{RRM}	Repetitive peak reverse voltage	35	40	45	V
V_F	Forward voltage	0.57	0.57	0.57	V
$I_{F(AV)}$	Average forward current	16	16	16	A

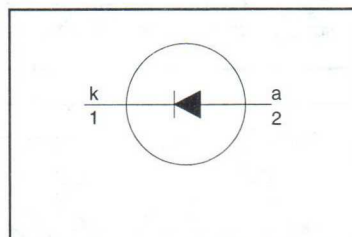
PINNING - SOT404

PIN	DESCRIPTION
1	no connection
2	cathode
3	anode
mb	cathode

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{RRM}	Repetitive peak reverse voltage	$T_{mb} \leq 141\text{ }^{\circ}\text{C}$	-	-35	-40	-45	V
V_{RWM}	Crest working reverse voltage		-	35	40	45	V
V_R	Continuous reverse voltage		-	35	40	45	V
$I_{F(AV)}$	Average forward current	square wave; $\delta = 0.5$; $T_{mb} \leq 134\text{ }^{\circ}\text{C}$	-	16			A
$I_{F(RMS)}$	RMS forward current	$t = 25\text{ }\mu\text{s}$; $\delta = 0.5$; $T_{mb} \leq 134\text{ }^{\circ}\text{C}$	-	23			A
I_{FRM}	Repetitive peak forward current		-	32			A
I_{FSM}	Non-repetitive peak forward current	$t = 10\text{ ms}$ $t = 8.3\text{ ms}$ sinusoidal; $T_j = 125\text{ }^{\circ}\text{C}$ prior to surge; with reapplied $V_{RRM(max)}$	-	135			A
			-	150			A
I^2t	I^2t for fusing	$t = 10\text{ ms}$	-	91			A ² s
I_{RRM}	Repetitive peak reverse current	$t_p = 2\text{ }\mu\text{s}$; $\delta = 0.001$	-	1			A
I_{RSM}	Non-repetitive peak reverse current	$t_p = 100\text{ }\mu\text{s}$	-	1			A
T_{stg}	Storage temperature		-65	175			$^{\circ}\text{C}$
T_j	Operating junction temperature		-	150			$^{\circ}\text{C}$

Rectifier diodes schottky barrier

PBYR1645B series

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-mb}$	Thermal resistance junction to mounting base	minimum footprint, FR4 board	-	-	1.5	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient		-	50	-	K/W

STATIC CHARACTERISTICS

$T_j = 25\text{ °C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage	$I_F = 16\text{ A}$; $T_j = 125\text{ °C}$	-	0.50	0.57	V
I_R	Reverse current	$I_F = 16\text{ A}$	-	0.58	0.63	V
		$V_R = V_{RRM}$	-	100	200	μA
		$V_R = V_{RRM}$; $T_j = 125\text{ °C}$	-	12	40	mA
C_d	Junction capacitance	$f = 1\text{ MHz}$; $V_R = 5\text{ V}$; $T_j = 25\text{ °C}$ to 125 °C	-	800	-	pF

Rectifier diodes schottky barrier

PBYR1645B series

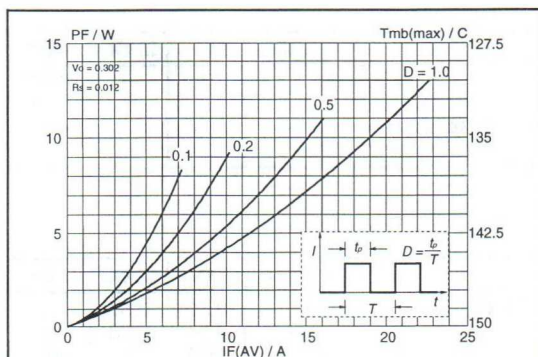


Fig. 1. Maximum forward dissipation $P_F = f(I_F(AV))$; square current waveform where $I_F(AV) = I_{F(RMS)} \times \sqrt{D}$.

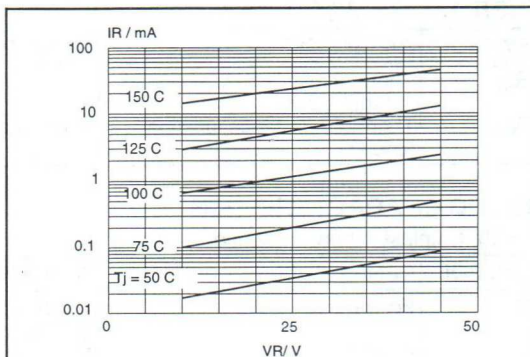


Fig. 4. Typical reverse leakage current; $I_R = f(V_R)$; parameter T_j .

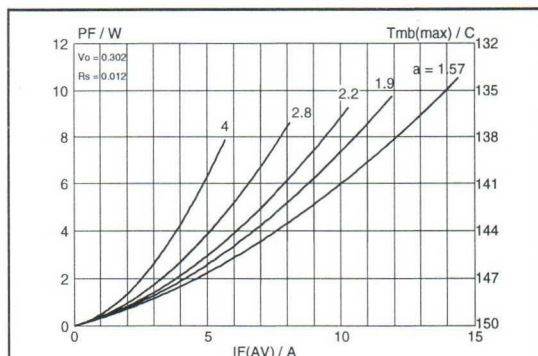


Fig. 2. Maximum forward dissipation $P_F = f(I_F(AV))$; sinusoidal current waveform where $a = \text{form factor} = I_{F(RMS)} / I_{F(AV)}$.

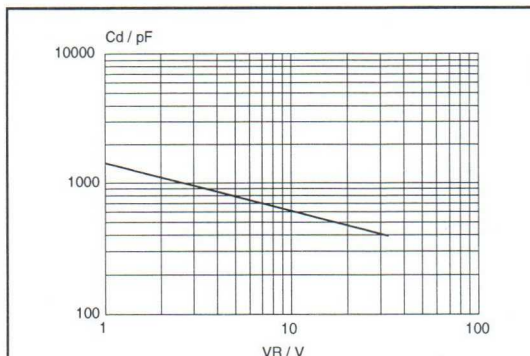


Fig. 5. Typical junction capacitance; $C_d = f(V_R)$; $f = 1 \text{ MHz}$; $T_j = 25^\circ\text{C}$ to 125°C .

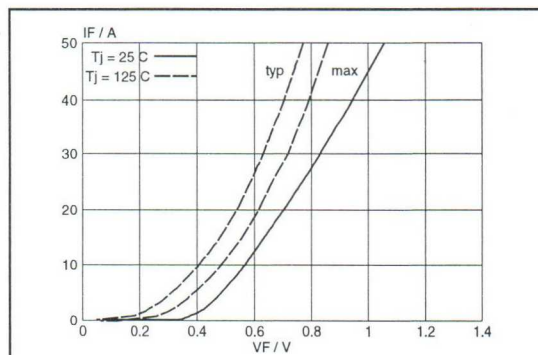


Fig. 3. Typical and maximum forward characteristic $I_F = f(V_F)$; parameter T_j .

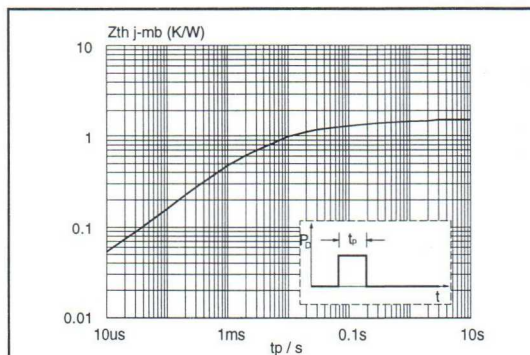


Fig. 6. Transient thermal impedance; $Z_{th j-mb} = f(t_p)$.

Rectifier diodes schottky barrier

PBYR1645F series

GENERAL DESCRIPTION

Low leakage, platinum barrier, schottky rectifier diodes in a full pack plastic envelope, featuring low forward voltage drop, absence of stored charge, and guaranteed reverse surge capability. The devices are intended for use in switched mode power supplies and high frequency circuits in general where low conduction and zero switching losses are important.

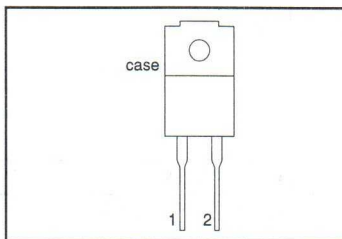
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
V_{RRM}	PBYR16- Repetitive peak reverse voltage	35F 35	40F 40	45F 45	V
V_F	Forward voltage	0.6	0.6	0.6	V
$I_{F(AV)}$	Average forward current	20	20	20	A

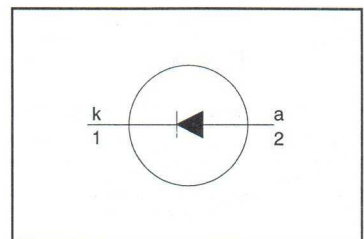
PINNING - SOD100

PIN	DESCRIPTION
1	cathode
2	anode
case	isolated

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{RRM}	Repetitive peak reverse voltage	$T_{hs} \leq 122\text{ }^{\circ}\text{C}$	-	-35 35	-40 40	-45 45	V
V_{RWM}	Crest working reverse voltage		-	35	40	45	V
V_R	Continuous reverse voltage		-	35	40	45	V
$I_{F(AV)}$	Average forward current	square wave; $\delta = 0.5$; $T_{hs} \leq 110\text{ }^{\circ}\text{C}$	-	14			A
$I_{F(RMS)}$	RMS output current	$t = 25\text{ }\mu\text{s}$; $\delta = 0.5$; $T_{hs} \leq 110\text{ }^{\circ}\text{C}$ $t = 10\text{ ms}$ $t = 8.3\text{ ms}$ sinusoidal $T_j = 125\text{ }^{\circ}\text{C}$ prior to surge; with reapplied $V_{RRM(max)}$ $t = 10\text{ ms}$ $t_p = 2\text{ }\mu\text{s}$; $\delta = 0.001$ $t_p = 100\text{ }\mu\text{s}$	-	20			A
I_{FRM}	Repetitive peak forward current		-	28			A
I_{FSM}	Non-repetitive peak forward current		-	120			A
I_{FSM}	Non-repetitive peak forward current		-	132			A
I^2t	I^2t for fusing	$V_{RRM(max)}$ $t = 10\text{ ms}$	-	72			A ² s
I_{RRM}	Repetitive peak reverse current	$t_p = 2\text{ }\mu\text{s}$; $\delta = 0.001$	-	1			A
I_{RSM}	Non-repetitive peak reverse current	$t_p = 100\text{ }\mu\text{s}$	-	1			A
T_{stg}	Storage temperature		-65	175			$^{\circ}\text{C}$
T_j	Operating junction temperature		-	150			$^{\circ}\text{C}$

Rectifier diodes schottky barrier

PBYR1645F series

ISOLATION LIMITING VALUE & CHARACTERISTIC

$T_{hs} = 25\text{ }^{\circ}\text{C}$ unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_{isol}	Repetitive peak voltage from all three terminals to external heatsink	R.H. $\leq 65\%$; clean and dustfree	-		1500	V
C_{isol}	Capacitance from T2 to external heatsink	$f = 1\text{ MHz}$	-	12	-	pF

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-hs}$	Thermal resistance junction to heatsink	with heatsink compound	-	-	4.2	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	in free air.	-	55	-	K/W

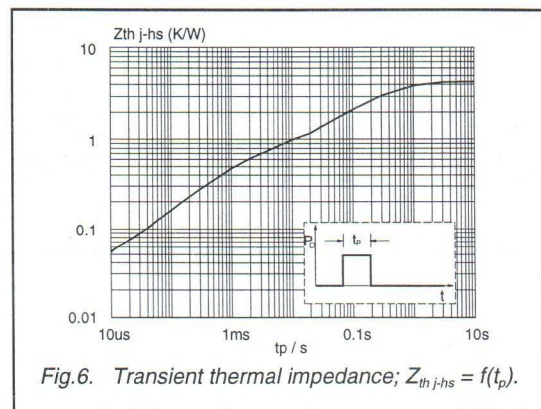
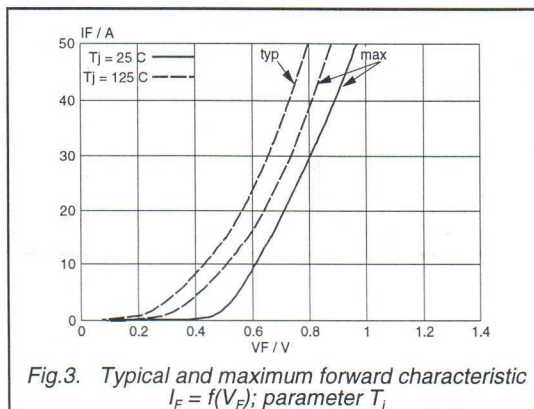
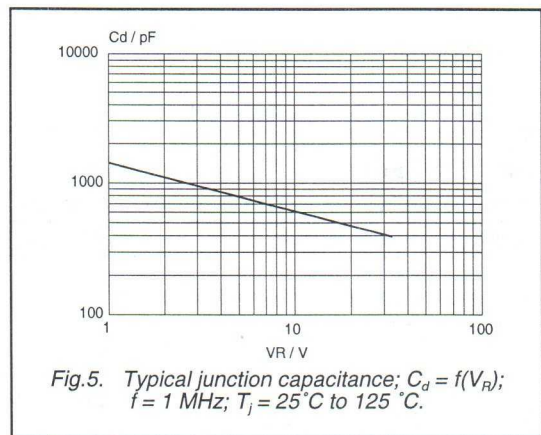
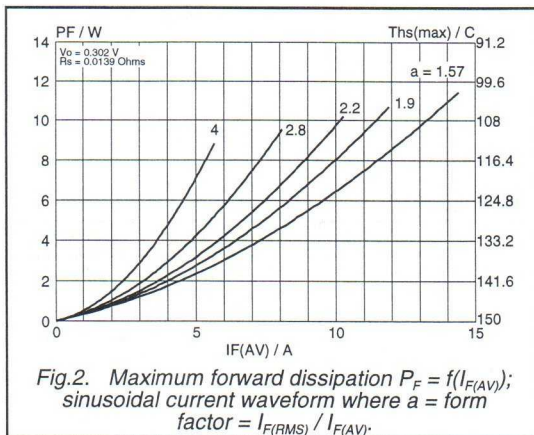
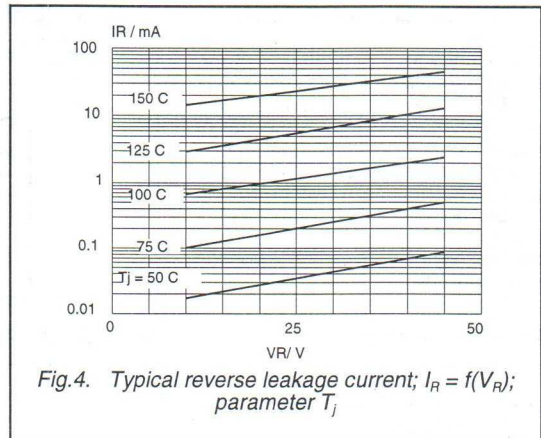
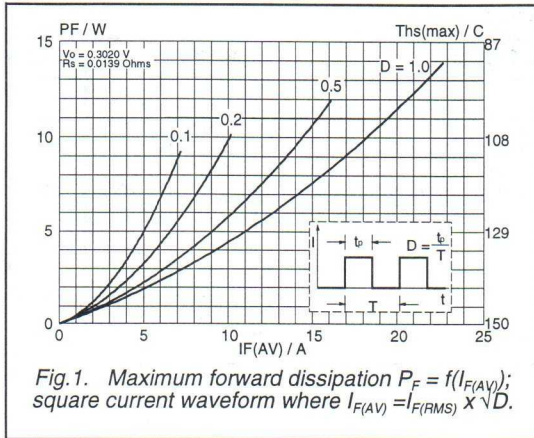
STATIC CHARACTERISTICS

$T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage	$I_F = 16\text{ A}$; $T_j = 125\text{ }^{\circ}\text{C}$	-	0.53	0.60	V
I_R	Reverse current	$I_F = 16\text{ A}$	-	0.63	0.68	V
		$V_R = V_{RRM}$	-	100	200	μA
		$V_R = V_{RRM}$; $T_j = 125\text{ }^{\circ}\text{C}$	-	12	40	mA
C_d	Junction capacitance	$f = 1\text{ MHz}$; $V_R = 5\text{ V}$; $T_j = 25\text{ }^{\circ}\text{C}$ to $125\text{ }^{\circ}\text{C}$	-	800	-	pF

Rectifier diodes schottky barrier

PBYR1645F series



Rectifier diodes schottky barrier

PBYR1645X series

GENERAL DESCRIPTION

Low leakage, platinum barrier, schottky rectifier diodes in a full pack plastic envelope, featuring low forward voltage drop, absence of stored charge, and guaranteed reverse surge capability. The devices are intended for use in switched mode power supplies and high frequency circuits in general where low conduction and zero switching losses are important.

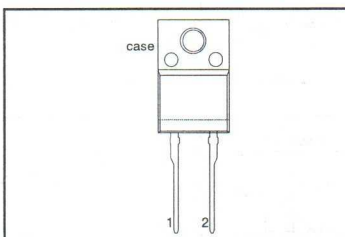
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
V_{RRM}	PBYR16- Repetitive peak reverse voltage	35X 35	40X 40	45X 45	V
V_F	Forward voltage	0.6	0.6	0.6	V
$I_{F(AV)}$	Average forward current	20	20	20	A

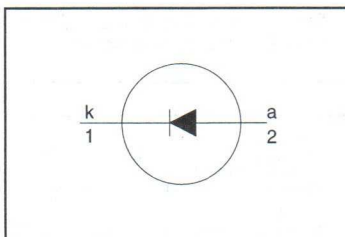
PINNING - SOD113

PIN	DESCRIPTION
1	cathode
2	anode
case	isolated

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{RRM}	Repetitive peak reverse voltage	$T_{hs} \leq 122\text{ }^{\circ}\text{C}$	-	-35	-40	-45	V
V_{RWM}	Crest working reverse voltage		-	35	40	45	V
V_R	Continuous reverse voltage		-	35	40	45	V
$I_{F(AV)}$	Average forward current	square wave; $\delta = 0.5$; $T_{hs} \leq 110\text{ }^{\circ}\text{C}$	-	14			A
$I_{F(RMS)}$	RMS output current	$t = 25\text{ }\mu\text{s}$; $\delta = 0.5$; $T_{hs} \leq 110\text{ }^{\circ}\text{C}$	-	20			A
I_{FRM}	Repetitive peak forward current		-	28			A
I_{FSM}	Non-repetitive peak forward current		-	120			A
		$t = 10\text{ ms}$	-	132			A
		$t = 8.3\text{ ms}$	-				
		sinusoidal $T_j = 125\text{ }^{\circ}\text{C}$ prior to surge; with reapplied $V_{RRM(max)}$	-				
I^2t	I^2t for fusing	$t = 10\text{ ms}$	-	72			A ² s
I_{RRM}	Repetitive peak reverse current	$t_p = 2\text{ }\mu\text{s}$; $\delta = 0.001$	-	1			A
I_{RSM}	Non-repetitive peak reverse current	$t_p = 100\text{ }\mu\text{s}$	-	1			A
T_{stg}	Storage temperature		-65	175			$^{\circ}\text{C}$
T_j	Operating junction temperature		-	150			$^{\circ}\text{C}$

Rectifier diodes
schottky barrier

PBYR1645X series

ISOLATION LIMITING VALUE & CHARACTERISTIC

 $T_{hs} = 25\text{ }^{\circ}\text{C}$ unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_{isol}	R.M.S. isolation voltage from all three terminals to external heatsink	$f = 50\text{-}60\text{ Hz}$; sinusoidal waveform; $R.H. \leq 65\%$; clean and dustfree	-		2500	V
C_{isol}	Capacitance from T2 to external heatsink	$f = 1\text{ MHz}$	-	10	-	pF

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-hs}$	Thermal resistance junction to heatsink	with heatsink compound	-	-	4.2	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	in free air.	-	55	-	K/W

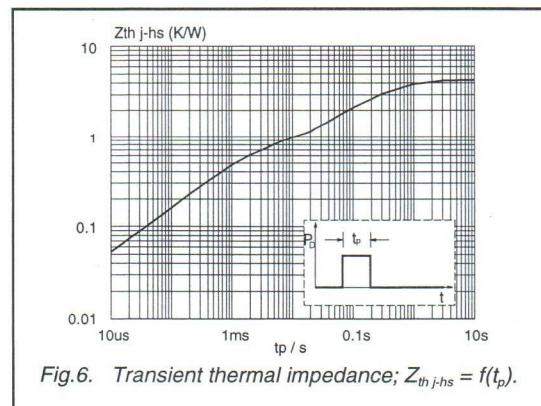
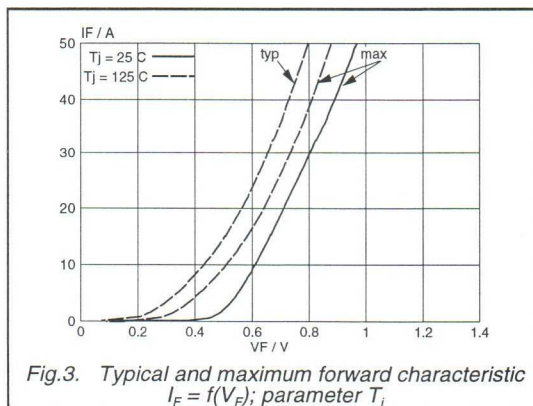
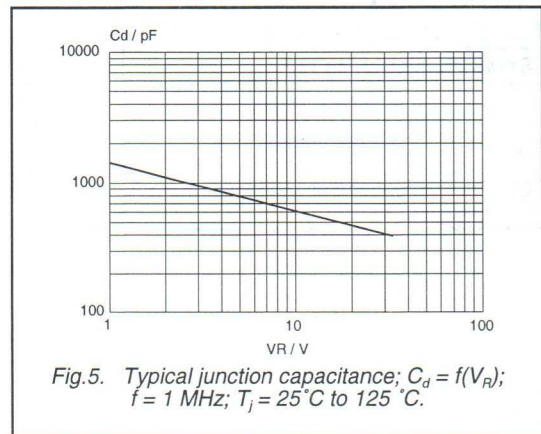
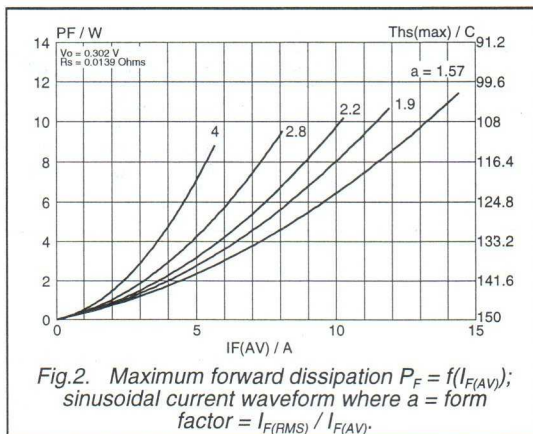
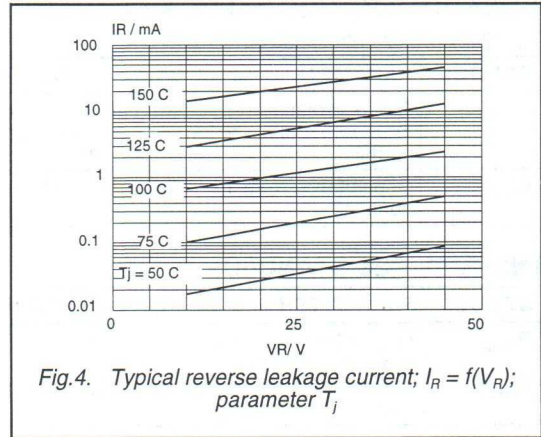
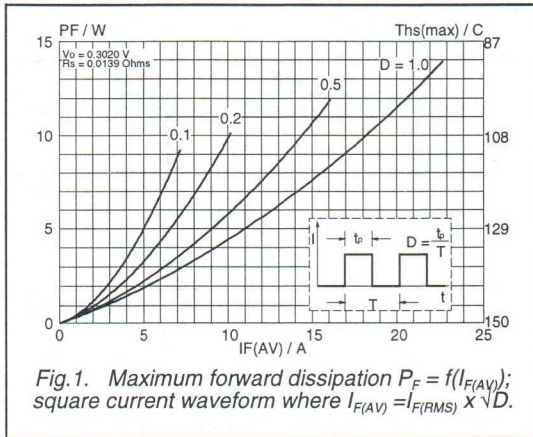
STATIC CHARACTERISTICS

 $T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage	$I_F = 16\text{ A}$; $T_j = 125\text{ }^{\circ}\text{C}$	-	0.53	0.60	V
I_R	Reverse current	$I_F = 16\text{ A}$ $V_R = V_{RRM}$	-	0.63	0.68	V
		$V_R = V_{RRM}$; $T_j = 125\text{ }^{\circ}\text{C}$	-	100	200	μA
		$V_R = V_{RRM}$; $T_j = 125\text{ }^{\circ}\text{C}$	-	12	40	mA
C_d	Junction capacitance	$f = 1\text{ MHz}$; $V_R = 5\text{ V}$; $T_j = 25\text{ }^{\circ}\text{C}$ to $125\text{ }^{\circ}\text{C}$	-	800	-	pF

Rectifier diodes schottky barrier

PBYR1645X series



Rectifier diodes schottky barrier

PBYR2025CT series

GENERAL DESCRIPTION

Dual nickel silicide schottky barrier rectifier diodes in a plastic envelope featuring low forward voltage drop and absence of stored charge. These devices can withstand reverse voltage transients and have guaranteed reverse surge capability. The devices are intended for use in switched mode power supplies with 3 V - 3.3 V outputs, or as or-ing diodes in fault tolerant power supply systems.

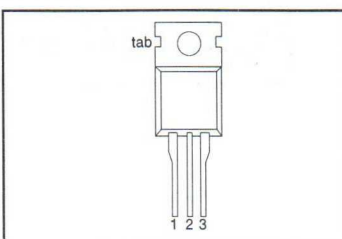
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	UNIT
V_{RRM}	Repetitive peak reverse voltage	20	25	V
V_F	Forward voltage	0.41	0.41	V
$I_{O(AV)}$	Average output current (both diodes conducting)	20	20	A

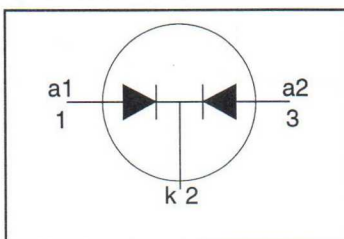
PINNING - TO220AB

PIN	DESCRIPTION
1	anode 1 (a)
2	cathode (k)
3	anode 2 (a)
tab	cathode (k)

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.		UNIT
V_{RRM}	Repetitive peak reverse voltage	$T_{mb} \leq 120\text{ }^{\circ}\text{C}$	-	-20	-25	V
V_{RWM}	Crest working reverse voltage		-	20	25	V
V_R	Continuous reverse voltage		-	20	25	V
$I_{O(AV)}$	Average output current (both diodes conducting)	square wave; $\delta = 0.5$; $T_{mb} \leq 135\text{ }^{\circ}\text{C}$	-	20		A
$I_{O(RMS)}$	RMS output current (both diodes conducting)		-	28		A
I_{FRM}	Repetitive peak forward current per diode	$t = 25\text{ }\mu\text{s}$; $\delta = 0.5$; $T_{mb} \leq 135\text{ }^{\circ}\text{C}$	-	20		A
I_{FSM}	Non-repetitive peak forward current, per diode	$t = 10\text{ ms}$ $t = 8.3\text{ ms}$ sinusoidal $T_j = 125\text{ }^{\circ}\text{C}$ prior to surge; with reapplied $V_{RRM(max)}$	-	135	150	A
I^2t	I^2t for fusing	$t = 10\text{ ms}$	-	91		A ² s
I_{RRM}	Repetitive peak reverse current per diode	$t_p = 2\text{ }\mu\text{s}$; $\delta = 0.001$	-	1		A
I_{RSM}	Non-repetitive peak reverse current per diode	$t_p = 100\text{ }\mu\text{s}$	-	1		A
T_{stg}	Storage temperature		-65	175		$^{\circ}\text{C}$
T_j	Operating junction temperature		-	150		$^{\circ}\text{C}$

Rectifier diodes schottky barrier

PBYR2025CT series

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-mb}$	Thermal resistance junction to mounting base	per diode	-	-	2.0	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	both diodes in free air	-	-	1.5	K/W
			-	60	-	K/W

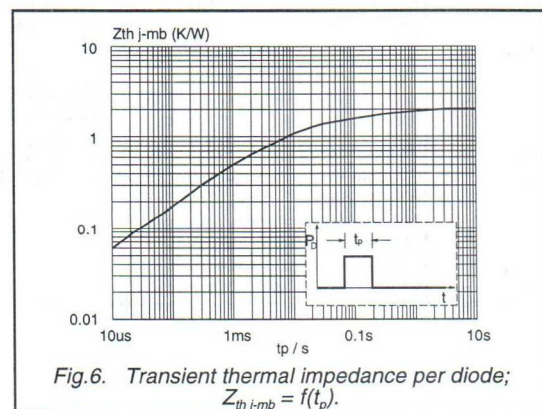
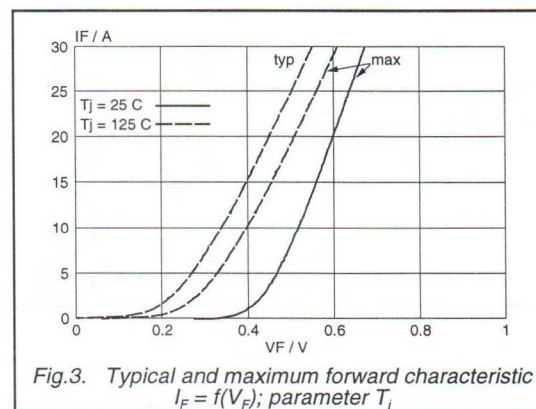
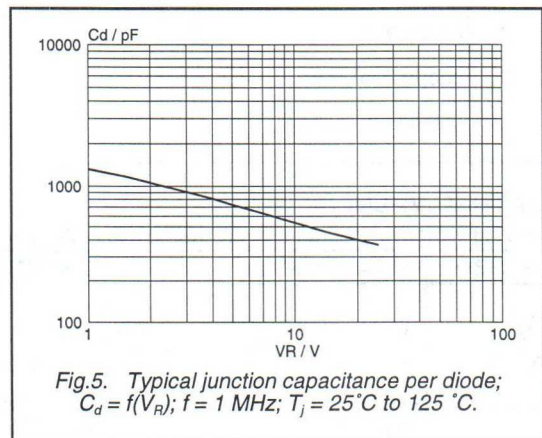
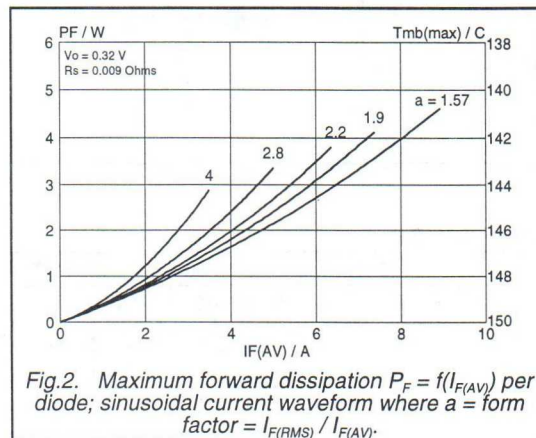
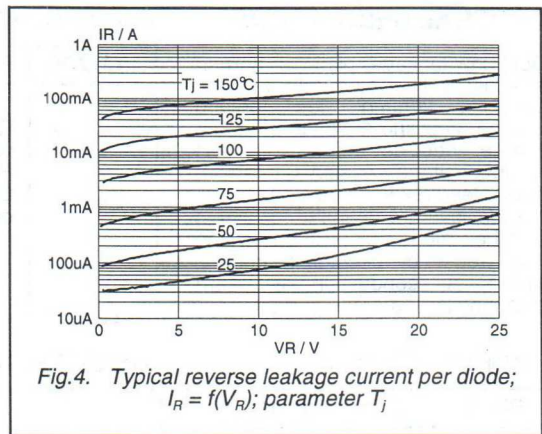
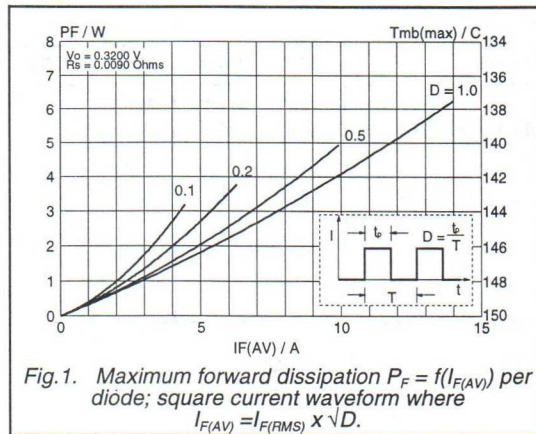
STATIC CHARACTERISTICS

$T_j = 25\ ^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage (per diode)	$I_F = 10\ \text{A}; T_j = 125\ ^\circ\text{C}$	-	0.33	0.41	V
		$I_F = 20\ \text{A}; T_j = 125\ ^\circ\text{C}$	-	0.43	0.50	V
		$I_F = 20\ \text{A}$	-	0.51	0.60	V
I_R	Reverse current (per diode)	$V_R = V_{RRM}$	-	1.0	5.0	mA
		$V_R = V_{RRM}; T_j = 100\ ^\circ\text{C}$	-	22	40	mA
C_d	Junction capacitance (per diode)	$f = 1\ \text{MHz}; V_R = 5\ \text{V}; T_j = 25\ ^\circ\text{C}$ to $125\ ^\circ\text{C}$	-	700	-	pF

Rectifier diodes schottky barrier

PBYR2025CT series



Rectifier diodes schottky barrier

PBYR2045CT series

GENERAL DESCRIPTION

Dual, low leakage, platinum barrier, schottky rectifier diodes in a plastic envelope featuring low forward voltage drop and absence of stored charge. These devices can withstand reverse voltage transients and have guaranteed reverse surge capability. The devices are intended for use in switched mode power supplies and high frequency circuits in general where low conduction and zero switching losses are important.

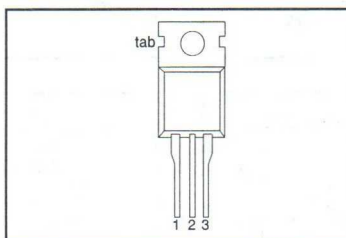
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
V_{RRM}	PBYR20- Repetitive peak reverse voltage	35CT 35	40CT 40	45CT 45	V
V_F	Forward voltage	0.57	0.57	0.57	V
$I_{O(AV)}$	Output current (both diodes conducting)	20	20	20	A

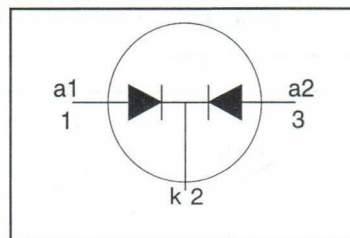
PINNING - TO220AB

PIN	DESCRIPTION
1	anode 1 (a)
2	cathode (k)
3	anode 2 (a)
tab	cathode (k)

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{RRM}	Repetitive peak reverse voltage	$T_{mb} \leq 143^\circ\text{C}$	-	-35 35	-40 40	-45 45	V
V_{RWM}	Crest working reverse voltage		-	35	40	45	V
V_R	Continuous reverse voltage		-	35	40	45	V
$I_{O(AV)}$	Output current (both diodes conducting)	square wave; $\delta = 0.5$; $T_{mb} \leq 129^\circ\text{C}$	-	20			A
$I_{O(RMS)}$	RMS forward current	$t = 25\ \mu\text{s}$; $\delta = 0.5$; $T_{mb} \leq 129^\circ\text{C}$	-	28			A
I_{FRM}	Repetitive peak forward current per diode		-	20			A
I_{FSM}	Non-repetitive peak forward current per diode	$t = 10\ \text{ms}$ $t = 8.3\ \text{ms}$ sinusoidal $T_j = 125^\circ\text{C}$ prior to surge; with reapplied $V_{RWM(max)}$	-	135			A
I^2t	I^2t for fusing	$t = 10\ \text{ms}$	-	91			A ² s
I_{RRM}	Repetitive peak reverse current per diode.	$t_p = 2\ \mu\text{s}$; $\delta = 0.001$	-	1			A
I_{RSM}	Non-repetitive peak reverse current per diode.	$t_p = 100\ \mu\text{s}$	-	1			A
T_{stg}	Storage temperature		-65	175			$^\circ\text{C}$
T_j	Operating junction temperature		-	150			$^\circ\text{C}$

Rectifier diodes
schottky barrier

PBYR2045CT series

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-mb}$	Thermal resistance junction to mounting base	per diode	-	-	2.0	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	both diodes in free air.	-	-	1.5	K/W
			-	60	-	K/W

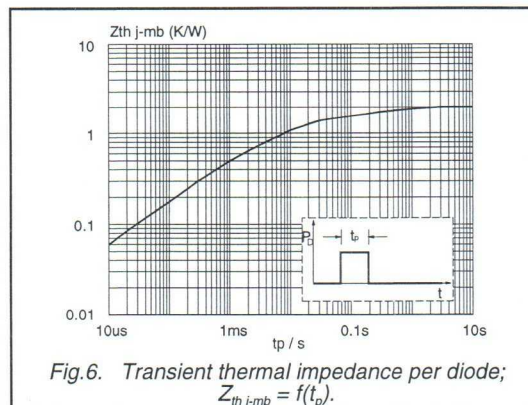
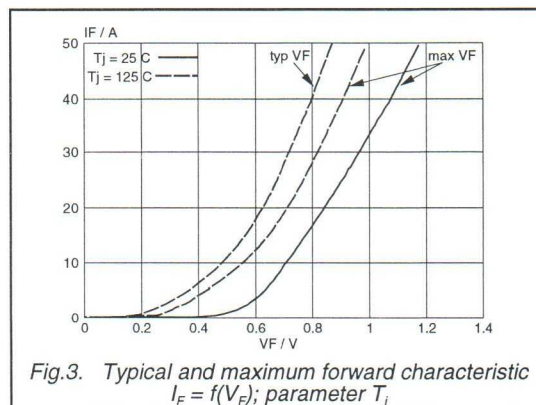
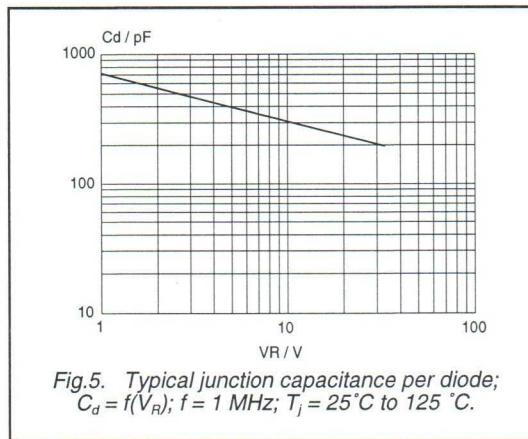
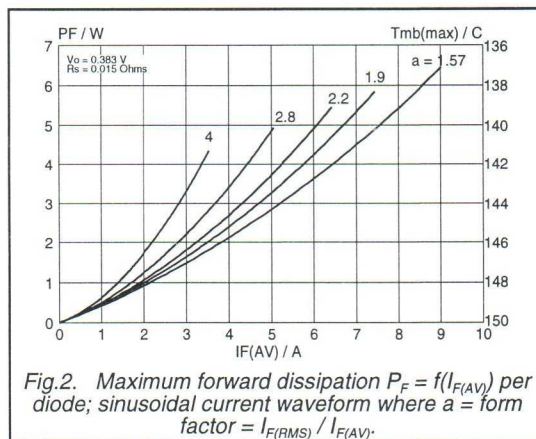
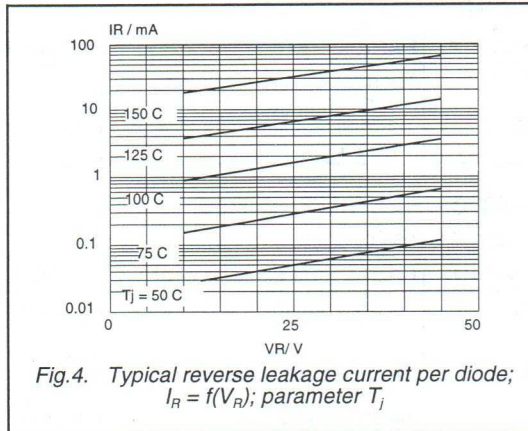
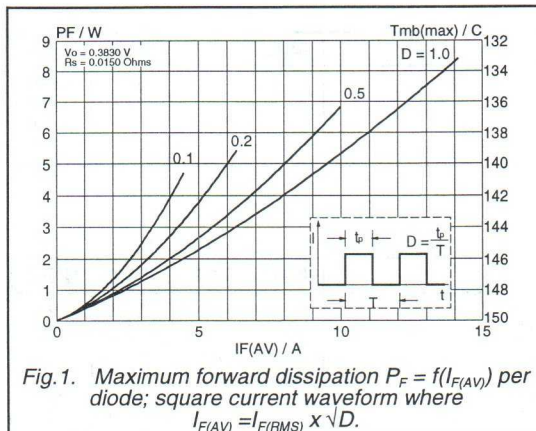
STATIC CHARACTERISTICS

 $T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage (per diode)	$I_F = 10\text{ A}; T_j = 125^{\circ}\text{C}$	-	0.50	0.57	V
		$I_F = 20\text{ A}; T_j = 125^{\circ}\text{C}$	-	0.65	0.72	V
		$I_F = 20\text{ A}$	-	0.78	0.84	
I_R	Reverse current (per diode)	$V_R = V_{RWM}$	-	50	100	μA
		$V_R = V_{RWM}; T_j = 125^{\circ}\text{C}$	-	13	26	mA
C_d	Junction capacitance (per diode)	$f = 1\text{ MHz}; V_R = 5\text{ V}; T_j = 25^{\circ}\text{C to } 125^{\circ}\text{C}$	-	400	-	pF

Rectifier diodes schottky barrier

PBYR2045CT series



Rectifier diodes schottky barrier

PBYR2045CTB series

GENERAL DESCRIPTION

Dual low leakage, platinum barrier, schottky rectifier diodes in a plastic envelope suitable for surface mounting, featuring low forward voltage drop, absence of stored charge, and guaranteed reverse surge capability. The devices are intended for use in switched mode power supplies and high frequency circuits in general where low conduction and zero switching losses are important.

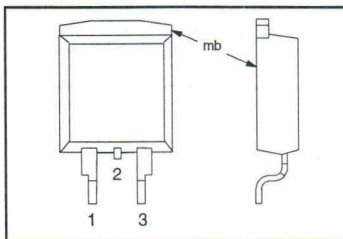
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
	PBYR20-	35CTB	40CTB	45CTB	
V_{RRM}	Repetitive peak reverse voltage	35	40	45	V
V_F	Forward voltage	0.57	0.57	0.57	V
$I_{O(AV)}$	Average output current (both diodes conducting)	20	20	20	A

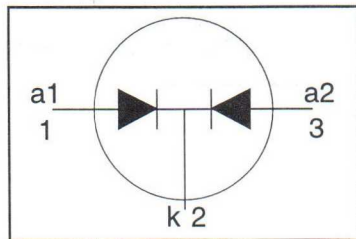
PINNING - SOT404

PIN	DESCRIPTION
1	anode 1
2	cathode
3	anode 2
mb	cathode

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{RRM}	Repetitive peak reverse voltage		-	-35	-40	-45	V
V_{RWM}	Crest working reverse voltage		-	35	40	45	V
V_R	Continuous reverse voltage	$T_{mb} \leq 143^\circ\text{C}$	-	35	40	45	V
$I_{O(AV)}$	Average output current (both diodes conducting)	square wave; $\delta = 0.5$; $T_{mb} \leq 129^\circ\text{C}$	-	20			A
$I_{O(RMS)}$	RMS output current (both diodes conducting)		-	28			A
I_{FRM}	Repetitive peak forward current per diode	$t = 25\ \mu\text{s}$; $\delta = 0.5$; $T_{mb} \leq 129^\circ\text{C}$	-	20			A
I_{FSM}	Non-repetitive peak forward current per diode	$t = 10\ \text{ms}$ $t = 8.3\ \text{ms}$ sinusoidal $T_j = 125^\circ\text{C}$ prior to surge; with reapplied $V_{RRM(max)}$	-	135			A
			-	150			A
I^2t	I^2t for fusing	$t = 10\ \text{ms}$	-	91			A ² s
I_{RRM}	Repetitive peak reverse current per diode.	$t_p = 2\ \mu\text{s}$; $\delta = 0.001$	-	1			A
I_{RSM}	Non-repetitive peak reverse current per diode.	$t_p = 100\ \mu\text{s}$	-	1			A
T_{stg}	Storage temperature		-65	175			$^\circ\text{C}$
T_j	Operating junction temperature		-	150			$^\circ\text{C}$

Rectifier diodes schottky barrier

PBYR2045CTB series

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-mb}$	Thermal resistance junction to mounting base	per diode	-	-	2.0	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	both diodes	-	-	1.5	K/W
		minimum footprint, FR4 board	-	50	-	K/W

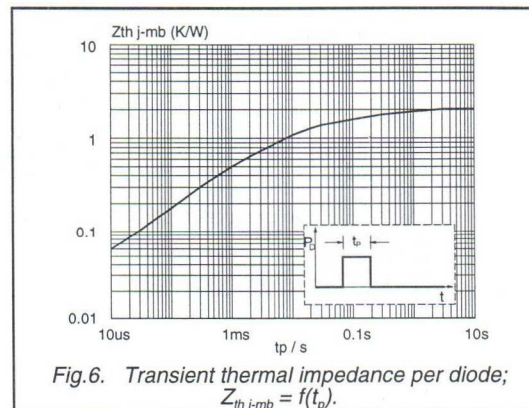
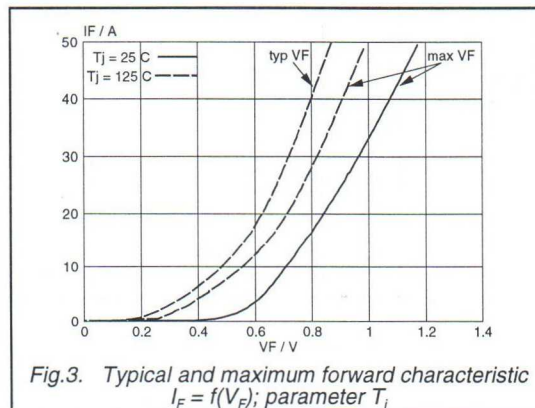
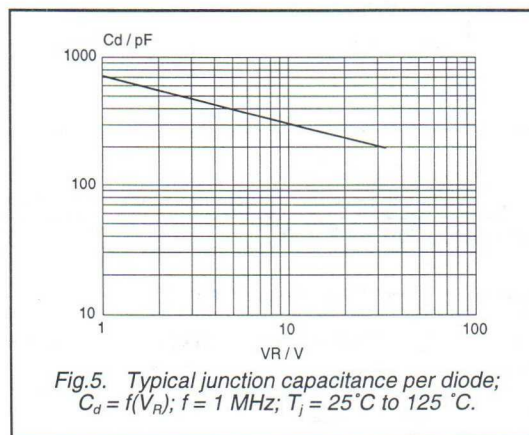
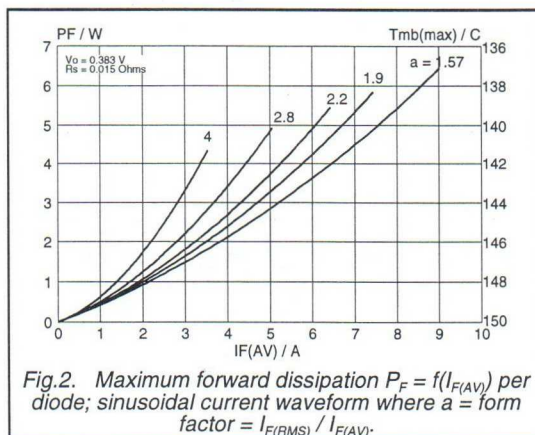
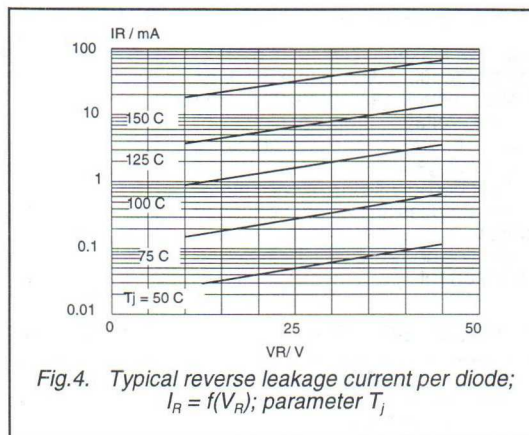
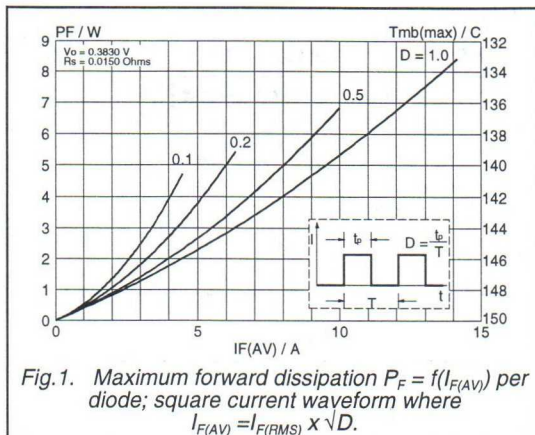
STATIC CHARACTERISTICS

$T_j = 25\text{ °C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage (per diode)	$I_F = 10\text{ A}; T_j = 125\text{ °C}$	-	0.50	0.57	V
		$I_F = 20\text{ A}; T_j = 125\text{ °C}$	-	0.65	0.72	V
I_R	Reverse current (per diode)	$I_F = 20\text{ A}$	-	0.78	0.84	
		$V_R = V_{RRM}$	-	50	100	μA
C_d	Junction capacitance (per diode)	$V_R = V_{RRM}; T_j = 125\text{ °C}$	-	13	26	mA
		$f = 1\text{ MHz}; V_R = 5\text{ V}; T_j = 25\text{ °C to }125\text{ °C}$	-	400	-	pF

Rectifier diodes schottky barrier

PBYR2045CTB series



Rectifier diodes schottky barrier

PBYR2045CTF series

GENERAL DESCRIPTION

Dual low leakage, platinum barrier, schottky rectifier diodes in a full pack plastic envelope, featuring low forward voltage drop, absence of stored charge, and guaranteed reverse surge capability. The devices are intended for use in switched mode power supplies and high frequency circuits in general where low conduction and zero switching losses are important.

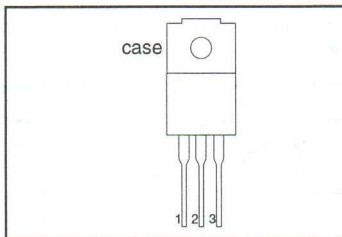
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
	PBYR20-	35CTF	40CTF	45CTF	
V_{RRM}	Repetitive peak reverse voltage	35	40	45	V
V_F	Forward voltage	0.57	0.57	0.57	V
$I_{O(AV)}$	Average output current (both diodes conducting)	20	20	20	A

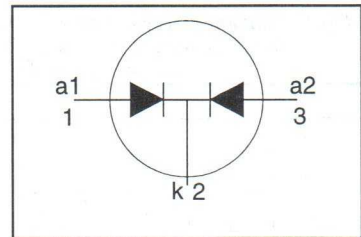
PINNING - SOT186

PIN	DESCRIPTION
1	anode 1 (a)
2	cathode (k)
3	anode 2 (a)

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{RRM}	Repetitive peak reverse voltage	$T_{hs} \leq 114\text{ }^{\circ}\text{C}$	-	-35	-40	-45	V
V_{RWM}	Crest working reverse voltage		-	35	40	45	V
V_R	Continuous reverse voltage		-	35	40	45	V
$I_{O(AV)}$	Average output current (both diodes conducting)	square wave; $\delta = 0.5$; $T_{hs} \leq 81\text{ }^{\circ}\text{C}$	-	20			A
$I_{O(RMS)}$	RMS output current (both diodes conducting)		-	20			A
I_{FRM}	Repetitive peak forward current per diode	$t = 25\text{ }\mu\text{s}$; $\delta = 0.5$; $T_{hs} \leq 81\text{ }^{\circ}\text{C}$	-	20			A
I_{FSM}	Non-repetitive peak forward current, per diode	$t = 10\text{ ms}$ $t = 8.3\text{ ms}$ sinusoidal $T_j = 125\text{ }^{\circ}\text{C}$ prior to surge; with reapplied $V_{RRM(max)}$	-	100			A
			-	110			A
I^2t	I^2t for fusing	$t = 10\text{ ms}$	-	50			A ² s
I_{RRM}	Repetitive peak reverse current per diode.	$t_p = 2\text{ }\mu\text{s}$; $\delta = 0.001$	-	1			A
I_{RSM}	Non-repetitive peak reverse current per diode.	$t_p = 100\text{ }\mu\text{s}$	-	1			A
T_{stg}	Storage temperature		-65	175			$^{\circ}\text{C}$
T_j	Operating junction temperature		-	150			$^{\circ}\text{C}$

Rectifier diodes schottky barrier

PBYR2045CTF series

ISOLATION LIMITING VALUE & CHARACTERISTIC

$T_{hs} = 25\text{ }^{\circ}\text{C}$ unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_{isol}	Repetitive peak voltage from all three terminals to external heatsink	R.H. $\leq 65\%$; clean and dustfree	-		1500	V
C_{isol}	Capacitance from T2 to external heatsink	$f = 1\text{ MHz}$	-	12	-	pF

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-hs}$	Thermal resistance junction to heatsink	per diode both diodes (with heatsink compound)	-	-	5.9	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	in free air.	-	55	-	K/W

STATIC CHARACTERISTICS

$T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage (per diode)	$I_F = 10\text{ A}$; $T_j = 125\text{ }^{\circ}\text{C}$	-	0.51	0.57	V
		$I_F = 20\text{ A}$; $T_j = 125\text{ }^{\circ}\text{C}$	-	0.67	0.72	V
		$I_F = 20\text{ A}$	-	0.79	0.84	V
I_R	Reverse current (per diode)	$V_R = V_{RRM}$	-	50	100	μA
		$V_R = V_{RRM}$; $T_j = 125\text{ }^{\circ}\text{C}$	-	13	26	mA
C_d	Junction capacitance (per diode)	$f = 1\text{ MHz}$; $V_R = 5\text{ V}$; $T_j = 25\text{ }^{\circ}\text{C}$ to $125\text{ }^{\circ}\text{C}$	-	400	-	pF

Rectifier diodes schottky barrier

PBYR2045CTF series

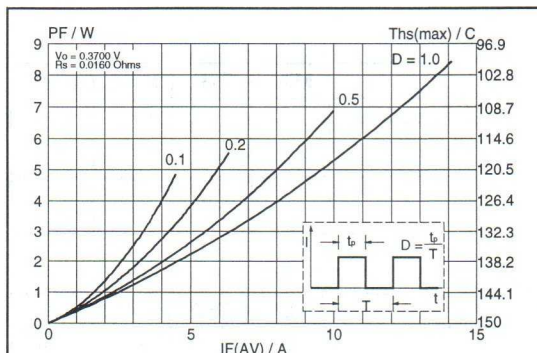


Fig. 1. Maximum forward dissipation $P_F = f(I_{F(AV)})$ per diode; square current waveform where $I_{F(AV)} = I_{F(RMS)} \times \sqrt{D}$.

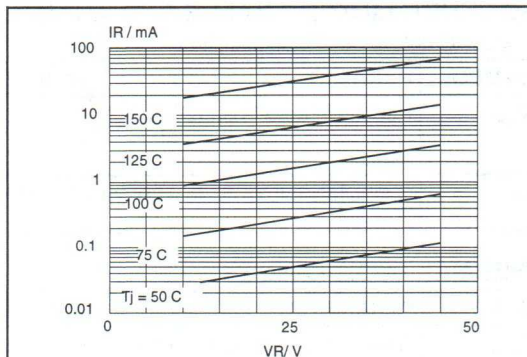


Fig. 4. Typical reverse leakage current per diode; $I_R = f(V_R)$; parameter T_J .

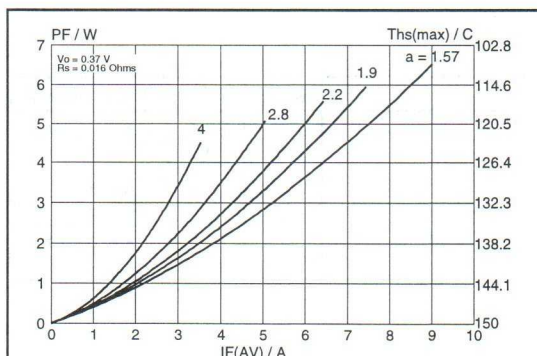


Fig. 2. Maximum forward dissipation $P_F = f(I_{F(AV)})$ per diode; sinusoidal current waveform where $a =$ form factor $= I_{F(RMS)} / I_{F(AV)}$.

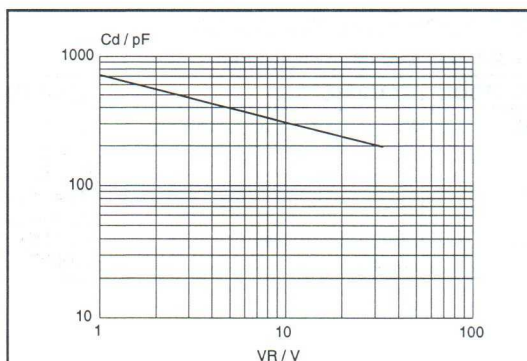


Fig. 5. Typical junction capacitance per diode; $C_d = f(V_R)$; $f = 1$ MHz; $T_J = 25^\circ\text{C}$ to 125°C .

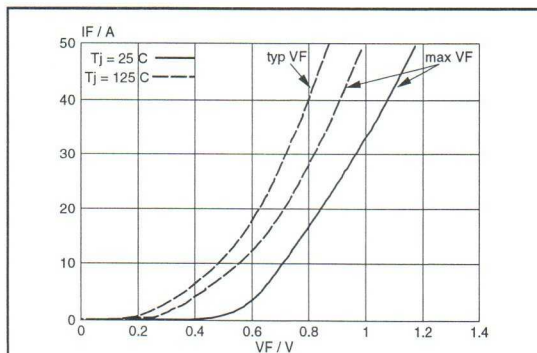


Fig. 3. Typical and maximum forward characteristic $I_F = f(V_F)$; parameter T_J .

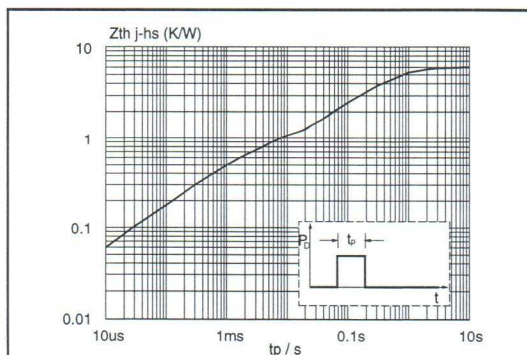


Fig. 6. Transient thermal impedance per diode; $Z_{th j-hs} = f(t_p)$.

Rectifier diodes schottky barrier

PBYR2045CTX series

GENERAL DESCRIPTION

Dual low leakage, platinum barrier, schottky rectifier diodes in a full pack plastic envelope, featuring low forward voltage drop, absence of stored charge, and guaranteed reverse surge capability. The devices are intended for use in switched mode power supplies and high frequency circuits in general where low conduction and zero switching losses are important.

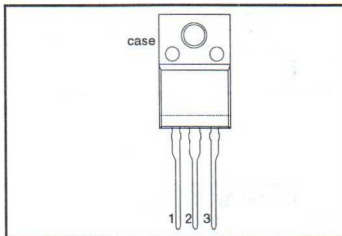
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
V_{RRM}	PBYR20- Repetitive peak reverse voltage	35CTX 35	40CTX 40	45CTX 45	V
V_F	Forward voltage	0.57	0.57	0.57	V
$I_{O(AV)}$	Average output current (both diodes conducting)	20	20	20	A

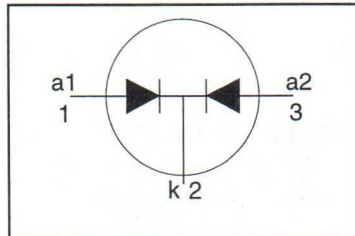
PINNING - SOT186A

PIN	DESCRIPTION
1	anode 1 (a)
2	cathode (k)
3	anode 2 (a)
case	isolated

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{RRM}	Repetitive peak reverse voltage	$T_{hs} \leq 114\text{ }^{\circ}\text{C}$	-	-35	-40	-45	V
V_{RWM}	Crest working reverse voltage		-	35	40	45	V
V_R	Continuous reverse voltage		-	35	40	45	V
$I_{O(AV)}$	Average output current (both diodes conducting)	square wave; $\delta = 0.5$; $T_{hs} \leq 81\text{ }^{\circ}\text{C}$	-	20			A
$I_{O(RMS)}$	RMS output current (both diodes conducting)		-	20			A
I_{FRM}	Repetitive peak forward current per diode	$t = 25\text{ }\mu\text{s}$; $\delta = 0.5$; $T_{hs} \leq 81\text{ }^{\circ}\text{C}$	-	20			A
I_{FSM}	Non-repetitive peak forward current, per diode	$t = 10\text{ ms}$	-	100			A
		$t = 8.3\text{ ms}$ sinusoidal $T_j = 125\text{ }^{\circ}\text{C}$ prior to surge; with reapplied $V_{RRM(max)}$	-	110			A
I^2t	I^2t for fusing	$t = 10\text{ ms}$	-	50			A ² s
I_{RRM}	Repetitive peak reverse current per diode.	$t_p = 2\text{ }\mu\text{s}$; $\delta = 0.001$	-	1			A
I_{RSM}	Non-repetitive peak reverse current per diode.	$t_p = 100\text{ }\mu\text{s}$	-	1			A
T_{stg}	Storage temperature		-65	175			$^{\circ}\text{C}$
T_j	Operating junction temperature		-	150			$^{\circ}\text{C}$

Rectifier diodes schottky barrier

PBYR2045CTX series

ISOLATION LIMITING VALUE & CHARACTERISTIC

$T_{hs} = 25\text{ }^{\circ}\text{C}$ unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_{isol}	R.M.S. isolation voltage from all three terminals to external heatsink	$f = 50\text{--}60\text{ Hz}$; sinusoidal waveform; $R.H. \leq 65\%$; clean and dustfree	-		2500	V
C_{isol}	Capacitance from T2 to external heatsink	$f = 1\text{ MHz}$	-	10	-	pF

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-hs}$	Thermal resistance junction to heatsink	per diode both diodes (with heatsink compound)	-	-	5.9	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	in free air.	-	55	-	K/W

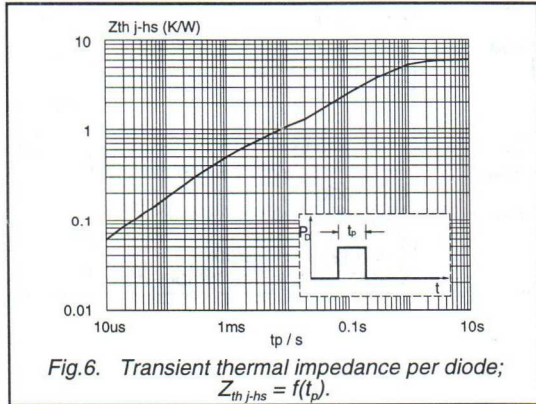
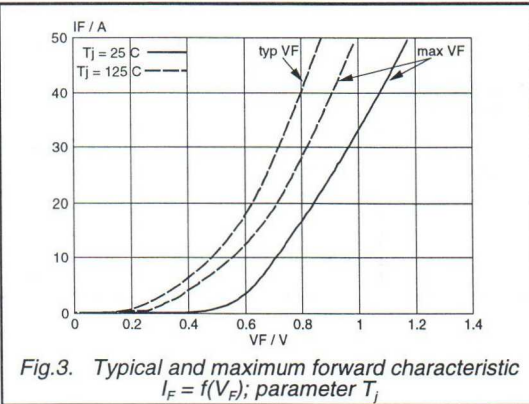
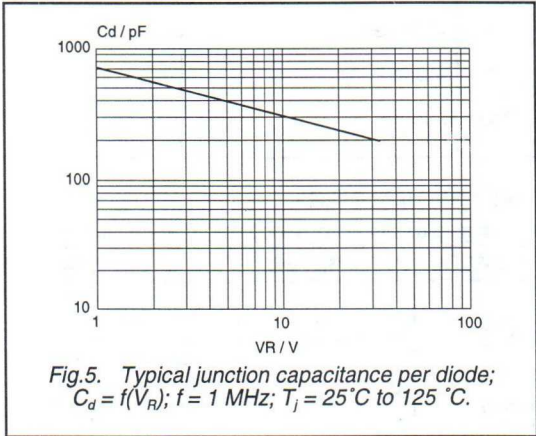
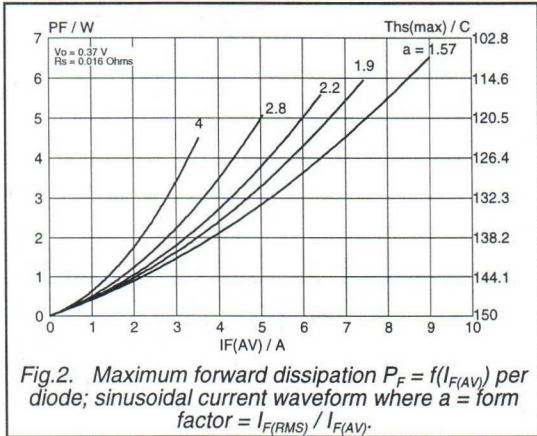
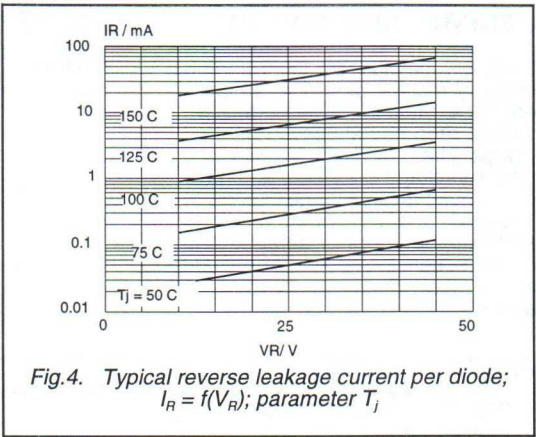
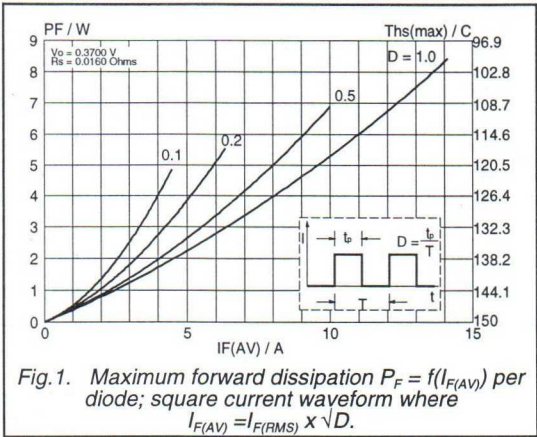
STATIC CHARACTERISTICS

$T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage (per diode)	$I_F = 10\text{ A}$; $T_j = 125\text{ }^{\circ}\text{C}$	-	0.51	0.57	V
		$I_F = 20\text{ A}$; $T_j = 125\text{ }^{\circ}\text{C}$	-	0.67	0.72	V
		$I_F = 20\text{ A}$	-	0.79	0.84	V
I_R	Reverse current (per diode)	$V_R = V_{RRM}$	-	50	100	μA
		$V_R = V_{RRM}$; $T_j = 125\text{ }^{\circ}\text{C}$	-	13	26	mA
C_d	Junction capacitance (per diode)	$f = 1\text{ MHz}$; $V_R = 5\text{ V}$; $T_j = 25\text{ }^{\circ}\text{C}$ to $125\text{ }^{\circ}\text{C}$	-	400	-	pF

Rectifier diodes
schottky barrier

PBYR2045CTX series



Rectifier diodes schottky barrier

PBYR20100CT series

GENERAL DESCRIPTION

Dual, low leakage, platinum barrier, schottky rectifier diodes in a plastic envelope featuring low forward voltage drop and absence of stored charge. These devices can withstand reverse voltage transients and have guaranteed reverse surge capability. The devices are intended for use in switched mode power supplies and high frequency circuits in general where low conduction and zero switching losses are important.

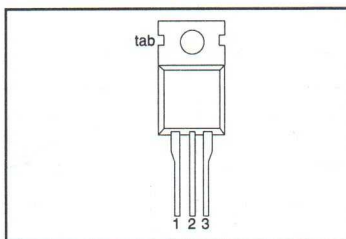
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
	PBYR20-	60CT	80CT	100CT	
V_{RRM}	Repetitive peak reverse voltage	60	80	100	V
V_F	Forward voltage	0.7	0.7	0.7	V
$I_{O(AV)}$	Output current (both diodes conducting)	20	20	20	A

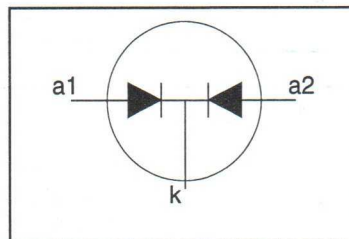
PINNING - TO220AB

PIN	DESCRIPTION
1	anode 1 (a)
2	cathode (k)
3	anode 2 (a)
tab	cathode (k)

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{RRM}	Repetitive peak reverse voltage	$T_{mb} \leq 139\text{ }^{\circ}\text{C}$	-	-60	-80	-100	V
V_{RWM}	Crest working reverse voltage		-	60	80	100	V
V_R	Continuous reverse voltage		-	60	80	100	V
$I_{O(AV)}$	Output current (both diodes conducting)	square wave; $\delta = 0.5$; $T_{mb} \leq 133\text{ }^{\circ}\text{C}$	-	20			A
$I_{O(RMS)}$	RMS forward current	$t = 25\text{ }\mu\text{s}$; $\delta = 0.5$; $T_{mb} \leq 133\text{ }^{\circ}\text{C}$	-	28			A
I_{FRM}	Repetitive peak forward current per diode		-	20			A
I_{FSM}	Non-repetitive peak forward current per diode.	$t = 10\text{ ms}$	-	135			A
		$t = 8.3\text{ ms}$	-	150			A
I^2t	I^2t for fusing	sinusoidal $T_j = 125\text{ }^{\circ}\text{C}$ prior to surge; with reapplied $V_{RWM(max)}$ $t = 10\text{ ms}$	-	91			A ² s
I_{RRM}	Repetitive peak reverse current per diode.	$t_p = 2\text{ }\mu\text{s}$; $\delta = 0.001$	-	1			A
I_{RSM}	Non-repetitive peak reverse current per diode.	$t_p = 100\text{ }\mu\text{s}$	-	1			A
T_{stg}	Storage temperature		-65	175			$^{\circ}\text{C}$
T_j	Operating junction temperature		-	150			$^{\circ}\text{C}$

Rectifier diodes schottky barrier

PBYR20100CT series

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-mb}$	Thermal resistance junction to mounting base	per diode	-	-	2.0	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	both diodes in free air.	-	-	1.0	K/W
			-	60	-	K/W

STATIC CHARACTERISTICS

$T_j = 25\ ^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage (per diode)	$I_F = 10\ \text{A}; T_j = 125\ ^\circ\text{C}$	-	0.61	0.70	V
		$I_F = 20\ \text{A}; T_j = 125\ ^\circ\text{C}$	-	0.74	0.85	V
		$I_F = 20\ \text{A}; T_j = 25\ ^\circ\text{C}$	-	0.88	0.95	V
I_R	Reverse current (per diode)	$V_R = V_{RWM}; T_j = 25\ ^\circ\text{C}$	-	5.0	150	μA
		$V_R = V_{RWM}; T_j = 125\ ^\circ\text{C}$	-	5.0	15	mA
C_d	Junction capacitance (per diode)	$f = 1\ \text{MHz}; V_R = 5\ \text{V}; T_j = 25\ ^\circ\text{C}$ to $125\ ^\circ\text{C}$	-	420	-	pF

Rectifier diodes schottky barrier

PBYR20100CT series

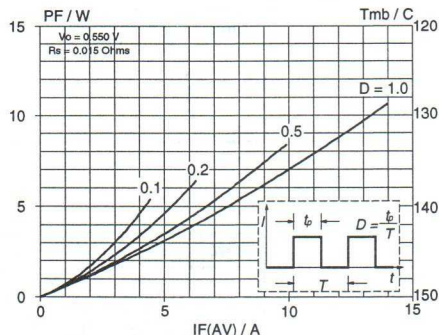


Fig.1. Maximum forward dissipation $P_F = f(I_{F(AV)})$ per diode; square current waveform where $I_{F(AV)} = I_{F(RMS)} \times \sqrt{D}$.

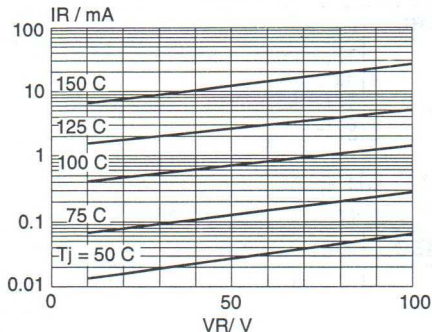


Fig.4. Typical reverse leakage current per diode; $I_R = f(V_R)$; parameter T_j

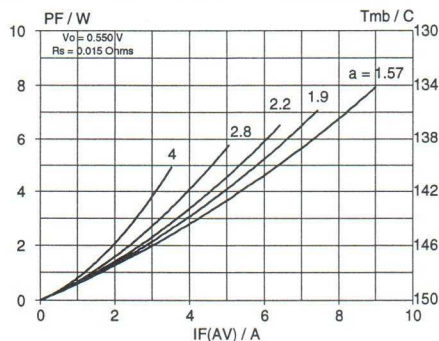


Fig.2. Maximum forward dissipation $P_F = f(I_{F(AV)})$ per diode; sinusoidal current waveform where $a = \text{form factor} = I_{F(RMS)} / I_{F(AV)}$.

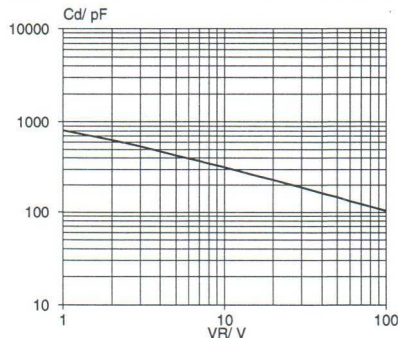


Fig.5. Typical junction capacitance per diode; $C_d = f(V_R)$; $f = 1$ MHz; $T_j = 25^\circ\text{C}$ to 125°C .

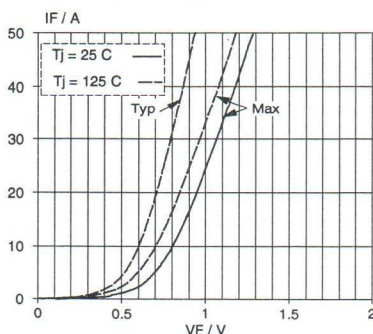


Fig.3. Typical and maximum forward characteristic $I_F = f(V_F)$; parameter T_j

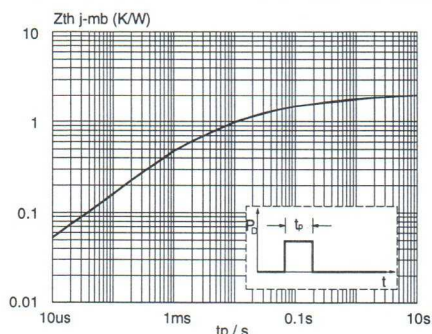


Fig.6. Transient thermal impedance per diode; $Z_{th j-mb} = f(t_p)$.

Rectifier diodes schottky barrier

PBYR20100CTB series

GENERAL DESCRIPTION

Dual low leakage, platinum barrier, schottky rectifier diodes in a plastic envelope suitable for surface mounting, featuring low forward voltage drop, absence of stored charge, and guaranteed reverse surge capability. The devices are intended for use in switched mode power supplies and high frequency circuits in general where low conduction and zero switching losses are important.

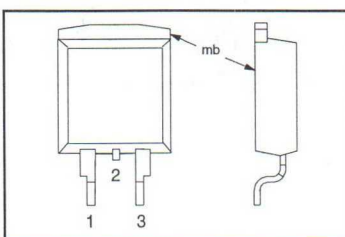
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
	PBYR20-	60CTB	80CTB	100CTB	
V_{RRM}	Repetitive peak reverse voltage	60	80	100	V
V_F	Forward voltage	0.7	0.7	0.7	V
$I_{O(AV)}$	Output current (both diodes conducting)	20	20	20	A

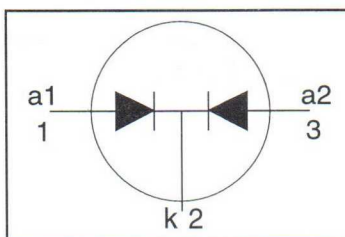
PINNING - SOT404

PIN	DESCRIPTION
1	anode 1
2	cathode
3	anode 2
mb	cathode

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{RRM}	Repetitive peak reverse voltage	$T_{mb} \leq 139\text{ }^{\circ}\text{C}$	-	-60	-80	-100	V
V_{RWM}	Crest working reverse voltage		-	60	80	100	V
V_R	Continuous reverse voltage		-	60	80	100	V
$I_{O(AV)}$	Output current (both diodes conducting)	square wave; $\delta = 0.5$; $T_{mb} \leq 133\text{ }^{\circ}\text{C}$	-	20			A
$I_{O(RMS)}$	RMS forward current	$t = 25\text{ }\mu\text{s}$; $\delta = 0.5$; $T_{mb} \leq 133\text{ }^{\circ}\text{C}$	-	28			A
I_{FRM}	Repetitive peak forward current per diode		-	20			A
I_{FSM}	Non-repetitive peak forward current per diode.	$t = 10\text{ ms}$ $t = 8.3\text{ ms}$ sinusoidal $T_j = 125\text{ }^{\circ}\text{C}$ prior to surge; with reapplied $V_{RRM(max)}$	-	135			A
			-	150			A
I^2t	I^2t for fusing	$t = 10\text{ ms}$	-	91			A ² s
I_{RRM}	Repetitive peak reverse current per diode.	$t_p = 2\text{ }\mu\text{s}$; $\delta = 0.001$	-	1			A
I_{RSM}	Non-repetitive peak reverse current per diode.	$t_p = 100\text{ }\mu\text{s}$	-	1			A
T_{slg}	Storage temperature		-65	175			$^{\circ}\text{C}$
T_j	Operating junction temperature		-	150			$^{\circ}\text{C}$

Rectifier diodes schottky barrier

PBYR20100CTB series

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-mb}$	Thermal resistance junction to mounting base	per diode	-	-	2.0	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	both diodes	-	-	1.0	K/W
		pcb mounted, minimum footprint	-	50	-	K/W

STATIC CHARACTERISTICS

$T_j = 25\ ^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage (per diode)	$I_F = 10\ \text{A}; T_j = 125\ ^\circ\text{C}$	-	0.61	0.70	V
		$I_F = 20\ \text{A}; T_j = 125\ ^\circ\text{C}$	-	0.74	0.85	V
		$I_F = 20\ \text{A}; T_j = 25\ ^\circ\text{C}$	-	0.88	0.95	V
I_R	Reverse current (per diode)	$V_R = V_{RRM}; T_j = 25\ ^\circ\text{C}$	-	5.0	150	μA
		$V_R = V_{RRM}; T_j = 125\ ^\circ\text{C}$	-	5.0	15	mA
C_d	Junction capacitance (per diode)	$f = 1\ \text{MHz}; V_R = 5\ \text{V}; T_j = 25\ ^\circ\text{C}$ to $125\ ^\circ\text{C}$	-	420	-	pF

Rectifier diodes schottky barrier

PBYR20100CTB series

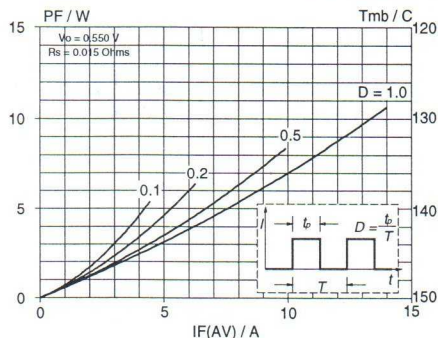


Fig. 1. Maximum forward dissipation $P_F = f(I_{F(AV)})$ per diode; square current waveform where $I_{F(AV)} = I_{F(RMS)} \times \sqrt{D}$.

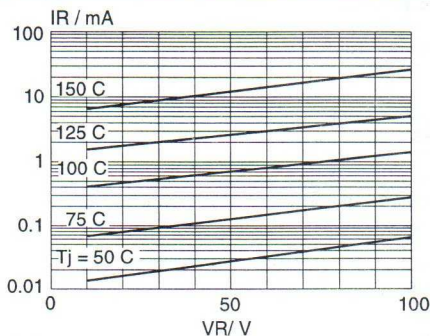


Fig. 4. Typical reverse leakage current per diode; $I_R = f(V_R)$; parameter T_J .

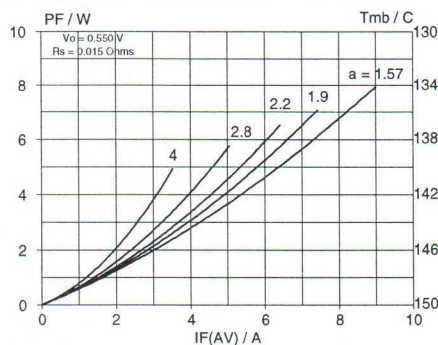


Fig. 2. Maximum forward dissipation $P_F = f(I_{F(AV)})$ per diode; sinusoidal current waveform where $a = \text{form factor} = I_{F(RMS)} / I_{F(AV)}$.

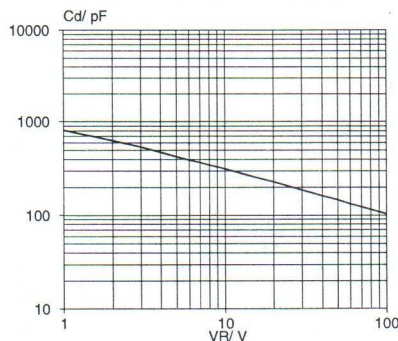


Fig. 5. Typical junction capacitance per diode; $C_d = f(V_R)$; $f = 1$ MHz; $T_J = 25^\circ\text{C}$ to 125°C .

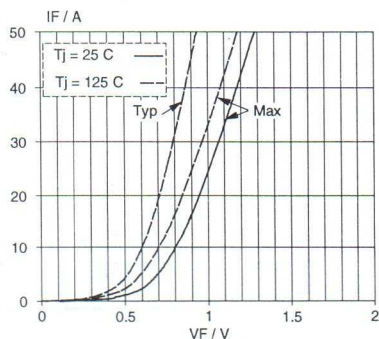


Fig. 3. Typical and maximum forward characteristic $I_F = f(V_F)$; parameter T_J .

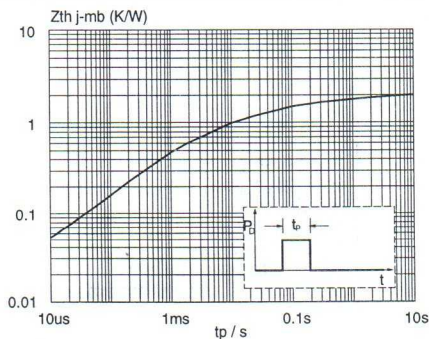


Fig. 6. Transient thermal impedance per diode; $Z_{th j-mb} = f(t_p)$.

Rectifier diodes schottky barrier

PBYR2525CT series

GENERAL DESCRIPTION

Dual nickel silicide schottky barrier rectifier diodes in a plastic envelope featuring low forward voltage drop and absence of stored charge. These devices can withstand reverse voltage transients and have guaranteed reverse surge capability. The devices are intended for use in switched mode power supplies with 3 V - 3.3 V outputs, or as or-ing diodes in fault tolerant power supply systems.

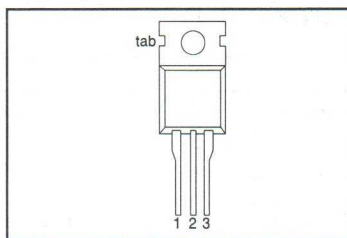
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	UNIT
V_{RRM}	Repetitive peak reverse voltage	20CT 20	25CT 25	V
V_F	Forward voltage	0.41	0.41	V
$I_{O(AV)}$	Average output current (both diodes conducting)	30	30	A

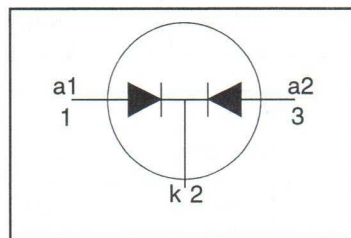
PINNING - TO220AB

PIN	DESCRIPTION
1	anode 1 (a)
2	cathode (k)
3	anode 2 (a)
tab	cathode (k)

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{RRM}	Repetitive peak reverse voltage	$T_{mb} \leq 109\text{ }^{\circ}\text{C}$	-	-20 20	V
V_{RWM}	Crest working reverse voltage		-	20	V
V_R	Continuous reverse voltage		-	20	V
$I_{O(AV)}$	Average output current (both diodes conducting)	square wave; $\delta = 0.5$; $T_{mb} \leq 135\text{ }^{\circ}\text{C}$	-	30	A
$I_{O(RMS)}$	RMS output current (both diodes conducting)		-	43	A
I_{FRM}	Repetitive peak forward current per diode	$t = 25\text{ }\mu\text{s}$; $\delta = 0.5$; $T_{mb} \leq 135\text{ }^{\circ}\text{C}$	-	30	A
I_{FSM}	Non-repetitive peak forward current, per diode	$t = 10\text{ ms}$ $t = 8.3\text{ ms}$ sinusoidal $T_j = 125\text{ }^{\circ}\text{C}$ prior to surge; with reapplied $V_{RRM(max)}$	-	180 200	A A
I^2t	I^2t for fusing	$t = 10\text{ ms}$	-	162	A ² s
I_{RRM}	Repetitive peak reverse current per diode	$t_p = 2\text{ }\mu\text{s}$; $\delta = 0.001$	-	2	A
I_{RSM}	Non-repetitive peak reverse current per diode	$t_p = 100\text{ }\mu\text{s}$	-	2	A
T_{stg}	Storage temperature		-65	175	$^{\circ}\text{C}$
T_j	Operating junction temperature		-	150	$^{\circ}\text{C}$

Rectifier diodes
schottky barrier

PBYR2525CT series

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-mb}$	Thermal resistance junction to mounting base	per diode	-	-	1.5	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	both diodes in free air	-	-	1.0	K/W
			-	60	-	K/W

STATIC CHARACTERISTICS

 $T_j = 25\ ^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage (per diode)	$I_F = 15\ \text{A}; T_j = 125\ ^\circ\text{C}$	-	0.33	0.41	V
		$I_F = 30\ \text{A}; T_j = 125\ ^\circ\text{C}$	-	0.43	0.50	V
		$I_F = 30\ \text{A}$	-	0.51	0.60	V
I_R	Reverse current (per diode)	$V_R = V_{RRM}$	-	2.0	10	mA
		$V_R = V_{RRM}; T_j = 100\ ^\circ\text{C}$	-	30	80	mA
C_d	Junction capacitance (per diode)	$f = 1\ \text{MHz}; V_R = 5\ \text{V}; T_j = 25\ ^\circ\text{C}$ to $125\ ^\circ\text{C}$	-	900	-	pF

Rectifier diodes schottky barrier

PBYR2045CTF series

GENERAL DESCRIPTION

Dual, low leakage, platinum barrier, schottky barrier rectifier diodes in a full pack, plastic envelope featuring low forward voltage drop and absence of stored charge. These devices can withstand reverse voltage transients and have guaranteed reverse surge capability. The devices are intended for use in switched mode power supplies and high frequency circuits in general where low conduction and zero switching losses are important.

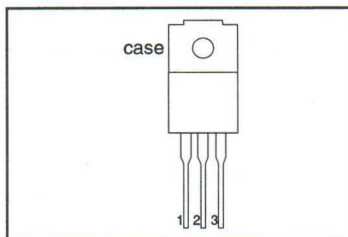
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
		35CTF	40CTF	45CTF	
V_{RRM}	Repetitive peak reverse voltage	35	40	45	V
V_F	Forward voltage	0.57	0.57	0.57	V
$I_{O(AV)}$	Output current (both diodes conducting)	20	20	20	A

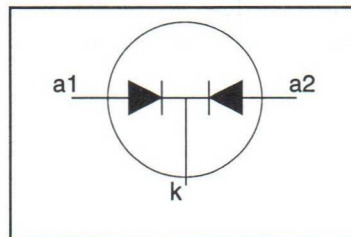
PINNING - SOT186

PIN	DESCRIPTION
1	anode 1 (a)
2	cathode (k)
3	anode 2 (a)

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{RRM}	Repetitive peak reverse voltage	$T_{hs} \leq 114\text{ }^{\circ}\text{C}$	-	-35	-40	-45	V
V_{RWM}	Crest working reverse voltage		-	35	40	45	V
V_R	Continuous reverse voltage		-	35	40	45	V
$I_{O(AV)}$	Output current (both diodes conducting)	square wave; $\delta = 0.5$; $T_{hs} \leq 82\text{ }^{\circ}\text{C}$	-	20			A
$I_{O(RMS)}$	RMS forward current	$t = 25\text{ }\mu\text{s}$; $\delta = 0.5$; $T_{hs} \leq 82\text{ }^{\circ}\text{C}$	-	28			A
I_{FRM}	Repetitive peak forward current per diode		-	20			A
I_{FSM}	Non-repetitive peak forward current per diode	$t = 10\text{ ms}$ $t = 8.3\text{ ms}$ sinusoidal; $T_j = 125\text{ }^{\circ}\text{C}$ prior to surge; with reapplied $V_{RWM(max)}$	-	100			A
			-	110			A
I^2t	I^2t for fusing	$t = 10\text{ ms}$	-	50			A ² s
I_{RRM}	Repetitive peak reverse current per diode.	$t_p = 2\text{ }\mu\text{s}$; $\delta = 0.001$	-	1			A
I_{RSM}	Non-repetitive peak reverse current per diode.	$t_p = 100\text{ }\mu\text{s}$	-	1			A
T_{stg}	Storage temperature		-65	175			$^{\circ}\text{C}$
T_j	Operating junction temperature		-	150			$^{\circ}\text{C}$

Rectifier diodes schottky barrier

PBYR2045CTF series

ISOLATION

$T_{hs} = 25\text{ }^{\circ}\text{C}$ unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_{isol}	Repetitive peak voltage from all three terminals to external heatsink	R.H. $\leq 65\%$; clean and dustfree	-	-	1500	V
C_{isol}	Capacitance from T2 to external heatsink	$f = 1\text{ MHz}$	-	12	-	pF

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-hs}$	Thermal resistance junction to heatsink	per diode	-	-	5.9	K/W
		both diodes	-	-	5.0	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	(with heatsink compound) in free air.	-	55	-	K/W

STATIC CHARACTERISTICS

$T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage (per diode)	$I_F = 10\text{ A}$; $T_j = 125\text{ }^{\circ}\text{C}$	-	0.51	0.57	V
		$I_F = 20\text{ A}$; $T_j = 125\text{ }^{\circ}\text{C}$	-	0.67	0.72	V
		$I_F = 20\text{ A}$	-	0.79	0.84	V
I_R	Reverse current (per diode)	$V_R = V_{RWM}$	-	50	100	μA
		$V_R = V_{RWM}$; $T_j = 125\text{ }^{\circ}\text{C}$	-	13	26	mA
C_d	Junction capacitance (per diode)	$f = 1\text{ MHz}$; $V_R = 5\text{ V}$; $T_j = 25\text{ }^{\circ}\text{C}$ to $125\text{ }^{\circ}\text{C}$	-	400	-	pF

Rectifier diodes
schottky barrier

PBYR2045CTF series

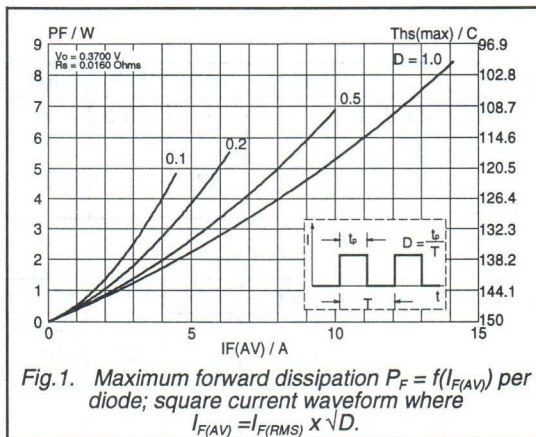


Fig.1. Maximum forward dissipation $P_F = f(I_F(AV))$ per diode; square current waveform where $I_F(AV) = I_F(RMS) \times \sqrt{D}$.

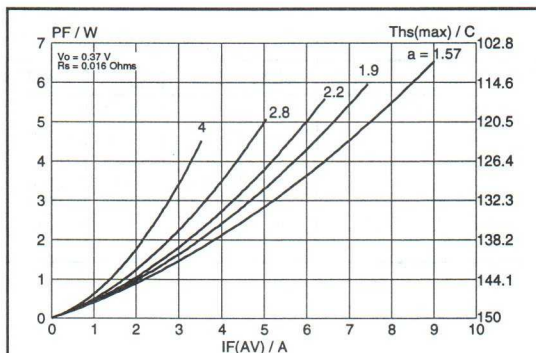


Fig.2. Maximum forward dissipation $P_F = f(I_F(AV))$ per diode; sinusoidal current waveform where $a =$ form factor $= I_F(RMS) / I_F(AV)$.

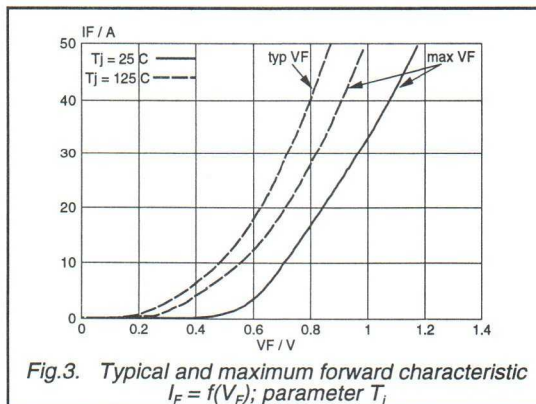


Fig.3. Typical and maximum forward characteristic $I_F = f(V_F)$; parameter T_j .

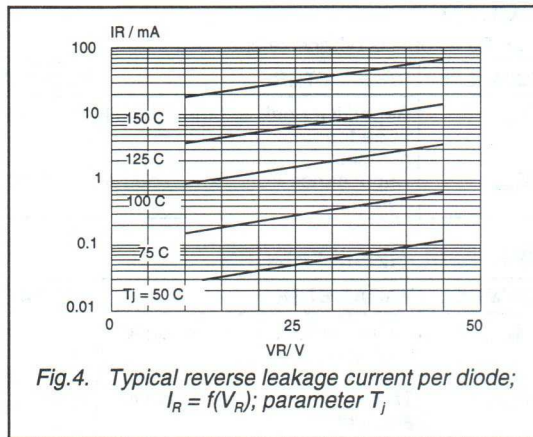


Fig.4. Typical reverse leakage current per diode; $I_R = f(V_R)$; parameter T_j .

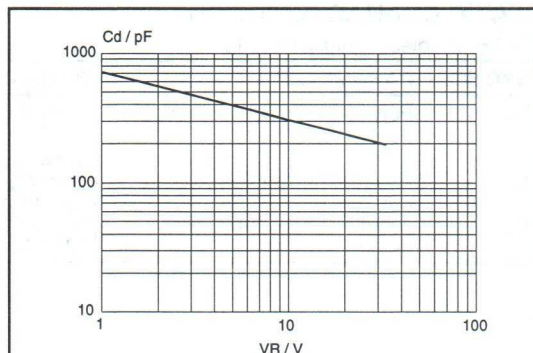


Fig.5. Typical junction capacitance per diode; $C_d = f(V_R)$; $f = 1$ MHz; $T_j = 25$ °C to 125 °C.

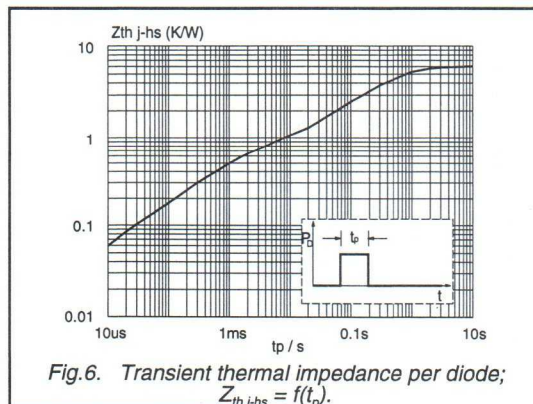


Fig.6. Transient thermal impedance per diode; $Z_{th j-hs} = f(t_p)$.

Rectifier diodes
schottky barrier

PBYR2545CTB series

GENERAL DESCRIPTION

Dual low leakage, platinum barrier, schottky rectifier diodes in a plastic envelope suitable for surface mounting, featuring low forward voltage drop, absence of stored charge, and guaranteed reverse surge capability. The devices are intended for use in switched mode power supplies and high frequency circuits in general where low conduction and zero switching losses are important.

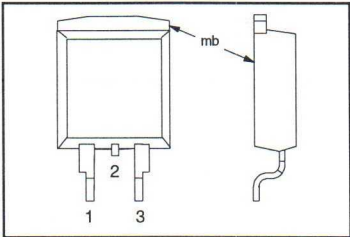
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
	PBYR25-	35CTB	40CTB	45CTB	
V_{RRM}	Repetitive peak reverse voltage	35	40	45	V
V_F	Forward voltage	0.62	0.62	0.62	V
$I_{O(AV)}$	Average output current (both diodes conducting)	30	30	30	A

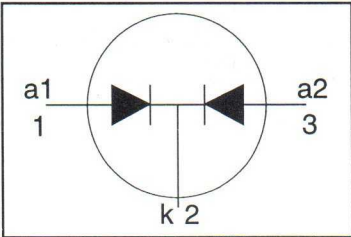
PINNING - SOT404

PIN	DESCRIPTION
1	anode 1
2	cathode
3	anode 2
mb	cathode

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{RRM}	Repetitive peak reverse voltage	$T_{mb} \leq 136\text{ }^{\circ}\text{C}$	-	-35	-40	-45	V
V_{RWM}	Crest working reverse voltage		-	35	40	45	V
V_R	Continuous reverse voltage		-	60	80	100	V
$I_{O(AV)}$	Average output current (both diodes conducting)	square wave; $\delta = 0.5$; $T_{mb} \leq 130\text{ }^{\circ}\text{C}$	-	30			A
$I_{O(RMS)}$	RMS output current (both diodes conducting)		-	43			A
I_{FRM}	Repetitive peak forward current per diode	$t = 25\text{ }\mu\text{s}$; $\delta = 0.5$; $T_{mb} \leq 130\text{ }^{\circ}\text{C}$	-	30			A
I_{FSM}	Non-repetitive peak forward current, per diode	$t = 10\text{ ms}$ $t = 8.3\text{ ms}$ sinusoidal $T_j = 125\text{ }^{\circ}\text{C}$ prior to surge; with reapplied	-	135			A
			-	150			A
I^2t	I^2t for fusing	$V_{RRM(max)}$ $t = 10\text{ ms}$	-	91			A ² s
I_{RRM}	Repetitive peak reverse current per diode.	$t_p = 2\text{ }\mu\text{s}$; $\delta = 0.001$	-	1			A
I_{RSM}	Non-repetitive peak reverse current per diode.	$t_p = 100\text{ }\mu\text{s}$	-	1			A
T_{stg}	Storage temperature		-65	175			$^{\circ}\text{C}$
T_j	Operating junction temperature		-	150			$^{\circ}\text{C}$

Rectifier diodes
schottky barrier

PBYR2545CTB series

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-mb}$	Thermal resistance junction to mounting base	per diode	-	-	1.5	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	both diodes minumum footprint, FR4 board	-	50	1.0	K/W

STATIC CHARACTERISTICS

$T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage (per diode)	$I_F = 30\text{ A}; T_j = 125^{\circ}\text{C}$	-	0.65	0.73	V
		$I_F = 20\text{ A}; T_j = 125^{\circ}\text{C}$	-	0.53	0.62	V
		$I_F = 30\text{ A}$	-	0.77	0.82	V
I_R	Reverse current (per diode)	$V_R = V_{RRM}$	-	100	200	μA
		$V_R = V_{RRM}; T_j = 125\text{ }^{\circ}\text{C}$	-	12	40	mA
C_d	Junction capacitance (per diode)	$f = 1\text{ MHz}; V_R = 5\text{ V}; T_j = 25\text{ }^{\circ}\text{C}$ to $125\text{ }^{\circ}\text{C}$	-	800	-	pF

Rectifier diodes schottky barrier

PBYR2545CTB series

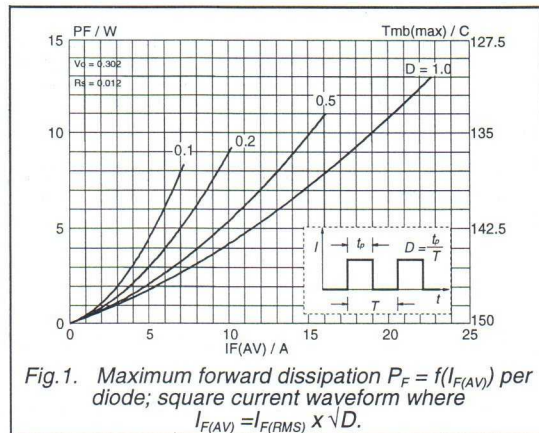


Fig.1. Maximum forward dissipation $P_F = f(I_F(AV))$ per diode; square current waveform where $I_F(AV) = I_F(RMS) \times \sqrt{D}$.

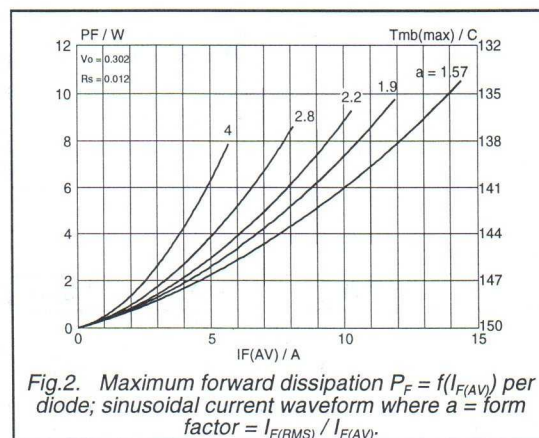


Fig.2. Maximum forward dissipation $P_F = f(I_F(AV))$ per diode; sinusoidal current waveform where $a = \text{form factor} = I_F(RMS) / I_F(AV)$.

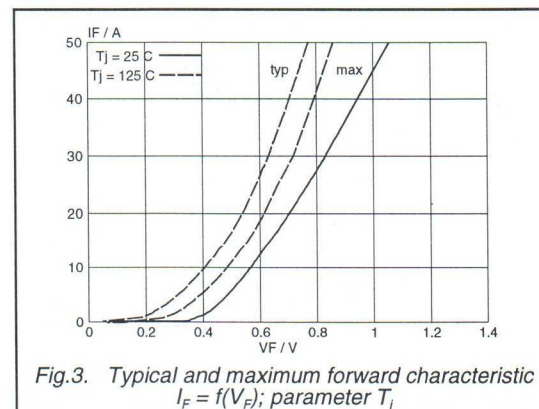


Fig.3. Typical and maximum forward characteristic $I_F = f(V_F)$; parameter T_J .

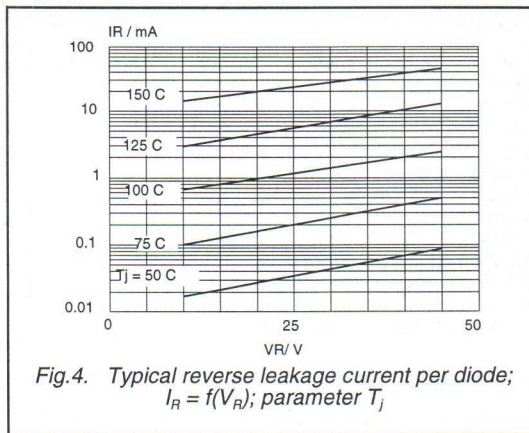


Fig.4. Typical reverse leakage current per diode; $I_R = f(V_R)$; parameter T_J .

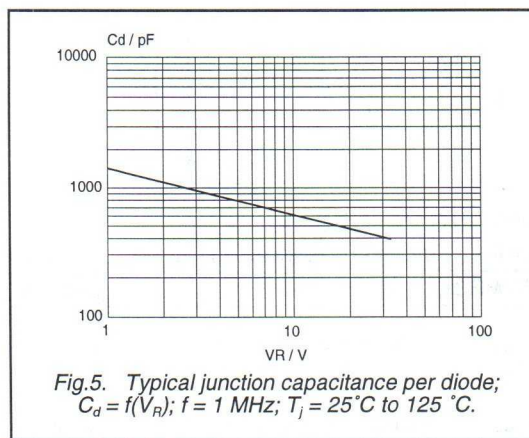


Fig.5. Typical junction capacitance per diode; $C_d = f(V_R)$; $f = 1 \text{ MHz}$; $T_J = 25^\circ\text{C}$ to 125°C .

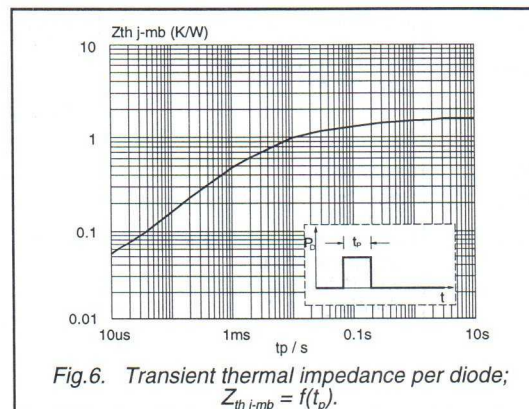


Fig.6. Transient thermal impedance per diode; $Z_{th j-mb} = f(t_p)$.

Rectifier diodes
schottky barrier

PBYR2545CTF series

GENERAL DESCRIPTION

Dual, low leakage, platinum barrier, schottky barrier rectifier diodes in a full pack, plastic envelope featuring low forward voltage drop and absence of stored charge. These devices can withstand reverse voltage transients and have guaranteed reverse surge capability. The devices are intended for use in switched mode power supplies and high frequency circuits in general where low conduction and zero switching losses are important.

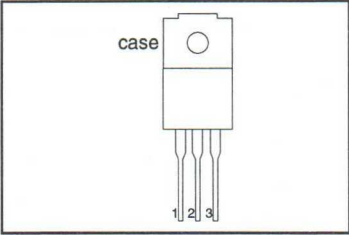
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
V_{RRM} V_F $I_{O(AV)}$	PBYR25- Repetitive peak reverse voltage Forward voltage Output current (both diodes conducting)	35CTF	40CTF	45CTF	
		35	40	45	V
		0.65	0.65	0.65	V
		20	20	20	A

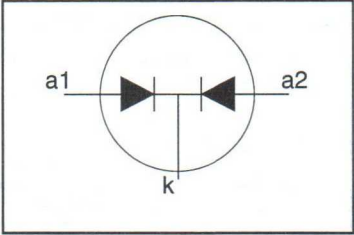
PINNING - SOT186

PIN	DESCRIPTION
1	anode 1 (a)
2	cathode (k)
3	anode 2 (a)

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{RRM}	Repetitive peak reverse voltage	$T_{hs} \leq 111\text{ }^{\circ}\text{C}$	-	-35	-40	-45	V
V_{RWM}	Crest working reverse voltage		-	35	40	45	V
V_R	Continuous reverse voltage		-	35	40	45	V
$I_{O(AV)}$	Output current (both diodes conducting)	square wave; $\delta = 0.5$; $T_{hs} \leq 104\text{ }^{\circ}\text{C}$	-	20			A
$I_{O(RMS)}$	RMS forward current	$t = 25\text{ }\mu\text{s}$; $\delta = 0.5$; $T_{hs} \leq 104\text{ }^{\circ}\text{C}$	-	20			A
I_{FRM}	Repetitive peak forward current per diode		-	20			A
I_{FSM}	Non-repetitive peak forward current per diode	$t = 10\text{ ms}$ $t = 8.3\text{ ms}$ sinusoidal; $T_j = 125\text{ }^{\circ}\text{C}$ prior to surge; with reapplied $V_{RWM(max)}$	-	135			A
I^2t	I^2t for fusing	$t = 10\text{ ms}$	-	91			A ² s
I_{RRM}	Repetitive peak reverse current per diode.	$t_p = 2\text{ }\mu\text{s}$; $\delta = 0.001$	-	1			A
I_{RSM}	Non-repetitive peak reverse current per diode.	$t_p = 100\text{ }\mu\text{s}$	-	1			A
T_{stg}	Storage temperature		-65	175			$^{\circ}\text{C}$
T_j	Operating junction temperature		-	150			$^{\circ}\text{C}$

Rectifier diodes schottky barrier

PBYR2545CTF series

ISOLATION

$T_{hs} = 25\text{ }^{\circ}\text{C}$ unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_{isol}	Repetitive peak voltage from all three terminals to external heatsink	R.H. $\leq 65\%$; clean and dustfree	-	-	1500	V
C_{isol}	Capacitance from T2 to external heatsink	$f = 1\text{ MHz}$	-	12	-	pF

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-hs}$	Thermal resistance junction to heatsink	per diode	-	-	4.8	K/W
		both diodes (with heatsink compound)	-	-	4.0	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	in free air.	-	55	-	K/W

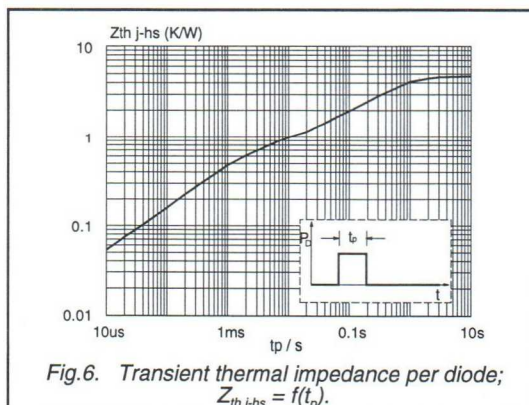
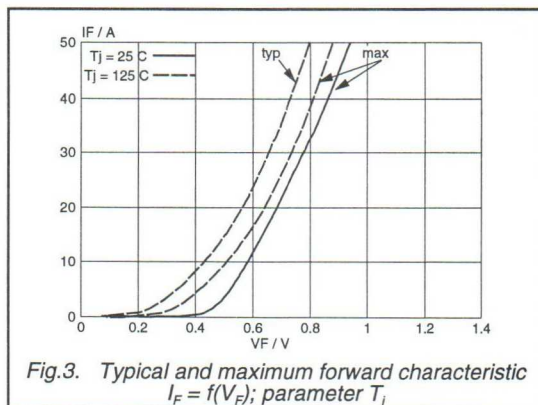
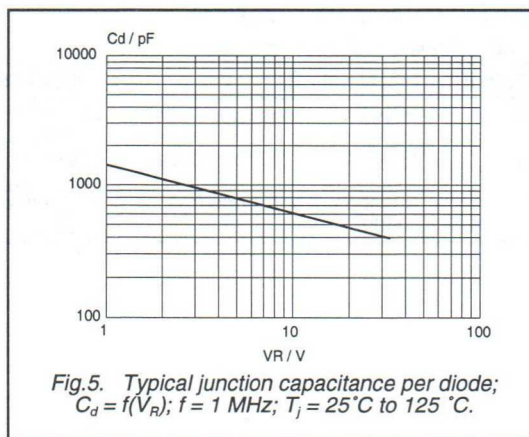
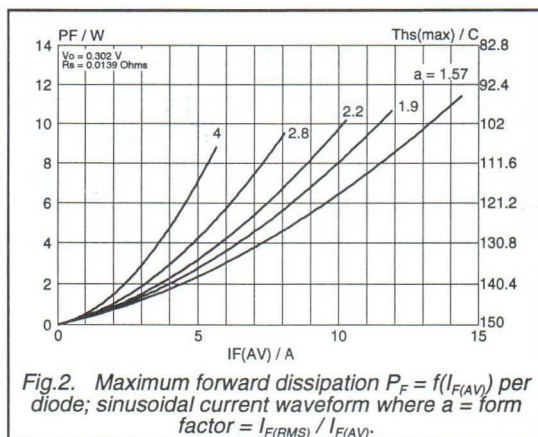
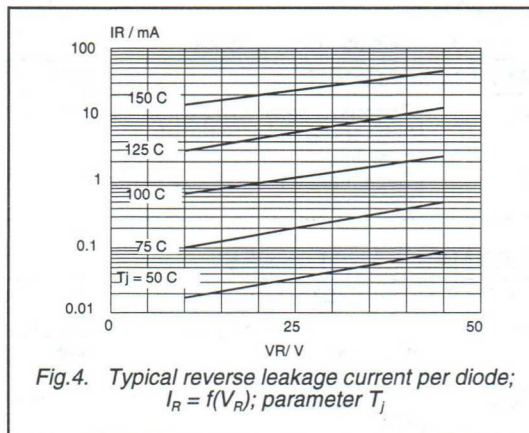
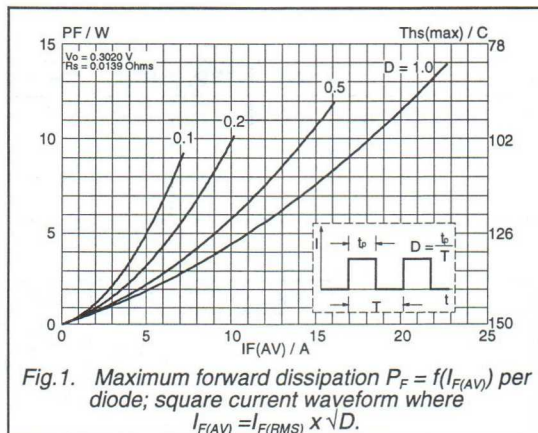
STATIC CHARACTERISTICS

$T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage (per diode)	$I_F = 20\text{ A}$; $T_j = 125\text{ }^{\circ}\text{C}$	-	0.58	0.65	V
		$I_F = 20\text{ A}$	-	0.63	0.68	V
I_R	Reverse current (per diode)	$V_R = V_{RWM}$	-	100	200	μA
		$V_R = V_{RWM}$; $T_j = 125\text{ }^{\circ}\text{C}$	-	12	40	mA
C_d	Junction capacitance (per diode)	$f = 1\text{ MHz}$; $V_R = 5\text{ V}$; $T_j = 25\text{ }^{\circ}\text{C}$ to $125\text{ }^{\circ}\text{C}$	-	800	-	pF

Rectifier diodes schottky barrier

PBYR2545CTF series



Rectifier diodes schottky barrier

PBYR2545CTX series

GENERAL DESCRIPTION

Dual low leakage, platinum barrier, schottky rectifier diodes in a full pack plastic envelope, featuring low forward voltage drop, absence of stored charge, and guaranteed reverse surge capability. The devices are intended for use in switched mode power supplies and high frequency circuits in general where low conduction and zero switching losses are important.

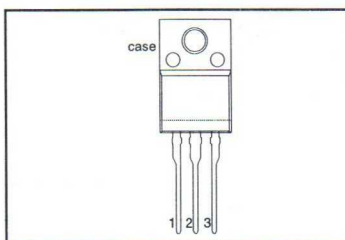
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
V_{RRM}	PBYR25- Repetitive peak reverse voltage	35CTX 35	40CTX 40	45CTX 45	V
V_F	Forward voltage	0.65	0.65	0.65	V
$I_{O(AV)}$	Average output current (both diodes conducting)	20	20	20	A

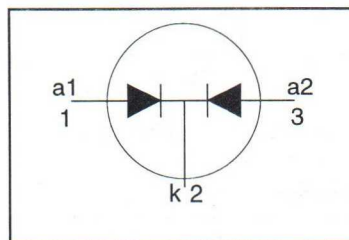
PINNING - SOT186A

PIN	DESCRIPTION
1	anode 1 (a)
2	cathode (k)
3	anode 2 (a)
case	isolated

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{RRM}	Repetitive peak reverse voltage	$T_{hs} \leq 111\text{ }^{\circ}\text{C}$	-	-35	-40	-45	V
V_{RWM}	Crest working reverse voltage		-	35	40	45	V
V_R	Continuous reverse voltage		-	60	80	100	V
$I_{O(AV)}$	Average output current (both diodes conducting)	square wave; $\delta = 0.5$; $T_{hs} \leq 103\text{ }^{\circ}\text{C}$	-	20			A
$I_{O(RMS)}$	RMS output current (both diodes conducting)		-	20			A
I_{FRM}	Repetitive peak forward current per diode	$t = 25\text{ }\mu\text{s}$; $\delta = 0.5$; $T_{hs} \leq 103\text{ }^{\circ}\text{C}$	-	20			A
I_{FSM}	Non-repetitive peak forward current, per diode	$t = 10\text{ ms}$ $t = 8.3\text{ ms}$ sinusoidal $T_j = 125\text{ }^{\circ}\text{C}$ prior to surge; with reapplied	-	135			A
			-	150			A
I^2t	I^2t for fusing	$V_{RRM(max)}$ $t = 10\text{ ms}$	-	91			A ² s
I_{RRM}	Repetitive peak reverse current per diode.	$t_p = 2\text{ }\mu\text{s}$; $\delta = 0.001$	-	1			A
I_{RSM}	Non-repetitive peak reverse current per diode.	$t_p = 100\text{ }\mu\text{s}$	-	1			A
T_{stg}	Storage temperature		-65	175			$^{\circ}\text{C}$
T_j	Operating junction temperature		-	150			$^{\circ}\text{C}$

Rectifier diodes schottky barrier

PBYR2545CTX series

ISOLATION LIMITING VALUE & CHARACTERISTIC

$T_{hs} = 25\text{ }^{\circ}\text{C}$ unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_{isol}	R.M.S. isolation voltage from all three terminals to external heatsink	$f = 50\text{--}60\text{ Hz}$; sinusoidal waveform; $R.H. \leq 65\%$; clean and dustfree	-		2500	V
C_{isol}	Capacitance from T2 to external heatsink	$f = 1\text{ MHz}$	-	10	-	pF

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-hs}$	Thermal resistance junction to heatsink	per diode	-	-	4.8	K/W
		both diodes	-	-	4.0	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	(with heatsink compound) in free air.	-	55	-	K/W

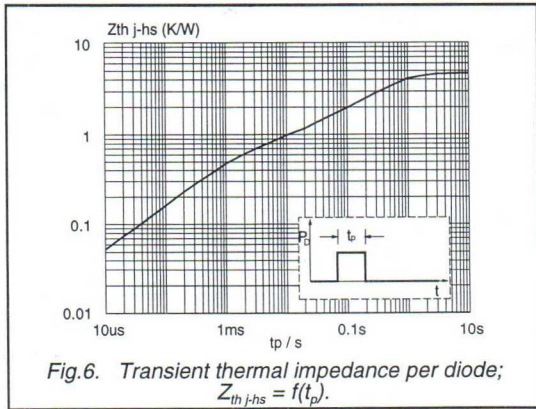
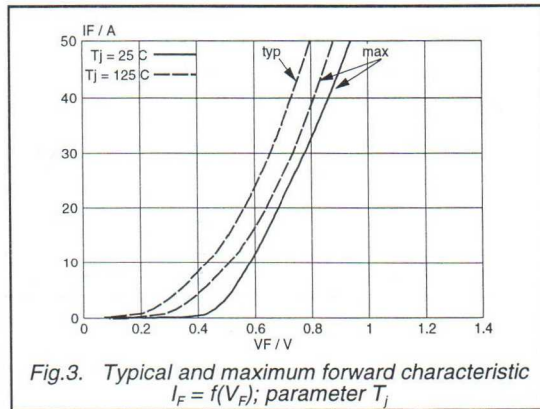
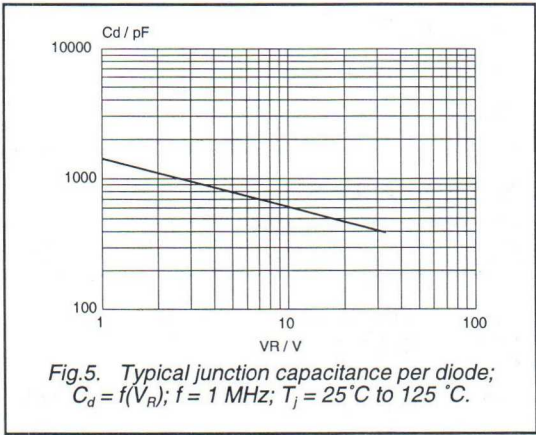
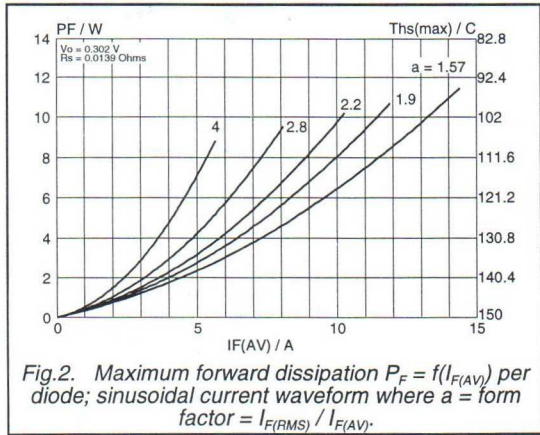
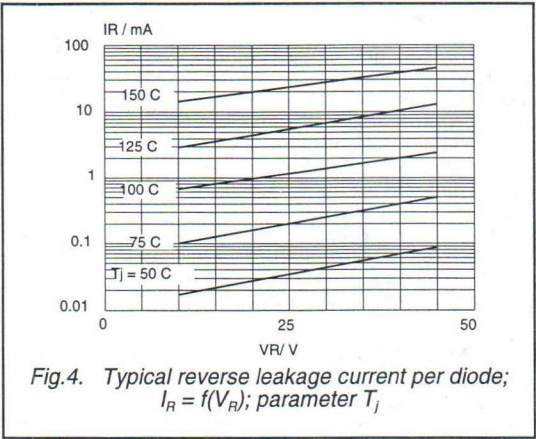
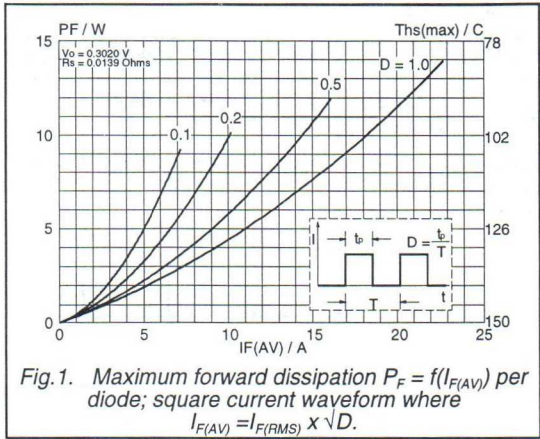
STATIC CHARACTERISTICS

$T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage (per diode)	$I_F = 20\text{ A}$; $T_j = 125\text{ }^{\circ}\text{C}$	-	0.58	0.65	V
		$I_F = 20\text{ A}$	-	0.63	0.68	V
I_R	Reverse current (per diode)	$V_R = V_{RRM}$	-	100	200	μA
		$V_R = V_{RRM}$; $T_j = 125\text{ }^{\circ}\text{C}$	-	12	40	mA
C_d	Junction capacitance (per diode)	$f = 1\text{ MHz}$; $V_R = 5\text{ V}$; $T_j = 25\text{ }^{\circ}\text{C}$ to $125\text{ }^{\circ}\text{C}$	-	800	-	pF

Rectifier diodes
schottky barrier

PBYR2545CTX series



Rectifier diodes schottky barrier

PBYR3045PT series

GENERAL DESCRIPTION

Dual, low leakage, platinum barrier, schottky rectifier diodes in a plastic envelope featuring low forward voltage drop and absence of stored charge. These devices can withstand reverse voltage transients and have guaranteed reverse surge capability. The devices are intended for use in switched mode power supplies and high frequency circuits in general where low conduction and zero switching losses are important.

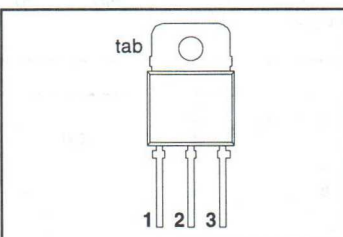
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
	PBYR30-	35PT	40PT	45PT	
V_{RRM}	Repetitive peak reverse voltage	35	40	45	V
V_F	Forward voltage	0.60	0.60	0.60	V
$I_{O(AV)}$	Output current (both diodes conducting)	30	30	30	A

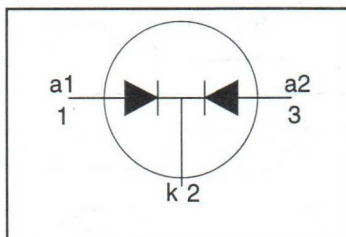
PINNING - SOT93

PIN	DESCRIPTION
1	Anode 1 (a)
2	Cathode (k)
3	Anode 2 (a)
tab	Cathode (k)

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{RRM}	Repetitive peak reverse voltage	$T_{mb} \leq 136\text{ }^{\circ}\text{C}$	-	-35	-40	-45	V
V_{RWM}	Crest working reverse voltage		-	35	40	45	V
V_R	Continuous reverse voltage		-	35	40	45	V
$I_{O(AV)}$	Output current (both diodes conducting) ¹	square wave; $\delta = 0.5$; $T_{mb} \leq 130\text{ }^{\circ}\text{C}$	-	30			A
$I_{O(RMS)}$	RMS forward current	$t = 25\text{ }\mu\text{s}$; $\delta = 0.5$; $T_{mb} \leq 130\text{ }^{\circ}\text{C}$	-	43			A
I_{FRM}	Repetitive peak forward current per diode		-	30			A
I_{FSM}	Non-repetitive peak forward current per diode	$t = 10\text{ ms}$	-	180			A
		$t = 8.3\text{ ms}$ sinusoidal $T_j = 125\text{ }^{\circ}\text{C}$ prior to surge; with reapplied $V_{RWM(max)}$	-	200			A
I^2t	I^2t for fusing	$t = 10\text{ ms}$	-	162			A ² s
I_{RRM}	Repetitive peak reverse current per diode.	$t_p = 2\text{ }\mu\text{s}$; $\delta = 0.001$	-	2			A
I_{RSM}	Non-repetitive peak reverse current per diode.	$t_p = 100\text{ }\mu\text{s}$	-	2			A
T_{stg}	Storage temperature		-65	175			$^{\circ}\text{C}$
T_j	Operating junction temperature		-	150			$^{\circ}\text{C}$

¹ For output currents in excess of 20 A connection should be made to the exposed metal mounting base.

Rectifier diodes schottky barrier

PBYR3045PT series

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-mb}$	Thermal resistance junction to mounting base	per diode	-	-	1.4	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	both diodes in free air.	-	-	1.0	K/W
			-	45	-	K/W

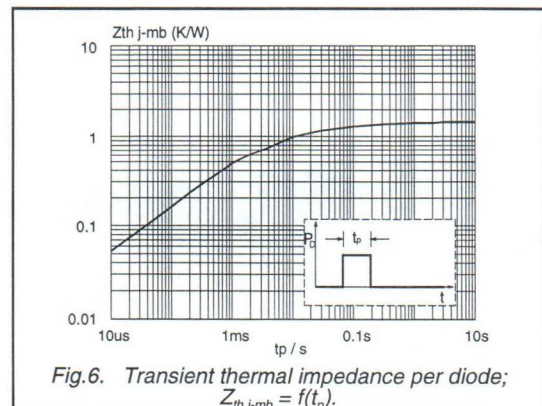
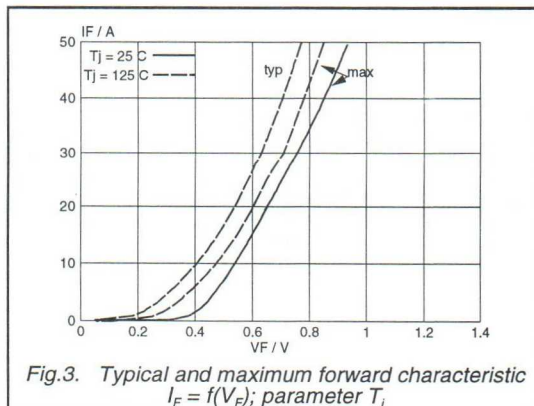
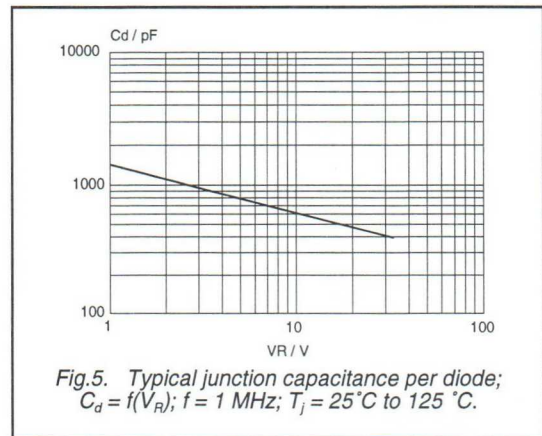
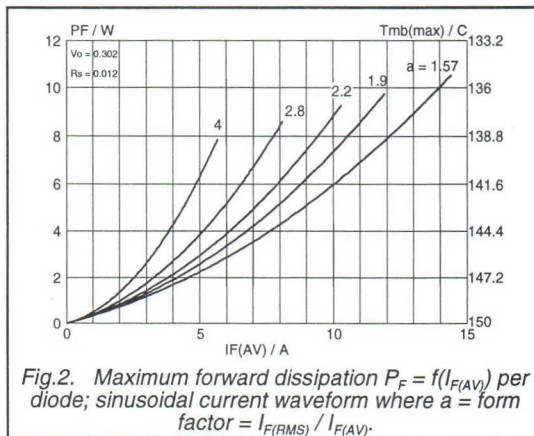
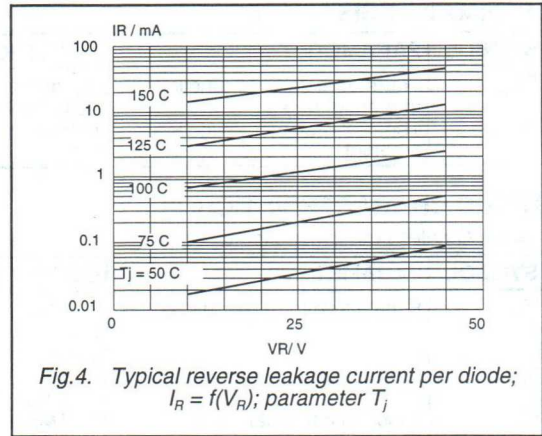
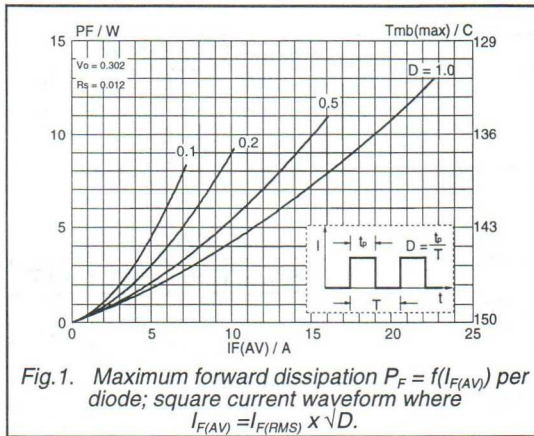
STATIC CHARACTERISTICS

$T_j = 25\ ^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage (per diode)	$I_F = 20\ \text{A}; T_j = 125\ ^\circ\text{C}$	-	0.55	0.60	V
		$I_F = 30\ \text{A}; T_j = 125\ ^\circ\text{C}$	-	0.67	0.72	V
		$I_F = 30\ \text{A}$	-	0.71	0.76	
I_R	Reverse current (per diode)	$V_R = V_{RWM}$	-	100	200	μA
		$V_R = V_{RWM}; T_j = 125\ ^\circ\text{C}$	-	12	40	mA
C_d	Junction capacitance (per diode)	$f = 1\ \text{MHz}; V_R = 5\ \text{V}; T_j = 25\ ^\circ\text{C}$ to $125\ ^\circ\text{C}$	-	800	-	pF

Rectifier diodes schottky barrier

PBYR3045PT series



Rectifier diodes schottky barrier

PBYR3045PTF series

GENERAL DESCRIPTION

Dual, low leakage, platinum barrier, schottky barrier rectifier diodes in a full pack, plastic envelope featuring low forward voltage drop and absence of stored charge. These devices can withstand reverse voltage transients and have guaranteed reverse surge capability. The devices are intended for use in switched mode power supplies and high frequency circuits in general where low conduction and zero switching losses are important.

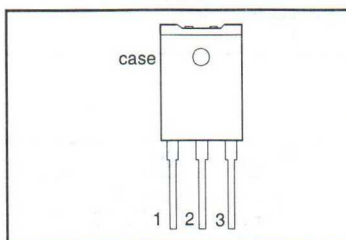
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
V_{RRM}	PBYR30- Repetitive peak reverse voltage	35PTF 35	40PTF 40	45PTF 45	V
V_F	Forward voltage	0.65	0.65	0.65	V
$I_{O(AV)}$	Output current (both diodes conducting)	20	20	20	A

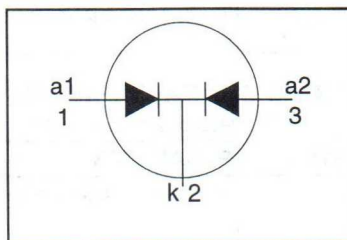
PINNING - SOT199

PIN	DESCRIPTION
1	anode 1 (a)
2	cathode (k)
3	anode 2 (a)

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{RRM}	Repetitive peak reverse voltage	$T_{hs} \leq 113\text{ }^{\circ}\text{C}$	-	-35 35	-40 40	-45 45	V
V_{RWM}	Crest working reverse voltage		-	35	40	45	V
V_R	Continuous reverse voltage		-	35	40	45	V
$I_{O(AV)}$	Output current (both diodes conducting)	square wave; $\delta = 0.5$; $T_{hs} \leq 109\text{ }^{\circ}\text{C}$	-	20			A
$I_{O(RMS)}$	RMS forward current	$t = 25\text{ }\mu\text{s}$; $\delta = 0.5$; $T_{hs} \leq 109\text{ }^{\circ}\text{C}$	-	20			A
I_{FRM}	Repetitive peak forward current per diode		-	30			A
I_{FSM}	Non-repetitive peak forward current per diode.	$t = 10\text{ ms}$ $t = 8.3\text{ ms}$ sinusoidal; $T_j = 125\text{ }^{\circ}\text{C}$ prior to surge; with reapplied $V_{RWM(max)}$	-	135			A
			-	150			A
I^2t	I^2t for fusing	$t = 10\text{ ms}$	-	91			A ² s
I_{RRM}	Repetitive peak reverse current per diode.	$t_p = 2\text{ }\mu\text{s}$; $\delta = 0.001$	-	2			A
I_{RSM}	Non-repetitive peak reverse current per diode.	$t_p = 100\text{ }\mu\text{s}$	-	2			A
T_{stg}	Storage temperature		-65	175			$^{\circ}\text{C}$
T_j	Operating junction temperature		-	150			$^{\circ}\text{C}$

Rectifier diodes schottky barrier

PBYR3045PTF series

ISOLATION LIMITING VALUE & CHARACTERISTIC

$T_{hs} = 25\text{ }^{\circ}\text{C}$ unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_{isol}	Repetitive peak voltage from all three terminals to external heatsink	R.H. $\leq 65\%$; clean and dustfree	-		2500	V
C_{isol}	Capacitance from T2 to external heatsink	$f = 1\text{ MHz}$	-	22	-	pF

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-hs}$	Thermal resistance junction to heatsink	per diode	-	-	4.0	K/W
		both diodes	-	-	3.5	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	(with heatsink compound) in free air.	-	35	-	K/W

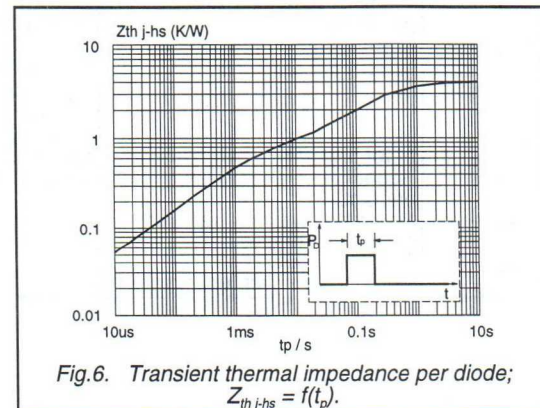
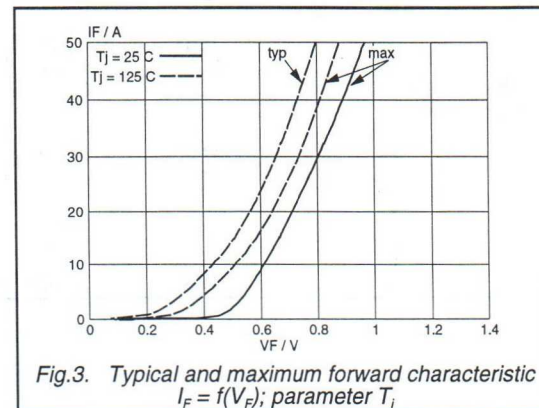
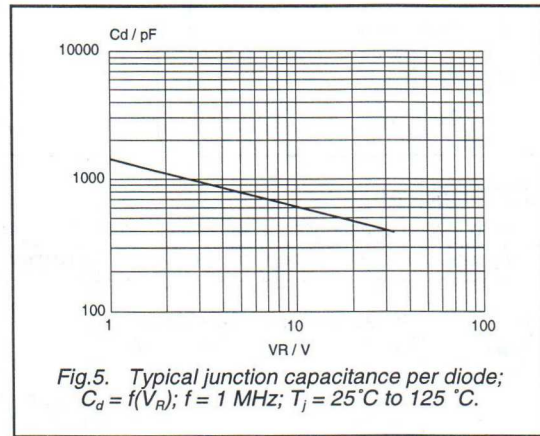
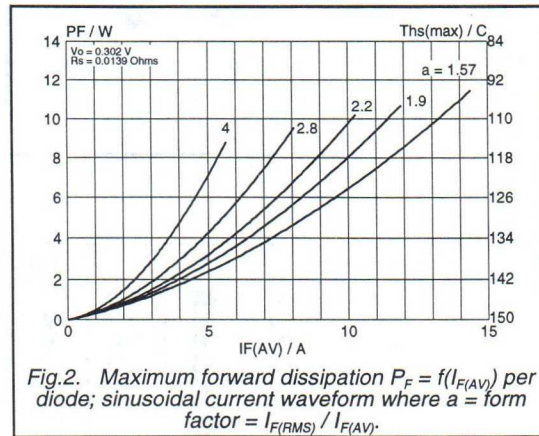
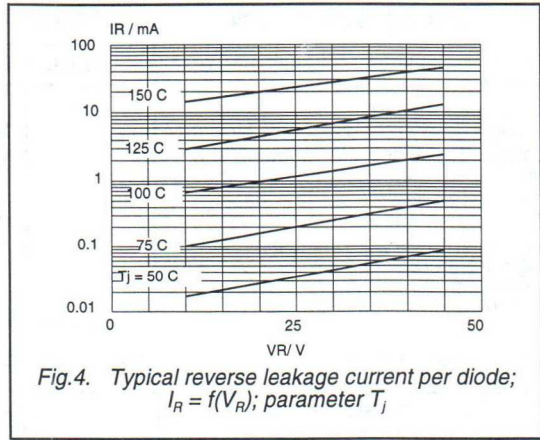
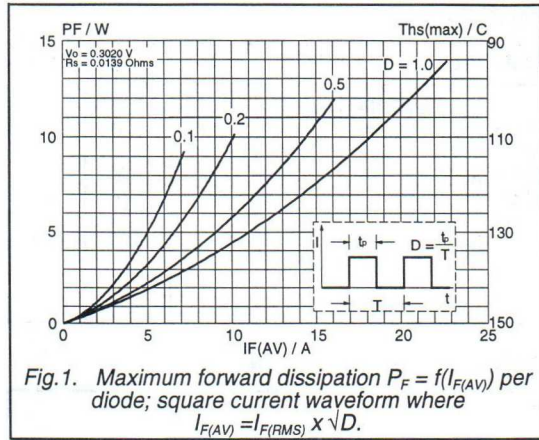
STATIC CHARACTERISTICS

$T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage (per diode)	$I_F = 30\text{ A}$; $T_j = 125\text{ }^{\circ}\text{C}$	-	0.70	0.75	V
		$I_F = 20\text{ A}$; $T_j = 125\text{ }^{\circ}\text{C}$	-	0.58	0.65	V
		$I_F = 30\text{ A}$	-	0.75	0.80	V
I_R	Reverse current (per diode)	$V_R = V_{RWM}$	-	100	200	μA
		$V_R = V_{RWM}$; $T_j = 125\text{ }^{\circ}\text{C}$	-	12	40	mA
C_d	Junction capacitance (per diode)	$f = 1\text{ MHz}$; $V_R = 5\text{ V}$; $T_j = 25\text{ }^{\circ}\text{C}$ to $125\text{ }^{\circ}\text{C}$	-	800	-	pF

Rectifier diodes schottky barrier

PBYR3045PTF series



Rectifier diodes schottky barrier

PBYR30100PT series

GENERAL DESCRIPTION

Dual, low leakage, platinum barrier schottky rectifier diodes in a plastic envelope featuring low forward voltage drop and absence of stored charge. These devices can withstand reverse voltage transients and have guaranteed reverse surge capability. The devices are intended for use in switched mode power supplies and high frequency circuits in general where low conduction and zero switching losses are important.

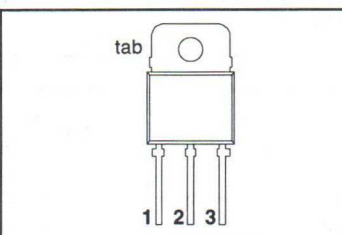
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
		60PT	80PT	100PT	
V_{RRM}	Repetitive peak reverse voltage	60	80	100	V
V_F	Forward voltage	0.7	0.7	0.7	V
$I_{O(AV)}$	Output current (both diodes conducting)	30	30	30	A

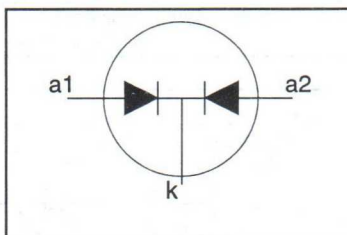
PINNING - SOT93

PIN	DESCRIPTION
1	Anode 1 (a)
2	Cathode (k)
3	Anode 2 (a)
tab	Cathode (k)

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{RRM}	Repetitive peak reverse voltage		-	-60	-80	-100	V
V_{RWM}	Crest working reverse voltage		-	60	80	100	V
V_R	Continuous reverse voltage	$T_{mb} \leq 139\text{ }^{\circ}\text{C}$	-	60	80	100	V
$I_{O(AV)}$	Output current (both diodes conducting) ¹	square wave; $\delta = 0.5$; $T_{mb} \leq 124\text{ }^{\circ}\text{C}$	-	30			A
$I_{O(RMS)}$	RMS forward current		-	43			A
I_{FRM}	Repetitive peak forward current per diode	$t = 25\text{ }\mu\text{s}$; $\delta = 0.5$; $T_{mb} \leq 124\text{ }^{\circ}\text{C}$	-	30			A
I_{FSM}	Non-repetitive peak forward current per diode.	$t = 10\text{ ms}$	-	180			A
		$t = 8.3\text{ ms}$ sinusoidal; $T_j = 125\text{ }^{\circ}\text{C}$ prior to surge; with reapplied $V_{RWM(max)}$	-	200			A
I^2t	I^2t for fusing	$t = 10\text{ ms}$	-	162			A ² s
I_{RRM}	Repetitive peak reverse current per diode.	$t_p = 2\text{ }\mu\text{s}$; $\delta = 0.001$	-	1			A
I_{RSM}	Non-repetitive peak reverse current per diode.	$t_p = 100\text{ }\mu\text{s}$	-	1			A
T_{stg}	Storage temperature		-65	175			$^{\circ}\text{C}$
T_j	Operating junction temperature		-	150			$^{\circ}\text{C}$

¹ For output currents in excess of 20 A connection should be made to the exposed metal mounting base.

Rectifier Diode Schottky Barrier

PBYR30100PT series

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-mb}$	Thermal resistance junction to mounting base	per diode	-	-	1.4	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	both diodes in free air.	-	45	1.0	K/W
			-		-	K/W

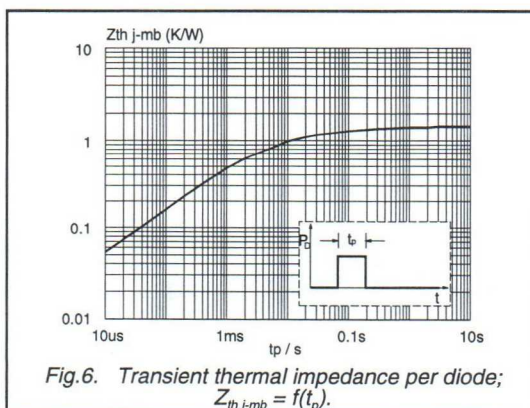
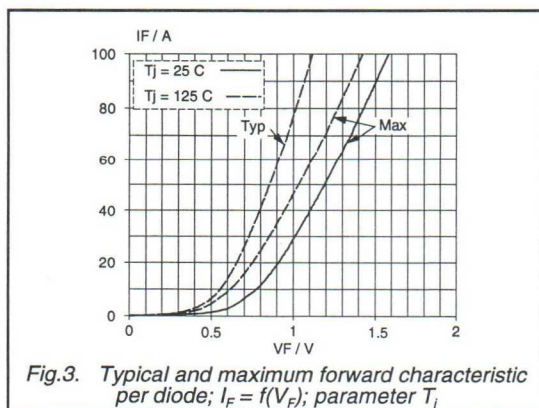
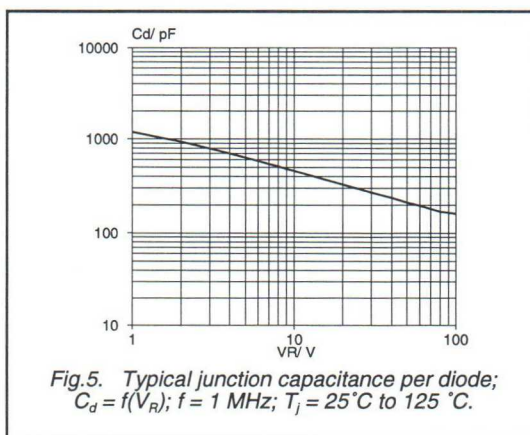
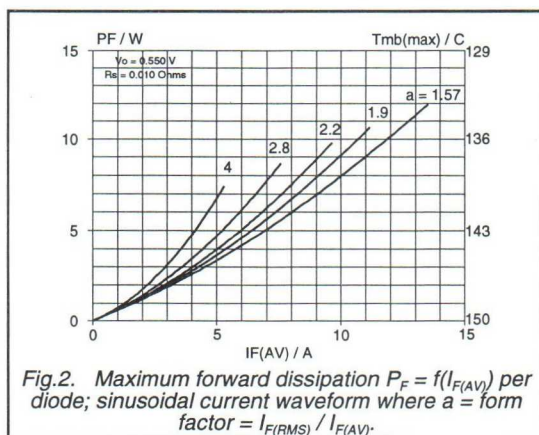
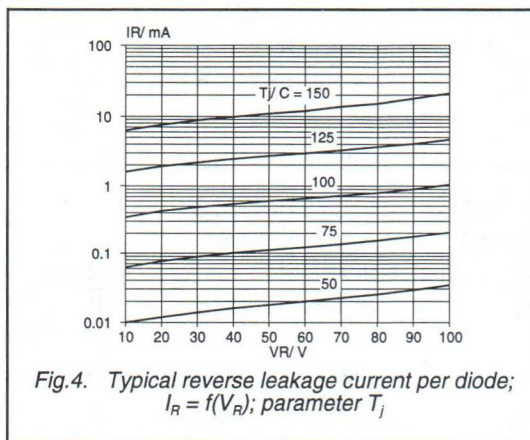
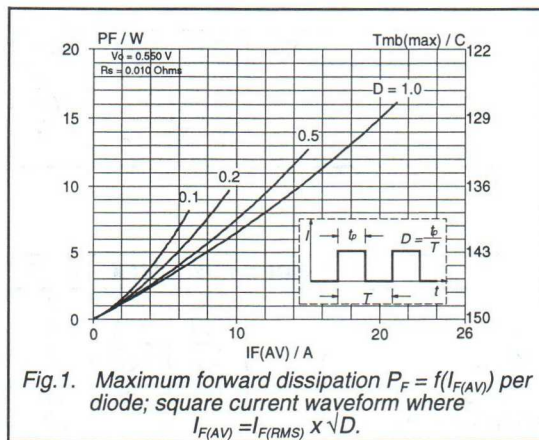
STATIC CHARACTERISTICS

 $T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	Forward voltage (per diode)	$I_F = 15\text{ A}; T_j = 125\text{ }^{\circ}\text{C}$	-	0.61	0.70	V
		$I_F = 30\text{ A}; T_j = 125\text{ }^{\circ}\text{C}$	-	0.74	0.85	V
		$I_F = 15\text{ A}; T_j = 25\text{ }^{\circ}\text{C}$	-	0.77	0.85	V
I_R	Reverse current (per diode)	$V_R = V_{RWM}; T_j = 25\text{ }^{\circ}\text{C}$	-	5.0	150	μA
		$V_R = V_{RWM}; T_j = 125\text{ }^{\circ}\text{C}$	-	5.0	15	mA
C_d	Junction capacitance (per diode)	$f = 1\text{ MHz}; V_R = 5\text{ V}; T_j = 25\text{ }^{\circ}\text{C}$ to $125\text{ }^{\circ}\text{C}$	-	600	-	pF

Rectifier diodes
schottky barrier

PBYR30100PT series



PACKAGE OUTLINES

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SOT186A	415
SOT199	416
SOT223	417
SOT404	418
TO220AB	419
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MECHANICAL DATA

Dimensions in mm

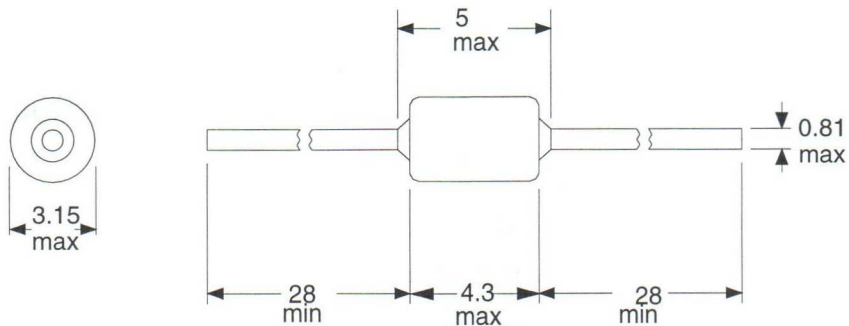


Fig.13. SOD84.

MECHANICAL DATA

Dimensions in mm

Net Mass: 2 g

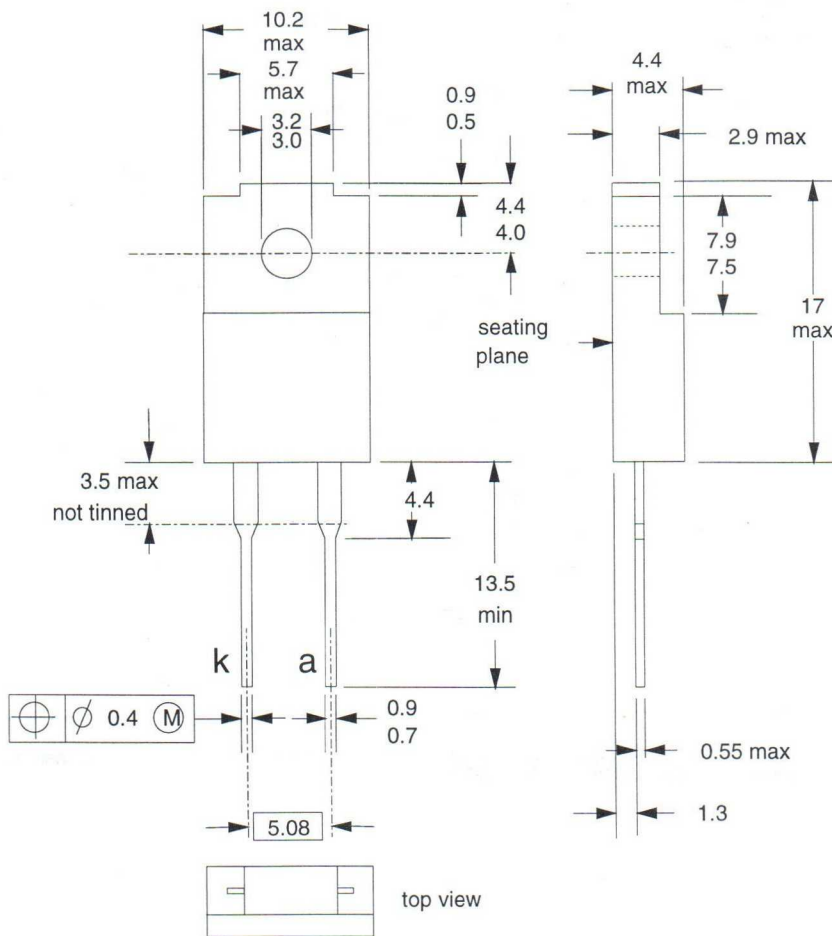
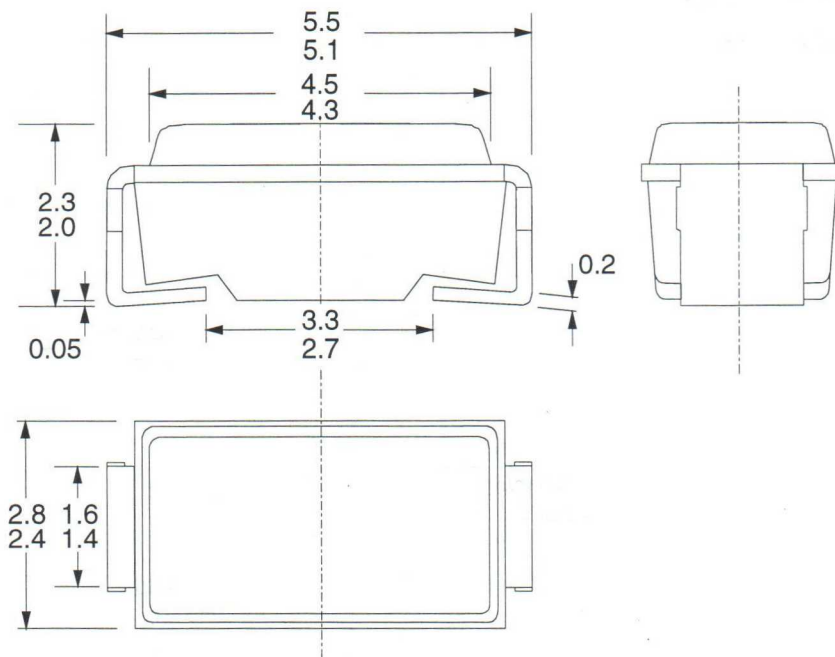


Fig.10. SOD100; The seating plane is electrically isolated from all terminals.

Notes

1. Refer to mounting instructions for F-pack envelopes.
2. Epoxy meets UL94 V0 at 1/8".

MECHANICAL DATA*Dimensions in mm**Net Mass: 0.2 g**Fig.11. SOD106.***Notes**

1. For mounting and soldering instructions refer to publication SC18 "SMD Footprint Design and Soldering Guidelines". Order code:9397 750 00505.

MECHANICAL DATA

Dimensions in mm

Net Mass: 2 g

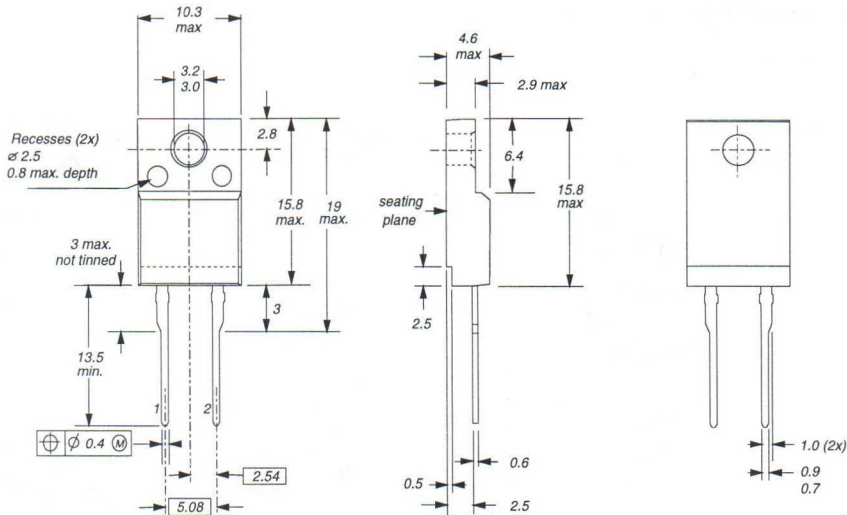


Fig.7. SOD113; The seating plane is electrically isolated from all terminals.

Notes

1. Refer to mounting instructions for F-pack envelopes.
2. Epoxy meets UL94 V0 at 1/8".

MECHANICAL DATA

Dimensions in mm

Net Mass: 0.8 g

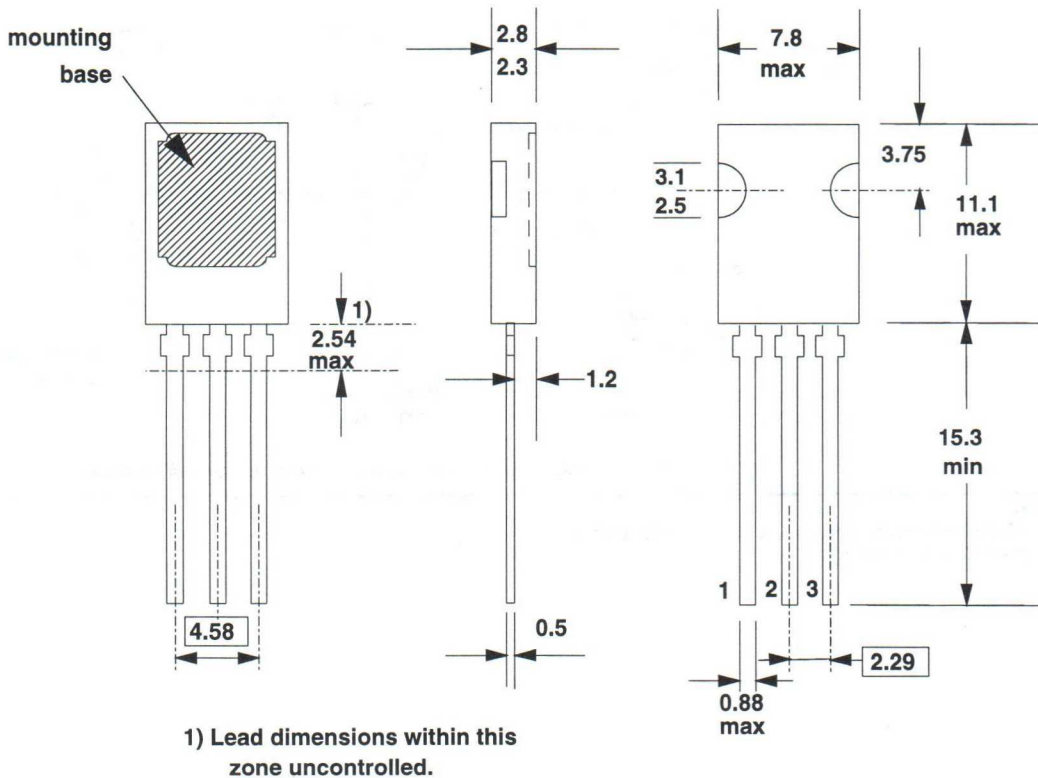
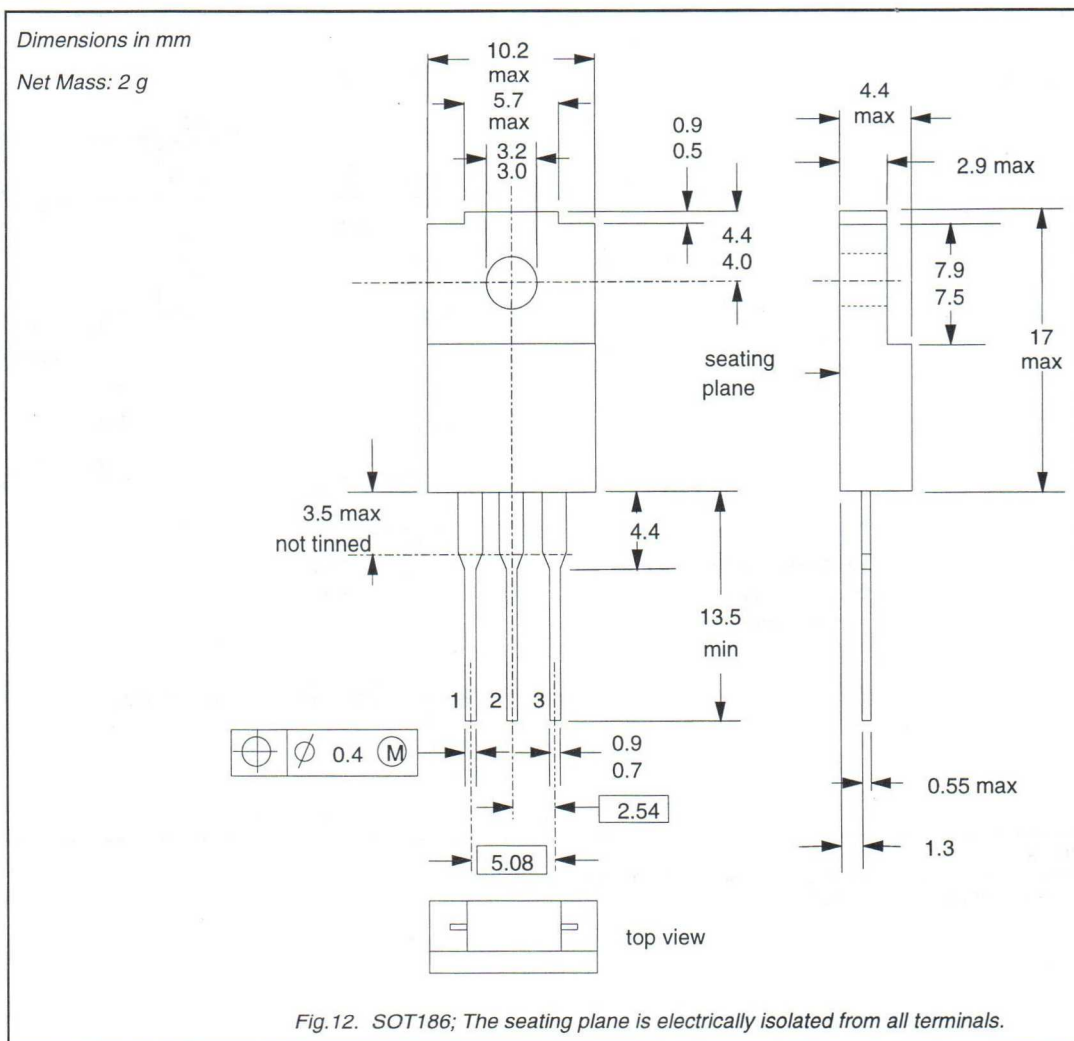


Fig. 7. SOT82; pin 2 connected to mounting base.

Notes

1. Accessories supplied on request: refer to mounting instructions for SOT82 envelopes.

MECHANICAL DATA



Notes

- Notes**
1. Refer to mounting instructions for F-pack envelopes.
 2. Epoxy meets UL94 V0 at 1/8".

MECHANICAL DATA

Dimensions in mm

Net Mass: 2 g

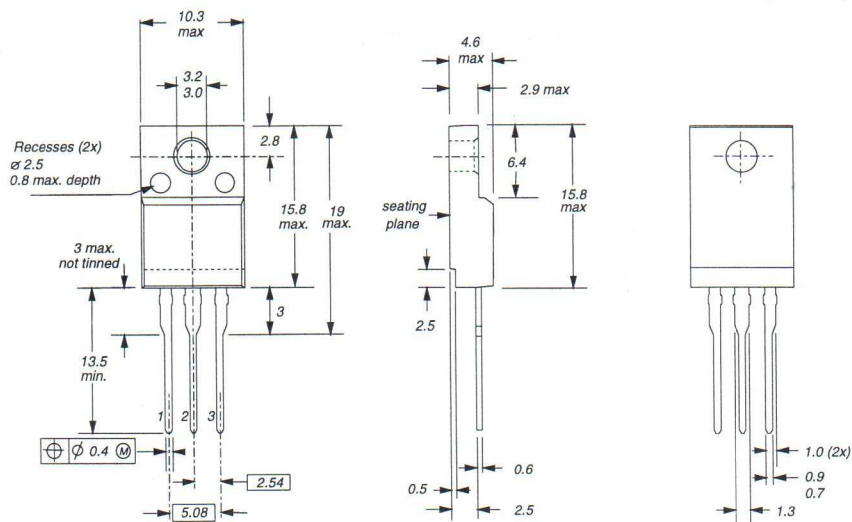
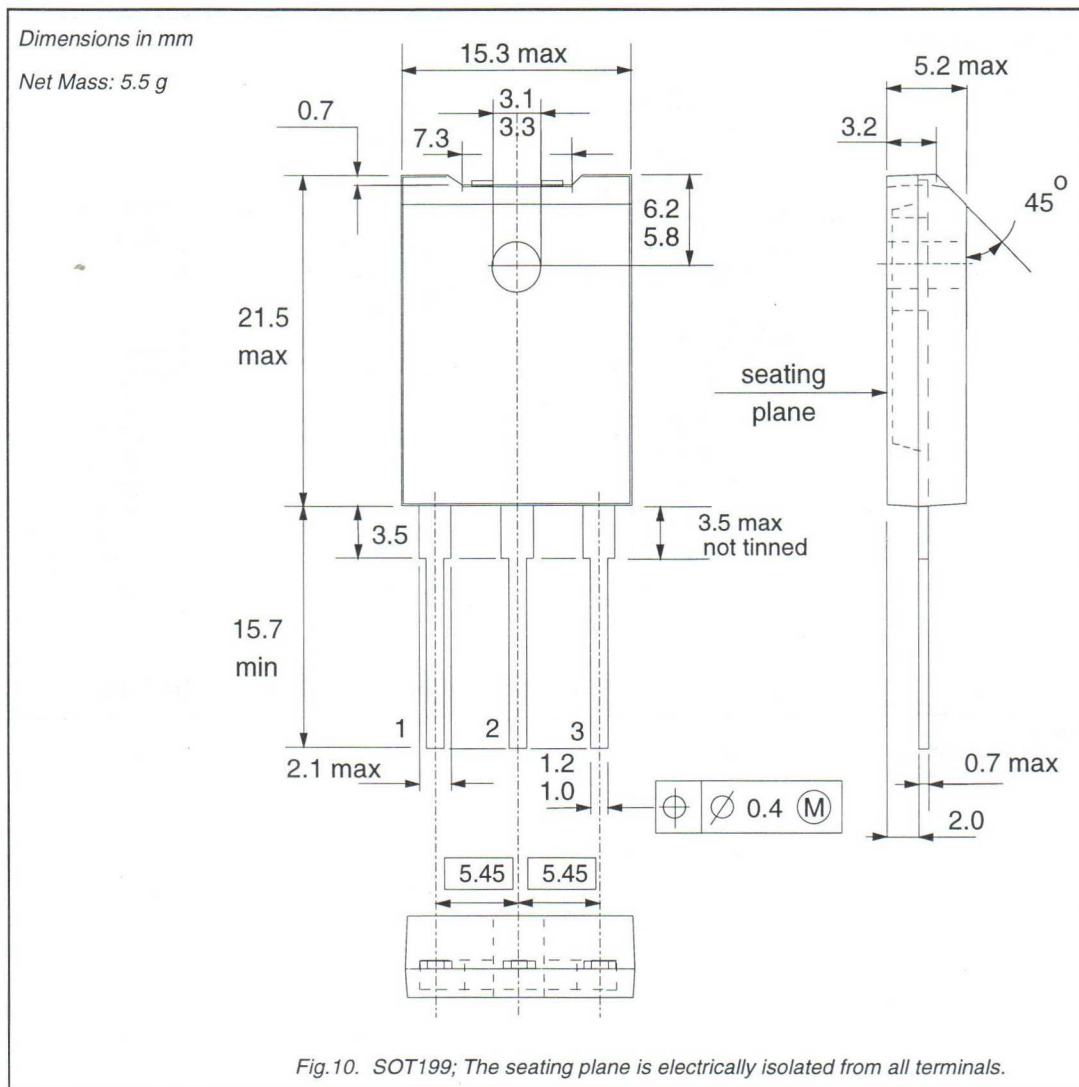


Fig.7. SOT186A; The seating plane is electrically isolated from all terminals.

Notes

1. Refer to mounting instructions for F-pack envelopes.
2. Epoxy meets UL94 V0 at 1/8".

MECHANICAL DATA



Notes

1. Refer to mounting instructions for F-pack envelopes.
2. Epoxy meets UL94 V0 at 1/8".

MECHANICAL DATA

Dimensions in mm

Net Mass: 0.11 g

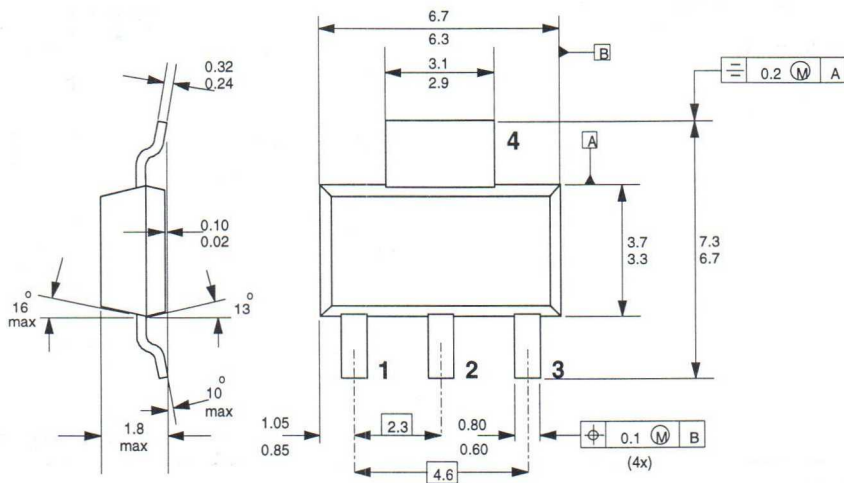
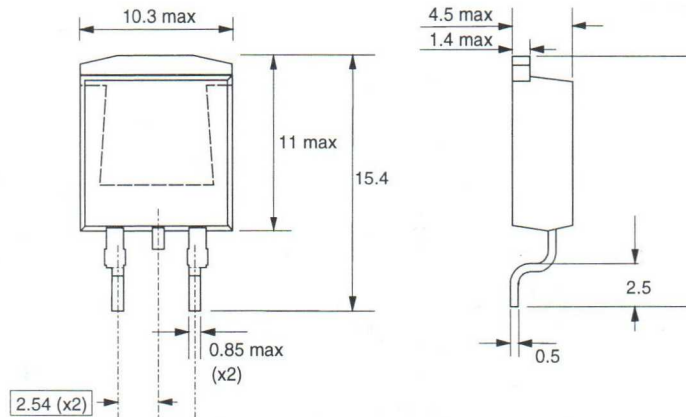


Fig.8. SOT223 surface mounting package.

Notes

1. For further information, refer to Philips publication SC18 "SMD Footprint Design and Soldering Guidelines".
Order code: 9397 750 00505.
2. Epoxy meets UL94 V0 at 1/8".

MECHANICAL DATA*Dimensions in mm**Net Mass: 1.4 g**Fig.7. SOT404 : centre pin connected to mounting base.***Notes**

1. Epoxy meets UL94 V0 at 1/8".

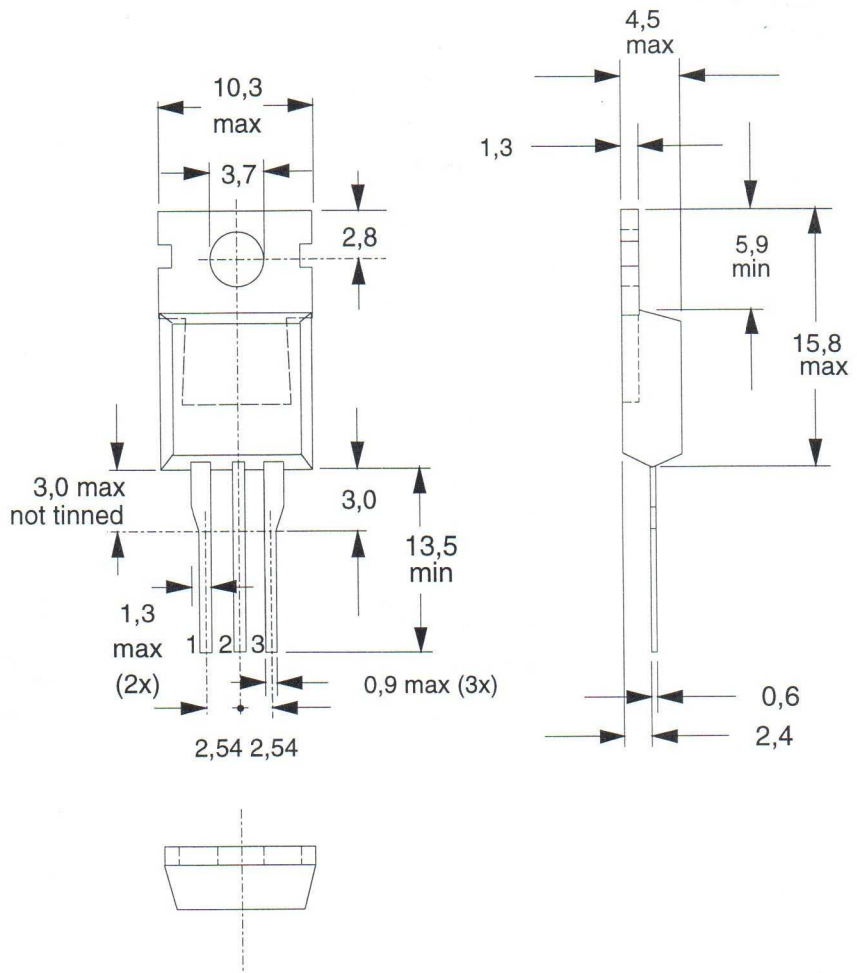
MECHANICAL DATA*Dimensions in mm**Net Mass: 2 g*

Fig.7. TO220AB; pin 2 connected to mounting base.

Notes

1. Refer to mounting instructions for TO220 envelopes.
2. Epoxy meets UL94 V0 at 1/8".

MECHANICAL DATA

Dimensions in mm

Net Mass: 2 g

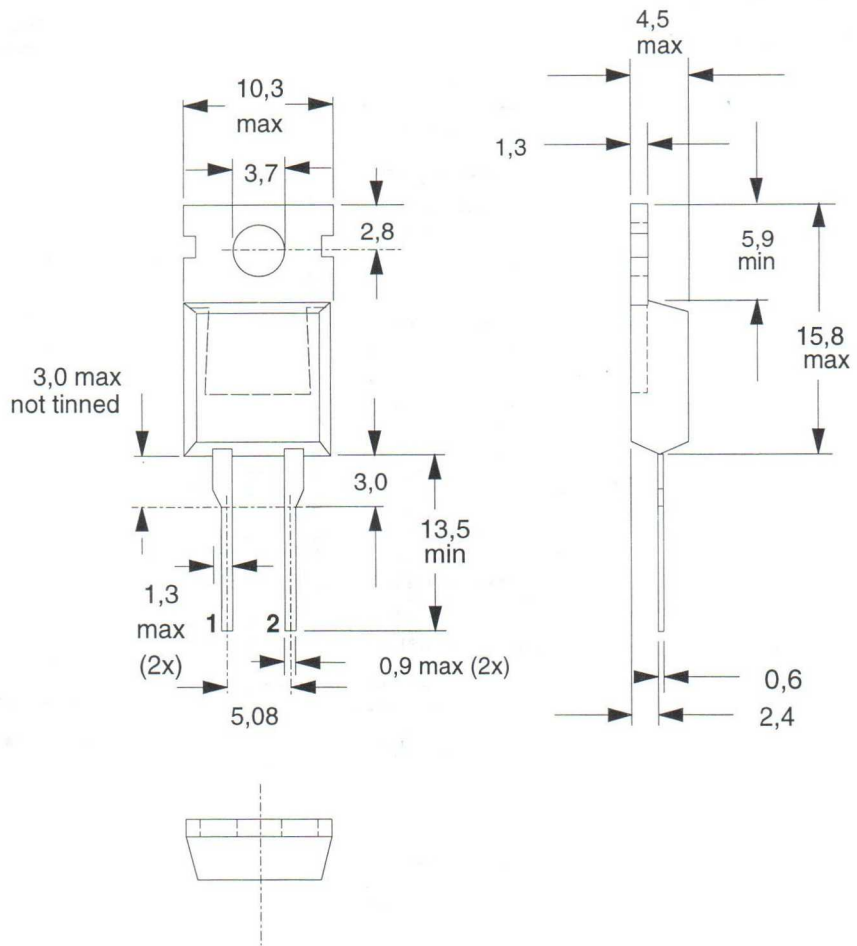


Fig. 10. TO220AC; pin 1 connected to mounting base.

Notes

1. Refer to mounting instructions for TO220 envelopes.
2. Epoxy meets UL94 V0 at 1/8".

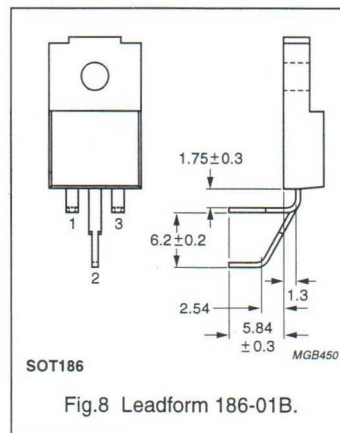
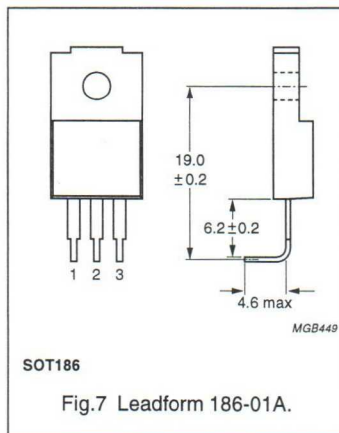
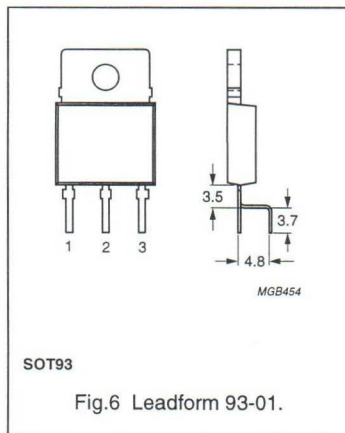
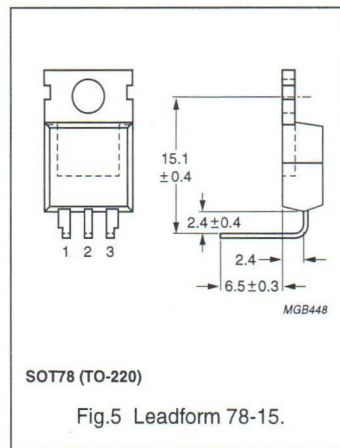
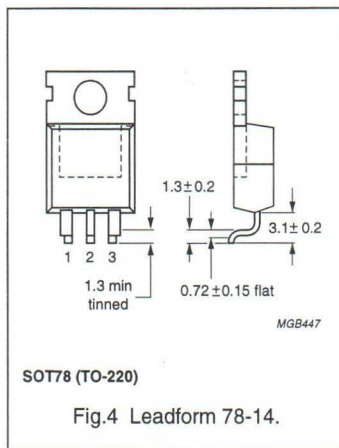
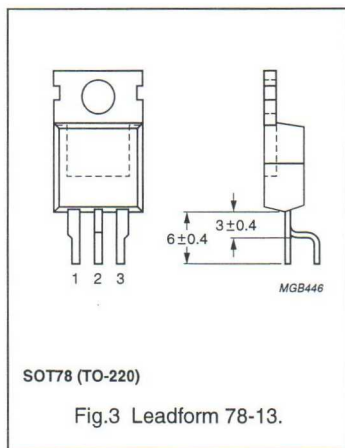
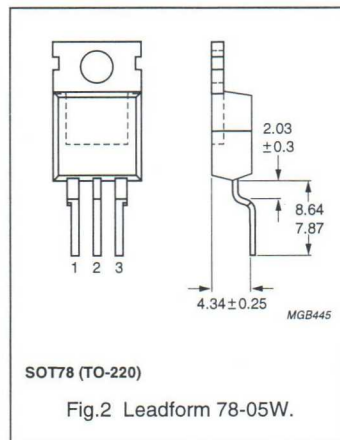
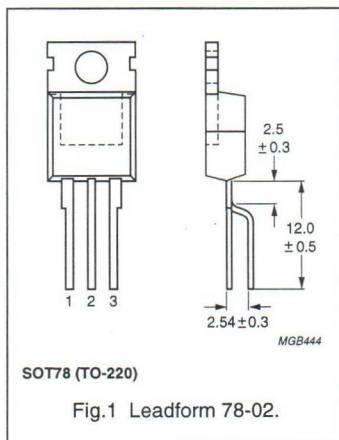
LEADFORM OPTIONS

Power diodes

Leadform options

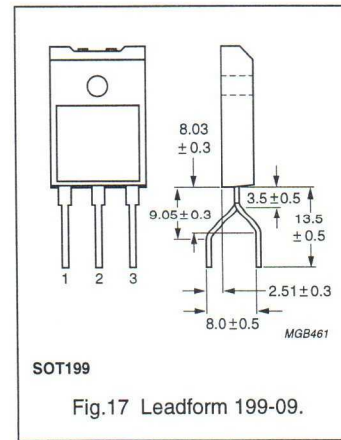
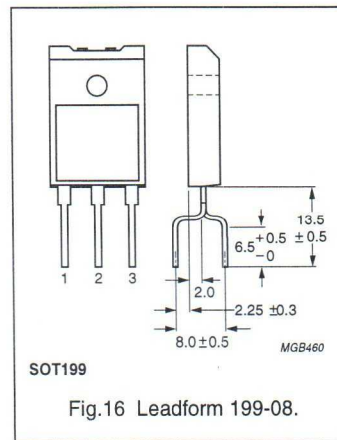
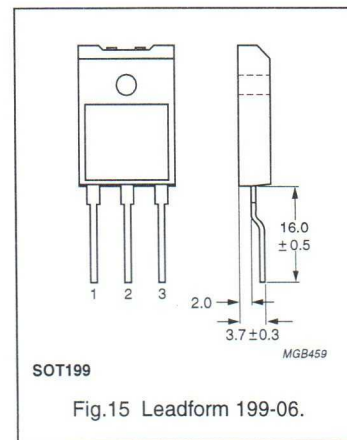
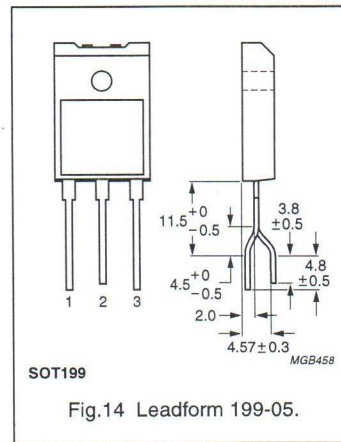
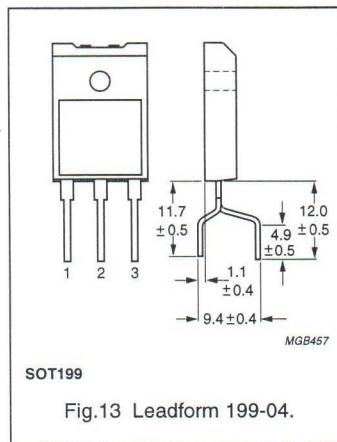
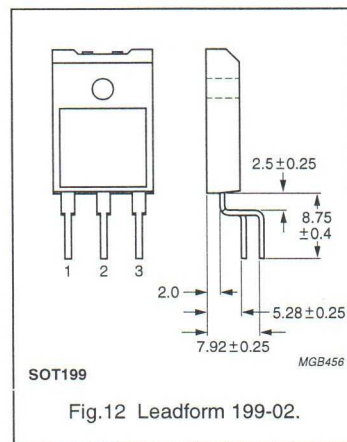
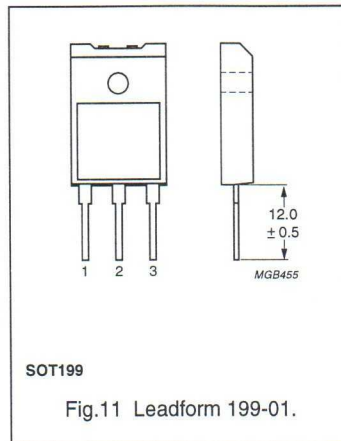
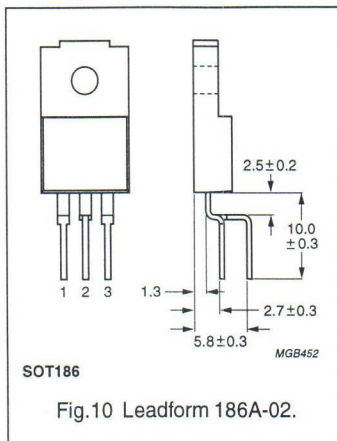
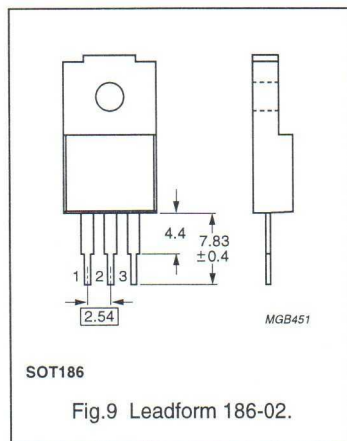
LEADFORM OPTIONS

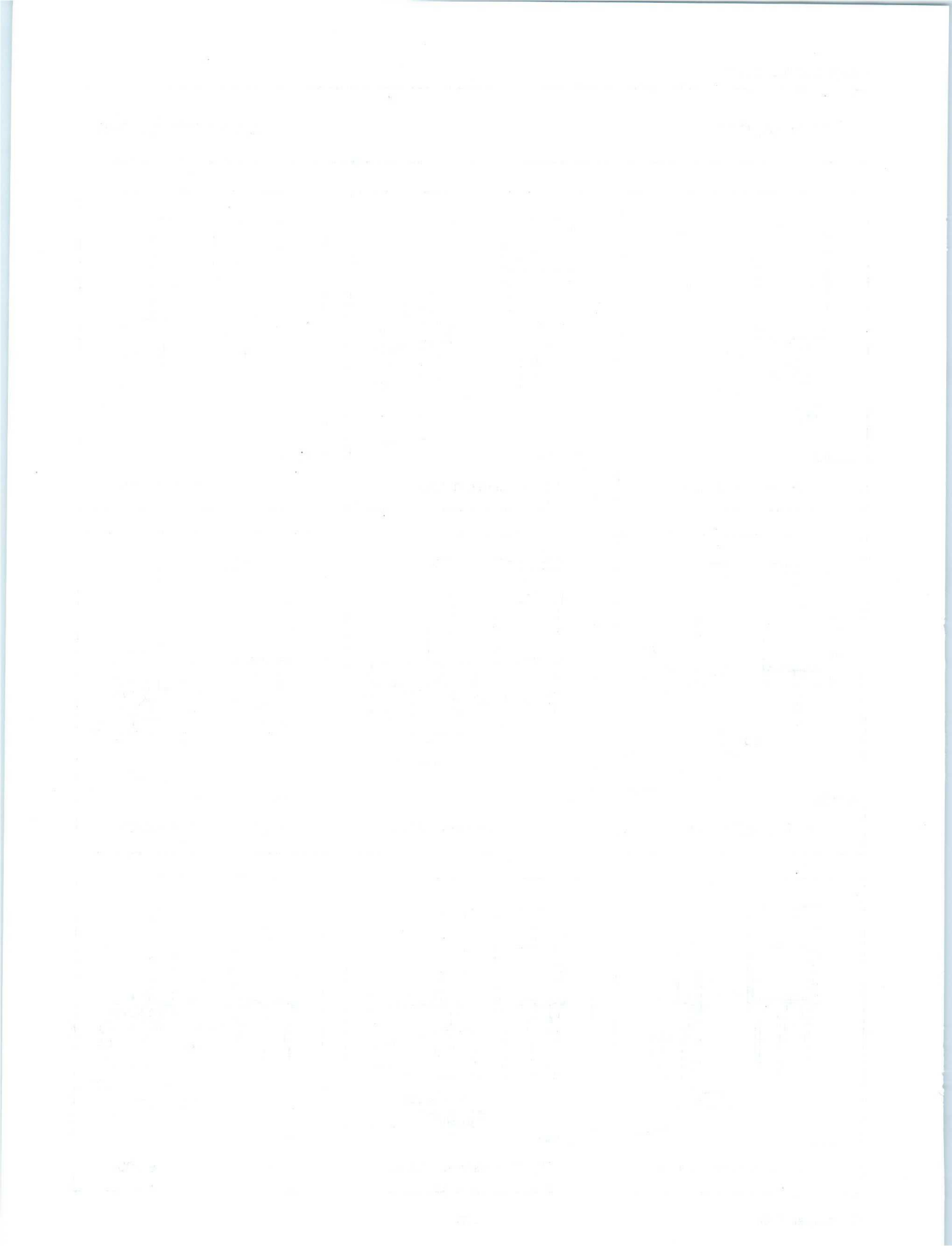
- These options require a special part number before ordering.
- Contact your local Philips Semiconductors representative for pricing, minimum order quantities and part number.



Power diodes

Leadform options





MOUNTING INSTRUCTIONS

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TO126; SOT82	426
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SOT404	436
SOT93; SOT199	438

GENERAL DATA AND INSTRUCTIONS

General rules

1. Fasten the device to the heatsink before soldering the leads.
2. Avoid stress to the leads.
3. Keep mounting tool (e.g. screwdriver) clear of the plastic body.

Mounting methods

CLIP MOUNTING (TO126 AND SOT82)

Mounting with a spring clip gives:

- a) A good thermal contact under the crystal area, and slightly lower thermal resistance than screw mounting.
- b) Safe insulation for mains operation.

Minimum force for good heat transfer is 10 N.

Maximum force to avoid damaging the device is 80 N.

M2.5 AND M3 SCREW MOUNTING (TO126 ONLY)

It is recommended that a metal washer is inserted between the screw head and the device.

Do not use self-tapping screws.

Mounting torque for screw mounting:

Minimum torque for good heat transfer is 0.40 Nm.

Maximum torque to avoid damaging the device is 0.60 Nm.

When the driven nut is in direct contact with a toothed lock washer the torques are as follows:

Minimum torque for good heat transfer is 0.55 Nm.

Maximum torque to avoid damaging the device is 0.80 Nm.

BODY MOUNTING (SOT82)

The SOT82 envelope can be adhesive mounted or soldered onto a hybrid circuit.
For soldering, a copper plate or an anodised aluminium plate with a copper layer is recommended.

The device may be adhesive mounted directly onto a ceramic substrate.

Heatsink requirements

Minimum thickness: 2 mm.

Flatness in the mounting area: 0.02 mm maximum per 10 mm.

Mounting holes must be deburred, for further information see clip and screw mounting instructions.

Heatsink compound

The thermal resistance from mounting base to heatsink ($R_{th\ mb-h}$) can be reduced by applying a metallic oxide compound between the contact surfaces. Values given are of thermal resistance using this type of compound. Dow Corning 340 Heat sink compound is recommended. For insulated mounting, the compound should be applied to the bottom of both device and insulator.

Thermal data for heatsink mounting methods

Typical figures, for exact figures see data for each device type.

$R_{th\ mb-h}$	Thermal resistance from mounting base to heatsink	K/W	
		clip	screw
	Mounting method		
	TO126, direct with heatsink compound	1.0	0.5
	TO126, direct without heatsink compound	3.0	1.0
	TO126 with heatsink compound and 0.1 mm maximum mica insulator	3.0	3.0
	TO126 without heatsink compound and 0.1 mm maximum mica insulator	6.0	6.0
	SOT82, direct with heatsink compound	0.4	-
	SOT82, direct without heatsink compound	2.0	-
	SOT82 with heatsink compound and 0.1 mm maximum mica insulator	2.0	-
	SOT82 without heatsink compound and 0.1 mm maximum mica insulator	5.0	-

Soldering

Recommendations for devices with a maximum storage temperature rating $T_{stg} \leq 150\ ^\circ\text{C}$:

Mounting instructions

TO126; SOT82

DIP OR WAVE SOLDERING.

Maximum permissible solder temperature is 260 °C at a distance from the body of > 5 mm and for a total contact time with soldering bath or waves of < 7 s.

HAND SOLDERING.

Maximum permissible temperature is 275 °C at a distance from the body of > 3 mm and for a total contact time with the soldering iron of < 5 s.

The body of the device must not touch anything with a temperature > 200 °C.

Avoid any force on body and leads during or after soldering; do not correct the position of the device or of its leads after soldering.

MOUNTING BASE SOLDERING.

Recommended metal-alloy of solder paste (85% metal weight)
62 Sn/36 Pb/2 Ag or 60 Sn/ 40 Pb.
Maximum soldering temperature 200°C (tab temperature)
Maximum soldering cycle duration including preheating 30 s.

For good soldering and to avoid damage to the encapsulation, pre-heating at $\leq 165^{\circ}\text{C}$ for ≤ 10 s max is recommended.

Lead bending

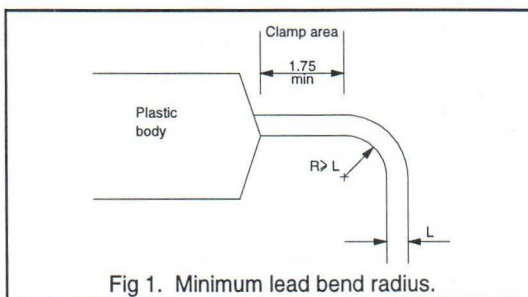
Lead forming by Philips is available as an option on all products supplied in these outlines.

Maximum permissible tensile force on the body for 5 seconds is 20 N.

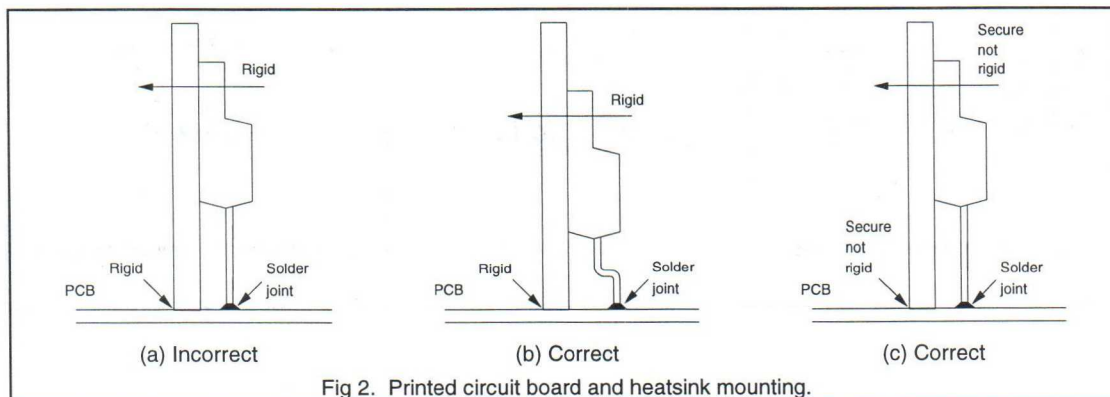
The leads can be bent, twisted or straightened. To keep forces within the above mentioned limits the leads should always be clamped rigidly near the body during bending. This is also to prevent damage to the seal of the leads within the plastic body.

Leads can be bent as near to the body as required, but adequate length should always be allowed for clamping. This is a minimum of 1.75 mm from the body to the start of a bend radius.

The internal radius of bend should never be less than the thickness of the lead. A minimum radius of at least 1.5 x lead thickness is preferred. See figure 1. Surface cracks in the dip tin coating on the lead are common when a radius less than 1.5 x lead thickness is used. Although exposing the copper material, these cracks do not affect the mechanical strength of the lead.

**Additional guidelines**

It is recommended that where a device is rigidly secured to a heatsink which is in turn rigidly secured to a PCB, that a bend is put in the leads to act as an expansion loop. This will prevent differential expansion of the mounting parts transferring stress to the soldering joint, as shown in figure 2 below. This is only necessary where the device is mounted so rigidly that expansion forces are transmitted through the assembly.



INSTRUCTIONS FOR CLIP MOUNTING

Direct mounting with spring clip

1. Apply heatsink compound to the mounting base, then place the device on the heatsink.
2. Push the short end of the clip into the narrow slot in the heatsink with the clip at an angle of 10° to 30° to the vertical. See figures 3 and 4.
3. Push down the clip over the device until the long end of the clip snaps into the wide slot in the heatsink. The clip should bear on the plastic body, not on the tab. See figure 5.

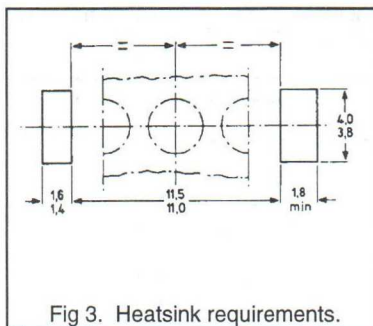


Fig 3. Heatsink requirements.

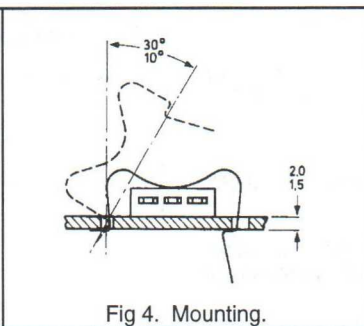


Fig 4. Mounting.

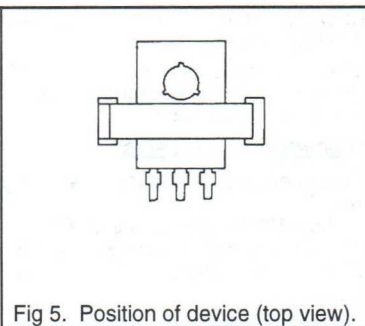


Fig 5. Position of device (top view).

Insulated mounting with clip and insulator

1. Apply heatsink compound to the bottom of both device and insulator, then place the device with the insulator on the heatsink.
2. Push the short end of the clip into the narrow slot in the heatsink with the clip at an angle of 10° to 30° to the vertical. See figures 6, 7 and 8.
3. Push down the clip over the device until the long end of the clip snaps into the wide slot in the heatsink. The clip should bear on the plastic body, not on the tab. Ensure that the device is centred on the mica insulator to prevent unwanted movement.

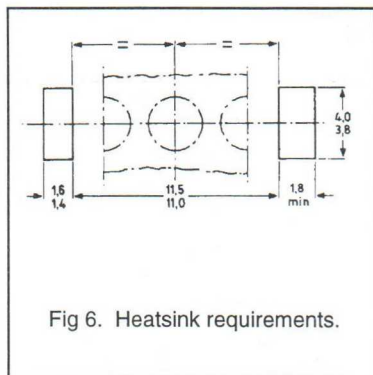


Fig 6. Heatsink requirements.

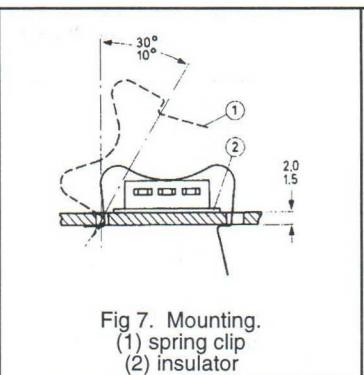
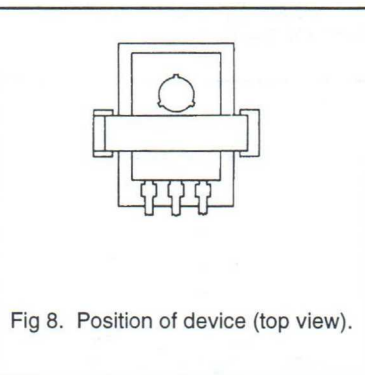
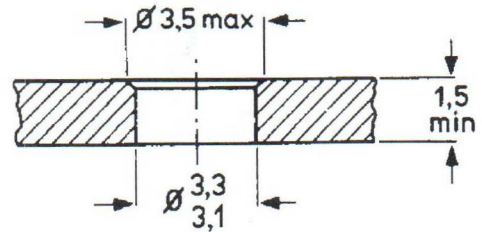
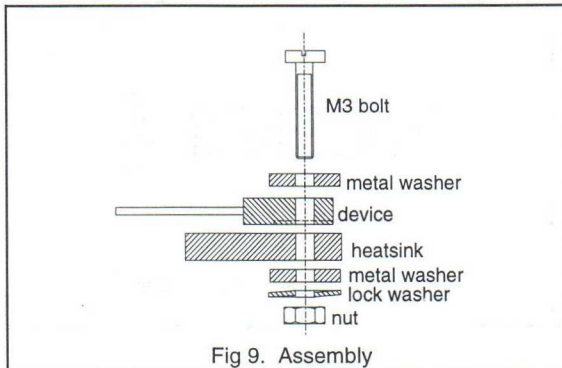
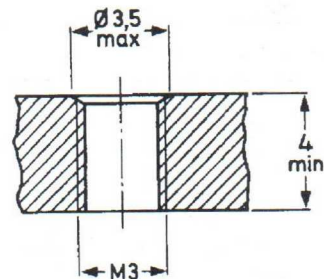
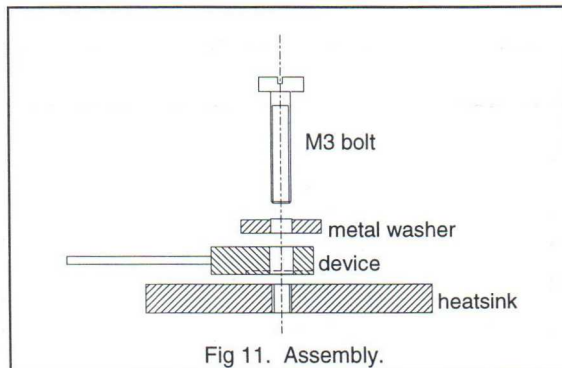
Fig 7. Mounting.
(1) spring clip
(2) insulator

Fig 8. Position of device (top view).

INSTRUCTIONS FOR SCREW MOUNTING (TO126 ONLY)**Direct mounting with screw and spacing washer****THROUGH HEATSINK WITH NUT****INTO TAPPED HEATSINK**

Mounting instructions

TO126; SOT82

Insulated mounting with screw and spacing washer

Not recommended where mounting tab is at mains voltage.

THROUGH HEATSINK WITH NUT

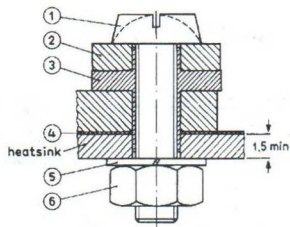


Fig 13. Insulated screw mounting with rectangular washer.

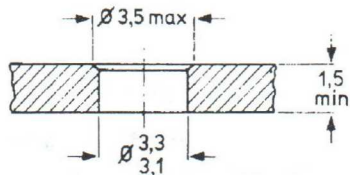


Fig 14. Heatsink requirements.

- (1) M2.5 screw
- (2) metal washer
- (3) insulating bush
- (4) insulating washer
- (5) lock washer
- (6) M2.5 nut

INTO TAPPED HEATSINK

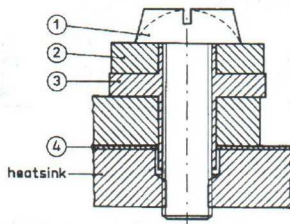


Fig 15. Insulated screw mounting with rectangular washer into tapped heatsink.

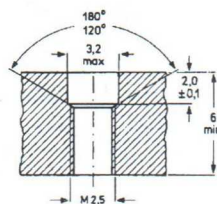


Fig 16. Heatsink requirements.

- (1) M2.5 screw
- (2) metal washer
- (3) insulating bush
- (4) insulating washer

GENERAL DATA AND INSTRUCTIONS

General rules

1. Fasten the device to the heatsink before soldering the leads.
2. Avoid stress to the leads.
3. Keep mounting tool (e.g. Screwdriver) clear of the plastic body.
4. When screw mounting, the rectangular washer should not exert any force on the plastic part of the body.

Mounting methods

CLIP MOUNTING

Mounting with a spring clip gives:

- a) A good thermal contact under the crystal area, and slightly lower thermal resistance than screw mounting.
- b) Safe insulation for mains operation.

Minimum force for good heat transfer is 10 N.

Maximum force to avoid damaging the device is 80 N.

M3 SCREW MOUNTING

It is recommended that a metal washer is inserted between screw head and mounting tab.

Do not use self-tapping screws.

Mounting torque for screw mounting:

For thread-forming screws these are final values.

Minimum torque for good heat transfer is 0.55 Nm.

Maximum torque to avoid damaging the device is 0.80 Nm.

When a nut or screw is driven directly against the tab, the torques are as follows:

Minimum torque for good heat transfer is 0.40 Nm.

Maximum torque to avoid damaging the device is 0.60 Nm.

RIVET MOUNTING NON-INSULATED

The device should not be pop-riveted to the heatsink. It is permissible to press-rivet the metal tab providing that eyelet rivets of soft material are used, and the press forces are slowly and carefully controlled.

This method is not permitted for full-pack envelopes (SOT186 and SOT186A) because it will damage the plastic encapsulation.

Heatsink requirements

Flatness in the mounting area: 0.02 mm maximum per 10 mm.

Mounting holes must be deburred, for further information see clip and screw mounting instructions.

Heatsink compound

The thermal resistance from mounting base to heatsink ($R_{th\,mb-h}$) can be reduced by applying a metallic oxide compound between the contact surfaces. Values given are of thermal resistance using this type of compound. Dow Corning 340 Heat sink compound is recommended. For insulated mounting, the compound should be applied to the bottom of both device and insulator.

Thermal data for TO220 envelopes with various heatsink mounting methods

Typical figures, for exact figures see data for each device type.

$R_{th\,mb-h}$	Thermal resistance from mounting base to heatsink	K/W	
Mounting method		clip	screw
direct with heatsink compound		0.3	0.5
direct without heatsink compound		1.4	1.4
with heatsink compound and 0.1 mm maximum mica insulator		2.2	-
with heatsink compound and 0.25 mm maximum alumina insulator		0.8	-
with heatsink compound and 0.05 mm mica insulator			
insulated up to 500 V		-	1.4
insulated up to 800 V / 1000 V		-	1.6
without heatsink compound and 0.05 mm mica insulator			
insulated up to 500 V		-	3.0
insulated up to 800 V / 1000 V		-	4.5

Additional insulators are generally not required when mounting the full-pack (SOT186 and SOT186A) envelopes.

Soldering

Recommendations for devices with a maximum storage temperature rating $\leq 175\text{ }^{\circ}\text{C}$:

DIP OR WAVE SOLDERING

Maximum permissible solder temperature is $260\text{ }^{\circ}\text{C}$ at a distance from the body of $> 5\text{ mm}$ and for a total contact time with soldering bath or waves of $< 7\text{ s}$.

Mounting instructions

SOT186; SOT186A; TO220AB; TO220AC

HAND SOLDERING

Maximum permissible temperature is 275 °C at a distance from the body of > 3 mm and for a total contact time with the soldering iron of < 5 s.

The body of the device must not touch anything with a temperature > 200 °C.

It is not permitted to solder the metal tab of the device to a heatsink, otherwise the junction temperature rating will be exceeded.

Avoid any force on body and leads during or after soldering; do not correct the position of the device or of its leads after soldering.

Lead bending

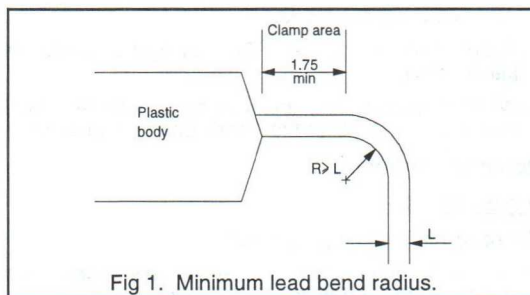
Maximum permissible tensile force on the body for 5 seconds is 20 N.

The leads can be bent, twisted or straightened. To keep forces within the above mentioned limits the leads should always be clamped rigidly near the body during bending. This is also to prevent damage to the seal of the leads within the plastic body.

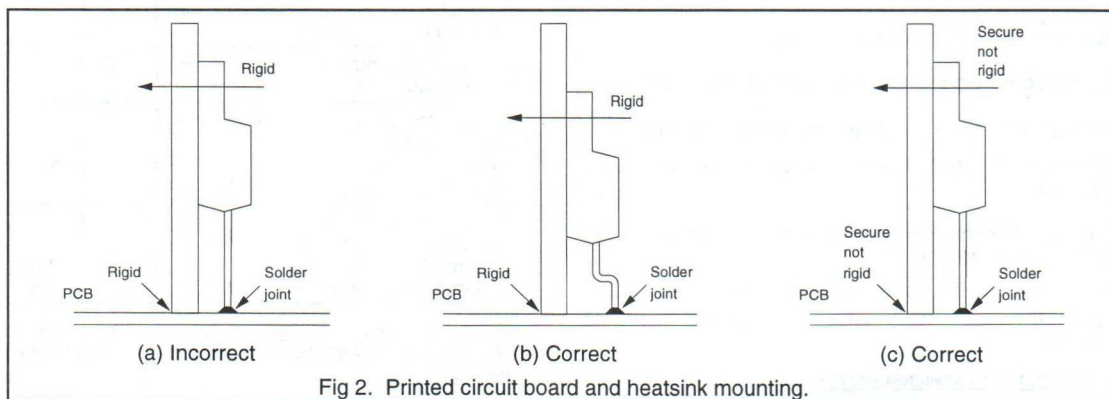
Leads can be bent as near to the body as required, but adequate length should always be allowed for clamping. This is a minimum of 1.75 mm from the body to the start of a bend radius.

The internal radius of bend should never be less than the thickness of the lead. A minimum radius of at least 1.5 x

lead thickness is preferred. See figure 1. Surface cracks in the dip tin coating on the lead are common when a radius less than 1.5 x lead thickness is used. Although exposing the copper material, these cracks do not affect the mechanical strength of the lead. Lead forming by Philips is available as an option on all products supplied in these outlines.

**Additional guidelines**

It is recommended that where a device is rigidly secured to a heatsink which is in turn rigidly secured to a PCB, that a bend is put in the leads to act as an expansion loop. This will prevent differential expansion of the mounting parts transferring stress to the soldering joint, as shown in figure 2 below. This is only necessary where the device is mounted so rigidly that expansion forces are transmitted through the assembly.



Mounting instructions

SOT186; SOT186A; TO220AB; TO220AC

INSTRUCTIONS FOR CLIP MOUNTING

Direct mounting with spring clip

1. Apply heatsink compound to the mounting base, then place the device on the heatsink.
2. Push the short end of the clip into the narrow slot in the heatsink with the clip at an angle of 10° to 30° to the vertical. See figures 3 and 4.
3. Push down the clip over the device until the long end of the clip snaps into the wide slot in the heatsink. The clip should bear on the plastic body, not on the tab. See figure 5.

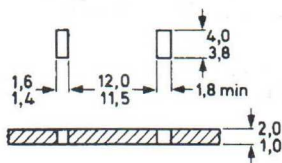


Fig 3. Heatsink requirements.

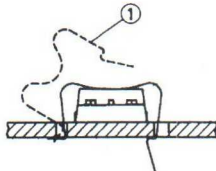
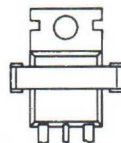
Fig 4. Mounting.
(1) spring clip.

Fig 5. Position of device (top view).

Insulated mounting with spring clip

1. Apply heatsink compound to the bottom of both device and insulator, then place the device with the insulator on the heatsink.
2. Push the short end of the clip into the narrow slot in the heatsink with the clip at an angle of 10° to 30° to the vertical. See figures 6, 7 and 8.
3. Push down the clip over the device until the long end of the clip snaps into the wide slot in the heatsink. The clip should bear on the plastic body, not on the tab. Ensure that the device is centred on the mica insulator to prevent unwanted movement.

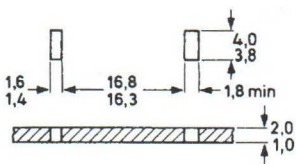


Fig 6. Heatsink requirements.

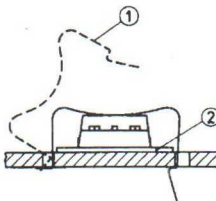
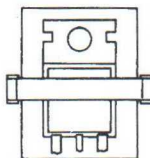
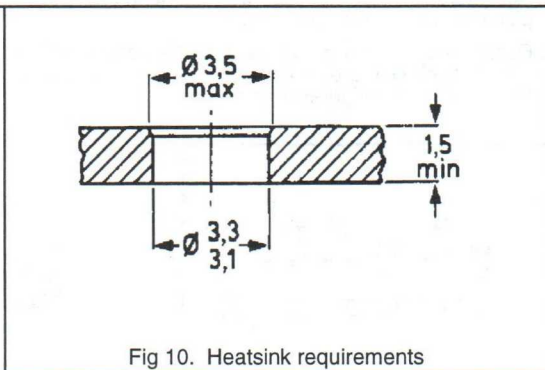
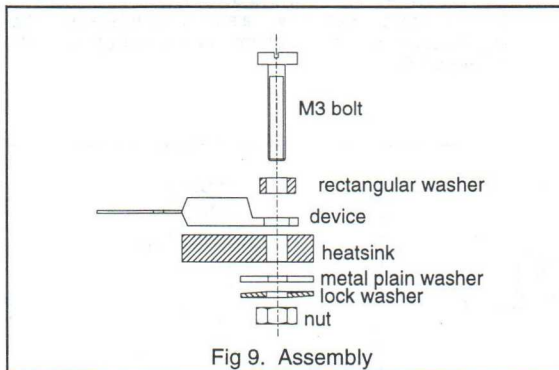
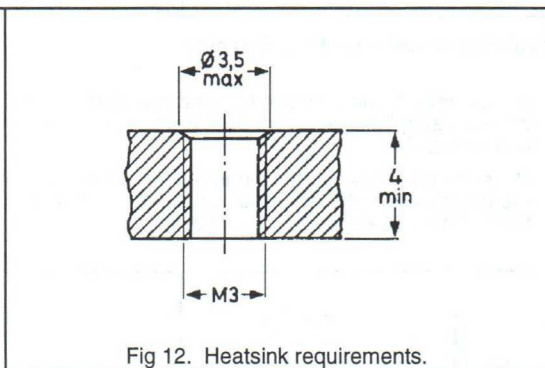
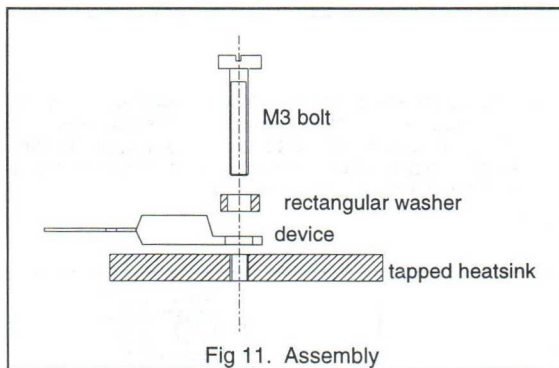
Fig 7. Mounting.
(1) spring clip.
(2) insulator.

Fig 8. Position of device (top view).

INSTRUCTIONS FOR SCREW MOUNTING**Direct mounting with screw and spacing washer****THROUGH HEATSINK WITH NUT****INTO TAPPED HEATSINK**

Mounting instructions

SOT186; SOT186A; TO220AB; TO220AC

Insulated mounting with screw and spacing washer

Not recommended where mounting tab is at mains voltage. Not applicable for SOT186 or SOT186A.

THROUGH HEATSINK WITH NUT

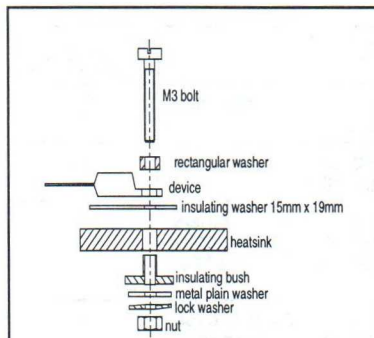


Fig 13. Insulated screw mounting with rectangular washer

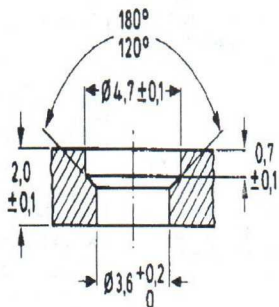


Fig 14. Heatsink requirements for 500 V insulation

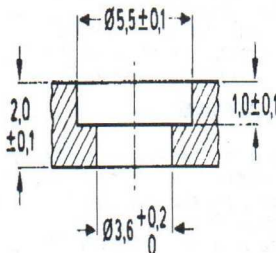


Fig 15. Heatsink requirements for 800V insulation

INTO TAPPED HEATSINK

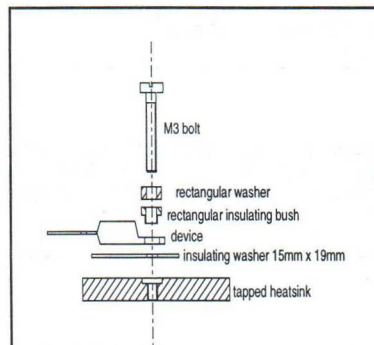


Fig 16. Insulated screw mounting with rectangular washer into tapped heatsink.

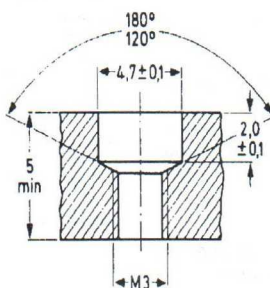


Fig 17. Heatsink requirements for 500 V insulation

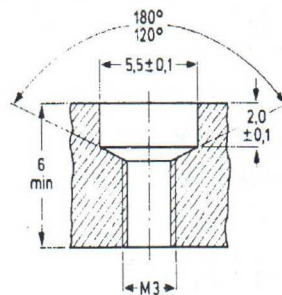


Fig 18. Heatsink requirements for 1000V insulation

GENERAL DATA AND INSTRUCTIONS

Scope

The technology of placing, soldering and reworking surface mounted components is covered extensively by other Philips publications listed in the references section. These mounting instructions refer specifically to power semiconductors in the SOT404 envelope.

The SOT404 Envelope

Surface mounting envelopes for power semiconductors differ from other surface mounting envelopes in that heat generated in the chip has to be conducted efficiently to a heatsink. Surface mount packages such as SOT223 dissipate heat via their leads, which due to their small cross sectional area and long length results in a high thermal resistance.

The SOT404 package removes this limitation. It is the same size and shape as the conventional, leaded TO220 but there is no mounting tab, the leads have been preformed and the mounting surfaces have been lead-tin plated to ensure good solderability. Inside the package, the chip is mounted on a large copper header which conducts the heat from the chip directly to the printed circuit board.

The SOT404 package has the same thermal resistance as TO220 and hence can handle the same power. It has the added advantages of automated surface mounting assembly and higher packing density than through hole components.

Thermal Management

In order to get the best performance from devices in SOT404, the printed circuit substrate material and the copper traces must conduct heat away efficiently from the mounting base to a heatsink.

The table below gives thermal data for the SOT404 envelope mounted on various printed circuit board substrate materials. The figures are representative of a single-sided printed circuit board measuring 60 mm x 40 mm, with the surface mounted power components and copper traces on the top side. The board is fastened to a heatsink with machine screws and a layer of heatsink compound or a thermally conducting pad is placed between the printed circuit board and the heatsink to improve thermal contact.

The figures are typical only. The thermal resistance of individual designs will depend upon the overall size of the printed circuit board, the packing density of the power devices, and the width of the copper traces.

The thermal resistance between junction and mounting base is quoted in the data sheet for each device type. This value needs to be added to the figures in the table to give the total thermal resistance between junction and heatsink.

Thermal resistance between mounting base and heatsink.

Mounting method	$R_{th\,mb-hs}$ Typical K/W
FR4 glass-epoxy board, 1.6 mm thick, land size as in fig:1.	50
FR4 glass-epoxy board, 1.6 mm thick, 2.5 cm square mounting land.	40
FR4 glass-epoxy board, 1.6 mm thick, land size as in fig:1, with pattern of 18 x 0.5 mm dia plated through holes filled with solder.	8
FR4 glass-epoxy board, 0.8 mm thick, land size as in fig:1, with pattern of 18 x 0.5 mm dia plated through holes filled with solder.	4
Alumina substrate, 0.8 mm thick, land size as in fig:1.	2
Aluminium clad substrate, 1.6 mm thick, land size as in fig:1.	1

PCB Design

Fig:1 shows the recommended land design for SOT404. Increasing the dimensions of the mounting land will improve the thermal conduction between the mounting base and the heatsink.

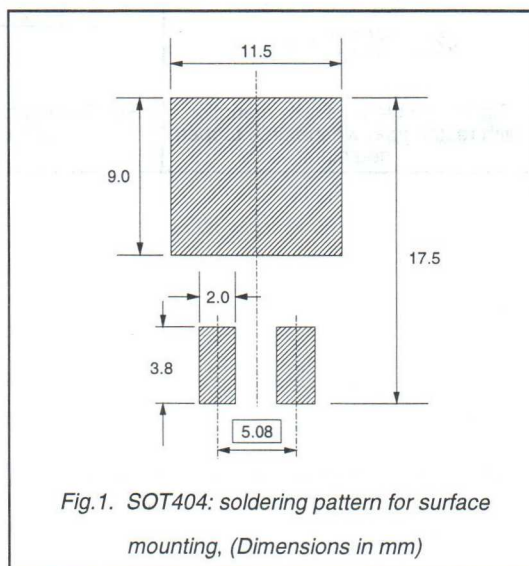


Fig.1. SOT404: soldering pattern for surface mounting, (Dimensions in mm)

Soldering process

In order to ensure proper solder flow between the device mounting base and the board land, the amount of solder paste on the mounting base land must be controlled. An excess of solder will cause the device top edge to rise up and float on a meniscus of solder. Conversely too little solder will mean an imperfect joint with voids, and the voids will be hidden from visual inspection. Both faults will increase the thermal resistance.

The preferred method of applying solder paste is screen printing or stencil printing. The preferred soldering method is reflow soldering.

SMD footprint design and soldering guidelines are covered in Philips publication SC18. See references section below.

References

1. SMD Footprint design and Soldering Guidelines. Philips Publication: SC18. Order code: 9397 750 00505
2. SMD Technology, Working with SMDs Order code: 9398 346 60011.
3. SMD Technology, Substrate Design Guidelines. Order code: 9398 346 70011.
4. SMD Technology, Computer-aided Design for SMD Boards. Order code: 9398 346 80011.
5. SMD Technology, Thermal Considerations. Order code: 9398 346 90011.
6. SMD Technology, Substrate Selection. Order code: 9398 347 00011.
7. SMD Technology, Automated Assembly Techniques. Order code: 9398 347 10011.
8. SMD Technology, Adhesive Application. Order code: 9398 347 20011.
9. SMD Technology, Component and Substrate Solderability. Order code: 9398 347 30011.
10. SMD Technology, Solder Paste. Order code: 9398 347 40011.
11. SMD Technology, Fluxing and Cleaning. Order code: 9398 347 50011.
12. SMD Technology, Soldering Techniques. Order code: 9398 347 60011.
13. SMD Technology, Soldered Joint Criteria. Order code: 9398 347 70011.
14. SMD Technology, Test and Repair. Order code: 9398 347 80011.

GENERAL DATA AND INSTRUCTIONS

General rules

1. Fasten the device to the heatsink before soldering the leads.
2. Avoid stress to the leads.
3. Keep mounting tool (e.g. screwdriver) clear of the plastic body.
4. When screw mounting, the washer should not exert any force the pastic part of the body.

Mounting methods

CLIP MOUNTING

Mounting with a spring clip gives:

- a) A good thermal contact under the crystal area.
- b) Safe insulation for mains operation.

Minimum force for good heat transfer is 10 N.

Maximum force to avoid damaging the device is 80 N.

SCREW MOUNTING

It is recommended that a metal washer is inserted between the screw head and the mounting tab.

Do not use self tapping screws.

Mounting torques for screw mounting:

For M3 screw (insulated mounting):

Minimum torque for good heat transfer is 0.4 Nm.

Maximum torque to avoid damaging the device is 0.6 Nm.

For M4 screw (direct mounting only):

Minimum torque for good heat transfer is 0.4 Nm.

Maximum torque to avoid damaging the device is 1.0 Nm.

The M4 screw head should not touch the plastic part of the envelope.

RIVET MOUNTING NON-INSULATED

The device should not be pop-riveted to the heatsink. It is permissible to press-rivet SOT93 providing that eyelet rivets of soft material are used, and the press forces are slowly and carefully controlled.

This method is not recommended for full pack envelopes (SOT199) because it will damage the plastic encapsulation.

Heatsink requirements

Flatness in the mounting area: 0.02 mm maximum per 10 mm.

Mounting holes must be deburred, for further information see clip and screw mounting instructions.

Heatsink compound

The thermal resistance from mounting base to heatsink ($R_{th\ mb-h}$) can be reduced by applying a metallic oxide compound between the contact surfaces. Values given are of thermal resistance using this type of compound. Dow Corning 340 Heat sink compound is recommended. For insulated mounting, the compound should be applied to the bottom of both device and insulator.

Thermal data for SOT93 envelope with various heatsink mounting methods

Typical figures, for exact figures see data for each device type.

$R_{th\ mb-h}$	Thermal resistance from mounting base to heatsink	K/W	
Mounting method		clip	screw
direct with heatsink compound		0.3	0.3
direct without heatsink compound		1.5	0.8
with heatsink compound and 0.05 mm maximum mica insulator		0.8	0.8
without heatsink compound and 0.05 mm maximum mica insulator		3.0	2.2

Additional insulators are generally not required when mounting the full-pack, SOT199 envelope.

Soldering

Recommendations for devices with a maximum junction temperature rating < 175 °C:

DIP OR WAVE SOLDERING

Maximum permissible solder temperature is 260 °C at a distance from the body of > 5 mm and for a total contact time with soldering bath or waves of < 7 s.

HAND SOLDERING

Maximum permissible temperature is 275 °C at a distance from the body of > 3 mm and for a total contact time with the soldering iron of < 5 s.

The body of the device must not touch anything with a temperature > 200 °C.

It is not permitted to solder the metal tab of the device to a heatsink, otherwise the junction temperature rating will be exceeded.

Avoid any force on body and leads during or after soldering; do not correct the position of the device or of its leads after soldering.

Mounting instructions

SOT93; SOT199

Lead bending

Maximum permissible tensile force on the body for 5 seconds is 20 N.

The leads can be bent, twisted or straightened. To keep forces within the above mentioned limits the leads should always be clamped rigidly near the body during bending. This is also to prevent damage to the seal of the leads within the plastic body.

Leads can be bent as near to the body as required, but adequate length should always be allowed for clamping. This is a minimum of 1.75 mm from the body to the start of a bend radius.

The internal radius of bend should never be less than the thickness of the lead. A minimum radius of at least 1.5 x lead thickness is preferred. See figure 1 Surface cracks in the dip tin coating on the lead are common when a radius less than 1.5 x lead thickness is used. Although exposing the copper material, these cracks do not affect the mechanical strength of the lead. Lead forming by Philips is available as an option on all products supplied in these outlines.

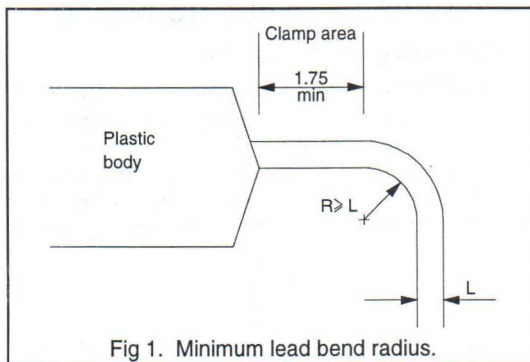


Fig 1. Minimum lead bend radius.

Additional guidelines

It is recommended that where a device is rigidly secured to a heatsink which is in turn rigidly secured to a PCB, that a bend is put in the leads to act as an expansion loop. This will prevent differential expansion of the mounting parts transferring stress to the soldering joint, as shown in figure 2 below. This is only necessary where the device is mounted so rigidly that expansion forces are transmitted through the assembly.

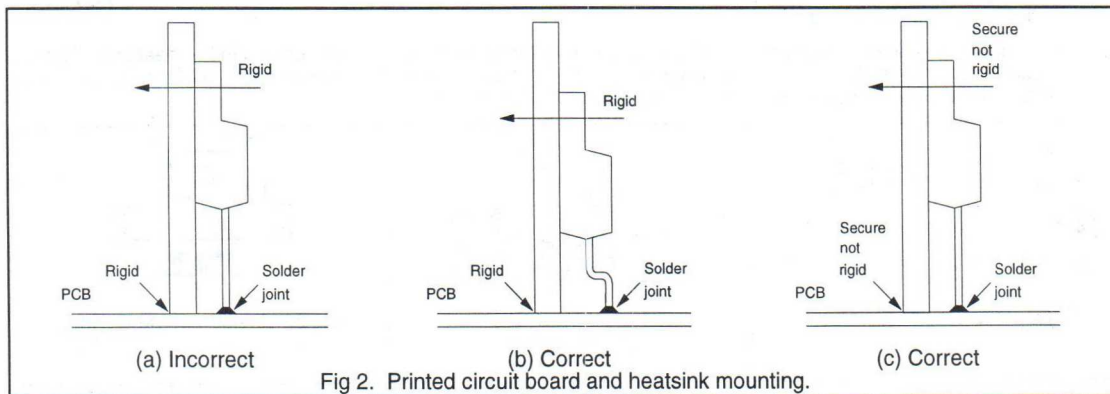
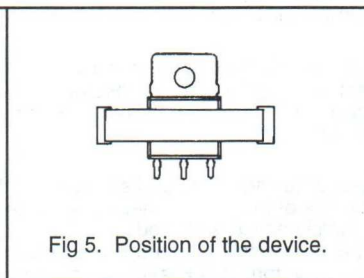
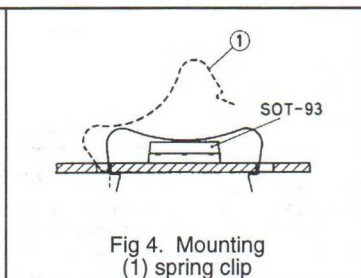
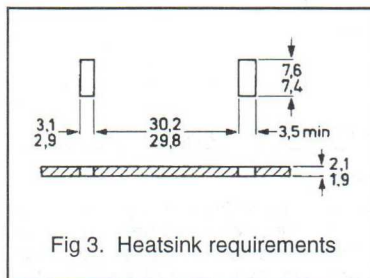


Fig 2. Printed circuit board and heatsink mounting.

INSTRUCTIONS FOR CLIP MOUNTING

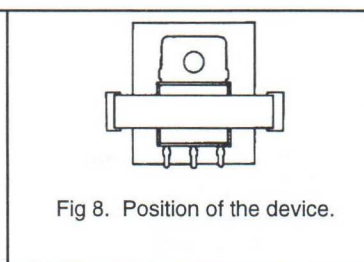
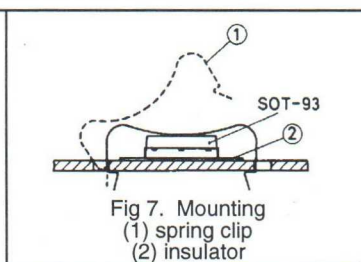
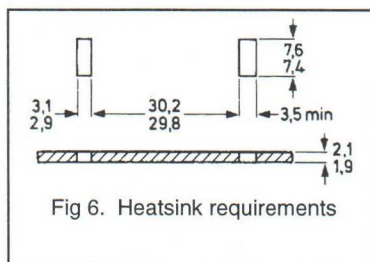
Direct mounting with spring clip

1. Place the device on the heatsink, applying heatsink compound to the mounting base.
2. Push the short end of the clip into the narrow slot in the heatsink with the clip at an angle of 10° to 30° to the vertical. See figures 3 and 4.
3. Push down the clip over the device until the long end of the clip snaps into the wide slot in the heatsink. The clip should bear on the plastic body, not on the tab. See figure 5.



Insulated mounting with spring clip

1. Place the device with the insulator on the heatsink, applying heatsink compound to the bottom of both device and insulator.
2. Push the short end of the clip into the narrow slot in the heatsink with the clip at an angle of 10° to 30° to the vertical. See figures 6, 7 and 8.
3. Push down the clip over the device until the long end of the clip snaps into the wide slot in the heatsink. The clip should bear on the plastic body, not on the tab. There should be a minimum of 3 mm distance between the device and the edge of the insulator for adequate creepage distance.



INSTRUCTIONS FOR SCREW MOUNTING

When screw mounting the SOT93 envelope, it is particularly important to apply a thin, even layer of heatsink compound to the mounting base, and to apply torque to the screw slowly so that the compound has time to flow and the mounting base is not deformed. Most SOT93 envelopes contain a crystal larger than that in the other plastic envelopes, and it is more likely to crack if the mounting base is deformed.

Where vibration is expected the use of a lock washer or of a curved spring washer is recommended with a plain washer between the spring washer and the heatsink.

Direct mounting

THROUGH HEATSINK WITH NUT

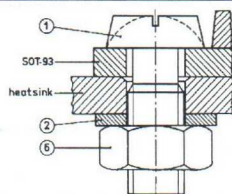


Fig 9. Assembly

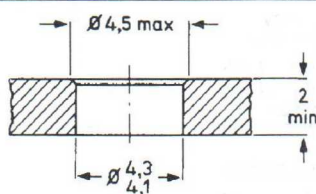


Fig 10. Heatsink requirements

- (1) M4 screw
- (2) plain washer
- (6) M4 nut.

Insulated mounting

THROUGH HEATSINK WITH NUT UP TO 800 V

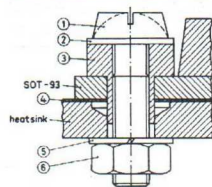


Fig 11. Assembly

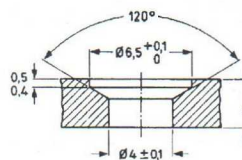


Fig 12. Heatsink requirements up to 800V.

- (1) M3 screw
- (2) plain washer
- (3) insulating bush
- (4) mica insulator
- (5) lock washer
- (6) M3 nut

Mounting instructions

SOT93; SOT199

INTO TAPPED HEATSINK UP TO 800 V

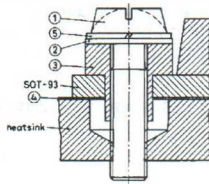


Fig 13. Assembly

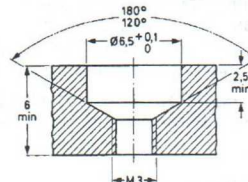


Fig 14. Heatsink requirements up to 800V

- (1) M3 screw
- (2) plain washer
- (3) insulating bush
- (4) mica insulator
- (5) lock washer

WITH INSERT NUT; UP TO 500V

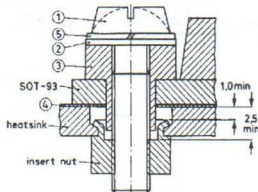
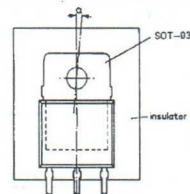


Fig 15. Assembly and heatsink requirements for 500V insulation. See also figures 9 and 10.

Fig 16. Mica insulator. The axial deviation (α) between package and mica should not exceed 5°

- (1) M3 screw
- (2) plain washer
- (3) insulating bush
- (4) mica insulator
- (5) lock washer

DATA HANDBOOK SYSTEM

Data handbook system

DATA HANDBOOK SYSTEM

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IC05	Advanced Low-power Schottky (ALS) Logic
IC06	High-speed CMOS Logic Family
IC11	General-purpose/Linear ICs
IC12	I ² C Peripherals
IC13	Programmable Logic Devices (PLD)
IC14	8048-based 8-bit Microcontrollers
IC15	FAST TTL Logic Series
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IC23	BiCMOS Bus Interface Logic
IC24	Low Voltage CMOS & BiCMOS Logic
IC25	16-bit 80C51XA Microcontrollers (eXtended Architecture)
IC26	IC Package Databook

Discrete semiconductors

<i>Book</i>	<i>Title</i>
SC01	Diodes
SC02	Power Diodes
SC03	Thyristors and Triacs
SC04	Small-signal Transistors
SC05	Video Transistors and Modules for Monitors
SC06	High-voltage and Switching NPN Power Transistors
SC07	Small-signal Field-effect Transistors
SC08a	RF Power Transistors for HF and VHF
SC08b	RF Power Transistors for UHF
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SC13	PowerMOS Transistors including TOPFETs and IGBTs
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SC15	Microwave Transistors (new version planned)
SC16	Wideband Hybrid IC Modules
SC17	Semiconductor Sensors

Professional components

PC06	Circulators and Isolators
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Data handbook system

OVERVIEW OF PHILIPS COMPONENTS DATA HANDBOOKS

Our sister product division, Philips Components, also has a comprehensive data handbook system to support their products. Their data handbook titles are listed here.

Display components

<i>Book</i>	<i>Title</i>
DC01	Colour TV Picture Tubes and Assemblies
DC02	Monochrome Monitor Tubes and Deflection Units
DC03	Television Tuners, Coaxial Aerial Input Assemblies
DC04	Colour Monitor Tubes
DC05	Flyback Transformers, Mains Transformers and General-purpose FXC Assemblies

Magnetic products

MA01	Soft Ferrites
MA03	Piezoelectric Ceramics Specialty Ferrites
MA04	Dry-reed Switches

Passive components

PA01	Electrolytic Capacitors
PA02	Varistors, Thermistors and Sensors
PA03	Potentiometers
PA04	Variable Capacitors
PA05	Film Capacitors
PA06	Ceramic Capacitors
PA07	Quartz Crystals for Special and Industrial Applications
PA08	Fixed Resistors
PA10	Quartz Crystals for Automotive and Standard Applications
PA11	Quartz Oscillators

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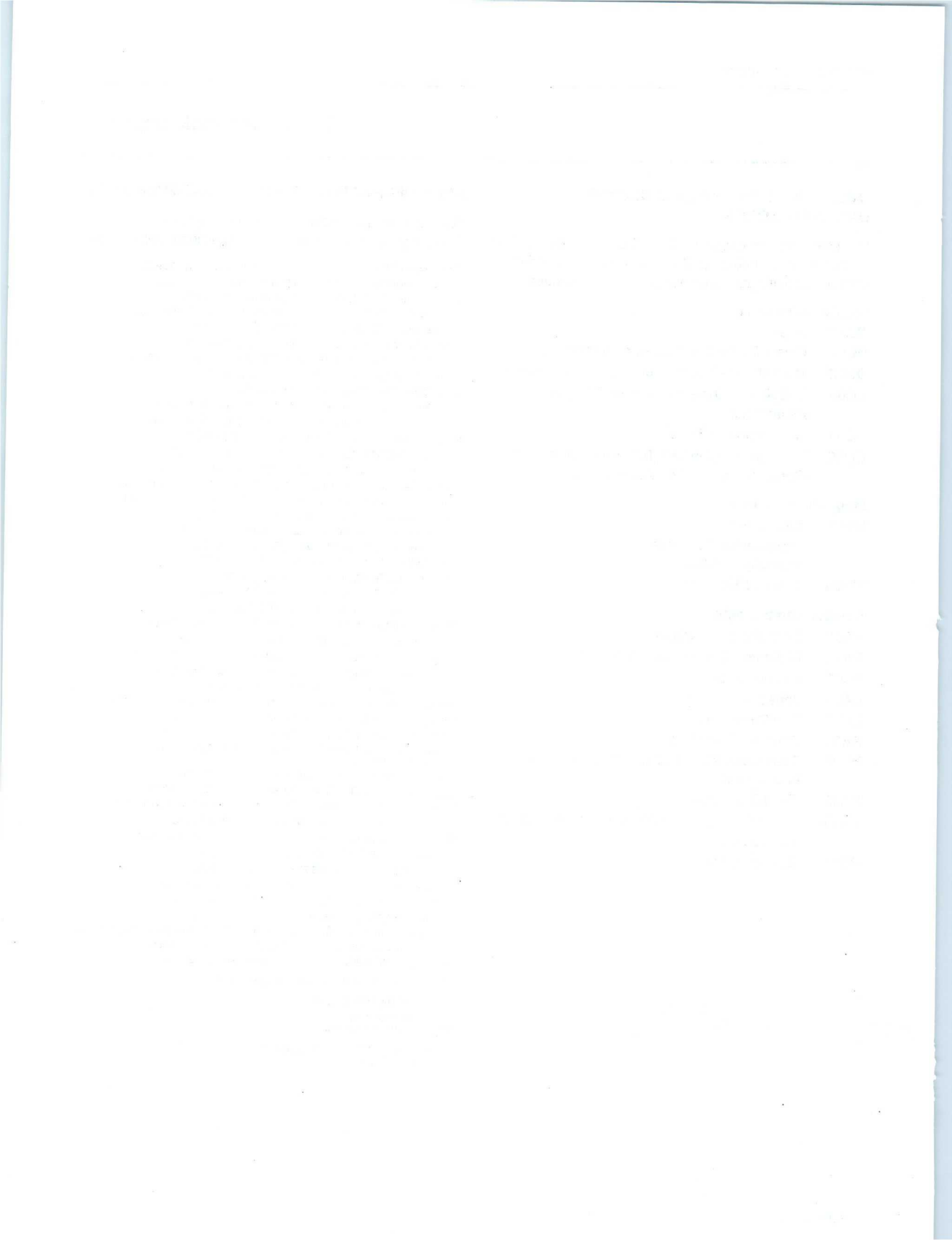
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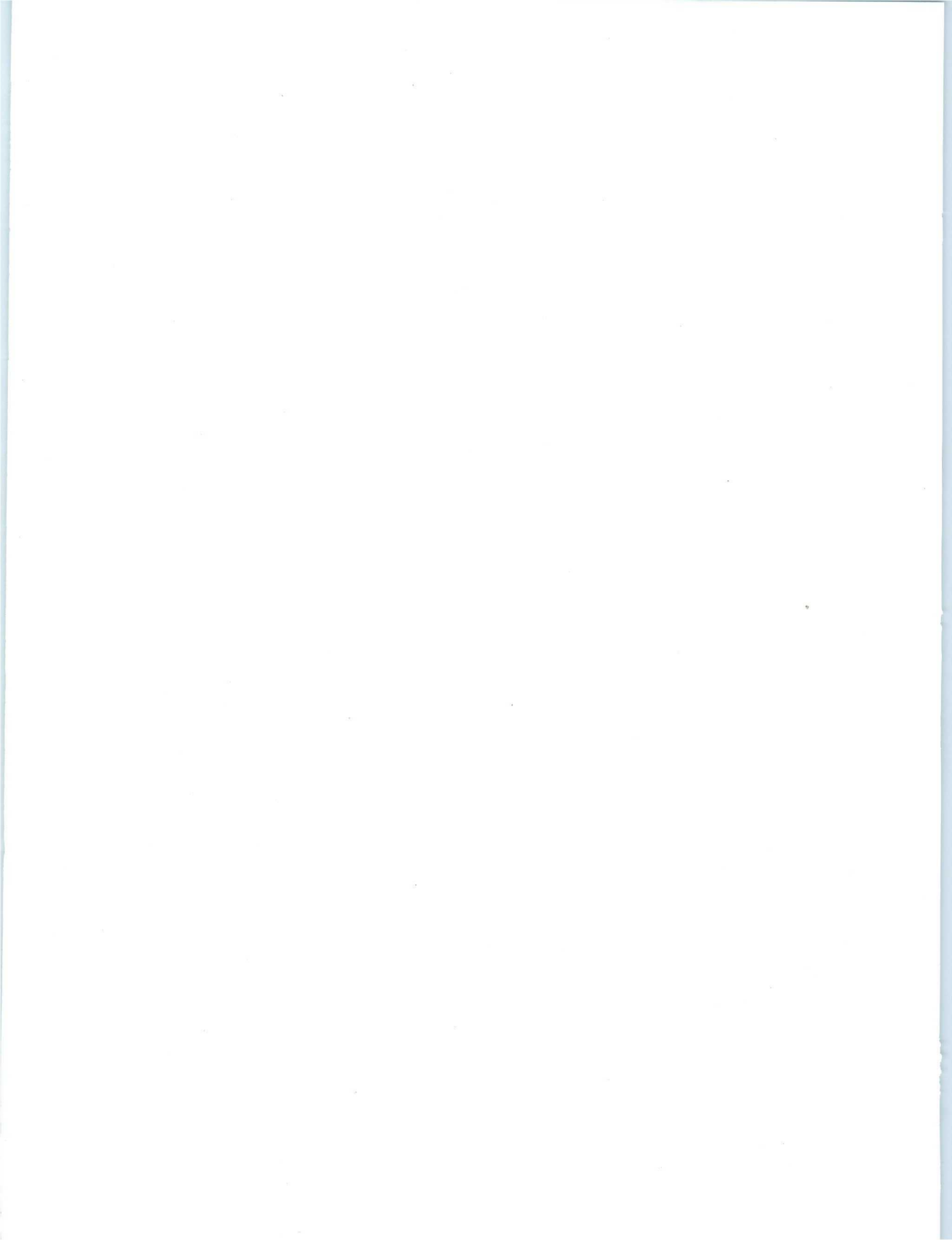
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