

## RF POWER TRIODE

Triode in metal-ceramic construction, intended for use as industrial oscillator.  
The tube is forced-air cooled, with integral cooler.

### QUICK REFERENCE DATA

Oscillator output power ( $W_o - W_{\text{feedb}}$ ), typical	$W_{\text{osc}}$	4,75 kW
Frequency for full ratings	f max.	85 MHz

To be read in conjunction with "General Operational Recommendations".

### RF CLASS C OSCILLATOR FOR INDUSTRIAL USE

#### OPERATING CONDITIONS

Frequency	f	30	30 MHz
Filament voltage	$V_f$	6,3	6,3 V
Oscillator output power ( $W_o - W_{\text{feedb}}$ )	$W_{\text{osc}}$	4,7	3,8 kW
Anode voltage	$V_a$	6	5 kV
Anode current	$I_a$	1	1 A
Anode input power	$W_{ia}$	6	5 kW
Anode dissipation	$W_a$	1,1	1,0 kW
Anode output power	$W_o$	4,9	4 kW
Anode efficiency	$\eta_a$	81,5	80 %
Oscillator efficiency	$\eta_{\text{osc}}$	78	76 %
Feedback ratio	$V_{gp}/V_{ap}$	17,6	19,4 %
Grid resistor	$R_g$	3,1	2,75 k $\Omega$
Grid current, on load	$I_g$	205	200 mA
Grid voltage, negative	$-V_g$	640	550 V
Grid dissipation	$W_g$	60	60 W
Grid resistor dissipation	$W_{Rg}$	130	110 W

**LIMITING VALUES** (Absolute maximum rating system)

Frequency	f	up to	85 MHz *
Anode voltage	$V_a$		7,2 kV
Anode current	$I_a$		1,1 A
Anode input power	$W_{ia}$		6,5 kW
Anode dissipation	$W_a$		2,5 kW
Grid voltage	$-V_g$		1 kV
Grid current, on load	$I_g$		250 mA
off load	$I_g$		350 mA
Grid dissipation	$W_g$		140 W
Grid circuit resistance	$R_g$		20 k $\Omega$
Cathode current, mean	$I_k$		1,4 A
peak	$I_{kp}$		7,5 A
Envelope temperature	$T_{env}$		240 °C

**HEATING:** direct; thoriated tungsten filament

Filament voltage	$V_f$	6,3 V
Filament current at $V_f = 6,3$ V	$I_f$	33 A

The filament is designed to accept temporary fluctuations of + 5% and -10%.

It is extremely important that the filament be properly decoupled. This should be done so that the resonance of the circuit formed by the filament and the decoupling elements remain below the fundamental oscillator frequency. In grounded-grid circuits this resonance should be below the grid-cathode resonance. For further information please see Application Book "Tubes for RF Heating" or contact the manufacturer.

**CAPACITANCES**

Anode-to-filament	$C_{af}$	0,4 pF
Grid to filament	$C_{gf}$	15 pF
Anode to grid	$C_{ag}$	12 pF

**CHARACTERISTICS** measured at  $V_a = 2,0$  kV,  $I_a = 0,5$  A

Transconductance	S	10 mA/V
Amplification factor	$\mu$	17

\* For operation above 85 MHz the tube manufacturer should be consulted.

**COOLING**

To obtain optimum life, the temperature of the seals and the envelope should, under normal operating conditions, be kept below 200 °C.

**Table 1** Air cooling characteristics with insulating pedestal type 40630

anode + grid dissipation $W_a + W_g$ kW	altitude h m	inlet temperature $T_i$ °C	rate of flow $q_{min}$ m <sup>3</sup> /min	pressure drop $\Delta P$ Pa*	max. outlet temperature $T_o$ °C
1	0	35	1,5	35	80
	0	45	1,9	50	81
1,5	0	35	2,7	83	70
	0	45	3,1	85	75
2,5	0	35	5,0	140	65
	0	45	5,4	160	73

**ACCESSORIES**

Filament connector	type 40688
Filament/cathode connector	type 40689
Grid connector	type 40686
Insulating pedestal	type 40630

\* 1 Pa  $\approx$  0,1 mm H<sub>2</sub>O.

**MECHANICAL DATA**

Mounting position: vertical with anode up or down

Net mass: 2,6 kg

Dimensions in mm

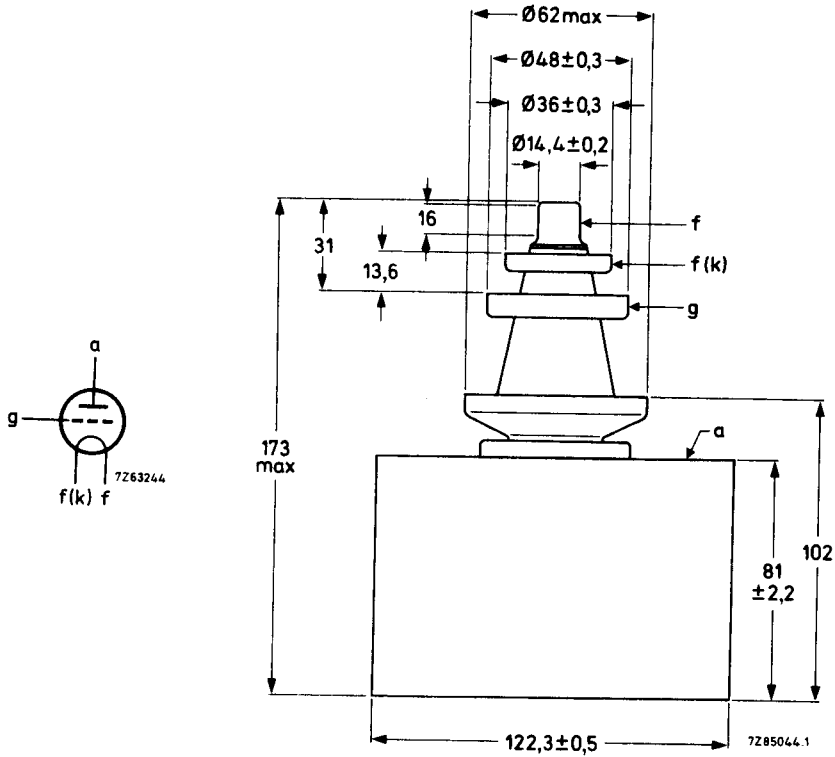


Fig. 1 Mechanical outline.

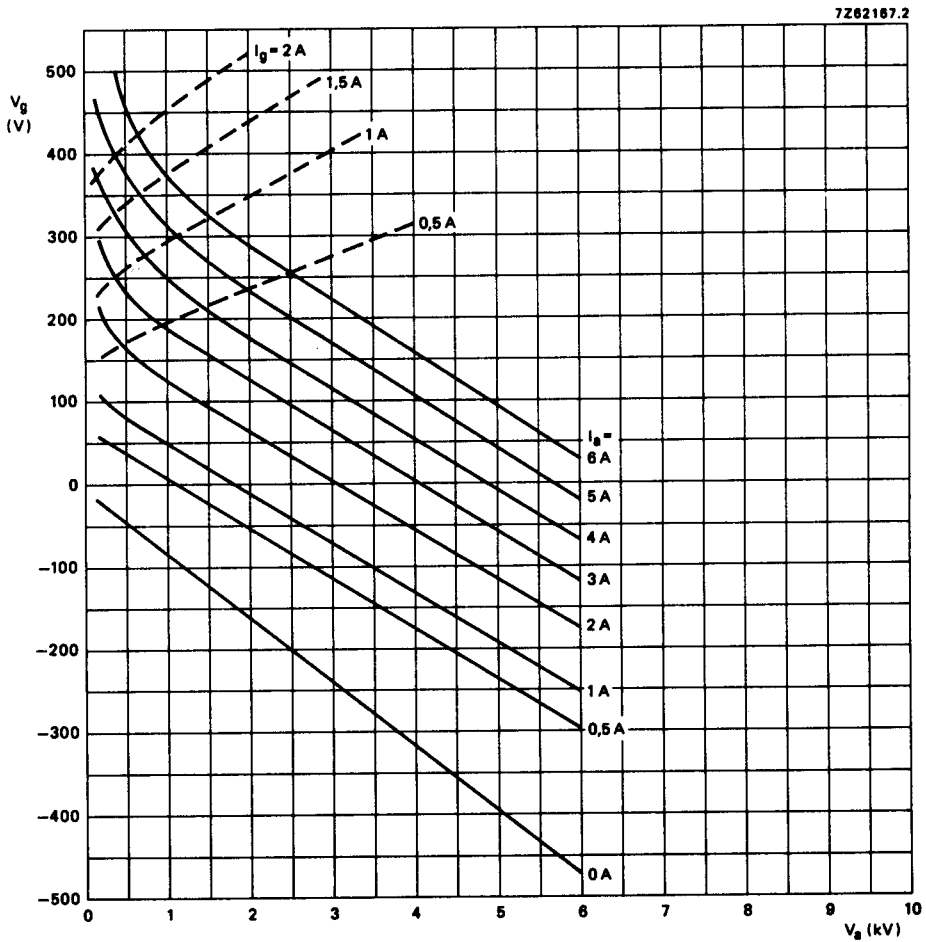


Fig. 2 Constant current characteristics.

# PHILIPS

Data handbook



Electronic  
components  
and materials

YD1150A

<b>page</b>	<b>sheet</b>	<b>date</b>
1	177	1988.02
2	178	1988.02
3	179	1988.02
4	180	1988.02
5	181	1988.02
6	FP	2000.08.24