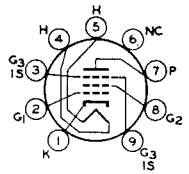
Refer to chart at end of section. **8058**



9GK

POWER PENTODE

8077/7054

INDUSTRIAL TYPE

Miniature type for use as a class C radio-frequency amplifier, oscillator and frequency multiplier up to 40 MHz in mobile communications equipment. **Outlines section,** 6B; requires miniature 9-contact socket.

Heater Voltage	13.5 ±1.5	volts
Heater Current	0.275	ampere
Peak Heater-Cathode Voltage	±120 max.	volts
Direct Interelectrode Capacitances (Approx.):		
Grid No.1 to Plate	0.063	pF
Grid No.1 to all other Electrodes except Plate	10.2	pF
Plate to all other Electrodes except Grid No.1	3.5	pF

Class A_1—AF Power Amplifier

MAXIMUM RATINGS (Absolute-Maximum Values)

Plate Voltage	330	volts
Grid-No.3 (Suppressor Grid)	Connected to cathode at socket	
Grid-No.2 (Screen-Grid) Voltage	180	volts
Grid-No.1 (Control-Grid) Voltage:		
Negative-bias value	55	volts
Positive-bias value	0	volt
Grid-No.2 Input	1	watt
Plate Dissipation	5	watts

MAXIMUM CIRCUIT VALUES

Grid-No.1-Circuit Resistance:		
For fixed-bias operation	0.1	megohm
For cathode-bias operation	0.25	megohm

CHARACTERISTICS

Heater Voltage	13.5	volts
Plate Supply Voltage	250	volts
Grid No.3	Connected to cathode at socket	
Grid No.2 Supply Voltage	150	volts
Cathode Resistor	120	ohms
Plate Resistance (Approx.)	0.1	megohm
Transconductance	11500	μmhos
Plate Current	19	mA
Grid-No.2 Current	3.5	mA
Grid-No.1 Voltage (Approx.) for plate μA = 20	—10	volts

RF Power Amplifier & Oscillator—Class C Telegraphy[a] and RF Power Amplifier—Class C FM Telephony

MAXIMUM CCS[b] RATINGS (Absolute-Maximum Values)

DC Plate Voltage	300	volts
DC Grid No.3 (Suppressor-Grid)	Connected to cathode at socket	
DC Grid-No.2 (Screen-Grid) Voltage	175	volts
DC Grid-No.1 (Control-Grid) Voltage:		
Negative-bias value	50	volts
DC Plate Current	33	mA
DC Grid-No.2 Current	5.5	mA
DC Grid-No.1 Current	3	mA
Grid-No.2 Input	1	watt
Plate Dissipation	5	watts

TYPICAL OPERATION

At frequencies up to 40 MHz

DC Plate Voltage	200	250	300	volts
Grid No.3	Connected to cathode at socket			
DC Grid-No.2 Voltage	115	145	175	volts
DC Grid-No.1 Voltage	—7	—9	—12	volts

Peak RF Grid-No.1 Voltage	9	11	16	volts
DC Plate Current	14.5	20	26	mA
DC Grid-No.2 Current	3	4.1	5.5	mA
DC Grid-No.1 Current (Approx.)	0.6	0.85	1	mA

MAXIMUM CIRCUIT VALUE

Grid-No.1-Circuit Resistance	0.1	megohm

Frequency Multiplier

MAXIMUM CCS[b] RATINGS (Absolute-Maximum Values)

Same as for RF POWER AMPLIFIER & OSCILLATOR

TYPICAL OPERATION

As doubler up to 40 MHz

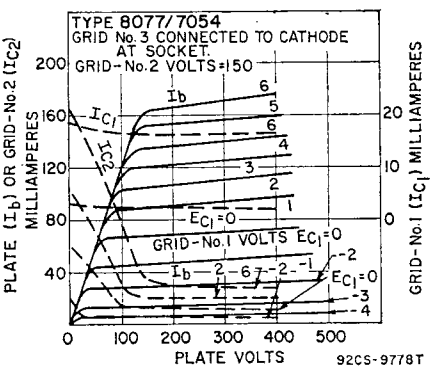
DC Plate Voltage	200	250	300	volts
Grid No.3	Connected to cathode at socket			
DC Grid-No.2 Voltage	115	145	175	volts
DC Grid-No.1 Voltage	—16	—20	—25	volts
Peak RF Grid-No.1 Voltage	19	24	31	volts
DC Plate Current	11	15	20	mA
DC Grid-No.2 Current	2	3	4	mA
DC Grid-No.1 Current (Approx.)	0.3	0.45	0.6	mA
Driving Power (Approx.)	5	9	13	mW
Useful Power Output (Approx.)	1.4	1.9	2.5	watts

MAXIMUM CIRCUIT VALUE

Grid-No.1-Circuit Resistance	0.1	megohm

[a] Key-down conditions per tube without amplitude modulation. Amplitude modulation essentially negative may be used if the positive peak of the audio-frequency envelope does not exceed 115 per cent of the carrier conditions.

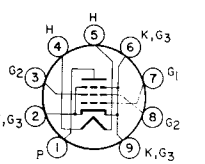
[b] Continuous Commercial Service.



8106

INDUSTRIAL TYPE

BEAM POWER TUBE



9PL

Miniature type for use as a frequency multiplier and driver in mobile communications equipment. **Outlines section,** 6B; requires miniature 9-contact socket.

Heater Voltage	13.5 ±1.5	volts
Heater Current	0.25	ampere
Peak Heater-Cathode Voltage	±100 max.	volts

Direct Interelectrode Capacitances:		
Grid No.1 to Plate	0.09	pF
Grid No.1 to Cathode, Heater, Grid No.2, and Grid No.3	10	pF
Plate to Cathode, Heater, Grid No.2, and Grid No.3	2.8	pF

Class A_1 Amplifier

MAXIMUM RATINGS (Absolute-Maximum Values)

Plate Voltage	330	volts
Grid-No.2 (Screen-Grid) Voltage	300	volts
Grid-No.1 Voltage	—125	volts
Plate Dissipation	6.0	watts
Grid-No.1 Current	3.0	mA
Cathode Current	40	mA

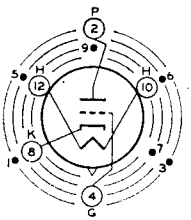
TYPICAL OPERATION AND CHARACTERISTICS

Plate Voltage	300	volts
Grid-No.2 Voltage	150	volts
Grid-No.1 (Control-Grid) Voltage	—3.5	volts
Plate Resistance (Approx.)	90000	ohms
Transconductance	9000	μmhos
Plate Current	16	mA
Grid-No.2 Current	3.2	mA
Grid-No.1 Voltage (Approx.) for plate μA = 100	—8	volts

Refer to chart at end of section. **8136**

Refer to chart at end of section. **8203**

Refer to chart at end of section. **8233**



INDEX=LARGE LUG
●=SHORT PIN—IC

12AQ

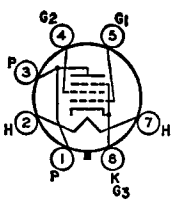
MEDIUM-MU TRIODE

8393

INDUSTRIAL TYPE

Nuvistor type, medium-mu general purpose triode for use as an amplifier or oscillator at frequencies extending into the UHF region. **Outlines section,** 1; requires nuvistor socket. The 8393 is the same as the 7586 except for the following items:

Heater Voltage (ac/dc)	13.5 ±1.4	volts
Heater Current	0.060	ampere
Peak Heater-Cathode Voltage	±100 max.	volts
Direct Interelectrode Capacitance (Approx.):		
Grid to Plate	2.4	pF
Grid to Cathode, Heater, and Shell	4.4	pF
Plate to Cathode, Heater, and Shell	1.6	pF
Plate to Cathode	0.26	pF
Heater to Cathode	1.7	pF



8LY

BEAM POWER TUBE

8417

Glass octal type used as output amplifier in high-fidelity, high-power sound systems. **Outlines section,** 19J; requires octal socket. This tube, like other power-handling tubes, should be adequately ventilated. **Heater:** volts (ac/dc), 6.3; amperes, 1.6; maximum heater-cathode volts, ±200 peak, 100 average.

Class A_1 Amplifier

MAXIMUM RATINGS (Design-Maximum Values)

Plate Voltage	660	volts
Grid-No.2 (Screen-Grid) Voltage	500	volts
Cathode Current	200	mA
Plate Dissipation▪	35	watts
Grid-No.2 Input	5*	watts

CHARACTERISTICS

Plate Voltage	300	volts
Grid-No.2 Voltage	300	volts
Grid-No.1 (Control-Grid) Voltage	—12	volts
Grid-No.1 Voltage for plate current of 1 mA	—37	volts
Plate Resistance	16000	ohms
Transconductance	23000	μmhos
Plate Current	100	mA
Grid-No.2 Current	5.5	mA
Triode Amplification Factor	16.5	

MAXIMUM CIRCUIT VALUES

Grid-No.1-Circuit Resistance:		
For fixed-bias operation	1	megohm
For cathode-bias operation	0.25	megohm

Push-Pull Class AB_1 Amplifier

MAXIMUM RATINGS (Same as for Class A_1 Amplifier)

TYPICAL OPERATION (Values are for two tubes)

Plate Supply Voltage	400	560	volts
Grid-No.2 Supply Voltage	275	300	volts
Grid-No.1 Voltage	—13	—15.5	volts
Peak AF Grid-to-Grid Voltage	24	31	volts
Zero-Signal Plate Current	150	100	mA
Maximum-Signal Plate Current	294	270	mA
Zero-Signal Grid-No.2 Current	4.4	3.4	mA
Maximum-Signal Grid-No.2 Current	34	31	mA
Effective Load (Plate-to-Plate)	2800	4200	ohms
Total Harmonic Distortion	2.5	2	per cent
Maximum Signal Power Output	65	100	watts

▪ A bias resistor or other means is required to protect the tube in absence of excitation.

* Grid-No.2 may reach 8 watts during peak levels of speech and music levels.

8532	Refer to chart at end of section.
8532/6J4WA	Refer to chart at end of section.
8532W	Refer to chart at end of section.
8627	Refer to chart at end of section.
8627A	Refer to chart at end of section.
8628	Refer to chart at end of section.
8808	Refer to chart at end of section.
8950	Refer to chart at end of section.
9001	Refer to chart at end of section.
9002	Refer to chart at end of section.
9003	Refer to chart at end of section.
9005	Refer to chart at end of section.
9006	Refer to chart at end of section.

Refer to type 1S2A/DY87.	**DY87**
Refer to type 6AK8/EABC8.	**EABC80**
Refer to type 6DC8/EBF89.	**EBF89**
Refer to type 6DL4/EC88.	**EC88**
Refer to type 6FY5/EC97.	**EC97**
Refer to type 12AT7/ECC81.	**ECC81**
Refer to type 12AU7A/ECC82.	**ECC82**
Refer to type 12AX7A/ECC83.	**ECC83**
Refer to type 6AQ8/ECC85.	**ECC85**
Refer to type 6ES8/ECC189.	**ECC189**
Refer to type 6BL8/ECF80.	**ECF80**
Refer to type 6HG8/ECF86.	**ECF86**
Refer to type 6X9/ECF200.	**ECF200**
Refer to type 6U9/ECF201.	**ECF201**
Refer to type 6GJ7/ECF801.	**ECF801**
Refer to type 6JW8/ECF802.	**ECF802**
Refer to type 6BM8/ECL82.	**ECL82**
Refer to type 6DX8/ECL84.	**ECL84**
Refer to type 6GV8/ECL85.	**ECL85**
Refer to type 6GW8/ECL86.	**ECL86**
Refer to type 6AM6/EF91.	**EF91**
Refer to type 6BA6/EF93.	**EF93**
Refer to type 6AK5/EF95.	**EF95**
Refer to type 6EH7/EF183.	**EF183**
Refer to type 6EJ7/EF184.	**EF184**
Refer to type 6X9/EFL200.	**EFL200**
Refer to type 6CA7/EL34.	**EL34**
Refer to type 6BQ5/EL84.	**EL84**
Refer to type 6CW5/EL86.	**EL86**
Refer to type 6DL5/EL95.	**EL95**
Refer to type 6GB5/EL500.	**EL500**

EL509	Refer to type 6KG6A/EL509.
ELL80	Refer to type 6HU8/ELL80.
EM84 **EM84/6GFG6**	Refer to chart at end of section.
EM87	Refer to type 6HU6/EM87.
EY88	Refer to type 6AL3/EY88.
EY500	Refer to type 6EC4A/EY500.
GZ34	Refer to type 5AR4/GZ34.
HCC85	Refer to type 17EW8/HCC85.
LCF80	Refer to type 6LN8/LCF80.
LCF86	Refer to type 5HG8/LCF86.
LCF201	Refer to type 5U9/LCF201.
LCF801	Refer to type 5GJ7/LCF801.
LCF802	Refer to type 6LX8/LCF802.
LCL84	Refer to type 10DX8/LCL84.
LCL85	Refer to type 10GV8/LCL85.
LF183	Refer to type 4EH7/LF183.
LF184	Refer to type 4EJ7/LF184.
LFL200	Refer to type 11Y9/LFL200.
LL86	Refer to type 10CW5/LL86.
LL500	Refer to type 18GB5/LL500.
LY88	Refer to type 20AQ3/LY88.
PC900	Refer to type 4HA5/PC900.
PCC85	Refer to type 9AQ8/PCC85.
PCC88	Refer to type 7DJ8/PCC88.
PCF80	Refer to type 9A8/PCF80.
PCF86	Refer to type 7HG8/PCF86.
PCF801	Refer to type 8GJ7/PCF801.
PCF802	Refer to type 9JW8/PCF802.
PCL82	Refer to type 16A8/PCL82.
PCL84	Refer to type 15DQ8/PCL84.

Refer to type 6GV8/PCL85.	**PCL85**
Refer to type 25E5/PL36.	**PL36**
Refer to type 15CW5/PL84.	**PL84**
Refer to type 27GB5/PL500.	**PL500**
Refer to type 40KG6A/PL509.	**PL509**
Refer to type 29KQ6/PL521.	**PL521**
Refer to type 17Z3/PY81.	**PY81**
Refer to type 30AE3/PY88.	**PY88**
Refer to type 42EC4A/PY500.	**PY500**
Refer to type 50BM8/UCL82.	**UCL82**
Refer to type 4ES8/XCC189.	**XCC189**
Refer to type 4BL8/XCF80.	**XCF80**
Refer to type 4GJ7/XCF801.	**XCF801**
Refer to type 9GV8/XCL85.	**XCL85**
Refer to type 3EH7/XF183.	**XF183**
Refer to type 3EJ7/XF184.	**XF184**
Refer to type 8CW5/XL86.	**XL86**
Refer to type 13GB5/XL500.	**XL500**
Refer to type 16AQ3/XY88.	**XY88**
Refer to type 5ES8/YCC189.	**YCC189**