

Transconductance	8000	8000	μ mhos
Load Resistance	2000	4000	ohms
Total Harmonic Distortion (Approx.)	10	10	per cent
Maximum-Signal Power Output	2.1	3.8	watts

CHARACTERISTICS (Triode Connection)*

Plate Voltage	225	volts
Grid-No.1 Voltage	-30	volts
Amplification Factor	6.2	
Plate Resistance (Approx.)	1600	ohms
Transconductance	3800	μ mhos
Plate Current	22	mA
Grid No.1 Voltage (Approx.) for plate current of 0.5 mA	-42	volts

MAXIMUM CIRCUIT VALUES:

Grid-No.1 Circuit Resistance:		
For fixed-bias operation	0.1	megohm
For cathode-bias operation	0.5	megohm

* Grid No.2 connected to plate.

Vertical-Deflection Amplifier

For operation in a 525-line, 30-frame system

MAXIMUM RATINGS (Design-Maximum Values)

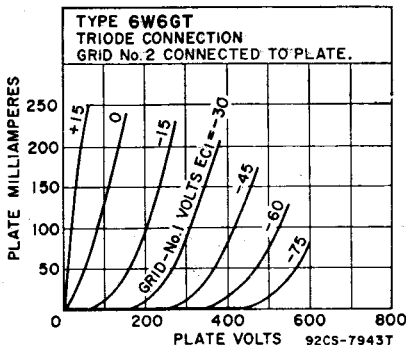
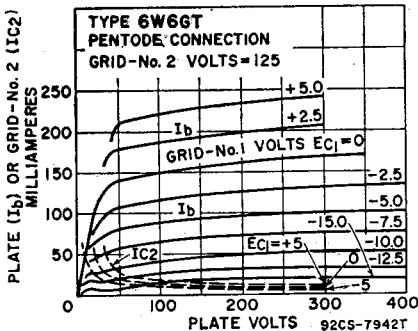
	Triode Connection*	Pentode Connection	
DC Plate Voltage	330	330	volts
Peak Positive-Pulse Plate Voltage#	1200	1500	volts
DC Grid No.2 (Screen-Grid) Voltage	—	165	volts
Peak Negative-Pulse Grid-No.1 Voltage	275	275	volts
Peak Cathode Current	195	195	mA
Average Cathode Current	65	65	mA
Plate Dissipation	8.5	8	watts
Grid-No.2 Input	—	1.2	watts

MAXIMUM CIRCUIT VALUE

Grid-No.1-Circuit Resistance, for cathode-bias operation	2.2	2.2	megohms
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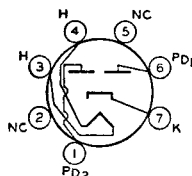
* Grid No.2 connected to plate.

Pulse duration must not exceed 15% of a vertical-scanning cycle (2.5-milliseconds).



Refer to chart at end of section.

6W7G



5BS

FULL-WAVE VACUUM RECTIFIER

6X4

12X4

Miniature type used in power supply of automobile and ac-operated radio receivers. Equivalent in performance to larger type 6X5GT. Outlines section, 5D; requires miniature 7-contact socket. This tube, like other power-handling tubes, should be adequately ventilated. For discussion of Rating Chart and Operation

Characteristics, refer to Interpretation of Tube Data. Type 12X4 is identical with type 6X4 except for heater ratings.

	6X4	12X4	
Heater Voltage (ac/dc)	6.3 ^A	12.5	volts
Heater Current	0.6	0.3	ampere
Heater-Cathode Voltage:			
Peak value	+200, -450 max		volts
Average value	100 max		volts

^A When the heater is operated from a 3-cell (nominal-6-volt) storage-battery source, the permissible heater-voltage range is from 5 to 8 volts.

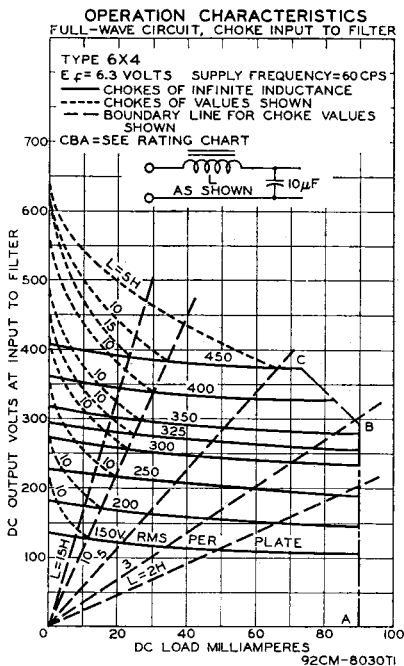
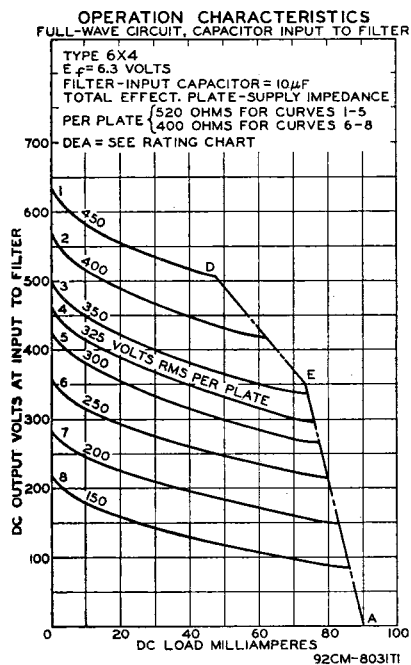
Full-Wave Rectifier

MAXIMUM RATINGS (Design-Maximum Values)

Peak Inverse Plate Voltage	1250	volts
Steady-State Peak Plate Current (Per Plate)	245	mA
AC Plate Supply Voltage (Per Plate, rms)	See Rating Chart	
DC Output Voltage (At filter input) [†]	350	volts
Average Output Current (Each plate) [†]	45	mA
Hot-Switching Transient Plate Current	#	

[†] This rating applies when the 6X4 is used in vibrator operation with a minimum duty cycle of 75 per cent.

If hot-switching is regularly required in operation, the use of choke-input circuits is recommended. Such circuits limit the hot-switching current to a value no higher than that of the peak plate current. When capacitor-input circuits are used, a maximum peak current value per plate of 1.1 amperes during the initial cycles of the hot-switching transient should not be exceeded.



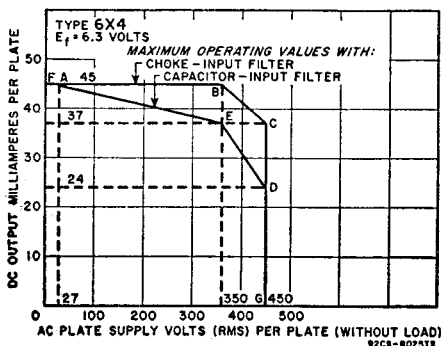
TYPICAL OPERATION

Filter Input

AC Plate Supply Voltage (Each plate, rms) ..	325	400	—	volts
Filter Input Capacitor	10	—	10	µF
Effective Plate Supply Impedance (Each plate) ..	525	—	—	ohms
Filter Input Choke	—	10	—	henries
Average Output Current	70	70	70	mA
DC Output Voltage at Input to Filter (Approx.)	310	340	240	volts

* AC plate supply voltage is measured without load.

RATING CHART

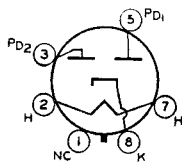


Refer to chart at end of section.

6X4W

Refer to chart at end of section.

6X5



6S

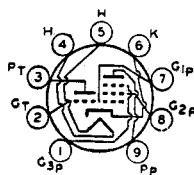
**FULL-WAVE
VACUUM RECTIFIER**

6X5GT

Glass octal type used in power supply of automobile and ac-operated receivers. Outlines section, 13D; requires octal socket. This type may be supplied with pin No.1 omitted. For maximum ratings, and typical operation, refer to type 6X4.

Refer to chart at end of section.

6X8



9AK

**MEDIUM-MU TRIODE—
SHARP-CUTOFF PENTODE**

6X8A

5X8, 19X8

Miniature type used as combined oscillator and mixer tube in television receivers utilizing an intermediate frequency in the order of 40 MHz and in AM/FM receivers. Outlines section, 6B; requires miniature 9-contact socket. Types 5X8 and 19X8 are identical with type 6X8A except for heater ratings.

Heater Voltage (ac/dc)	5X8	6X8A	19X8	
Heater Current	4.7	6.3	18.4	volts
Heater Warm-up Time (Average)	0.6	0.45	0.15	ampere
Heater-Cathode Voltage:	11	11	—	seconds
Peak value	±200 max	±200 max	±200 max	volts
Average value	100 max	100 max	100 max	volts
Direct Interelectrode Capacitances:	Unshielded Shielded^A			
Triode Unit:				
Grid to Plate	1.5	1.5		pF
Grid to Cathode and Heater	2	2.4		pF
Plate to Cathode and Heater	0.5	1		pF
Pentode Unit:				
Grid No.1 to Plate	0.09 max	0.06 max		pF
Grid No.1 to Cathode, Heater, Grid No.2, and Grid No.3	4.6	4.8		pF
Plate to Cathode, Heater, Grid No.2, and Grid No.3	0.9	1.6		pF
Pentode Grid No.1 to Triode Plate	0.05 max	0.04 max		pF
Pentode Plate to Triode Plate	0.05 max	0.008 max		pF
Heater to Cathode	6.5	6.5*		pF