

The grid-No.2 (screen-grid) voltage may be obtained from a potentiometer or bleeder circuit across the B-supply source, or through a dropping resistor from the plate supply. The use of series resistors for obtaining satisfactory control of grid-No.2 voltage in the case of four-electrode tubes is usually impossible because of secondary-emission phenomena. In the 6BA6, however, because grid No.3 practically removes these effects, it is practical to obtain grid-No.2 voltage through a series-dropping resistor from the plate supply or from some high intermediate voltage, provided the source does not exceed the plate-supply voltage. With this method, the grid-No.2-to-cathode voltage will fall off very little from minimum to maximum value of the resistor controlling cathode bias. In some cases, it may actually rise. This rise of grid-No.2-to-cathode voltage above the normal maximum value is allowable because both the grid-No.2 current and the plate current are reduced simultaneously by a sufficient amount to prevent damage to the tube. It should be recognized that, in general, the series-resistor method of obtaining grid-No.2 voltage from a higher voltage supply necessitates the use of the variable cathode-resistor method of controlling volume in order to prevent too high a voltage on grid No.2. When grid-No.2 and control-grid voltage are obtained in this manner, the remote "cutoff" advantage of the 6BA6 can be fully realized. However, it should be noted that the use of a resistor in the grid-No.2 circuit has an effect on the change in plate resistance with variation in grid-No.3 (suppressor-grid) voltage in case grid No.3 is utilized for control purposes.



8CT

PENTAGRID CONVERTER

6BA7

Miniature type used as converter in AM and FM receivers. Outlines section, 6E; requires miniature 9-contact socket.

Heater Voltage	6.3	volts
Heater Current	0.3	ampere
Peak Heater-Cathode Voltage	±90	volts
Direct Interelectrode Capacitances:		
Grid No. 3 to All Other Electrodes	9.5	pF
Plate to All Other Electrodes	8.3	pF
Grid No. 1 to All Other Electrodes	6.7	pF
Grid No. 3 to Plate	0.19 max	pF
Grid No. 3 to Grid No. 1	0.1 max	pF
Grid No. 1 to Plate	0.05 max	pF
Grid No. 1 to All Other Electrodes, except Cathode	3.4	pF
Grid No. 1 to Cathode	3.3	pF
Cathode to All Other Electrodes except Grid No. 1	4	pF

Converter Service

MAXIMUM RATINGS (Design-Center Values)

Plate Voltage	300	volts
Grid-No.5-and-Internal-Shield Voltage ^a	0	volts
Grids-No.-2-and-No.4 (Screen-Grid) Voltage	100	volts
Grids-No.2-and-No.4 Supply Voltage	300	volts
Plate Dissipation	2	watts
Grids-No.2-and-No.4 Input	1.5	watts
Total Cathode Current	22	mA
Grid-No.3 Voltage:		
Negative-bias value	100	volts
Positive-bias value	0	volts

CHARACTERISTICS (Separate Excitation)*

Plate Voltage	100	250	volts
Grid No.5 and Internal Shield ^a	Connected directly to ground		
Grids-No.2-and-No.4 (Screen-Grid) Voltage	100	100	volts

Grid-No.3 (Control-Grid) Voltage	—1	—1	volt
Grid-No.1 (Oscillator-Grid) Resistor	20000	20000	ohms
Plate Resistance (Approx.)	0.5	1	megohm
Conversion Transconductance	900	950	μ mhos
Conversion Transconductance (Approx.)**	3.5	3.5	μ mhos
Plate Current	3.6	3.8	mA
Grids-No.2-and-No.4 Current	10.2	10	mA
Grid-No.1 Current	0.35	0.35	mA
Total Cathode Current	14.2	14.2	mA

NOTE: The transconductance between grid No.1 and grids No.2 and No.4 connected to plate (not oscillating) is approximately 8000 μ mhos under the following conditions: signal applied to grid No.1 at zero bias; grids No.2 and No.4 and plate at 100 volts; grid No.3 grounded. Under the same conditions, the plate current is 32 milliamperes, and the amplification factor is 16.5.

* The characteristics shown with separate excitation correspond very closely with those obtained in a self-excited oscillator circuit operating with zero bias.

** With grid-No.3 bias of —20 volts.

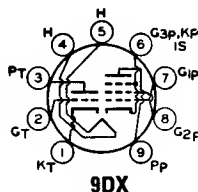
▲ Internal Shield (pins No.6 and No.8) connected directly to ground.

6BA8A

8BA8A

MEDIUM-MU TRIODE— SHARP-CUTOFF PENTODE

Miniature type used in color and black-and-white television receivers. The pentode unit is used as a video amplifier, an age amplifier, or a reactance tube. The triode unit is used in low-frequency oscillator and phase-splitter circuits. Outlines section, 6E; requires miniature 9-contact socket. Type 8BA8A is identical with type 6BA8A except for the heater ratings.



Heater Voltage (ac/dc)	6.3	8.4	volt
Heater Current	0.3	0.45	ampere
Heater Warm-up Time (Average)	11	—	seconds
Heater-Cathode Voltage:			
Peak value	±200 max	±200 max	volt
Average value	100 max	100 max	volt

Direct Interelectrode Capacitances (Approx.):

Triode Unit:			
Grid to Plate	2.2	2.2	pF
Grid to Cathode and Heater	2.5	2.7	pF
Plate to Cathode and Heater	0.4	1.9	pF
Pentode Unit:			
Grid No.1 to Plate	0.06	0.05	pF
Grid No.1 to Cathode, Heater, Grid No.2, Grid No.3, and Internal Shield	10	10	pF
Plate to Cathode, Heater, Grid No.2, Grid No.3, and Internal Shield	3.6	4.5	pF
Triode Grid to Pentode Plate	0.016	0.006	pF
Pentode Grid No.1 to Triode Plate	0.006	0.003	pF
Pentode Plate to Triode Plate	0.15	0.023	pF

Class A₁ Amplifier

■ With external shield connected to cathode of unit under test.

MAXIMUM RATINGS (Design-Center Values)

	Triode Unit	Pentode Unit	
Plate Voltage	300	300	volt
Grid-No.2 (Screen-Grid) Supply Voltage	—	300	volt
Grid-No.2 Voltage	—	See curve page 98	
Grid-No.1 (Control-Grid) Voltage:			
Negative-bias value	—	—50	volt
Positive-bias value	—	0	volt
Plate Dissipation	2	3.25	watt
Grid-No.2 Input:			
For grid-No.2 voltages up to 150 volts	—	1	watt
For grid-No.2 voltages between 150 and 300 volts	—	See curve page 98	

CHARACTERISTICS

Plate-Supply Voltage	200	200	volt
Grid-No.2 Supply Voltage	—	150	volt
Grid-No.1 Voltage	—8	—	volt
Cathode-Bias Resistor	—	180	ohms
Amplification Factor	18	—	
Plate Resistance (Approx.)	6700	400000	ohms
Transconductance	2700	9000	μ mhos
Plate Current	8	13	mA
Grid-No.2 Current	—	3.5	mA
Grid-No.1 Voltage (Approx.) for plate current of 10 μ A	—16	—10	volt