

RATINGS (Design Maximum Rating System)**Triode**

Plate Voltage (Max.)	300 Volts
Plate Dissipation (Max.)	0.5 Watt
Positive-Grid Voltage (Max.)	0 Volt

Diode

Diode Current (Each Section) (Max.)	1.0 Ma
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CHARACTERISTICS AND TYPICAL OPERATION**Class A1 Amplifier**

Plate Voltage	100	250 Volts
Grid Voltage	-1	-3 Volts
Plate Current	0.8	1.0 Ma
Transconductance	1300	1200 μ mhos
Amplification Factor	70	70
Plate Resistance	54,000	58,000 Ohms
Average Diode Current at 10 Volts DC ⁽²⁾	2.0	2.0 Ma

NOTES:

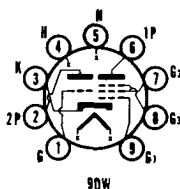
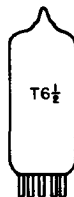
- (1) Shield No. 316 connected to cathode.
 (2) Test condition only.

6AT8A**5AT8**

Color Television Type

VHF OSCILLATOR AND MIXER**Medium Mu Triode and Sharp Cutoff Pentode**

Construction	Miniature T-6½
Base	Button 9 Pin, E9-1
Basing	.9DW
Outline	6-2
Maximum Diameter	0.875 In.
Maximum Seated Height	1.938 In.
Maximum Overall Height	2.188 In.

**ELECTRICAL DATA****HEATER OPERATION**

	5AT8	6AT8A
Heater Voltage	4.7	6.3 Volts
Heater Current	600	450 Ma
Heater Warm-up Time	11	11 Seconds
Maximum Heater-Cathode Voltage		
Heater Negative With Respect to Cathode		
Total DC and Peak		200 Volts
Heater Positive With Respect to Cathode		
DC		100 Volts
Total DC and Peak		200 Volts

DIRECT INTERELECTRODE CAPACITANCES

	Shielded⁽¹⁾	Unshielded
Triode Section		
Grid to Plate	1.5	1.5 Pf
Input	2.4	2.0 Pf
Output	1.0	0.5 Pf
Pentode Section		
Grid No. 1 to Plate (Max.)	0.016	0.025 Pf
Input	4.7	4.5 Pf
Output	1.6	0.9 Pf
Pentode Section Triode Connected⁽²⁾		
Grid No. 1 to Plate	1.3	1.3 Pf
Input	3.3	3.0 Pf
Output	2.5	1.7 Pf
Coupling		
Pentode Grid No. 1 to Triode Plate (Max.)	0.04	0.05 Pf
Pentode Plate to Triode Plate (Max.)	0.007	0.05 Pf
Heater to Cathode	6.5 ⁽³⁾	6.5 Pf

RATINGS (Design Center Rating System)

	Triode Section as Oscillator	Pentode Section as Mixer
Converter Service		
Plate Voltage (Max.)	250	250 Volts
Grid No. 3 Voltage (Max.)	—	0 Volt
Grid No. 2 Supply Voltage (Max.)	—	250 Volts
Grid No. 2 Voltage	See Rating Chart (Gen. Info. Sec.)	
Grid No. 1 Voltage		
Negative Bias Value (Max.)	40	40 Volts
Positive Bias Value (Max.)	0	0 Volt
Plate Dissipation (Max.)	1.5	2.0 Watts
Grid No. 2 Input (Max.)	—	0.4 Watt
Grid No. 1 Input (Max.)	0.5	— Watt
Grid No. 1 Circuit Resistance		
Fixed Bias (Max.)	—	0.1 Megohm
Self Bias (Max.)	—	0.5 Megohm

Pentode Section as Triode Connected Mixer⁽²⁾

Plate Voltage (Max.)	250 Volts
Negative Grid No. 1 Voltage (Max.)	40 Volts
Positive Grid No. 1 Voltage (Max.)	0 Volt
Plate Dissipation (Max.)	2.4 Watts

CHARACTERISTICS AND TYPICAL OPERATION

	Triode Section	Pentode Section
Plate Voltage	100	250 Volts
Grid No. 3 Voltage	Connected to Cathode at Socket	
Grid No. 2 Voltage	—	150 Volts
Cathode Bias Resistor	100	200 Ohms
Plate Current	8.5	7.7 Ma
Grid No. 2 Current	—	1.6 Ma
Transconductance	5800	4600 μ mhos
Amplification Factor	40	—
Plate Resistance (Approx.)	6900	750,000 Ohms
Ec1 for Ib = 10 μ a (Approx.)	-10	-10 Volts

	Triode Section as 250 MHz Oscillator⁽⁴⁾	Pentode Section as Mixer⁽⁵⁾
Plate Voltage	150	150 Volts
Grid No. 3 Voltage	Connected to Cathode at Socket	
Grid No. 2 Voltage	—	150 Volts
Mixer Grid No. 1 Supply Voltage	—	-3.5 Volts
Plate Current	13	6.2 Ma
Grid No. 2 Current	—	1.8 Ma
Conversion Transconductance	—	2100 μ mhos
Mixer Grid No. 1 Circuit Resistance	—	120,000 Ohms
Oscillator Voltage at Mixer Grid No. 1 (RMS)	—	2.6 Volts
Oscillator Grid Resistor	2700	— Ohms
Grid No. 1 Current	3.6	— Ma
Grid No. 1 Current	—	2.0 μ a
Oscillator Power Output (Approx.) ⁽⁴⁾	0.5	— Watt

Pentode Section as Triode Connected Mixer⁽²⁾

Plate Voltage	150 Volts
Grid No. 1 Supply Voltage	-3.5 Volts
Plate Current	7.8 Ma
Conversion Transconductance	2800 μ mhos
Oscillator Voltage at Grid No. 1 (RMS)	2.6 Volts
Grid No. 1 Current	2.0 μ a
Grid No. 2 Circuit Resistance	120,000 Ohms

NOTES:

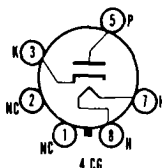
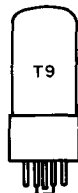
- (1) External Shield No. 315 connected to cathode.
- (2) Grid No. 3 connected to cathode; Grid No. 2 connected to plate.
- (3) Shield No. 315 connected to ground.
- (4) In TV or FM receivers, it is generally desirable to operate the oscillator with less power input than shown in the tabulation data in order to avoid over excitation and excessive oscillator radiation.
- (5) With separate excitation and triode unit grounded.

6AU4GTA**19AU4GTA**

Color Television Type

DAMPER**Heater-Cathode Diode**

Construction Octal T-9
 Base⁽¹⁾ Octal 5 or 6 Pin, B5-85 or B6-60
 Basing⁽¹⁾ 4CG
 Outline 9-44
 Maximum Diameter 1.188 In.
 Maximum Seated Height 3.250 In.
 Maximum Overall Height 3.813 In.

**ELECTRICAL DATA
HEATER OPERATION**

	19AU4GTA	6AU4GTA
Heater Voltage.....	18.9	6.3 Volts
Heater Current.....	600	1800 Ma
Heater Warm-up Time.....	11	— Seconds
Maximum Heater-Cathode Voltage		
Heater Negative with Respect to Cathode		
DC.....		900 Volts
Total DC and Peak.....		4500 Volts
Heater Positive with Respect to Cathode		
DC.....		100 Volts
Total DC and Peak.....		300 Volts

DIRECT INTERELECTRODE CAPACITANCES (Unshielded)

Heater to Cathode	4.0 Pf
Plate to Cathode and Heater.....	8.5 Pf
Cathode to Plate and Heater.....	11.5 Pf

RATINGS (Design Maximum Rating System)**Damper Diode⁽²⁾**

Peak Inverse Plate Voltage (Abs. Max.).....	4500 Volts
DC Plate Current (Max.).....	190 Ma
Steady State Peak Plate Current (Max.).....	1150 Ma
Plate Dissipation (Max.).....	6.0 Watts

CHARACTERISTICS AND TYPICAL OPERATION**Damper Service—90° Deflection Scan System**

Peak Inverse Plate Voltage	3.65 Kv
Peak Heater-Cathode Voltage.....	3.9 Kv
Average Cathode Current	120 Ma
Peak Cathode Current	500 Ma
Boosted B+ Voltage	640 Volts
Plate Dissipation	2.8 Watts
Average Tube Voltage Drop for Ib = 350 Ma	25 Volts

NOTES:

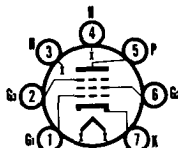
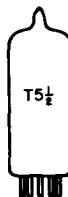
- (1) May be either 5 or 6 pin. Socket terminals No. 1 (if used), 2, 4, and 6 shall not be used as tie points. Pin No. 1 may be omitted on 5 pin base.
- (2) For operation in a 525-line, 30-frame system, the duty cycle of the horizontal voltage pulse must not exceed 15% of one horizontal scanning cycle. Power rectification service is not recommended.

6AU6A**3AU6, 4AU6, 12AU6**

Color Television Type

RF AMPLIFIER**Sharp Cutoff Pentode**

Construction Miniature T-5½
 Base Button 7 Pin, E7-1
 Basing 7BK
 Outline 5-2
 Maximum Diameter 0.750 In.
 Maximum Seated Height 1.875 In.
 Maximum Overall Height 2.125 In.



7BK