

**6BY4****TRIODE****FOR UHF AMPLIFIER APPLICATIONS****6BY4**
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DESCRIPTION AND RATING

The 6BY4 is a ceramic high-mu triode of parallel-plane construction designed primarily for use as a grounded-grid radio-frequency amplifier in combined UHF-VHF television tuners. In this service, at 900 megacycles, the 6BY4 exhibits a power gain of approximately 15 decibels and a noise factor of approximately 8.5 decibels with a 10-megacycle bandwidth. The high performance capabilities of the tube thus make possible simplified tuner designs in which the 6BY4 serves as the r-f amplifier for both the UHF and VHF bands. Special features of the tube include excellent isolation between input and output circuits, low lead inductances, low interelectrode capacitances, short transit time, extremely high ratio of transconductance to plate current, and small size.

The size of the 6BY4 makes it particularly suited to compact tuner designs. In these applications, the tube may be used with special clip-type or friction-type sockets which are either separate units or integral with the tuner; the 6BY4 may also be adapted to coaxial circuitry.

The special metal-ceramic construction of the 6BY4 provides several fundamental advantages over conventional glass receiving tubes. The tube may operate at much higher envelope temperatures, exhibits increased resistance to mechanical shock and vibration, has greatly increased physical strength, and produces significantly lower microphonic output. The 6BY4 construction is also well suited for use with printed circuit boards and other types of automatic circuit assembly.

GENERAL**ELECTRICAL**

Cathode—Coated Unipotential

Heater Voltage, AC or DC 6.3 $\pm$ 10% Volts

Heater Current 0.25 Amperes

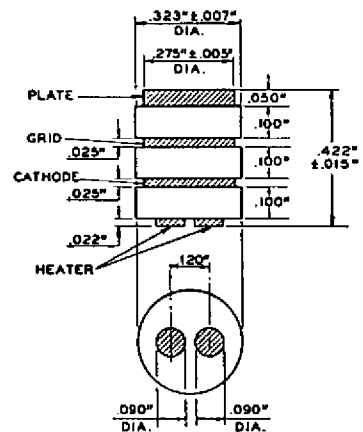
Direct Interelectrode Capacitances*

Plate to Cathode, maximum 0.007 μ mfCathode to Grid and Heater 2.0 μ mfPlate to Grid and Heater 0.7 μ mfHeater to Cathode 0.8 μ mf**MECHANICAL**

Mounting Position—Any

Envelope—See Physical Dimensions

* Without external shield.

PHYSICAL DIMENSIONS**GENERAL  ELECTRIC**

MAXIMUM RATINGS

DESIGN-MAXIMUM VALUES (SEE NOTE)

Plate Voltage	300	Volts
Positive DC Grid Voltage	0	Volts
Plate Dissipation	1.1	Watts
DC Cathode Current	5.5	Milliamperes
Heater-Cathode Voltage		
Heater Positive with Respect to Cathode		
DC Component	25	Volts
Total DC and Peak	50	Volts
Heater Negative with Respect to Cathode		
Total DC and Peak	50	Volts

Design-Maximum Ratings are the limiting values expressed with respect to bogie tubes at which satisfactory tube life can be expected to occur. To obtain satisfactory circuit performance, therefore, the equipment designer must establish the circuit design so that no design-maximum value is exceeded with a bogie tube under the worst probable operating conditions with respect to supply-voltage variation, equipment component variation, equipment control adjustment, load variation, and environmental conditions.

CHARACTERISTICS AND TYPICAL OPERATION

CLASS A₁ AMPLIFIER

Plate Voltage	200	Volts
Cathode-Bias Resistor	200	Ohms
Amplification Factor	100	
Plate Resistance, approximate	16,700	Ohms
Transconductance	6000	Micromhos
Plate Current	5.0	Milliamperes
Grid Voltage, approximate		
I _b = 10 Microamperes	-4.0	Volts

GROUND-GRID AMPLIFIER—900 MEGACYCLES

Plate Voltage	200	Volts
Cathode-Bias Resistor	200	Ohms
Plate Current	5.0	Milliamperes
Band width, approximate	10	Megacycles
Power Gain, approximate	15	Decibels
Noise Figure (Matched Input), approximate	8.5	Decibels

