

The Type 6221 is a medium-mu triode designed for application where reliable performance under conditions of extreme vibration and shock is essential. The design features include close tolerance on filament current and delta transconductance/E_f, together with resistance to vibration frequencies up to 2000 cycles as indicated by peak to peak readings.

MECHANICAL DATA

GENERAL

Style	subminiature	Outline	8-1
Cathode	coated unipotential	Maximum Diameter	0.400 inch
Bulb	T-3	Maximum Overall Bulb Length	1.375 inches
Base	Subminiature Button	Minimum Lead Length	1.500 inches
	Flexible Leads	Mounting Position	any

Basing Connections:

- Lead 1—grid
- Lead 2—no connection (do not use)
- Lead 3—heater
- Lead 4—plate
- Lead 5—cathode
- Lead 6—heater
- Lead 7—no connection (do not use)
- Lead 8—plate

89A F

Ratings

Maximum Impact Acceleration(1)	600 g
Maximum Vibrational Acceleration for Extended Periods(2)	2.5 g
Maximum Bulb Temperature (measured at hottest point on bulb)	220° C

ELECTRICAL DATA

GENERAL

Heater Voltage (ac or dc)	6.3 volts	Maximum Heater-Cathode Voltage	±200 volts
Heater Current	175 ma		

Life Expectancy:

220° C Ambient Temperature(3)	1000 hours
Heater Cycle Life(4)	2500 cycles

Direct Interelectrode Capacitances:

	<i>Unshielded</i>
Grid to Plate	1.8 uuf
Input	2.2 uuf
Output	0.9 uuf

RATINGS—Absolute Values

Heater Voltage	6.3(±5%) volts
Maximum Plate Voltage (dc)	165 volts
Maximum Plate Dissipation	3.3 watts
Maximum Plate Current	22 ma
Maximum Grid Current	5.5 ma
Maximum Negative Grid Voltage	55 volts

CHARACTERISTICS

Heater Voltage	6.3 volts
Plate Voltage (dc)	100 volts
Cathode Resistor	150 ohms
Plate Current	8.5 ma
Amplification Factor	27
Transconductance	5800 umhos
Grid Voltage for 10 ua Plate Current	—7 volts
Noise Output Voltage 1, maximum (peak to peak) (5)	25 mv
Noise Output Voltage 2, maximum (peak to peak) (6)	50 mv
Noise Output Voltage 3, maximum (peak to peak) (7)	100 mv
Operation Time(8)	20 seconds
Mechanical	as per MIL-E-17751A

NOTES

- (1) Tubes are held rigid in three different positions in a Navy Type, High Impact (flyweight) Shock Machine and subjected to 600 g impact acceleration. Hammer angle=42°.
- (2) Tubes are rigidly mounted and subjected in each of three positions to 2.5 g vibrational acceleration at 25 cycles per second for 32 hours.
- (3) Life test is made with a heater voltage of 6.3 volts, plate supply voltage of 100 volts, dc heater-cathode voltage (heater positive with respect to cathode) of 200 volts, cathode resistor of 150 ohms and a grid-No. 1 resistor of 1 megohm. Life test end points: Δ transconductance/t, 20% maximum; heater-cathode leakage current, 15 microamperes maximum; grid-No. 1 current, —.8 microamperes maximum.
- (4) Under the following conditions: heater voltage of 7.5 volts cycled 1 minute on and 4 minutes off; heater-cathode voltage of 140 volts (rms); plate and grid voltages=0.
- (5) Under the following conditions: plate voltage supply of 100 volts with an impedance not exceeding that of a 40-uf capacitor, plate load resistor of 10000 ohms, cathode resistor of 150 ohms, cathode bypass capacitor of 1000 uf, vibrational acceleration of 15 g at 40 cycles per second. Free free bar vibrator.
- (6) Under the following conditions: A 100-volt plate voltage supply having an impedance not exceeding that of a 40-uf capacitor, plate load resistor of 10000 ohms, cathode resistor of 150 ohms, cathode bypass capacitor of 1000 microfarads, and vibrational acceleration of 15 g, with sweep frequency of 20 to 500 cycles per second.
- (7) Under the following conditions: A 100-volt plate voltage supply having an impedance not exceeding that of a 40-uf capacitor, plate load resistor of 10000 ohms, cathode resistor of 150 ohms, cathode bypass capacitor of 1000 microfarads, and vibrational acceleration of 10 g, with sweep frequency of 500 to 2000 cycles per second.
- (8) Operation Time is the time in seconds required for the plate current to attain a value of 95% \pm 5% of the three minute plate current value when measured under average operating conditions.

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