

SONOTONE CORPORATION

TYPE 6221

JETEC Registration Data

TRIODE

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
Cathode coated unipotential
Bulb T-3
Base Subminiature Button
Flexible Leads

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

Outline 8-1
Maximum Diameter 0.400 inch
Maximum Overall Bulb Length 1.375 inches
Minimum Lead Length 1.500 inches
Mounting Position any

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
Heater Current 175 ma

Life Expectancy:

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

Direct Interelectrode Capacitances:

Unshielded
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

Maximum Heater-Cathode Voltage ±200 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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