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/\(\varepsilon_f\), 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—the cathode
- Lead 6—heater
- Lead 7—no connection (do not use)
- Lead 8—plate

**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 umbhos
- Grid Voltage for 10 ma
- Plate Current: —7 volts
- Noise Output Voltage 1, maximum (peak to peak): 25 mv
- Noise Output Voltage 2, maximum (peak to peak): 50 mv
- Noise Output Voltage 3, maximum (peak to peak): 100 mv
- Operation Time: 20 seconds
- Mechanical: as per MILE-17751A

from JETEC release #1549, Dec. 12, 1955
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: △ 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% ± 5% of the three minute plate current value when measured under average operating conditions.