ADVANCE DATA

MECHANICAL DATA

Bulb T-3
Base E8-10, Subminiature Button Flexible Leads
Outline JEDEC 3-1
Basing 8LD
Cathode Coated Unipotential
Mounting Position Any

RATINGS¹ (Absolute Maximum)

Bulb Temperature 180 °C
Altitude² 80,000 Ft.
Radiation³
Total Dosage (Neutrons/sq. cm) 10¹⁶ nvt
Dose Rate (Neutrons/sq. cm/sec.) 10¹² nv

DURABILITY CHARACTERISTICS⁴

Impact Acceleration (3/4 msec Duration)⁵ 500 G Max.
Fatigue (Vibrational Acceleration for Extended Periods)⁶ 2.5 G Max.
On-Off Heater Cycles⁷ 2000 Min.

ELECTRICAL DATA

HEATER CHARACTERISTICS

Heater Voltage⁸ 6.3 V
Heater Current 150 mA

DIRECT INTERELECTRODE CAPACITANCES (Shielded)⁹

Grid to Plate 1.8 pf
Input 4.2 pf
Output 2.2 pf
Heater to Cathode 2.2 pf

CONTROLLED DETRINENTS

Interelectrode Insulation¹⁰ 100 Meg. Min.
Total Grid Current¹¹ -0.4 μA Max.
Grid Emission¹² -0.5 μA Max.
Vibration Output as Equivalent Ec¹³ 4.0 mVac Max.
Heater-Cathode Leakage¹⁴ 20 μA Max.

QUICK REFERENCE DATA

The Sylvania Type 8319 is a subminiature strap frame grid, high-mu triode featuring low heater power, high Gm and Gm/ma. It is intended for grounded cathode IF preamp, RF amplifier and mixer applications and is operable into UHF.

The Type 8319 is designed to provide dependable operation under conditions of severe shock, vibration, high temperature and high altitude.

146 (10-58) from JEDEC release #4249, May 6, 1963
RATINGS\(^1\) (Absolute Maximum)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heater Voltage</td>
<td>6.3 (±10%) V</td>
</tr>
<tr>
<td>Plate Voltage</td>
<td>165 Vdc</td>
</tr>
<tr>
<td>Peak Plate Forward Voltage</td>
<td>330 V</td>
</tr>
<tr>
<td>Plate Dissipation</td>
<td>1.0 W</td>
</tr>
<tr>
<td>Plate Current</td>
<td>20 mA</td>
</tr>
<tr>
<td>DC Grid Voltage</td>
<td></td>
</tr>
<tr>
<td>Positive Value</td>
<td>0 Vdc</td>
</tr>
<tr>
<td>Negative Value</td>
<td>55 Vdc</td>
</tr>
<tr>
<td>Grid Current</td>
<td>3.0 mA</td>
</tr>
<tr>
<td>Heater-Cathode Voltage</td>
<td></td>
</tr>
<tr>
<td>Heater Positive with Respect to Cathode</td>
<td>100 V</td>
</tr>
<tr>
<td>Heater Negative with Respect to Cathode</td>
<td>100 V</td>
</tr>
<tr>
<td>Grid Circuit Resistance</td>
<td>1.1 MΩ</td>
</tr>
</tbody>
</table>

The spacing between Grid No. 1 and Cathode is of such a low order of magnitude as to preclude the use of excessive voltages between these elements in commercial tube checkers and shorts indicating devices, particularly where the tube is mechanically excited. The DC or peak AC voltage applied must not exceed 50 volts.

CHARACTERISTICS

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plate Voltage</td>
<td>100 Vdc</td>
</tr>
<tr>
<td>Cathode Resistor</td>
<td>160 Ohms</td>
</tr>
<tr>
<td>Plate Current</td>
<td>7.5 mA</td>
</tr>
<tr>
<td>Transconductance</td>
<td>14,000 μmhos</td>
</tr>
<tr>
<td>Amplification Factor</td>
<td>55</td>
</tr>
<tr>
<td>Grid Voltage for Ib = 20 μA (Approx.)</td>
<td>-4.0 Vdc</td>
</tr>
</tbody>
</table>

NOTES:

1. Limitations beyond which normal tube performance and tube life may be impaired.

2. If altitude rating is exceeded, reduction of instantaneous voltages (Ef excluded) may be required.

3. The radiation ratings are confirmed by a qualification test. The test is conducted in a suitable reactor furnishing mixed pile radiation at no less than 90% of the specified neutron dose rate. The tubes are measured for electrical parameters both before and after irradiation.

4. Tests performed as a measure of the mechanical durability of the tube structure.

5. Force as applied in any direction by the Navy Type High Impact (Flyweight) Shock Machine for Electronic Devices. Shock duration = 3/4 milliseconds.

6. Vibrational forces applied in any direction for a period of 96 hours.
7. One cycle consists of the application of $EF = 7.0 \text{ V}$ for one minute and interruption of the filament voltage for four minutes. A voltage of $E_{hk} = 140 \text{ Vac}$ is applied continuously.

8. Tube life and reliability of performance are directly related to the degree of regulation of the heater voltage to its center rated value.


10. Measure with $EF = 6.3 \text{ V}$; $Eg\text{-all} = -100 \text{ Vdc}$; $Ep\text{-all} = -300 \text{ Vdc}$; cathode is positive so that no cathode emission occurs.

11. Measure with $EF = 6.3 \text{ V}$; $Eb = 100 \text{ Vdc}$; $Ec = -1.5 \text{ Vdc}$.

12. Preheat for five minutes with $EF = 7.5 \text{ V}$; $Eb = 100 \text{ Vdc}$; $Rk = 160 \text{ Ohms}$; $Rg = 1.0 \text{ Meg}$; then test with $EF = 7.5 \text{ V}$; $Eb = 100 \text{ Vdc}$; $Ecl = -4.0 \text{ Vdc}$; $Rg = 1.0 \text{ Meg}$.

13. Test with $EF = 6.3 \text{ V}$; $Eb = 100 \text{ Vdc}$; $Ec = 0$; $Rk = 160 \text{ Ohms}$; $Rp = 10,000 \text{ Ohms}$; $Ck = 1000 \mu\text{f}$; $F = 40 \text{ cps}$; $Acc = 15 \text{ g}$.

14. Measured with $EF = 6.3 \text{ V}$; $E_{hk} = \pm 100 \text{ Vdc}$. 