



# engineering data service

SYLVANIA

7759

## ADVANCE DATA

### MECHANICAL DATA

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

### RATINGS<sup>1</sup> (Absolute Maximum)

Bulb Temperature (per JEDEC JO-11L) 2200 C  
Altitude<sup>2</sup> 80000 Ft.  
Radiation  
Total Dosage ( $\int$  neutrons/sq. cm/sec.) 10<sup>16</sup> nvt  
Dose Rate (neutrons/sq. cm/sec.) 10<sup>12</sup> nv

### DURABILITY CHARACTERISTICS<sup>4</sup>

Impact Acceleration (3/4 msec Duration)<sup>5</sup> 750 G Max.  
Fatigue (Vibrational Acceleration for  
Extended Periods)<sup>6</sup> 2.5 G Max.  
On-Off Heater Cycles<sup>7</sup> 2000 Min.

### ELECTRICAL DATA

#### HEATER CHARACTERISTICS

Heater Voltage<sup>3</sup> 26.5 V  
Heater Current 90 mA

#### DIRECT INTERELECTRODE CAPACITANCES

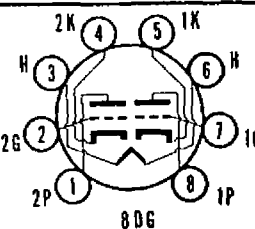
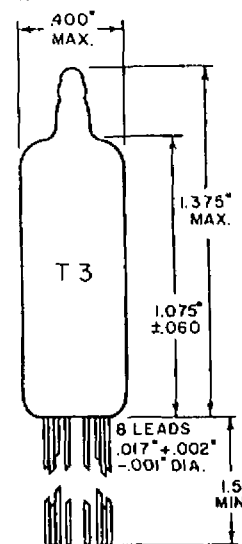
|                              | Shielded <sup>8</sup> | Unshielded    |      |
|------------------------------|-----------------------|---------------|------|
| Grid to Plate (Each Section) | 1.4                   | 1.5 $\mu$ f   |      |
| Input (Each Section)         | 2.2                   | 2.0 $\mu$ f   |      |
| Output                       |                       |               |      |
| Section No. 1                | 1.3                   | 0.28 $\mu$ f  |      |
| Section No. 2                | 1.3                   | 0.33 $\mu$ f  |      |
| Grid to Grid                 | 0.013                 | 0.015 $\mu$ f | Max. |
| Plate to Plate               | 0.30                  | 0.45 $\mu$ f  | Max. |

#### CONTROLLED DETRIMENTS

|                                                  |      |            |      |
|--------------------------------------------------|------|------------|------|
| Interelectrode Insulation <sup>9</sup>           | 100  | Meg.       | Min. |
| Total Grid Current <sup>10</sup>                 | -0.3 | $\mu$ A dc | Max. |
| Grid Emission <sup>11</sup>                      | -0.5 | $\mu$ A dc | Max. |
| Vibration Output <sup>12</sup> as equivalent Ecl | 2.5  | mVac       | Max. |
| Heater-Cathode Leakage <sup>13</sup>             | 5.0  | $\mu$ A dc | Max. |

## QUICK REFERENCE DATA

The Premium Subminiature Type 7759 is a general purpose, medium  $\mu$ , double triode having separate cathode connections for each section. It is particularly useful in oscillator and amplifier applications where power requirements permit the use of two tubes in one envelope. The 7759 is designed to provide dependable operation under conditions of severe shock, vibration, high temperature and high altitude and is manufactured and inspected to meet the applicable MIL-E-1 specification for reliability.



## SYLVANIA ELECTRONIC TUBES

A Division of  
Sylvania Electric Products Inc.

RECEIVING TUBE  
OPERATIONS  
EMPORIUM, PA.

Prepared and Released By The  
TECHNICAL PUBLICATIONS SECTION  
EMPORIUM, PENNSYLVANIA

RATINGS<sup>1</sup> (Absolute Maximum)

|                                         |                     |                  |
|-----------------------------------------|---------------------|------------------|
| Heater Voltage <sup>3</sup>             | 26.5 ( $\pm 10\%$ ) | V                |
| Plate Voltage                           | 165                 | Vdc              |
| Peak Plate Forward Voltage <sup>4</sup> | 330                 | v                |
| Plate Dissipation (Each Section)        | 1.1                 | W                |
| Plate Current (Each Section)            | 22                  | mA <sub>dc</sub> |
| DC Grid Voltage                         |                     |                  |
| Positive Value                          | 0                   | Vdc              |
| Negative Value                          | 55                  | Vdc              |
| Grid Current                            | 5.5                 | mA <sub>dc</sub> |
| Heater-Cathode Voltage                  |                     |                  |
| Heater Positive with Respect to Cathode | 200                 | v                |
| Heater Negative with Respect to Cathode | 200                 | v                |
| Grid Circuit Resistance                 | 1.1                 | Meg              |

## CHARACTERISTICS (Each Section)

|                                                  |      |                  |
|--------------------------------------------------|------|------------------|
| Plate Voltage                                    | 100  | Vdc              |
| Cathode Resistor                                 | 150  | Ohms             |
| Plate Current                                    | 6.5  | mA <sub>dc</sub> |
| Transconductance                                 | 5400 | $\mu$ mhos       |
| Amplification Factor                             | 35   |                  |
| Grid Voltage for $I_b = 100 \mu$ A <sub>dc</sub> | -6.5 | Vdc              |

## NOTES:

1. Limitations beyond which normal tube performance and tube life may be impaired.
2. If altitude rating is exceeded, reduction of instantaneous voltages ( $E_f$  excluded) may be required.
3. Tube life and reliability of performance are directly related to the degree of regulation of the heater voltage to its center rated value of 26.5 volts.
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  $E_f = 29.0$  V for one minute and interruption of the filament voltage for four minutes. A voltage of  $E_{hk} = 140$  Vac is applied continuously.
8. External shield No. 318 connected to cathode.
9. Measure each section separately with  $E_f = 26.5$  V;  $E_{g-all} = -100$  Vdc;  $E_{p-all} = -300$  Vdc; Cathode is positive so that no cathode emission occurs.

## NOTES: (Cont'd)

10. Measure each section separately with  $E_f = 26.5$  V;  $E_b = 150$  Vdc;  $R_k = 300$  ohms.
11. Each section preheated for five minutes with  $E_f = 31.5$  V;  $E_b = 150$  Vdc;  $R_k = 500$  ohms;  $R_g = 1.0$  Meg; then each section tested separately with  $E_f = 31.5$  V;  $E_b = 150$  Vdc;  $E_{c1} = -7.5$  Vdc;  $R_g = 1.0$  Meg.
12. Test each section separately with  $E_f = 26.5$  V;  $E_b = 100$  Vdc;  $R_k = 150$  ohms;  $C_k = 1000$   $\mu$ f;  $R_p = 10,000$  ohms;  $F = 40$  cps;  $Acc = 15$  g.
13. Measure each section separately with  $E_f = 26.5$  V;  $E_{hk} = \pm 100$  Vdc.
14. Per MIL-E-1 Par. 6.5 and General Section of this Manual titled Specifications and Ratings.