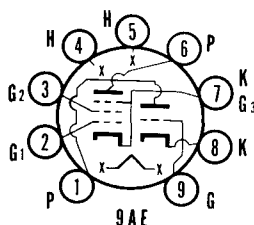


# SYLVANIA TYPE 7687

LO-NOISE AUDIO  
TRIODE-PENTODE



## MECHANICAL DATA

|                        |                              |
|------------------------|------------------------------|
| Bulb.....              | T-6½                         |
| Base.....              | E9-1, Miniature Button 9-Pin |
| Outline.....           | 6-3                          |
| Basing.....            | 9AE                          |
| Cathode.....           | Coated Unipotential          |
| Mounting Position..... | Any                          |

## ELECTRICAL DATA

### HEATER CHARACTERISTICS

|                                                |                |
|------------------------------------------------|----------------|
| Heater Voltage <sup>1</sup> .....              | 6.3 Volts      |
| Heater Current.....                            | 500 Ma         |
| Maximum Heater Voltage Range.....              | 5.7-6.9 Volts  |
| Heater-Cathode Voltage (Design Maximum Values) |                |
| Heater Negative with Respect to Cathode        |                |
| Total D C and Peak.....                        | 200 Volts Max. |
| Heater Positive with Respect to Cathode        |                |
| D C.....                                       | 100 Volts Max. |
| Total D C and Peak.....                        | 200 Volts Max. |

### DIRECT INTERELECTRODE CAPACITANCES (Unshielded)

|                                       |               |
|---------------------------------------|---------------|
| <b>Triode Section</b>                 |               |
| Grid to Plate.....                    | 2.4 μμf       |
| Input: g to (h+Tk+Pk, G3, I.S.).....  | 2.2 μμf       |
| Output: p to (h+Tk+Pk, G3, I.S.)..... | 0.3 μμf       |
| <b>Pentode Section</b>                |               |
| Grid No. 1 to Plate.....              | 0.15 μμf Max. |
| Input: g1 to (h+k+g2+g3+I.S.).....    | 7.0 μμf       |
| Output: p to (h+k+g2+g3+I.S.).....    | 2.8 μμf       |

### RATINGS (Design Maximum Values)

|                                  | Triode Section        | Pentode Section  |
|----------------------------------|-----------------------|------------------|
| Plate Voltage.....               | 330                   | 330 Volts Max.   |
| Grid No. 2 Supply Voltage.....   | —                     | 330 Volts Max.   |
| Grid No. 2 Voltage.....          | See 6AM8 Rating Chart |                  |
| Positive Grid No. 1 Voltage..... | 0                     | 0 Volts Max.     |
| Plate Dissipation.....           | 2.4                   | 3.0 Watts Max.   |
| Grid No. 2 Dissipation.....      | —                     | 0.6 Watt Max.    |
| Grid Circuit Resistance          |                       |                  |
| Fixed Bias.....                  | 0.5                   | 0.25 Megohm Max. |
| Cathode Bias.....                | 1.0                   | 1.0 Megohm Max.  |

### CHARACTERISTICS AND TYPICAL OPERATION

|                                   | Triode Section | Pentode Section |
|-----------------------------------|----------------|-----------------|
| Plate Voltage.....                | 215            | 220 Volts       |
| Grid No. 2 Voltage.....           | —              | 130 Volts       |
| Grid No. 1 Voltage.....           | -8.5           | — Volts         |
| Cathode Bias Resistor.....        | —              | 62 Ohms         |
| Plate Current.....                | 7.5            | 10 Ma           |
| Grid No. 2 Current.....           | —              | 3.4 Ma          |
| Transconductance.....             | 2500           | 5800 μmhos      |
| Amplification Factor.....         | 18             | —               |
| Plate Resistance.....             | .0072          | 0.5 Megohms     |
| Ec1 for Ib = 10 μa (approx.)..... | -21            | — Volts         |

### EQUIVALENT NOISE AND HUM VOLTAGE

(Referenced to Grid, Average Values)

|                                          | Triode Section   | Pentode Section               |
|------------------------------------------|------------------|-------------------------------|
| Cathode Resistor (Bypassed 50 μ fd)..... | 7.5 <sup>2</sup> | 10.5 <sup>3</sup> μ Volts RMS |
| Cathode Resistor (Unbypassed).....       | 8 <sup>2</sup>   | 20 <sup>4</sup> μ Volts RMS   |

### NOTES:

1. For parallel heater operation, equipment should be designed so that at normal supply voltage tubes will operate at this value of heater voltage.

## SYLVANIA TYPE 7687 (Cont'd)

2. Measured under the following conditions:  $E_f = 6.3$  Vac; center-tap of heater transformer grounded;  $E_{bb} = 250$  Vdc;  $R_1 = 0.1$  Megohm;  $R_k = 1500$  ohms;  $R_g = 47,000$  ohms;  $F = 25$  to  $10,000$  cps.
3. Measured under the following conditions:  $E_f = 6.3$  Vac; Center-tap of heater transformer grounded;  $E_{bb} = 250$  Vdc;  $R_1 = 0.22$  Megohm;  $E_{cc2} = 250$  Vdc;  $R_{g2} = 1.0$  megohms;  $C_{g2} = 0.1 \mu f$ ;  $R_k = 1000$  ohms;  $R_{g1} = 100,000$  ohms;  $F = 25$  to  $10,000$  cps.

### APPLICATION

The Sylvania Type 7687 is a triode-pentode designed primarily for High Fidelity audio applications. The pentode section is particularly suited to preamplifier service while the triode section is intended for use as a phase splitter. Type 7687 features exceptionally low hum and noise output. Although basings differ, Type 7687 is similar to Type 7199. Type 7687 is an improved low noise version of Type 7199.