TUNG-SOL

PENTODE
MINIATURE TYPE

UNIPOTENTIAL CATHODE
HEATER
6.3 VOLTS 0.8 AMP.
AC OR DC
ANY MOUNTING POSITION

GLASS BULB

BOTTOM VIEW
SMALL-BUTTON NOVAL
9 PIN BASE
9MM

THE 6EM5 IS A BEAM POWER PENTODE IN THE 9 PIN MINIATURE CONSTRUCTION AND IS INTENDED FOR USE AS THE VERTICAL DEFLECTION AMPLIFIER IN HIGH-EFFICIENCY DEFLECTION CIRCUITS OF TV RECEIVERS WHICH USE PICTURE TUBES WITH A 110° DIAGONAL DEFLECTION ANGLE. WITH THE EXCEPTION OF HEATER RATINGS AND HEATER WARM-UP TIME, THE 6EM5 IS IDENTICAL TO THE 8EM5.

DIRECT INTERELECTRODE CAPACITANCES
WITHOUT EXTERNAL SHIELD

GRID #1 TO PLATE
GRID #1 TO CATHODE & G3, G2, AND HEATER
PLATE TO CATHODE & G3, G2, AND HEATER

0.7  µµF
10  µµF
5.1  µµF

RATINGS
INTERPRETED ACCORDING TO DESIGN CENTER SYSTEM
VERTICAL DEFLECTION AMPLIFIER

HEATER VOLTAGE  6.3 VOLTS
MAXIMUM PLATE VOLTAGE:
DC  315 VOLTS
PEAK POSITIVE PULSE (ABS. MAX.) 2 200 VOLTS
MAXIMUM GRID #2 VOLTAGE  285 VOLTS
MAXIMUM PEAK NEGATIVE-PULSE GRID #1 VOLTAGE
MAXIMUM CATHODE CURRENT:
PEAK  210 MA.
AVERAGE  60 MA.
MAXIMUM PLATE DISSIPATION  10 WATTS
MAXIMUM GRID #2 INPUT  1.3 WATTS
MAXIMUM PEAK HEATER-CATHODE VOLTAGE:
HEATER NEGATIVE WITH RESPECT TO CATHODE  200 VOLTS
HEATER POSITIVE WITH RESPECT TO CATHODE  200 VOLTS
MAXIMUM BULB TEMPERATURE (AT HOTTEST POINT)  250 °C
MAXIMUM CIRCUIT VALUES:
GRID #1 CIRCUIT RESISTANCE:
FOR FIXED-BIAS OPERATION
FOR CATHODE-BIAS OPERATION  2.2 MEGOHMS

CONTINUED ON FOLLOWING PAGE

TUNG-SOL ELECTRIC INC. ELECTRON TUBE DIVISION BLOOMFIELD, NEW JERSEY, U.S.A. AUGUST 1, 1960 PLATE #5935
## TYPICAL OPERATING CONDITIONS AND CHARACTERISTICS

**CLASS A1 AMPLIFIER**

<table>
<thead>
<tr>
<th>HEATER VOLTAGE</th>
<th>6.3</th>
<th>6.3 VOLTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>HEATER CURRENT</td>
<td>0.8</td>
<td>0.8 AMP.</td>
</tr>
<tr>
<td>PLATE VOLTAGE</td>
<td>60</td>
<td>250 VOLTS</td>
</tr>
<tr>
<td>GRID #2 (SCREEN-GRID) VOLTAGE</td>
<td>250</td>
<td>250 VOLTS</td>
</tr>
<tr>
<td>GRID #1 (CONTROL-GRID) VOLTAGE</td>
<td>0</td>
<td>-18 VOLTS</td>
</tr>
<tr>
<td>MU-FACTOR, GRID #1 TO GRID #2</td>
<td>---</td>
<td>8.7</td>
</tr>
<tr>
<td>TRANSCONDUCTANCE</td>
<td>---</td>
<td>5100 OHMS</td>
</tr>
<tr>
<td>PLATE CURRENT</td>
<td>180E</td>
<td>40 MA.</td>
</tr>
<tr>
<td>GRID #2 CURRENT</td>
<td>30E</td>
<td>3 MA.</td>
</tr>
<tr>
<td>PLATE RESISTANCE (APPROX.)</td>
<td></td>
<td>50 000 OHMS</td>
</tr>
<tr>
<td>GRID #4 VOLTAGE FOR PLATE CURRENT 0.2 MA.</td>
<td></td>
<td>-37</td>
</tr>
</tbody>
</table>

* INDICATES AN ADDITION.

---

**NOTES:**

- FOR OPERATION IN A 525-LINE, 30-FRAME SYSTEM AS DESCRIBED IN "STANDARDS OF GOOD ENGINEERING PRACTICE FOR TELEVISION BROADCAST STATIONS; FEDERAL COMMUNICATIONS COMMISSION", THE DUTY CYCLE OF THE VOLTAGE PULSE MUST NOT EXCEED 15% OF ONE SCANNING CYCLE.

- UNDER NO CIRCUMSTANCES SHOULD THIS ABSOLUTE VALUE BE EXCEEDED.

- THE DC COMPONENT MUST NOT EXCEED 100 VOLTS.

- THESE VALUES CAN BE MEASURED BY A METHOD INVOLVING A RE-CURRENT WAVEFORM SUCH THAT THE PLATE DISSIPATION AND GRID #2 INPUT WILL BE KEPT WITHIN RATINGS IN ORDER TO PREVENT DAMAGE TO THE TUBE.

---

**Graph:**

- $E_C^1 = 0$
- $E_C^2 = 0$
- $E_C^1 = 6.3$ Volts
- $E_C^2 = 250$ Volts
- $I_C^b$ and $I_C^{c_2}$ milliamperes vs. plate volts