TRIODE PENTODE
MINIATURE TYPE

FOR
USE AS A COMBINED OSCILLATOR
AND MIXER TUBE IN T.V. RECEIVERS

COATED UNIPOTENTIAL CATHODE
ANY MOUNTING POSITION

GLASS BULB
MINIATURE BUTTON
9 PIN BASE E9-1
OUTLINE DRAWING
JEDEC 6-2

BOTTOM VIEW
BASING DIAGRAM
JEDEC 9AK

THE 6X8 AND 6X8A ARE MULTI-UNIT TUBES USING THE 9 PIN MINIATURE CONSTRUCTION. THEY CONTAIN A MEDIUM-MU TRIODE AND A SHARP-CUTOFF PENTODE IN ONE ENVELOPE. THEY ARE DESIGNED PRIMARILY FOR USE AS COMBINED OSCILLATORS AND MIXER TUBES IN TELEVISION RECEIVERS UTILIZING AN INTERMEDIATE FREQUENCY IN THE ORDER OF 40 MC. THEY ARE ESPECIALLY SUITABLE FOR USE IN AM/FM RECEIVERS. THERMAL CHARACTERISTICS OF THE HEATER OF THE 6X8A ARE CONTROLLED SUCH THAT HEATER VOLTAGE SURGES DURING THE WARM-UP CYCLE ARE MINIMIZED PROVIDED IT IS USED WITH OTHER TYPES WHICH ARE SIMILARLY CONTROLLED.

DIRECT INTERELECTRODE CAPACITANCES
WITH SHIELD WITHOUT SHIELD

PENTODE GRID 1 TO PENTODE PLATE: (PG1 TO PP) MAX. 0.06 0.09 pF
PENTODE INPUT: PG1 TO (H+K+PG2+PG3) 4.8 4.6 pF
PENTODE OUTPUT: PP TO (H+K+PG2+PG3) 1.6 0.9 pF
CATHODE TO HEATER: (K TO H) 6.5 6.5 pF
TRIODE GRID TO TRIODE PLATE: (TG TO TP) 1.5 1.5 pF
TRIODE INPUT: TG TO (H+K) 2.4 2.0 pF
TRIODE OUTPUT: TP TO (H+K) 1.0 0.5 pF
PENTODE GRID 1 TO TRIODE PLATE (PG1 TO TP) MAX. 0.04 0.05 pF
PENTODE PLATE TO TRIODE PLATE: (PP TO TP) MAX. 0.008 0.05 pF

HEATER CHARACTERISTICS AND RATINGS
DESIGN MAXIMUM VALUES - SEE EIA STANDARD RS-239

AVERAGE CHARACTERISTICS 6.3 VOLTS 450 MA.
HEATER WARM-UP TIME C (FOR 6X8A ONLY) 11 SECONDS
LIMITS OF APPLIED VOLTAGE 6.3±0.6 VOLTS
LIMITS OF SUPPLIED CURRENT (6X8A ONLY) 600±40 MA.
MAXIMUM HEATER-CATHODE VOLTAGE:
HEATER NEGATIVE WITH RESPECT TO CATHODE TOTAL DC AND PEAK 200 VOLTS
HEATER POSITIVE WITH RESPECT TO CATHODE DC 100 VOLTS
TOTAL DC AND PEAK 200 VOLTS

TUNG-SOL ELECTRIC INC., ELECTRON TUBE DIVISION, BLOOMFIELD, NEW JERSEY, U.S.A., JUNE 3, 1963, PLATE #635
### TYPICAL OPERATING CHARACTERISTICS

**CLASS A1 AMPLIFIER**

<table>
<thead>
<tr>
<th></th>
<th>TRIODE</th>
<th>PENTODE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PLATE VOLTAGE</strong></td>
<td>125</td>
<td>125</td>
</tr>
<tr>
<td><strong>GRID 1 VOLTAGE</strong></td>
<td>-1.0</td>
<td>-1.0</td>
</tr>
<tr>
<td><strong>GRID 2 CURRENT</strong></td>
<td>12.0</td>
<td>9.0</td>
</tr>
<tr>
<td><strong>TRANSCONDUCTANCE</strong></td>
<td>6,500</td>
<td>5,500</td>
</tr>
<tr>
<td><strong>PLATE RESISTANCE</strong></td>
<td>APPROX. 6,000</td>
<td>300,000</td>
</tr>
<tr>
<td><strong>AMPLIFICATION FACTOR</strong></td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td><strong>GRID 1 VOLTAGE</strong></td>
<td>APPROX. -7</td>
<td>-6.5</td>
</tr>
<tr>
<td><strong>ZERO BIAS TRANSCONDUCTANCE</strong></td>
<td>WITH (E_b = 100\ \text{V}); (E_c2 = 70\ \text{V}).</td>
<td></td>
</tr>
<tr>
<td></td>
<td>APPROX. 5,700</td>
<td>(\mu\text{HOS})</td>
</tr>
</tbody>
</table>

**A**  
EXTERNAL SHIELD 313 CONNECTED TO PIN 6.

**B**  
EXTERNAL SHIELD 315 CONNECTED TO PIN 9.

**C**  
HEATER WARM-UP TIME IS DEFINED AS THE TIME REQUIRED FOR THE VOLTAGE ACROSS THE HEATER TO REACH 80% OF ITS RATED VOLTAGE AFTER APPLYING 4 TIMES RATED HEATER VOLTAGE TO A CIRCUIT CONSISTING OF THE TUBE HEATER IN SERIES WITH A RESISTANCE OF VALUE THREE TIMES THE NOMINAL HEATER OPERATING RESISTANCE.
PENTODE UNIT
CONNECTED AS TRIODE

$E_f = 6.3$ Volts
Grid #3 Connected to Cathode
Grid #2 Connected to Plate

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PENTODE UNIT
SEPARATE OSCILLATOR EXCITATION

$E_f = 6.3$ Volts
$E_b = 150$ Volts
$E_c = 0$ Volts
$E_{c2} = 150$ Volts
$R_{c2} = 120000$ Ohms
Oscillator Volts at
Grid #1 = 2.6 rms

$g_{c1}$
$g_{c2}$
$g_{c}$

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