PENTODE
MINIATURE TYPE

COATED UNIPOTENTIAL CATHODE

HEATER
4.2 VOLTS 0.45 AMP.
AC OR DC
ANY MOUNTING POSITION

BOTTOM VIEW
MINIATURE BUTTON
7 PIN BASE

THE 4CB6 IS A SHARP CUT-OFF PENTODE USING THE SMALL BUTTON SEVEN PIN MINIATURE CONSTRUCTION. IT IS DESIGNED FOR USE IN 450 MA SERIES HEATER OPERATED RECEIVERS AS AN IF AMPLIFIER OPERATING AT FREQUENCIES ABOVE 20 MC. IT IS ALSO WELL SUITED FOR USE AS AN RF AMPLIFIER IN VHF TELEVISION RECEIVERS. IT IS CHARACTERIZED BY HIGH TRANSDUCTANCE AND LOW CAPACITANCE VALUES. THERMAL CHARACTERISTICS OF THE HEATER 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. WITH EXCEPTION OF HEATER RATINGS ITS CHARACTERISTICS ARE IDENTICAL TO THE 6CB6.

DIRECT INTERELECTRODE CAPACITANCES

<table>
<thead>
<tr>
<th></th>
<th>WITHOUT SHIELD</th>
<th>WITH SHIELD</th>
</tr>
</thead>
<tbody>
<tr>
<td>GRID TO PLATE: (G2 TO P) MAX.</td>
<td>0.025</td>
<td>0.015</td>
</tr>
<tr>
<td>INPUT: G4 TO (H+G2+G3&amp;15)</td>
<td>6.5</td>
<td>6.5</td>
</tr>
<tr>
<td>OUTPUT: P TO (H+G2+G3&amp;15)</td>
<td>2.0</td>
<td>3.0</td>
</tr>
</tbody>
</table>

*A EXTERNAL SHIELD #16 CONNECTED TO PIN #2.

RATINGS
INTERPRETED ACCORDING TO DESIGN MAXIMUM SYSTEM

HEATER VOLTAGE
4.2 VOLTS

MAXIMUM PLATE VOLTAGE
530 VOLTS

MAXIMUM GRID #2 VOLTAGE
SEE JS-C4-2

MAXIMUM GRID #2 SUPPLY VOLTAGE
330 VOLTS

MAXIMUM PLATE DISSIPATION
2.3 WATTS

MAXIMUM GRID #2 DISSIPATION
0.55 WATT

MAXIMUM POSITIVE DC GRID #1 VOLTAGE
0 VOLTS

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

HEATER WARM-UP TIME (APPROX.)*
11.0 SECONDS

* DC COMPONENT MUST NOT EXCEED 200 VOLTS.

→ INDICATES A CHANGE.
**TYPICAL OPERATING CONDITIONS AND CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>HEATER VOLTAGE</td>
<td>4.2 V</td>
</tr>
<tr>
<td>HEATER CURRENT</td>
<td>0.45 A</td>
</tr>
<tr>
<td>PLATE VOLTAGE</td>
<td>125 V</td>
</tr>
<tr>
<td>GRID #2 VOLTAGE</td>
<td>125 V</td>
</tr>
<tr>
<td>GRID #3 VOLTAGE</td>
<td></td>
</tr>
<tr>
<td>CATHODE BIAS RESISTOR</td>
<td>56 O</td>
</tr>
<tr>
<td>PLATE RESISTANCE (APPROX.)</td>
<td>0.28 MΩ</td>
</tr>
<tr>
<td>TRANSCONDUCTANCE</td>
<td>8000 A</td>
</tr>
<tr>
<td>PLATE CURRENT</td>
<td>15.0 mA</td>
</tr>
<tr>
<td>GRID #2 CURRENT</td>
<td>5.7 mA</td>
</tr>
<tr>
<td>GRID #1 VOLTAGE (APPROX.) FOR I_b=20 μA</td>
<td></td>
</tr>
<tr>
<td>PLATE CURRENT AT E_c1=-3V, R_k=0</td>
<td>2.38 mA</td>
</tr>
</tbody>
</table>

**NOTE:**

Design maximum ratings are the limiting values expressed with respect to bogie tubes at which satisfactory tube life can be expected to occur in the types of service for which the tube is rated. Therefore, the equipment designer must establish the circuit design so that initially and throughout equipment life no design maximum value is exceeded with a bogie tube under the worst probable operating conditions with respect to supply-voltage variation, equipment component variation, equipment control adjustment, load variation, and environmental conditions.

*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 9 times rated heater voltage to a circuit consisting of the tube heater in series with a resistance of value 3 times the nominal heater operating resistance.*
**TENTATIVE DATA**

**4CB6**

**PENTODE CONNECTION**

- $E_f = 4.2$ Volts
- $E_b = 200$ Volts
- $E_{c2} = 150$ Volts

- $I_b$
- $I_{C2}$
- $g_m$

**Graph:**

- **Y-axis:** Plate ($I_b$) or grid #2 ($I_{C2}$) in Milliamperes
- **X-axis:** Grid #1 Volts
- **Transconductance ($g_m$) in Microhms**

- Grid voltage ranges from -10.0 to 0 Volts.
- Plate current ranges from 10 to 40 Milliamperes.
- Transconductance values range from 2500 to 10,000 Microhms.