RCA-6HB7 is a multiunit tube of the 9-pin miniature type containing a medium-mu triode and a sharp-cutoff pentode in one envelope. This type is useful as a combined oscillator-mixer tube in television receivers utilizing an intermediate frequency in the order of 40 Mc.

The pentode unit of the 6HB7 has a relatively high value of transconductance and an excellent knee-current characteristic. In addition, the pentode unit has an exceptionally low value of grid-No.1-to-plate capacitance (0.010 pf maximum) to minimize feedback problems.

Two base pin connections to the cathode minimize the cathode lead inductance of the pentode unit. An inter-unit shield reduces interaction between units.

The heater of the 6HB7 has controlled warm-up time for use in series-heater-string arrangements. The RCA Dark Heater is utilized for long life and dependable performance.

**GENERAL DATA**

**Electrical:**

Heater Characteristics and Ratings:
- Voltage (AC or DC) .......... 6.38 volts
- Current ...................... 0.450 ± 0.030 amp
- Warm-up time (Average) .. 11 sec
- Peak heater-cathode voltage:
  - Heater negative with respect to cathode .......... 200 max. volts
  - Heater positive with respect to cathode .......... 200 max. volts

Direct Interelectrode Capacitances:
- Triode Unit .................. 1.9 pf
- Grid to plate ................ 0.010 max. pf

- Pentode Unit .................. 5.0 pf
- Plate to cathode & grid No.3 & internal shield, and heater .......... 3.4 pf
- Heater to cathode .............. 3.8 pf

**Characteristics, Class A1 Amplifier:**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Triode UNIT</th>
<th>Pentode UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plate Supply Voltage</td>
<td>150</td>
<td>125 volts</td>
</tr>
<tr>
<td>Grid-No.2 Supply Voltage</td>
<td>-</td>
<td>125 volts</td>
</tr>
<tr>
<td>Grid-No.1 Supply Voltage</td>
<td>0</td>
<td>-1 volts</td>
</tr>
<tr>
<td>Cathode Resistor</td>
<td>56</td>
<td>ohms</td>
</tr>
<tr>
<td>Amplification Factor</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>Plate Resistance (Approx.)</td>
<td>5000</td>
<td>200,000 ohms</td>
</tr>
<tr>
<td>Transconductance</td>
<td>8500</td>
<td>6400 μhos</td>
</tr>
<tr>
<td>Plate Current</td>
<td>18</td>
<td>12 ma</td>
</tr>
<tr>
<td>Grid-No.2 Current</td>
<td>-</td>
<td>4 ma</td>
</tr>
<tr>
<td>Grid-No.1 Voltage (Approx.) for plate μa = 10</td>
<td>-12</td>
<td>-9 volts</td>
</tr>
</tbody>
</table>

**Mechanical:**

- Operating Position: Any
- Type of Cathode: Coated Unipotential
- Maximum Overall Length: 2-3/16"
- Maximum Seated Length: 1-15/16"
- Length, Base Seat to Bulb Top (Excluding Tip): 1-9/16" ± 3/32"
- Diameter: 0.750" to 0.875"
- Dimensional Outline: JEDEC No.6-2
- Bulb: 76-1/2
- Base: Small-Button Naval 9-Pin (JEDEC No.E9-1)

**AMPLIFIER – Class A1**

**Maximum Ratings, Design-Maximum Values:**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Triode UNIT</th>
<th>Pentode UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plate Voltage</td>
<td>330 max.</td>
<td>330 max. volts</td>
</tr>
<tr>
<td>Grid-No.2 (Screen-Grid) Supply Voltage</td>
<td>-</td>
<td>330 max. volts</td>
</tr>
<tr>
<td>Grid-No.2 Voltage</td>
<td>-</td>
<td>See Grid-No.2 Input Rating Chart</td>
</tr>
<tr>
<td>Grid-No.1 (Control-Grid) Voltage:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive-bias value</td>
<td>0 max.</td>
<td>0 max. volts</td>
</tr>
<tr>
<td>Grid-No.2 Input:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>For grid-No.2 voltages up to 165 volts</td>
<td>-</td>
<td>0.55 max. watt</td>
</tr>
<tr>
<td>For grid-No.2 voltages between 165 and 330 volts</td>
<td>-</td>
<td>See Grid-No.2 Input Rating Chart</td>
</tr>
<tr>
<td>Plate Dissipation</td>
<td>2.5 max.</td>
<td>3.1 max. watts</td>
</tr>
</tbody>
</table>

**Maximum Circuit Values:**

Grid-No.1 Circuit Resistance:
- For fixed-bias operation: 0.5 max. 0.25 max. megohm
- For cathode-bias operation: 1.0 max. 0.5 max. megohm

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\[ a \] At heater amperes = 0.450.
\[ b \] The dc component must not exceed 100 volts.
\[ c \] With external shield JEDEC No.315 connected to cathode except as noted.
\[ d \] With external shield JEDEC No.315 connected to ground.
AVERAGE CHARACTERISTICS
Pentode Unit

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DIMENSIONAL OUTLINE
JEDEC No.6-2

Dimensions in Inches
* Measured from base seat to bulb-tog line as determined by ring gauge of 7/16" inside diameter.
** Applies to zone starting 0.375" from base seat.

TERMINAL DIAGRAM
Bottom View

JEDEC 9QA
Pin 1 - Cathode
Pentode
Grid No. 3,
Internal
Shield
Pin 2 - Pentode
Grid No. 1
Pin 3 - Same as
Pin 1
Pin 4 - Heater
Pin 5 - Heater
Pin 6 - Pentode
Plate
Pin 7 - Pentode
Grid No. 2
Pin 8 - Triode
Plate
Pin 9 - Triode
Grid