The 6BA6 is a miniature remote-cutoff pentode primarily designed for use as a high-gain radio-frequency or intermediate-frequency amplifier. Features include small size, low grid-plate capacitance, and high transconductance.

Except for heater ratings the 3BA6 and 4BA6 are identical to the 6BA6. In addition, they incorporate a controlled heater-warm-up characteristic which makes them especially suited for use in television receivers that employ series-connected heaters.

The 12BA6, which differs from the 6BA6 only in heater ratings and heater-cathode voltage ratings, is especially useful in a-c/d-c radio receivers.

### GENERAL

**Electrical**

<table>
<thead>
<tr>
<th></th>
<th>3BA6</th>
<th>4BA6</th>
<th>6BA6</th>
<th>12BA6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heater Voltage, AC or DC</td>
<td>3.15</td>
<td>4.2</td>
<td>6.3</td>
<td>12.6</td>
</tr>
<tr>
<td>Heater Current</td>
<td>0.6</td>
<td>0.45</td>
<td>0.3</td>
<td>0.15</td>
</tr>
<tr>
<td>Heater Warm-up Time*</td>
<td>11</td>
<td>11</td>
<td>...</td>
<td>...</td>
</tr>
</tbody>
</table>

*Direct Interelectrode Capacitances*

<table>
<thead>
<tr>
<th>With Shield†</th>
<th>Without Shield</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grid-Number 1 to Plate, maximum</td>
<td>0.0035</td>
</tr>
<tr>
<td>Input</td>
<td>5.5</td>
</tr>
<tr>
<td>Output</td>
<td>5.5</td>
</tr>
</tbody>
</table>

**Mechanical**

- Mounting Position—Any
- Envelope—T-5½, Glass
- Base—E7-1, Miniature Button 7-Pin

**Terminal Connections**

- Pin 1—Grid Number 1
- Pin 2—Internal Shield and Grid Number 3 (Suppressor)
- Pin 3—Heater
- Pin 4—Heater
- Pin 5—Plate
- Pin 6—Grid Number 2 (Screen)
- Pin 7—Cathode

**Physical Dimensions**

Supersedes ET-T897 dated 9-54
MAXIMUM RATINGS

DESIGN-CENTER VALUES
Plate Voltage ........................................................................... 300 Volts
Screen-Supply Voltage ............................................................... 300 Volts
Screen Voltage—See Screen Rating Chart
Positive DC Grid-Number 1 Voltage ........................................... 0 Volts
Negative DC Grid-Number 1 Voltage ......................................... 50 Volts
Plate Dissipation ...................................................................... 3.0 Watts
Screen Dissipation .................................................................... 0.6 Watts

Heater-Cathode Voltage
Heater Positive with Respect to Cathode
          3BA6          4BA6          6BA6          12BA6
DC Component ................................................................. 100          ... Volts
Total DC and Peak .............................................................. 200          100 Volts
Heater Negative with Respect to Cathode
Total DC and Peak ................................................................ 200          100 Volts

CHARACTERISTICS AND TYPICAL OPERATION

CLASS A1 AMPLIFIER
Plate Voltage ........................................................................... 100          250 Volts
Suppressor, Connected to Cathode at Socket
Screen Voltage ........................................................................ 100          100 Volts
Cathode-Bias Resistor ............................................................ 68          68 Ohms
Plate Resistance, approximate ............................................... 0.25          1.0 Megohms
Transconductance .................................................................. 4300          4400 Micromhos
Plate Current ......................................................................... 10.8          11 Milliamperes
Screen Current ....................................................................... 4.4          4.2 Milliamperes
Grid-Number 1 Voltage, approximate
                      G_m = 40 Micromhos .............................................. —20          —20 Volts

* The time required for the voltage across the heater to reach 80 percent of its rated value after applying 4 times rated heater voltage to a circuit consisting of the tube heater in series with a resistance equal to 3 times the rated heater voltage divided by the rated heater current.
† With external shield (RETMA 316) connected to pin 7.
**AVERAGE PLATE CHARACTERISTICS**

$E_f = $ RATED VALUE
$E_{c2} = 100$ VOLTS
$E_{c3} = 0$ VOLTS

**AVERAGE TRANSFER CHARACTERISTICS**

$E_f = $ RATED VALUE
$E_b = 250$ VOLTS
$E_{c3} = 0$ VOLTS
$E_{c2} = 125$ VOLTS
$R_{c2} = 33000$ OHMS

GRID NUMBER 1 VOLTAGE IN VOLTS

SCREEN CURRENT IN MILLIAMPERES

PLATE (I_b) OR SCREEN (I_c2) CURRENT IN MILLIAMPERES

PLATE VOLTAGE IN VOLTS
**Average Transfer Characteristics**

- $E_t = \text{Rated Value}$
- $E_b = 250 \text{ Volts}$
- $E_c = 0 \text{ Volts}$

**Screen Rating Chart**

- **Area of Permissible Operation**
AVERAGE TRANSFER CHARACTERISTICS

\[ E_f = \text{RATED VALUE} \]
\[ E_b = 250 \text{ VOLTS} \]
\[ E_{c3} = 0 \text{ VOLTS} \]