from JEDEC release #3252, May 1, 1961

50HC6

For AF Power Amplifier Applications

The 50HC6 is a miniature power pentode primarily designed for use in the audio-frequency power output stage of radio receivers. Features of the tube include high power sensitivity at low plate and screen voltages and a heater tap to permit operation of a panel lamp.

GENERAL

Electrical

Cathode - Coated Unipotential
Heater Characteristics and Ratings (Design-Maximum Rating System)
Heater Voltage, AC or DC* 50 Volts
Heater Current+ 0.15±0.009 Amperes
Heater Tap Voltage† 7.0 Volts
Direct Interelectrode Capacitances, approximate§
Grid-Number 1 to Plate: (g1 to p) 0.5 pf
Input: g1 to (h + k + g2 + g3) 17 pf
Output: p to (h + k + g2 + g3) 9.0 pf

Mechanical

Mounting Position - Any
Envelope - T-5 1/2, Glass
Base - B7-1, Miniature Button, 7-Pin
Outline Drawing - EIA 5-3
  Maximum Diameter 3/4 Inches
  Maximum Over-all Length 2 5/8 Inches
  Maximum Seated Height 2 3/8 Inches

TERMINAL CONNECTIONS

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

The tubes and arrangements disclosed herein may be covered by patents of General Electric Company or others. Neither the disclosure of any information herein nor the sale of tubes by General Electric Company conveys any license under patent claims covering combinations of tubes with other devices or elements. In the absence of an express written agreement to the contrary, General Electric Company assumes no liability for patent infringement arising out of any use of the tubes with other devices or elements by any purchaser of tubes or others.

ETR-2187

ELECTRONIC COMPONENTS DIVISION

GENERAL ELECTRIC

OWENSBORO, KENTUCKY
MAXIMUM RATINGS

Design-Maximum Values

Heater-Tap Voltage When Panel Lamp Fails, RMS 14 Volts
Plate Voltage 150 Volts
Screen Voltage 130 Volts
Plate Dissipation 5.5 Watts
Screen Dissipation 2.0 Watts
Heater-Cathode Voltage
  Heater Positive with Respect to Cathode
    DC Component 100 Volts
    Total DC and Peak 200 Volts
  Heater Negative with Respect to Cathode
    Total DC and Peak 200 Volts

Design-maximum ratings are limiting values of operating and environmental conditions applicable to a bogey tube of a specified type as defined by its published data and should not be exceeded under the worst probable conditions. The tube manufacturer chooses these values to provide acceptable serviceability of the tube, taking responsibility for the effects of changes in operating conditions due to variations in characteristics of the tube under consideration.

The equipment manufacturer should design so that initially and throughout life no design-maximum value for the intended service is exceeded with a bogey tube under the worst probable operating conditions with respect to supply voltage variation, equipment component variation, variation in characteristics of all other tubes in the equipment, equipment control adjustment, load variation, signal variation, and environmental conditions.

CHARACTERISTICS AND TYPICAL OPERATION

Class A1 Amplifier

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plate Voltage</td>
<td>110 Volts</td>
</tr>
<tr>
<td>Screen Voltage</td>
<td>115 Volts</td>
</tr>
<tr>
<td>Cathode-Bias Resistor</td>
<td>62 Ohms</td>
</tr>
<tr>
<td>Peak AF Grid-Number 1 Voltage</td>
<td>3.0 Volts</td>
</tr>
<tr>
<td>Plate Resistance, approximate</td>
<td>11000 Ohms</td>
</tr>
<tr>
<td>Transconductance</td>
<td>14600 Micromhos</td>
</tr>
<tr>
<td>Zero-Signal Plate Current</td>
<td>42 Milliamperes</td>
</tr>
<tr>
<td>Maximum-Signal Plate Current</td>
<td>42 Milliamperes</td>
</tr>
<tr>
<td>Zero-Signal Screen Current</td>
<td>11.5 Milliamperes</td>
</tr>
<tr>
<td>Maximum-Signal Screen Current</td>
<td>14.5 Milliamperes</td>
</tr>
<tr>
<td>Load Resistance</td>
<td>3000 Ohms</td>
</tr>
<tr>
<td>Total Harmonic Distortion, approximate</td>
<td>7 Percent</td>
</tr>
<tr>
<td>Maximum-Signal Power Output</td>
<td>1.4 Watts</td>
</tr>
</tbody>
</table>
* Heater voltage at bogey heater current.

+ For series heater operation, the equipment designer shall design the equipment so that heater current is centered at the specified bogey value, with heater supply variations restricted to maintain heater current within the specified tolerance.

§ Without panel lamp.

§ Without external shield.

The 50HC6 has a heater tap, which may be used for operating a 6.3-volt, 150-milliampere panel lamp in equipment employing semiconductor rectifiers. The table below gives the required values of panel-lamp shunting resistor for various rectifier load currents.

| SHUNTING RESISTOR REQUIRED WITH PANEL LAMP NUMBER 40 OR NUMBER 47 (See Typical Circuit) |
|-----------------------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Heater Voltage (Pin 3 to Pin 4)               | 45              | 45              | 45              | 45              | 45              | 45              |
| Heater-Tap Voltage (Pin 4 to Pin 6)           | 5.0             | 5.0             | 5.0             | 5.0             | 5.0             | 5.0             |
| Heater Current (Between Pins 3 and 6)         | 150             | 150             | 150             | 150             | 150             | 150             |
| Panel-Lamp Shunting Resistor                  | ---             | ---             | 370             | 175             | 120             | 88              |
| Rectifier Load Current§                       | 60              | 70              | 80              | 90              | 100             | 110             |
|                                                 | 120             |                 |                 |                 |                 |                 |

**Typical Circuit for Operation**

**WITH PANEL LAMP**

- \( R_5 = \text{Panel-lamp shunting resistor} \)
- Drop across \( R \) at 0.15 ampere should equal difference between line voltage and total of all rated heater voltages

Higher load currents will require smaller values of panel-lamp shunting resistor. For maximum panel-lamp life, the shunting resistor should be selected to allow a panel-lamp voltage of 5.5 volts with full rectifier load current.