COMPACTRON BEAM TRIODE

DESCRIPTION AND RATING

The 6EA4 is a low-current, high-voltage, beam triode intended for use as a shunt regulator in the high-voltage power supply of color television receivers.

GENERAL

ELECTRICAL

Cathode - Coated Unipinot
Heater Characteristics and Ratings
Heater Voltage, AC or DC* . . . 6.3±0.6 Volts
Heater Current† . . . . . . . . . 0.2 Amperes
Direct Inter-electrode Capacitances‡
Grid to Plate: (g to p) . . . 0.036 pf
Input: g to (h + k) . . . . . 1.9 pf
Output: p to (h + k) . . . . . 0.63 pf

MECHANICAL

Operating Position - Any
Envelope - T-12, Glass
Base - E12-74, Button 12-Pin
Top Cap - CL-34, Small
Outline Drawing - EIA 12-90

Maximum Diameter . . . . . . 1.563 Inches
Maximum Overall Length . . . . 4.375 Inches
Maximum Seated Height . . . . . 4.000 Inches
Minimum Seated Height . . . . . 3.750 Inches

MAXIMUM RATINGS

Design-Maximum ratings are limiting values of operating and environmental conditions applicable to a bogey electron 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, making allowance for the effects of changes in operating conditions due to variations in the 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, equipment control adjustment, load variation, signal variation, environmental conditions, and variations in the characteristics of all other electron devices in the equipment.

PHYSICAL DIMENSIONS

TERMINAL CONNECTIONS

Pin 1 - Heater
Pin 2 - Internal Connection - Do Not Use
Pin 3 - Internal Connection - Do Not Use
Pin 4 - Internal Connection - Do Not Use
Pin 5 - Cathode and Internal Shield
Pin 6 - Grid
Pin 7 - No Connection
Pin 8 - Internal Connection - Do Not Use
Pin 9 - Internal Connection - Do Not Use
Pin 10 - Internal Connection - Do Not Use
Pin 11 - Internal Connection - Do Not Use
Pin 12 - Heater
Cap - Plate

BASE DIAGRAM

EIA 12FA
MAXIMUM RATINGS (Cont’d)

DESIGN-MAXIMUM VALUES

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plate-Supply Voltage, Unregulated</td>
<td>60000 Volts</td>
</tr>
<tr>
<td>Plate Voltage</td>
<td>27000 Volts</td>
</tr>
<tr>
<td>Negative DC Grid Voltage</td>
<td>135 Volts</td>
</tr>
<tr>
<td>Peak Negative Grid Voltage%</td>
<td>440 Volts</td>
</tr>
<tr>
<td>Plate Dissipation</td>
<td>30 Watts</td>
</tr>
<tr>
<td>DC Plate Current</td>
<td>1.6 Milliampere</td>
</tr>
<tr>
<td>Heater-Cathode Voltage</td>
<td></td>
</tr>
<tr>
<td>Heater Positive with Respect to Cathode</td>
<td>Not Recommended</td>
</tr>
<tr>
<td>Heater Negative with Respect to Cathode</td>
<td>200 Volts</td>
</tr>
<tr>
<td>Grid-Circuit Resistance#</td>
<td>3.0 Megohms</td>
</tr>
</tbody>
</table>

CHARACTERISTICS AND TYPICAL OPERATION

SHUNT VOLTAGE REGULATOR SERVICE—See Circuit Diagram, Page 3

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unregulated DC Supply Voltage</td>
<td>36000 Volts</td>
</tr>
<tr>
<td>Equivalent Resistance of Unregulated Supply</td>
<td>11 Megohms</td>
</tr>
<tr>
<td>DC Reference Voltage</td>
<td>200 Volts</td>
</tr>
<tr>
<td>Equivalent Resistance of Reference Supply</td>
<td>1000 Ohms</td>
</tr>
<tr>
<td>Effective Grid-Plate Transconductance</td>
<td>200 Micromhos</td>
</tr>
<tr>
<td>DC Plate Current for Zero Load Current</td>
<td>1000 Microamperes</td>
</tr>
<tr>
<td>DC Plate Current for Load Current of 1 Milliampere</td>
<td>45 Microamperes</td>
</tr>
<tr>
<td>Regulated DC Output Voltage at Zero Load Current</td>
<td>25000 Volts</td>
</tr>
<tr>
<td>Regulated DC Output Voltage at Load Current of 1 Milliampere</td>
<td>24500 Volts</td>
</tr>
</tbody>
</table>

NOTES

* The equipment designer should design the equipment so that heater voltage is centered at the specified bogey value, with heater supply variations restricted to maintain heater voltage within the specified tolerance.

† Heater current of a bogey tube at Ef = 6.3 volts.

§ Without external shield.

¶ Peak value for duration of 20 seconds maximum during equipment warm-up.

# With flyback transformer high-voltage supply.

Note: High voltage operation of the 6EA4 can result in the production of x-rays which can constitute a health hazard unless these tubes are adequately shielded. The need for this precaution should be considered in equipment design. Relatively simple shielding should prove adequate.