Compactron Beam Triode

The 6JD5 is a compactron beam triode suited for use as a pulse-type high-voltage regulator in high-voltage power supply of color television receivers.

Features of the 6JD5 include a diffusion bonded cathode coating which provides a positive bond between the cathode coating and base material, thereby practically eliminating grid-to-cathode shorts caused by cathode flaking. By operating at a relatively low potential (3500 volts), this pulse-type regulator provides much less stress on internal components than shunt regulators operating in the 25000-volt range.

**GENERAL**

**ELECTRICAL**
- Cathode - Coated Unipotential
- Heater Characteristics and Ratings
  - Heater Voltage, AC or DC*: 6.3 ± 0.6 Volts
  - Heater Current*: 2.4 Amperes
- Direct Interelectrode Capacitances, approximate*
  - Grid to Plate: (g to p): 1.7 pf
  - Input: g to (h + k + b.p.): 23 pf
  - Output: p to (h + k + b.p.): 12 pf

**MECHANICAL**
- Operating Position - Any
- Envelope - T-12, Glass
- Base - E12-74, Button 12-Pin
- Outline Drawing
  - Maximum Diameter: 1.563 Inches
  - Minimum Diameter: 1.437 Inches
  - Maximum Over-all Length: 4.250 Inches
  - Maximum Seated Height: 3.875 Inches
  - Minimum Seated Height: 3.625 Inches

**MAXIMUM RATINGS**

**HIGH-VOLTAGE REGULATOR SERVICE—DESIGN-MAXIMUM VALUES**
- Peak Plate Voltage: 5500 Volts
- Plate Dissipation: 35 Watts
- Peak Plate Current: 325 Milliampere
- 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
    - DC Component: 450 Volts
    - Total DC and Peak: 0.1 Megohms
- Grid-Circuit Resistance: 0.1 Megohms
- Bulb Temperature at Hottest Point: 240° C

**PHYSICAL DIMENSIONS**

**TERMINAL CONNECTIONS**
- Pin 1 - Heater
- Pin 2 - Grid
- Pin 3 - Beam Plate
- Pin 4 - Cathode
- Pin 5 - Internal Connection - Do Not Use
- Pin 6 - Internal Connection - Do Not Use
- Pin 7 - Plate
- Pin 8 - Internal Connection - Do Not Use
- Pin 9 - Internal Connection - Do Not Use
- Pin 10 - Beam Plate
- Pin 11 - Grid
- Pin 12 - Heater

**BASING DIAGRAM**

EIA 12GY
MAXIMUM RATINGS (Cont’d)

Design-Maximum ratings are limiting values of operating and environmental conditions applicable to a bogy 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 bogy 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.

CHARACTERISTICS AND TYPICAL OPERATION

AVERAGE CHARACTERISTICS

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pulse Plate Voltage</td>
<td>3500 Volts</td>
</tr>
<tr>
<td>Beam Plate Connected to Cathode at Socket</td>
<td>4.4 Volts</td>
</tr>
<tr>
<td>Negative DC Grid Voltage</td>
<td>300 Milliamperes</td>
</tr>
<tr>
<td>Peak Plate Current</td>
<td>300</td>
</tr>
<tr>
<td>Amplification Factor</td>
<td>55000 Micromhos</td>
</tr>
<tr>
<td>Transconductance</td>
<td>4600 Ohms</td>
</tr>
<tr>
<td>Plate Resistance, approximate</td>
<td>-16 Volts</td>
</tr>
<tr>
<td>Grid Voltage, approximate</td>
<td></td>
</tr>
<tr>
<td>$E_b = 3500$ Volts, $I_b = 1.0$ Milliamperes</td>
<td></td>
</tr>
</tbody>
</table>

NOTES

- The equipment designer should design the equipment so that heater voltage is centered at the specified bogy value, with heater supply variations restricted to maintain heater voltage within the specified tolerance.
- Heater current of a bogy tube at $E_f = 6.3$ volts.
- Without external shield.
- For operation in a 525-line, 30-frame television system as described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations", Federal Communications Commission. The duty cycle of the voltage pulse must not exceed 15 percent of one scanning cycle.
- $S$ Sufficient impedance (220 ohms by-passed with a 0.01 microfarad capacitor is suggested) should be in series with the cathode to limit the cathode current under prolonged heater-cathode short-circuit conditions. This protective impedance will minimize the danger of heater burnout in case of a momentary heater-cathode arc within the tube.
- Larger values of grid-circuit resistance may be used if provisions are made to protect the tube.
- Duty cycle of the pulse must be less than 2.5 percent.
- $T$ Measured with an infrared thermometer, Ircon Model 700 BC or equivalent, at an ambient temperature of 40°C.

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AVERAGE PLATE CHARACTERISTICS

TUBE PRODUCTS DEPARTMENT

GENERAL ELECTRIC

Owensboro, Kentucky 42301