Compactron Beam Pentode
FOR TV HORIZONTAL-DEFLECTION AMPLIFIER APPLICATIONS

The 12JF5 is a compactron beam-power pentode primarily designed for use as the horizontal-deflection amplifier in color television receivers.

**GENERAL**

**ELECTRICAL**

- Cathode - Coated Unipotential
- Heater Characteristics and Ratings
  - Heater Voltage, AC or DC: 12.6 Volts
  - Heater Current: 0.6±0.04 Amperes
  - Heater Warm-up Time, average: 11 Seconds
  - Direct Interelectrode Capacitances, approximate:
    - Grid-Number 1 to Plate: (g1 to p) 0.95 pf
    - Input: g1 to (h+k+g2+b.p.) 15.6 pf
    - Output: p to (h+k+g2+b.p.) 6.4 pf

**MECHANICAL**

- Mounting Position - Any
- Envelope - T-12, Glass
- Base - E12-74, Button 12-Pin
- Top Cap - C1-1, Small
- Outline Drawing - EIA 12-87
  - Maximum Diameter: 1.563 Inches
  - Minimum Diameter: 1.437 Inches
  - Maximum Over-all Length: 3.625 Inches
  - Maximum Seated Height: 3.250 Inches
  - Minimum Seated Height: 3.000 Inches

**MAXIMUM RATINGS**

**HORIZONTAL-DEFLECTION AMPLIFIER SERVICE —— DESIGN-MAXIMUM VALUES**

- DC Plate-Supply Voltage (Boost + DC Power Supply): 770 Volts
- Peak Positive Pulse Plate Voltage: 6500 Volts
- Peak Negative Pulse Plate Voltage: 0 Volts
- Screen Voltage: 220 Volts
- Peak Negative Grid-Number 1 Voltage: 330 Volts
- Plate Dissipation: 17.5 Watts
- Screen Dissipation: 3.5 Watts
- DC Cathode Current: 175 Milliamperes
- Peak Cathode Current: 550 Milliamperes
- 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
- Grid-Number 1 Circuit Resistance: 1.0 Megohms
- Bulb Temperature at Hottest Point: 220 °C

**PHYSICAL DIMENSIONS**

**TERMINAL CONNECTIONS**

- Pin 1 - Heater
- Pin 2 - Grid-Number 2 (Screen)
- Pin 3 - Grid-Number 1
- Pin 4 - Cathode and Beam Plates
- Pin 5 - Internal Connection - Do Not Use
- Pin 6 - Internal Connection - Do Not Use
- Pin 7 - No Connection
- Pin 8 - Internal Connection - Do Not Use
- Pin 9 - Internal Connection - Do Not Use
- Pin 10 - Cathode and Beam Plates
- Pin 11 - Grid-Number 1
- Pin 12 - Heater
- Cap - Plate

**BASING DIAGRAM**

EIA 12JH
MAXIMUM RATINGS (Cont’d)

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.

CHARACTERISTICS AND TYPICAL OPERATION

AVERAGE CHARACTERISTICS

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Value 1</th>
<th>Value 2</th>
<th>Value 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plate Voltage</td>
<td>5000</td>
<td>60</td>
<td>250</td>
</tr>
<tr>
<td>Screen Voltage</td>
<td>150</td>
<td>150</td>
<td>150</td>
</tr>
<tr>
<td>Grid-Number 1 Voltage</td>
<td>-</td>
<td>0†</td>
<td>-22.5</td>
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<tr>
<td>Plate Resistance, approximate</td>
<td>-</td>
<td>-</td>
<td>18000</td>
</tr>
<tr>
<td>Transconductance</td>
<td>-</td>
<td>-</td>
<td>7300</td>
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<tr>
<td>Plate Current</td>
<td>345</td>
<td>65</td>
<td>Milliampere</td>
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<tr>
<td>Screen Current</td>
<td>27</td>
<td>1.8</td>
<td>Milliampere</td>
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<tr>
<td>Grid-Number 1 Voltage, approximate</td>
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<td>-80</td>
<td>-42</td>
</tr>
<tr>
<td>Triode Amplification Factor†</td>
<td>-</td>
<td>-</td>
<td>4.4</td>
</tr>
</tbody>
</table>

MINIMUM RECOMMENDED GRID DRIVE

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Value 1</th>
<th>Value 2</th>
<th>Value 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peak Positive Pulse Plate Voltage</td>
<td>3500</td>
<td>5000</td>
<td>6000</td>
</tr>
<tr>
<td>Peak Negative Grid-Number 1 Voltage for Eg2 = 150 Volts</td>
<td>-100</td>
<td>-118</td>
<td>-130</td>
</tr>
<tr>
<td>Peak Negative Grid-Number 1 Voltage for Eg2 = 200 Volts</td>
<td>-120</td>
<td>-138</td>
<td>-150</td>
</tr>
</tbody>
</table>

NOTES

- Heater voltage for a bogey tube at If = 0.6 amperes.
- The equipment designer should 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.
- The time required for the voltage across the heater to reach 80 percent of the bogey value after applying 4 times the bogey heater voltage to a circuit consisting of the tube heater in series with a resistance equal to 3 times the bogey heater voltage divided by the bogey heater current.
- 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.
- ° In stages operating with grid-leak bias, an adequate cathode-bias resistor or other suitable means is required to protect the tube in the absence of excitation.
- □ Measured with an infrared thermometer, Ircon Model 700 BC or equivalent, at an ambient temperature of 40° C.
- † Applied for short interval (two seconds maximum) so as not to damage tube.
- ‡ Triode connection (screen tied to plate) with Eb = Ec2 = 150 volts, and Ec1 = -22.5 volts.

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.
RECOMMENDED MINIMUM PEAK NEGATIVE GRID VOLTAGE vs PEAK POSITIVE PULSE PLATE VOLTAGE

PEAK E92 VOLTS DURING RE-TRACE = 200 VOLTS
PEAK E92 VOLTS DURING RE-TRACE = 150 VOLTS

PEAK NEGATIVE GRID TO CATHODE VOLTAGE IN VOLTS
PEAK POSITIVE PLATE VOLTAGE IN KILOVOLTS