The 12GN7-A is a miniature, sharp-cutoff pentode designed primarily for video amplifier service in television receivers.

**GENERAL**

**ELECTRICAL**
- **Cathode** - Coated Unipotential
- **Heater Characteristics and Ratings**
- **Heater Voltage, AC or DC**
- **Heater Current**
- **Heater Warm-up Time, average**
- **Direct Interelectrode Capacitances**
  - Grid-Number 1 to Plate: (g1 to p)
  - Input: g1 to (h + k + g2 + g3 + i.s.)
  - Output: p to (h + k + g2 + g3 + i.s.)

**MECHANICAL**
- **Operating Position** - Any
- **Envelope** - T-6 1/2, Glass
- **Base** - E9-1, Small Button 9-Pin
- **Outline Drawing** - EIA 6-3
  - **Maximum Diameter**
  - **Maximum Over-all Length**
  - **Maximum Seated Height**

**MAXIMUM RATINGS**
- **Design-Maximum Values**
  - **Plate Voltage**
  - **Screen Supply Voltage**
  - **Screen Voltage** - See Screen Rating Chart
  - **Positive DC Grid-Number 1 Voltage**
  - **Plate Dissipation**
  - **Screen Dissipation**
  - **Grid-Number 1 Circuit Resistance**

**PHYSICAL DIMENSIONS**
- **Physical Dimensions**
  - **0.875" MAX.**
  - **2.625" MAX.**
  - **2.375" MAX.**
  - **T6 1/2 MAX.**

**TERMINAL CONNECTIONS**
- **Pin 1** - Cathode
- **Pin 2** - Grid Number 1
- **Pin 3** - Grid Number 3 (Suppressor) and Internal Shield
- **Pin 4** - Heater
- **Pin 5** - Heater
- **Pin 6** - Heater Center Tap
- **Pin 7** - Plate
- **Pin 8** - Grid Number 2 (Screen)
- **Pin 9** - Grid Number 3 (Suppressor) and Internal Shield

**BASING DIAGRAM**
- **EIA 9BF**
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>Average Value</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plate Voltage</td>
<td>50</td>
<td>Volts</td>
</tr>
<tr>
<td>Screen Voltage</td>
<td>125</td>
<td>Volts</td>
</tr>
<tr>
<td>Grid-Number 1 Voltage</td>
<td>0</td>
<td>Volts</td>
</tr>
<tr>
<td>Cathode-Bias Resistor</td>
<td>56</td>
<td>Ohms</td>
</tr>
<tr>
<td>Plate Resistance, approximate</td>
<td>50000</td>
<td>Ohms</td>
</tr>
<tr>
<td>Transconductance</td>
<td>36000</td>
<td>Micromhos</td>
</tr>
<tr>
<td>Plate Current</td>
<td>70</td>
<td>Milliampere</td>
</tr>
<tr>
<td>Screen Current</td>
<td>24</td>
<td>Milliampere</td>
</tr>
<tr>
<td>Grid-Number 1 Voltage, approximate</td>
<td>-5.7</td>
<td>Volts</td>
</tr>
</tbody>
</table>

$\text{I_b} = 100 \text{ Microamperes}$

NOTES

* Operated with the two sections of the heater connected in parallel and the resulting combination in series with the heaters of other tubes having the same bogey heater current.

† Operated with the two sections of the heater connected in parallel and the resulting combination in parallel with the heaters of other tubes having the same bogey heater voltage.

§ Operated with the two sections of the heater connected in series and the resulting combination in parallel with the heaters of other tubes having the same bogey heater voltage.

¶ Heater voltage for a bogey tube at \( I_f = 0.6 \text{ amperes} \).

# For parallel heater operation, 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; for series heater operation, 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.

▲ Heater current of a bogey tube at \( E_f = 6.3 \text{ volts} \).

‡ Heater current of a bogey tube at \( E_f = 12.6 \text{ volts} \).

** 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.

§§ Control grid to cathode spacing of this type is of such low order of magnitude as to preclude the use of voltage between these elements of more than 50 volts dc or peak ac in commercial tube checkers or shorts indicating devices, particularly where mechanical excitation of the tube is employed.

¶¶ Applied for a short interval (two seconds maximum) so as not to damage tube.
SCREEN RATING CHART

AVERAGE PLATE CHARACTERISTICS

E_F = RATED VALUE
E_{C2} = 150 VOLTS
E_{C3} = 0 VOLTS