Beam Power Tube

**NOVAR TYPE**  **DARK HEATER**

*For High-Voltage-Pulse Shunt-Regulator Applications in Color-TV Receivers*

**ELECTRICAL CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heater Voltage</td>
<td>6.3 V</td>
</tr>
<tr>
<td>Heater Current</td>
<td>1.600 A</td>
</tr>
<tr>
<td><strong>Direct Interelectrode Capacitances</strong></td>
<td></td>
</tr>
<tr>
<td>Without external shield</td>
<td></td>
</tr>
<tr>
<td>Grid No.1 to plate</td>
<td>1.2 pF</td>
</tr>
<tr>
<td>Input: G1 to (k,G3,G2,H)</td>
<td>22 pF</td>
</tr>
<tr>
<td>Output: P to (k,G3,G2,H)</td>
<td>9.0 pF</td>
</tr>
</tbody>
</table>

*For the following characteristics, see Conditions*

**Amplification Factor**

(Triode Connection) \(\mu\) 4

**Plate Resistance (Approx.)** \(r_p\) 6000 \(\Omega\)

**Transconductance** \(g_m\) 9500 \(\mu\)mho

**DC Plate Current** \(I_b\) 580 \(b\) mA

**DC Grid-No.2 Current** \(I_c2\) 24 \(b\) mA

**Cutoff DC Grid-No.1 Voltage** \(E_{c1}(co)\) --42 V

**Conditions**

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heater Voltage</td>
<td>Bogey Value V</td>
</tr>
<tr>
<td>DC Plate Voltage</td>
<td>(E_b) 100 140 V</td>
</tr>
<tr>
<td>DC Grid-No.3 Voltage</td>
<td>(E_{c3}) 0 0 V</td>
</tr>
<tr>
<td>DC Grid-No.2 Voltage</td>
<td>(E_{c2}) 140 140 V</td>
</tr>
<tr>
<td>DC Grid-No.1 Voltage</td>
<td>(E_{c1}) 0 -24.5 V</td>
</tr>
</tbody>
</table>

**MECHANICAL CHARACTERISTICS**

**Operating Position** Any

**Type of Cathode** Coated Unipotential

**Dimensional Outline (JEDEC 12-96)** See General Section

**Maximum Overall Length** 3.130 in

**Maximum Seated Length** 2.750 in

**Maximum Diameter** 1.562 in

**Envelope** JEDEC Designation T12

**Base** Large-Button Novar 9-Pin with Exhaust Tip (JEDEC Designation E9-88)

**TERMINAL DIAGRAM (Bottom View)**

Pin 1 - Grid No.2
Pin 2 - Grid No.1
Pin 3 - Cathode
Pin 4 - Heater
Pin 5 - Heater
Pin 6 - Grid No.3
Pin 7 - Grid No.2
Pin 8 - Do Not Use
Pin 9 - Plate
**DESIGN-MAXIMUM RATINGS**

For operation as a High-Voltage-Pulse Shunt-Regulator Tube in Color-Television Receivers in a 525-line, 30-frame system

**DC Plate Supply Voltage**

\[ E_{bb} \] 770 V

**Peak Positive-Pulse Plate Voltage**

\[ E_{bm} \] 6500 V

**Peak Negative-Pulse Plate Voltage**

\[ -E_{bm} \] 1500 V

**DC Grid-No.3 Voltage**

\[ E_{c3} \] 75 V

**DC Grid-No.2 (Screen-Grid) Voltage**

\[ E_{c2} \] 220 V

**Grid No.1 (Control-Grid) Voltage**

- Peak negative-pulse value
  \[ -E_{clm} \] 330 V

- Negative dc value (bias)
  \[ -E_{cl} \] 75 V

**Heater-Cathode Voltage**

- Peak
  \[ E_{hk} \] 200 V

- Average
  \[ E_{hk(\text{av})} \] 100 V

**Heater Voltage (AC or DC)**

\[ E_h \] 5.7 to 6.9 V

**Cathode Current**

- Peak
  \[ I_{km} \] 950 mA

- Average
  \[ I_{k(\text{av})} \] 275 mA

**Grid-No.2 Input**

\[ P_{g2} \] 3.5 W

**Plate Dissipation**

\[ P_b \] 20 W

**Envelope Temperature (at hottest point on envelope surface)**

TE 240 °C

**Maximum Circuit Value**

**Grid-No.1-Circuit Resistance**

\[ R_{gl(\text{ckt})} \] 1 MΩ

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\( a \) With grid No.3 and grid No.2 connected, respectively, to cathode and plate at socket.

\( b \) This value can be measured by a method involving a recurrent waveform such that the Maximum Ratings of the tube will not be exceeded.

\( c \) This rating is applicable where the duration of the voltage pulse does not exceed 15% of one horizontal scanning cycle. In a 525-line, 30-frame system, 15% of one horizontal scanning cycle is 10 μs.

\( d \) Measured with a dc meter.

\( e \) Adequate circuit precautions must be taken to protect the tube in the absence of grid-No.1 bias.

\( f \) Plate dissipations up to 24 W maximum are permissible for short periods of time (up to 10 sec maximum) provided the maximum envelope-temperature rating is not exceeded.