Beam Power Tube

NOVAR TYPE

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

ELECTRICAL CHARACTERISTICS – Bogey Values

Heater Voltage, ac or dc...\(E_h\)

Heater Current ...

Direct Interelectrode Capacitances:

\(c_{g1-p}\)

Input: \(G1\) to \((K,G3,G2,H)\)

Output: \(P\) to \((K,G3,G2,H)\)

For the following characteristics, see Conditions below.

Amplification Factor (Triode Connection) \(\mu\)

Plate Resistance (Approx.) \(r_p\)

Transconductance \(g_m\)

DC Plate Current \(I_b\)

DC Grid-No.2 Current \(I_{c2}\)

Cutoff DC Grid-No.1 Voltage for \(I_b = 1\) mA...

Conditions:

Heater Voltage ... \(E_h\)

DC Plate Voltage ... \(E_b\)

DC Grid-No.3 Voltage ... \(E_{c3}\)

DC Grid-No.2 Voltage ... \(E_{c2}\)

DC Grid-No.1 Voltage ... \(E_{c1}\)

MECHANICAL CHARACTERISTICS

Dimensional Outline ... JEDEC No.12-97

Maximum Overall Length ... 3.380in. (85.85 mm)

Maximum Seated Length ... 3.000in. (76.2 mm)

Maximum Diameter ... 1.562in. (39.6 mm)

Envelope ... JEDEC Designation T12

Base ... Large-Button Novar 9-Pin with Exhaust Tip (JEDEC Designation E9-88)
Terminal-Connections Designation .......... JEDEC 9QU
Type of Cathode ......................... Coated Unipotential
Operating Position ....................... Any

MAXIMUM RATINGS – Design-Maximum Values

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
\( I_b = 0 \text{ mA} \) ........................................ \( E_{bb} \) 900 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
Peak Positive-Pulse Grid-No.2 Voltage \( e_{c2m} \) 600 V

Grid No.1 (Control-Grid) Voltage:
- Peak negative-pulse value \( -e_{c1m} \) 330 V
- Negative dc value (bias) \( -E_{c1} \) 250 V

Heater-Cathode Voltage:
- Peak \( e_{hkm} \) \{+200 V
- Average \( E_{hk(av)} \) 100 V

Heater Voltage .............................. \( E_h \) 5.7 to 6.9 V

Cathode Current:
- Peak \( i_{km} \) 950 mA
- Average \( I_{k(av)} \) 275 mA

Grid-No.2 Input ............................... \( P_{g2} \) 2.0 W
Plate Dissipation \( P_b \) 28 W

Envelope Temperature (at hottest point on envelope surface) \( T_E \) 240 °C

MAXIMUM CIRCUIT VALUE

Grid-No.1-Circuit Resistance: \( R_{g1(ckt)} \)
For grid-No.1-resistor-bias operation ...................... 1 MΩ
a Measured without external shield in accordance with the current issue of EIA Standard RS-191.

b With grid No.3 and grid No.2 connected, respectively, to cathode and plate at socket.

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

d Designed to mate with "Novar 9-Contact" Socket generally available from your local RCA Distributor.

e As defined in the current issue of EIA Standard RS-239.

f 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\mu s.

g Measured with a dc meter.

h Adequate circuit precautions must be taken to protect the tube in the absence of grid-No.1 bias.

k Plate dissipations up to 32W maximum are permissible for short periods of time provided the maximum envelope-temperature rating is not exceeded. This condition may exist under high-line voltage, zero picture tube beam current.

**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
<table>
<thead>
<tr>
<th>DIMENSION</th>
<th>INCHES</th>
<th>MILLIMETERS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Min.</td>
<td>Max.</td>
</tr>
<tr>
<td>A</td>
<td>1.438*</td>
<td>1.562</td>
</tr>
<tr>
<td>C</td>
<td>–</td>
<td>3.380</td>
</tr>
<tr>
<td>D</td>
<td>2.750</td>
<td>3.000</td>
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**MILLIMETER DIMENSION DERIVED FROM INCH DIMENSION**

* Applies to the minimum diameter except in the area of the seal.