Beam Power Tube

T12 NOVAR TYPE

\[ P_b = 30 \, W \quad \text{Overload} \, P_b = 200 \, W \]

Electrical Characteristics – Bogey Values

- Heater Voltage, ac or dc \( E_h \) \( 6.3 \) V
- Heater Current \( I_h \) \( 2.3 \) A
- Direct Interelectrode Capacitances:
  - Grid No. 1 to plate \( C_{g1-p} \) \( 0.6 \) pF
  - Input: G1 to (K, G3, G2, H) \( C_i \) \( 22 \) pF
  - Output: P to (K, G3, G2, H) \( C_o \) \( 11 \) pF

For the following characteristics, see Conditions below:

- Amplification Factor (Triode Connection) \( \mu \) \( 3.5 \)
- Plate Resistance (Approx.), \( r_p \) \( 5800 \) \( \Omega \)
- Transconductance \( g_m \) \( 9600 \) \( \mu \text{mho} \)
- DC Plate Current \( I_b \) \( 130 \) mA
- DC Grid-No. 2 Current \( I_{c2} \) \( 2.8 \) mA
- Cutoff DC Grid-No. 1
- Voltage for \( I_b = 1 \) mA \( (E_{c1(co)} = -125 \) V

Conditions:

- Heater Voltage \( E_h \) \( 6.3 \) V
- Peak Positive-Pulse Plate Voltage \( E_{bm} \) \( 5000 \) V
- DC Plate Voltage \( E_b \) \( 55 \) V
- DC Grid-No. 3 Voltage \( E_{c3} \) \( 30 \) V
- DC Grid-No. 2 Voltage \( E_{c2} \) \( 125 \) V
- DC Grid-No. 1 Voltage \( E_{c1} \) \( 0 \) V

Mechanical Characteristics

- Dimensional Outline \( \text{JEDEC No. 12-117} \)
- Envelope \( \text{JEDEC T-12} \)
- Top Cap \( \text{Small (JEDEC C1-1)} \)
- Base \( \text{Large-Button Novar 9-Pin with Exhaust Tip (JEDEC E9-88)} \)

Terminal Connections

(See TERMINAL DIAGRAM) \( \text{JEDEC 9QL} \)

Type of Cathode \( \text{Coated Unipotential} \)

Operating Position \( \text{Any} \)

Maximum Ratings – Design-Maximum Values

For operation as a Horizontal-Deflection-Amplifier Tube in a 525-line, 30-frame system.

- DC Plate Supply Voltage \( E_{bb} \) \( 990 \) V
- Peak Positive-Pulse Plate Voltage \( E_{bm} \) \( 7500 \) V
- Peak-Negative-Pulse Plate Voltage \( -e_{bm} \) \( 1100 \) V
DC Grid-No. 3 Voltage $E_{C3}$: 75 V
DC Grid-No. 2 (Screen-Grid) Voltage $E_{C2}$: 220 V
Peak Negative-Pulse Grid-No. 1 (Control-Grid) Voltage $-e_{C1m}$: 330 V

Heater-Cathode Voltage:
- Peak $e_{hk}m$: ±200 V
- Average $E_{hk}$: 100 V
- Heater Voltage $E_h$: 5.7 to 6.9 V

Cathode Current:
- Peak $i_{km}$: 1200 mA
- Average $I_{k(\text{av})}$: 350 mA

Grid-No. 2 Input $P_{g2}$: 5 W
Plate Dissipation $P_b$: 30 W
Temporary Overload Plate Dissipation $P_b$: 200 W
Envelope Temperature (at hottest point on envelope surface) $T_E$: 250 °C

Maximum Circuit Values
Grid-No. 1 Circuit Resistance: $R_{g(\text{ckt})}$: 1.0 megohm
- (with min. $R_K = 100 \Omega$

Grid-leak Bias: 10.0 megohms (with signal peak clamped to zero bias)

Fixed Bias: 0.47 megohm (where positive grid current is not drawn)

- a Measured without external shield in accordance with the current issue of EIA Standard RS-191B.
- b With grid No. 3 and grid No. 2 connected, respectively, to cathode and plate at socket.
- c Conditions: $E_b = E_{C2} = 125$ V, $E_{C1} = -25$ V.
  This value can be measured by a method involving a recurrent waveform such that the Maximum Ratings of the tube will not be exceeded.
- e Under pulse-duration condition specified in Footnote g.
- f As defined in the current issue of EIA Standard RS-239A.
- g This rating is applicable when 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 scanning cycle is 10 µs.
- h In horizontal-deflection-amplifier service, a positive voltage should be applied to grid No. 3 to reduce interference from "snivets", which may occur in both vhf and uhf television receivers, and to increase power output. A typical value is 30 V.
- j An adequate bias resistor or other means is required to protect the tube in the absence of excitation.
- k Total continuous or accumulated time not to exceed 40 seconds.
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. 1
Pin 7 - Grid No. 2
Pin 8 - Grid No. 3
Pin 9 - Do Not Use
Top Cap - Plate

TYPICAL CHARACTERISTICS

E_h = BOGEY VALUE
GRID - No. 3 VOLTS = 30
GRID - No. 2 VOLTS = 125

GRID - No. 2 MILLIAMPERES (I_C2)

PLATE MILLIAMPERES (I_B)
PLATE VOLTS

RCA Electronic Components
DATA 2
2-72
DIMENSIONAL OUTLINE
JEDEC No. 12-117

4.380 (111.25)
Max.

1.562 (39.6)
1.438* (36.6*)

CAP JEDEC No.
Cl-1

* Applies to the
min. dia. except in
the area of the seal

4.000 (101.6)
3.750 ( 95.3)

ENVELOPE T12

BASE
JEDEC No. E9-88

Dimensions
in inches (mm)

TYPICAL CHARACTERISTICS

$E_h = \text{BOGEY VALUE}$
GRID-No. 3 VOLTS = 30
GRID-No. 1 VOLTS = 0

RCA Electronic Components

DATA 2