Beam Power Tube

CERMOLOX® THORIATED-TUNGSTEN MESH FILAMENT INTEGRAL LOUVERED-FIN RADIATOR FORCED-AIR COOLED

5500 WATTS UHF TV OUTPUT AT 890 Mc
5500 WATTS CW OUTPUT AT 900 Mc

Also Useful in Applications Intended for UHF TV Service in Stationary and Portable Equipment, such as AF Power Amplifiers or Modulators, Plate-Modulated RF Power Amplifiers in Class-C Telephony Service, AM or Single-Sideband Linear RF Power Amplifiers, Hard-Tube Modulators, Pulsed-RF Amplifiers, Regulators, or other Special Services

Electrical:

Filamentary Cathode, Thoriated Tungsten Mesh Type:

Voltage (AC or DC)................. (4.5 typ. volts
                                               (5.0 max. volts

Current:

At 4.5 volts........................................ 125 typ. amp
For starting, even momentarily................. 300 max. amp
Cold resistance................................. 0.005 ohm
Minimum heating time......................... 15 sec

Mu-Factor, Grid No.2 to Grid No.1
for plate volts = 1200, grid-No.2
volts = 900, and plate amperes = 8

Direct Interelectrode Capacitances:

Grid No.1 to plate........................................ 0.32 max. pf
Grid No.1 to filament................................. 65 pf
Plate to filament........................................ 0.040 max. pf
Grid No.1 to grid No.2................................. 70 pf
Grid No.2 to plate........................................ 13 pf
Grid No.2 to filament................................. 2.0 max. pf

Mechanical:

Operating Position................................. Vertical, either end up
Maximum Overall Length............................... 5.65"
Maximum Diameter (See Dimensional Outline)........ 6.17"
Weight (Approx.)........................................ 10 lbs

Radiator.............................................. Integral part of tube

Terminal Connections (See Dimensional Outline):

G1 - Grid-No.1-
   Terminal
   Contact
   Surface

G2 - Grid-No.2-
   Terminal
   Contact
   Surface

F - Filament-
   Terminal
   Contact
   Surface

K-F - Cathode-
   Filament
   Terminal
   Contact
   Surface

P - Plate-
   Terminal
   Contact
   Surface
Thermal:
Terminal Temperature (Plate, grid No.2, grid No.1, cathode-filament and filament) ... 250 max. °C
Plate-Core Temperature ... 250 max. °C
Air Flow:

Through radiator — Adequate air flow to limit the plate-core temperature to 250°C should be delivered by a blower through the radiator before and during the application of filament, plate, grid-No.2, and grid-No.1 voltages.

To Plate, Grid-No.2, Grid-No.1, Cathode-Filament, and Filament Terminals — A sufficient quantity of air should be allowed to flow past each of these terminals so that their temperature does not exceed the specified maximum value of 250°C.

During Standby Operation — Cooling air is required when only filament voltage is applied to the tube.

During Shutdown Operation — Air flow should continue for a few minutes after all electrode power is removed.

RF POWER AMPLIFIER — Class B Television Service

Synchronizing-level conditions per tube unless otherwise specified

Maximum CCS Ratings, Absolute-Maximum Values:

DC Plate Voltage ................ 7000 volts
DC Grid-No.2 Voltage .......... 1500 volts
DC Plate Current .................. 4 amp
Plate Dissipation ................. 10000 watts
Grid-No.2 Input .................. 150 watts
Grid-No.1 Input .................. 100 watts

Typical CCS Operation:

In a cathode-drive circuit at 890 Mc and bandwidth of 8.5 Mc

DC Plate Voltage ................ 5700 volts
DC Grid-No.2 Voltage .......... 1000 volts
DC Grid-No.1 Voltage .......... 40 volts
DC Plate Current:
Synchronizing level .......... 2.9 amp
Pedestal level ................. 2.2 amp
DC Grid-No.2 Current:
Synchronizing level .......... 0.015 amp
Pedestal level ................. 0.011 amp
DC Grid-No.1 Current:
Synchronizing level .......... 0.375 amp
Pedestal level ................. 0.275 amp
Driver Power Output:
Synchronizing level .......... 600 watts
Pedestal level ................. 335 watts
Output Circuit Efficiency ........ 80 %
Useful Power Output:
Synchronizing level ............................................. 5500 watts
Pedestal level ...................................................... 3100 watts

RF POWER AMPLIFIER & OSCILLATOR — Class C Telegraphy
and
RF POWER AMPLIFIER — Class C FM Telephony

Maximum CCS Ratings, Absolute-Maximum Values:

DC Plate Voltage .................................................. 7000 volts
DC Grid-No.2 Voltage .............................................. 1500 volts
DC Grid-No.1 Voltage .............................................. -100 volts
DC Plate Current .................................................... 3 amp
DC Grid-No.1 Current .............................................. 0.65 amp
Grid-No.1 Inputf .................................................... 100 watts
Grid-No.2 Inputg .................................................... 150 watts
Plate Dissipation ................................................... 10000 watts

Maximum Circuit Values:
Grid-No.1-Circuit Resistance ..................................... 5000 ohms
Grid-No.2-Circuit Impedance .................................... See Note g
Plate-Circuit Impedance ......................................... See Note h

Typical CCS Operation:

In Cathode-Drive Circuit at 900 Mc

DC Plate Voltage .................................................. 5700 volts
DC Grid-No.2 Voltage .............................................. 1000 volts
DC Grid-No.1 Voltage .............................................. -85 volts
DC Plate Current .................................................... 2.7 amp
DC Grid-No.2 Current .............................................. 0.025 amp
DC Grid-No.1 Current .............................................. 0.200 amp
Driver Power Output ............................................. 900 watts
Output-Circuit Efficiency ....................................... 72 %
Useful Power Output ............................................. 5500 watts

a with external flat metal shield 8" in diameter having a center hole 3" in diameter. Shield is located in plane of the grid-No.2 terminal, perpendicular to the tube axis, and is connected to grid No.2.

b with external flat metal shield 8" in diameter having a center hole 2-3/8" indiameter. Shield is located in plane of the grid-No.1 terminal, perpendicular to the tube axis, and is connected to grid No.1.

The following footnotes apply to the RCA Transmitting Tube Operating Considerations given at front of this section.

c See Electrical Considerations — Filament or Heater.
d See Cooling Considerations — Forced-Air Cooling.
e See Classes of Service.
f See Electrical Considerations — Grid-No.1 Voltage Supply.
g See Electrical Considerations — Grid-No.2 Voltage Supply.
h See Electrical Considerations — Plate Voltage Supply.
**Note 1:** Concentricity between the various diameters is such that the tube will enter a gauge having suitably spaced concentric apertures and posts of the following diameters:

- a. Radiator = 6.240
- b. Plate Terminal = 3.288
- c. Grid-No.2 Terminal = 3.061
- d. Grid-No.1 Terminal = 2.338
- e. Cathode-Filament Terminal = 1.878
- f. Filament Terminal (OD) = 0.908
- g. Filament Terminal (ID) = 0.722

**Note 2:** The diameter of the terminal is held to the indicated value only over the contact surface length. The contact surface length of the filament, cathode-filament, and grid-No.1 terminals extends from the edge of its terminal to the plane coincident with the edge of the adjacent larger terminal.

**Note 3:** Keep all stippled regions clear. Do not allow contacts or circuit components to protrude into these annular regions.
PREFERRED MOUNTING ARRANGEMENT

REFERENCE LINE

SEE DETAIL

.020 WIDE X .425 DEEP
(6 SLOTS EQ. SP.)

DIMENSIONS
IN
INCHES

.431 DIA.

.781 DIA.

.125 R.

.800

.531 +.000

-.002 DIA.

Note: All finger stock No. 97-380, made by Instrument Specialties Co., Little Falls, N.J.

CAVITY TUNING CHARACTERISTICS

GRID No. 1 TO GRID No. 2

FREQUENCY — Mc

GRAND No. 2
TERMINAL
GRAND No. 1
TERMINAL

Zo = 6
0-HMS

2.718 OD
3.000 ID

RCF - 13035
TYPICAL CONSTANT-CURRENT CHARACTERISTICS

FILAMENT VOLTS = 4.5
GRID-No. 2 VOLTS = 1000
PLATE AMPERES = I_b
GRID-No. 2 AMPERES = I_{C_2}
GRID-No. 1 AMPERES = I_{C_1}

GRID-No. 1 VOLTS

250  500  1000  1500  2000  2500  3000  3500  4000  4500  5000  5500  6000  6500

PLATE VOLTS

DATA 4
RADIO CORPORATION OF AMERICA
Electronic Components and Devices
Harrison, N. J.