Sharp-Cutoff Pentode
With Two Independent Control Grids

7-PIN MINIATURE TYPE
For FM Sound-Detector Service

GENERAL DATA

Electrical:
Heater, for Unipotential Cathode:
Voltage (AC or DC) ...................... 6.3 volts
Current .................................. 0.45 ± 6% amp
Warm-up time (Average) ........... 11 sec

Direct Interelectrode Capacitances
(Approx.):*
Grid No.1 to plate .................. 0.022 μf
Grid No.1 to cathode & internal
  shield, grid No.3, grid No.2, 
  and heater .......................... 8 μf
Grid No.3 to plate .................. 1.6 μf
Grid No.1 to grid No.3 ............. 0.11 μf
Grid No.3 to cathode & internal
  shield, plate, grid No.2, grid 
  No.1, and heater ................. 7.5 μf

Characteristics, Class A, Amplifier:
Plate Supply Voltage ................. 150 volts
Grid-No.3 Supply Voltage ............. 0 volts
Grid-No.2 Supply Voltage ............. 100 volts
Grid-No.1 Supply Voltage ............. 0 volts
Cathode Resistor .................... 180 ohms
Plate Resistance (Approx.) ........ 0.14 megohm
Transconductance, Grid No.1 to Plate. 3700 μmhos
Transconductance, Grid No.3 to Plate. 750 μmhos
Plate Current ........................ 3.7 ma
Grid-No.2 Current ................... 3 ma
Grid-No.1 Supply Voltage (Approx.)
  for plate μa = 20 .................. -4.5 volts
Grid-No.3 Supply Voltage (Approx.)
  for plate μa = 20 .................. -7 volts

Mechanical:
Operating Position .................... Any
Maximum Overall Length ................ 2-1/8"
Maximum Seated Length ................ 1-7/8"
Length, Base Seat to Bulb Top (Excluding tip) 1-1/2" ± 3/32"
Diameter ................................ 0.650" to 0.750"
Dimensional Outline ................... See General Section
Bulb .................................. Small-Button Miniature 7-Pin (JEDEC No.E7-1)
Basing Designation for BOTTOM VIEW............. 7EN

Pin 1–Grid No.1
Pin 2–Cathode,
Internal
Shield
Pin 3–Heater
Pin 4–Heater
Pin 5–Plate
Pin 6–Grid No.2
Pin 7–Grid No.3

FM SOUND-DETECTOR SERVICE

Maximum Ratings, Design-Maximum Values:

PLATE VOLTAGE ......................... 300 max. volts
GRID-No.3 (CONTROL-GRID) VOLTAGE:
  Negative value (DC and Peak AC) .... 100 max. volts
  Positive value (DC and Peak AC) .... 25 max. volts
GRID-No.2 (SCREEN-GRID) SUPPLY VOLTAGE... 300 max. volts
GRID-No.2 VOLTAGE ............ See Grid-No.2 Input Rating Chart at front of Receiving Tube Section
GRID-No.1 (CONTROL-GRID) VOLTAGE:
  Negative-bias value ............... 50 max. volts
  Positive-bias value .............. 0 max. volts
GRID-No.2 INPUT:
  For grid-No.2 voltages up to 150 volts. 1 max. watt
  For grid-No.2 voltages between 150 and 300 volts .... See Grid-No.2 Input Rating Chart at front of Receiving Tube Section
GRID-No.3 INPUT ..................... 0.1 max. watt
PLATE DISSIPATION ................. 1.7 max. watts
PEAK HEATER-CATHODE VOLTAGE:
  Heater negative with respect to cathode. 200 max. volts
  Heater positive with respect to cathode. 200 max. volts

Maximum Circuit Values:

Grid-No.3–Circuit Resistance........ 0.68 max. megohm
Grid-No.1–Circuit Resistance:
  For fixed-bias operation......... 0.22 max. megohm
  For cathode-bias operation ...... 0.47 max. megohm

a Without external shield.
b The dc component must not exceed 100 volts.
AVERAGE CHARACTERISTICS

$E_f = 6.3$ VOLTS
GRID-No. 3 VOLTS=0
GRID-No. 2 VOLTS=100

PLATE (I_b) OR GRID-No. 2 (I_c2) MILLIAMPERES

PLATE VOLTS

92CM-11002
AVERAGE CHARACTERISTICS

$E_t = 6.3$ VOLTS
PLATE VOLTS = 150
GRID-No. 2 VOLTS = 100

GRID-No. 1 VOLTS

GRID-No. 2 MILLIAMPERES

92CM-11007
AVERAGE CHARACTERISTICS

$E_f = 6.3$ VOLTS
GRID-No. 2 VOLTS $= 100$
GRID-No. 1 VOLTS $= 0$

PLATE (I_b) OR GRID-No.2 ($I_{C2}$) MILLIAMPERES

PLATE VOLTS

92CM-11003

RADIO CORPORATION OF AMERICA
Electron Tube Division
Harrison, N. J.
AVERAGE CHARACTERISTICS

$E_p = 6.3$ VOLTS
PLATE VOLTS = 150
GRID-No. 2 VOLTS = 100

GRID-No. 1 VOLTS = 0
GRID-No. 2 VOLTS = 0
GRID-No. 3 VOLTS

PLATE (1b), GRID-No. 2, GRID-No. 3, OR GRID-No. 3 (3c3) MILLIAMPERES

92CM-11006
AVERAGE GRID-No.1
OPERATION CHARACTERISTIC

\[ E_f = 6.3\ \text{VOLTS} \]
\[ \text{PLATE VOLTS} = 150 \]
\[ \text{GRID-No.3 VOLTS} = 0 \]
\[ \text{GRID-No.2 VOLTS} = 100 \]

GRID-No.1 VOLTS

GRID-No.1 MILLIAMPERES

-4 -2 0 2 4

E_f = 6.3 VOLTS
PLATE VOLTS = 150
GRID-No.3 VOLTS = 0
GRID-No.2 VOLTS = 100