Sharp-Cutoff Pentode
With Two Independent Control Grids

7-PIN MINIATURE TYPE
With Heater Having Controlled Warm-Up Time

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 ...................................... 0.026 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 .................................. 0.12 μf
Grid No.3 to cathode & internal
  shield, plate, grid No.2, grid
  No.1, and heater .................................... 6.5 μf

Characteristics, Class A1 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 μhos
Transconductance, Grid No.3 to Plate .............. 750 μhos
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 ....................................................... T5-1/2
Base ....................................................... 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

GATED AGC AMPLIFIER & NOISE INVERTER

For operation in a 525-line, 30-frame system.

Maximum Ratings, Design-Maximum Values:

PLATE VOLTAGE: 300 max. volts
PEAK POSITIVE-PULSE PLATE VOLTAGE: 600 max. volts
GRID-No.3 (CONTROL-GRID) VOLTAGE:
  Negative-bias value: 100 max. volts
  Positive-bias value: 0 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
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.
\(^{b}\) As described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations," Federal Communications Commission.
\(^{c}\) This rating is applicable when the duration of the voltage pulse does not exceed 15 per cent of one horizontal scanning cycle. In a 525-line, 30-frame system, 15 per cent of one horizontal scanning cycle is 10 microseconds.
\(^{d}\) The dc component must not exceed 100 volts.
AVERAGE CHARACTERISTICS

$E_1 = 6.3$ 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