Beam Power Tube—Sharp-Cutoff Pentode

For Combined FM Detector and Audio-Frequency Output Amplifier Applications in TV Receivers

DUODECAR TYPE

Electrical:

Heater Characteristics and Ratings:
   Voltage (AC or DC)........ 6.3 ± 0.6 volts
   Current at heater volts = 6.3...... 0.9 amp
   Peak heater–cathode voltage (Each unit):
     Heater negative with respect to cathode. 200 max. volts
     Heater positive with respect to cathode. 200 max. volts

Direct Interelectrode Capacitances (Approx.):

   Grid No.1 to plate.................. 0.26 pf
   Input: G1 to (Kp,G3,G2,IS,H)....... 11 pf
   Output: P to (Kp,G3,G2,IS,H)....... 12 pf

Pentode Unit:
   G1p to Pp.................. 0.034 pf
   G3p to Pp.................. 3.2 pf
   G1p to (Kp,G2p,G3p,IS,H)........ 6.5 pf
   G2p to (Kp,G1p,G2p,Pp,IS,H)....... 7.5 pf
   G1p to G3p.................. 0.24 pf
   P to Pp.................. 0.12 pf

Mechanical:

Operating Position.................. Any
Type of Cathodes.................. Coated Unipotential
Maximum Overall Length........... 2.625"
Seated Length.................. 2.000" to 2.250"
Diameter.................. 1.062" to 1.188"
Dimensional Outline (JEDEC 9-59) See General Section
Bulb.................. T9
Base.................. Small-Button Duodecar 12-Pin (JEDEC No.E12-70)
Basing Designation for BOTTOM VIEW........ 12BU

Pin 1—Heater
Pin 2—Pentode Cathode
Pin 3—Pentode Grid No.1
Pin 4—Pentode Grid No.3
Pin 5—Internal Shield
Pin 6—Pentode Plate
Pin 7—Pentode Grid No.2
Pin 8—Beam Power Grid No.1
Pin 9—Beam Power Cathode,
   Beam Power Grid No.3
Pin 10—Beam Power Grid No.2
Pin 11—Beam Power Plate
Pin 12—Heater

The dc component must not exceed 100 volts.
Without external shield.

Indicates a change.
Characteristics, Class A1 Amplifier (Pentode Unit):

Plate Supply Voltage .................................. 150 volts
Grid-No.3 .................................................. Connected to cathode at socket
Grid-No.2 Supply Voltage .................................. 100 volts
Grid-No.1 .................................................. Connected to negative end of cathode resistor
Cathode Resistor ......................................... 560 ohms
Plate Resistance (Approx.) ................................ 0.15 megalohms
Transconductance, Grid No.1 to Plate ................. 1000 µhos
Transconductance, Grid No.3 to Plate .................. 400 µhos
Plate Current ............................................. 1.3 ma
Grid-No.2 Current ........................................ 2.1 ma
Grid-No.1 Voltage (Approx.) for plate µa = 30 ...... -4.5 volts
Grid-No.3 Voltage (Approx.) for plate µa = 50 ...... -4.5 volts

PENTODE UNIT — FM SOUND DETECTOR

Maximum Ratings, Design-Maximum Values:

Plate Voltage ............................................ 330 max. volts
Grid-No.3 (Suppressor-Grid) Voltage ................... 28 max. volts
Grid-No.2 (Screen-Grid) Supply Voltage ............... 330 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:
Positive-bias value ...................................... 0 max. volts
Plate Dissipation ........................................ 1.7 max. watts
Grid-No.2 Input:
For grid-No.2 voltages up to 165 volts ................ 1.1 max. watts
For grid-No.2 voltages between 165 and 330 volts ... See Grid-No.2 Input Rating Chart at front of Receiving Tube Section

BEAM POWER UNIT — AMPLIFIER — Class A1

Maximum Ratings, Design-Maximum Values:

Plate Voltage ............................................ 275 max. volts
Grid-No.2 (Screen-Grid) Voltage ....................... 275 max. volts
Plate Dissipation ........................................ 10 max. watts
Grid-No.2 Input .......................................... 2 max. watts

Typical Operation and Characteristics:

Plate Voltage ............................................ 250 volts
Grid-No.2 Voltage ........................................ 250 volts
Grid-No.1 (Control-Grid) Voltage ...................... -8 volts
Peak AF Grid-No.1 Voltage ............................. 8 volts
Zero-Signal Plate Current ............................. 35 ma
Max.-Signal Plate Current ............................. 39 ma
Zero-Signal Grid-No.2 Current ......................... 2.5 ma
Max.-Signal Grid-No.2 Current ......................... 7 ma
Plate Resistance (Approx.) ............................ 0.1 megalohms
Transconductance .................. 6500 µhos
Load Resistance ........................................ 5000 ohms
Total Harmonic Distortion .................. 10 per cent
Max.-Signal Power Output ..................... 4.2 watts

Maximum Circuit Values:

Grid-No.1-Circuit Resistance:
For fixed-bias operation ......................... 0.25 max. megalohms
For cathode-bias operation ...................... 0.5 max. megalohms
AVERAGE CHARACTERISTICS
Beam Power Unit

$E_f = 6.3$ VOLTS
GRID-No. 2 VOLTS = 250

GRID-No. 2 (I_C2) MILLIAMPERES

PLATE (I_b) MILLIAMPERES

92CM-12669
OPERATION CHARACTERISTICS
Beam Power Unit

$E_t=6.3$ VOLTS
PLATE VOLTS=250
GRID-No.2 VOLTS=250
GRID-No.1 VOLTS=-8
SIGNAL VOLTS (RMS)=5.6

AVERAGE CHARACTERISTICS
Pentode Unit

$E_t=6.3$ VOLTS
PLATE VOLTS=150
GRID-No.3 VOLTS=0
AVERAGE PLATE CHARACTERISTICS
Pentode Unit

E_t = 6.3 VOLTS
GRID-No. 2 VOLTS = 100
GRID-No. 1 VOLTS = 0

PLATE MILLIAMPERES

PLATE VOLTS

92CM-12672

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