High-Mu Triode—Beam Power Tube

NOVAR TYPE
For Combined Vertical-Deflection Oscillator and Amplifier Service in TV Receivers

Electrical:
Heater Characteristics and Ratings:
Voltage (AC or DC) ........ 6.3 ± 0.6 volts
Current at heater volts = 6.3 ........ 1.100 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.):
Triode Unit:
Grid to plate ........ 0.44 pf
G1 to (KT, H) ........ 15.0 pf
P1 to (KT, H) ........ 7.0 pf
Beam Power Unit:
Grid No.1 to plate. ........ 0.048 pf
G1b to (Kb + G3b, G2b, H) ........ 2.6 pf
Pb to (Kb + G3b, G2b, H) ........ 0.28 pf

Mechanical:
Operating Position .................. Any
Type of Cathodes .................. Coated Unipotential
Maximum Overall Length ............... 2.380"
Seated Length .................. 1.750" to 2.000"
Diameter .................. 1.062" to 1.188"
Dimensional Outline .................. See General Section
Bulb .................. T9
Base .................. Small Button Novar 9-Pin with Exhaust Tip
(JEDEC No. E9-89)
Basing Designation for BOTTOM VIEW ........ 9QT

Pin 1—Triode Cathode
Pin 2—Beam Power Grid No.1
Pin 3—Beam Power Cathode & Grid No.3
Pin 4—Heater
Pin 5—Heater
Pin 6—Beam Power Plate
Pin 7—Beam Power Grid No.2
Pin 8—Triode Plate
Pin 9—Triode Grid

Characteristics, Class A Amplifier:

<table>
<thead>
<tr>
<th>Triode Unit</th>
<th>Beam Power Unit</th>
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<tbody>
<tr>
<td>Plate Voltage</td>
<td>250</td>
</tr>
<tr>
<td>Grid-No.2 Voltage</td>
<td>-</td>
</tr>
<tr>
<td>Grid-No.1 Voltage</td>
<td>-3</td>
</tr>
<tr>
<td>Amplification Factor</td>
<td>64</td>
</tr>
</tbody>
</table>
Triode Unit  Beam Power Unit
Plate Resistance (Approx.).  40000  -  18000  -  ohms
Transconductance.  1600  -  8400  -  μhos
Plate Current.  1.4  170c  39  -  ma
Grid-No.2 Current.  -  20c  3  -  ma
Grid-No.1 Voltage
(Approx.,) for plate
ma = 1  -  -  -24  -  volts

VERTICAL-DEFLECTION OSCILLATOR (Triode Unit)
Maximum Ratings, Design-Maximum Values:

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

DC Plate Voltage.  330 max.  volts
Peak Negative-Pulse Grid Voltage.  400 max.  volts
Peak Cathode Current.  77 max.  ma
Average Cathode Current.  22 max.  ma
Plate Dissipation.  1.5 max.  watts

Maximum Circuit Values:
Grid-Circuit Resistance:
For grid-resistor-bias operation.  2.2 max.  megohms

VERTICAL-DEFLECTION AMPLIFIER (Beam Power Unit)
Maximum Ratings, Design-Maximum Values:

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

DC Plate Voltage.  300 max.  volts
Peak Positive-Pulse Plate Voltage.  2000 abs.max.  volts
DC Grid-No.2 (Screen-Grid) Voltage.  150 max.  volts
Peak Negative-Pulse Grid-No.1
(Control-Grid) Voltage.  250 max.  volts
Peak Cathode Current.  200 max.  ma
Average Cathode Current.  70 max.  ma
Plate Dissipation.  12 max.  watts
Grid-No.2 Input.  1.9 max.  watts

Maximum Circuit Values:
Grid-No.1-Circuit Resistance:
For grid-resistor-bias operation.  2.2 max.  megohms

a The dc component must not exceed 100 volts.
b without external shield.
c This value can be measured by a method involving a recurrent waveform such that the plate dissipation and grid-No.2 input will be kept within ratings in order to prevent damage to the tube.
d As described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations", Federal Communications Commission.
e This rating is applicable where the duration of the voltage pulse does not exceed 15 per cent of one vertical scanning cycle. In a 525-line, 30-frame system, 15 per cent of one vertical scanning cycle is 2.5 milliseconds.
AVERAGE CHARACTERISTICS
Beam Power Unit

$E_t = 6.3$ VOLTS
GRID-No.2 VOLTS = 120

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

PLATE MILLIAMPERES

PLATE VOLTS

92CM-11942
AVERAGE CHARACTERISTICS
Triode Unit

$E_t = 6.3$ VOLTS

PLATE VOLTAGE (Vp) ~ 88

AMPLIFICATION FACTOR ($\mu$)

TRANSCONDUCTANCE (gm) ~ MICROMOS

PLATE RESISTANCE ($r_p$) ~ MEGOHMS

GRID VOLTS

-6 -5 -4 -3 -2 -1 0

0.02 0.04 0.06

200 500 1000 2000 3000

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