### Two-Plate Beam-Deflection Tube

**BALANCED OUTPUT** 9-PIN MINIATURE TYPE  DARK HEATER

*For Color-Demodulator Applications in Color-TV Receivers and a Variety of Other Switching and Gating Applications*

#### ELECTRICAL CHARACTERISTICS

**Bogey Values**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heater Voltage (AC or DC)</td>
<td>$E_h$</td>
</tr>
<tr>
<td>Heater Current at $E_h$ = bogey value</td>
<td>$I_h$</td>
</tr>
</tbody>
</table>

**Direct Interelectrode Capacitances**

- Without external shield
  - Grid No.1 to all except plates: $7.5$ pF
  - Either plate to all: $6.0$ pF
  - Either deflecting electrodes to all other electrodes: $6.0$ pF
  - Plate No.1 to Plate No.2: $0.4$ pF
  - Deflecting-electrode No.1 to deflecting-electrode No.2: $0.4$ pF
  - Grid No.1 to deflecting-electrode No.1: $0.07$ max pF
  - Grid No.1 to deflecting-electrode No.2: $0.1$ max pF

*For the following characteristics see Conditions "A"

**Transconductance, grid No.1 to both plates**

$g_m = 4400 \ \mu\text{mho}$

**Total DC Plate Current (plate-No.1 + plate-No.2 current)**

$I_{b(tot)} = 14.5$ mA

**DC Grid-No.3 Current**

$C_3 = 0.7$ mA

**Cutoff DC Grid-No.1 Voltage for**

$E_{C1(co)} = -16$ V

*Conditions "A"

**Heater Voltage**

$E_h$  Bogey Value  V

**DC Plate-No.1 Supply Voltage**

$E_{bb1} = 250$ V

**Plate No.2**

- Connected to plate No.1

**DC Deflecting-Electrode-No.1**

- Supply Voltage: 75 V

**DC Deflecting-Electrode-No.2**

- Supply Voltage: 75 V

**DC Grid-No.3 Supply Voltage**

$E_{cc3} = 350$ V

**DC Grid-No.1 Supply Voltage**

$E_{cc1} = 0$ V

**Cathode Resistor**

$R_k = 390$ Ω

*For the following deflecting-electrode characteristics, see Conditions "B"

**Deflecting-Electrode Switching Voltage**

$E_{dj(swapping)} = 30$ max V

**Voltage Difference between Deflecting Electrodes for equal plate currents ($I_{b1} = I_{b2}$)**

- 0 V
Plate-No.1 Current with deflecting electrode-No.1 voltage (Edj1) = 55 V and deflecting-electrode-No.2 voltage (Edj2) = 95 V ............ Ib1 1.3 max mA
Plate-No.2 Current with (Edj1) = 95 V and (Edj2) = 55 V ............ Ib2 1.3 max mA
Deflecting-Electrode-No.1 Current with Edj1 = 125 V and Edj2 = 25 V ............ Idj1 0.04 max mA
Deflecting-Electrode-No.2 Current with Edj1 = 25 V and Edj2 = 125 V ............ Idj2 0.04 max mA

Conditions "B"

Heater Voltage .......... $E_h$ 6.3 V
DC Plate-No.1 Supply Voltage .......... $E_{bb1}$ 250 V
DC Plate-No.2 Supply Voltage .......... $E_{bb2}$ 250 V
DC Grid-No.3 Supply Voltage .......... $E_{cc3}$ 350 V
DC Grid-No.1 Supply Voltage .......... $E_{cc1}$ 0 V
Cathode Resistor .......... $R_k$ 390 $\Omega$

MECHANICAL CHARACTERISTICS

Operating Position .......... Any
Type of Cathode .......... Coated Unipotential
Maximum Overall Length .......... 2.625 in
Maximum Seated Length .......... 2.375 in
Length, Base Seat to Bulb Top Excluding tip .......... 1.906 to 2.094 in
Maximum Diameter .......... 0.875 in
Dimensional Outline (JEDEC 6-3) See General Section
Envelope .......... JEDEC T6-1/2
Base .......... Small-Button Noval 9-Pin (JEDEC E9-1)

TERMINAL DIAGRAM (Bottom View)

Pin 1 - Deflecting Electrode No.2
Pin 2 - Deflecting Electrode No.1
Pin 3 - Grid No.3
Pin 4 - Heater End B
Pin 5 - Heater End A, Internal Shield
Pin 6 - Grid No.1
Pin 7 - Grid No.2, Cathode
Pin 8 - Plate No.2
Pin 9 - Plate No.1

$^\Delta$ Pin No.5 should be connected directly to ground.

DESIGN-MAXIMUM RATINGS

DC Plate Voltage, each plate .......... $E_b$ 400 V
DC Deflecting-Electrode Voltage, each electrode .......... $E_{dj}$ 100 V
Peak Deflecting-Electrode Voltage, each electrode .......... $E_{djm}$ 1200 V
DC Grid-No.3 (Accelerating-Grid) Voltage $E_{c3}$ 400 V
DC Grid-No.1 (Control-Grid) Voltage $E_{c1}$ 0 V
Heater Voltage (AC or DC) .......... $E_h$ 5.7 to 6.9 V
DESIGN-MAXIMUM RATINGS (Cont'd)

Average Cathode Current.  \( I_{K_{av}} \)  30 mA
Grid-No.3 Input.  \( P_{g3} \)  2 W
Plate Dissipation, each plate.  \( P_{d} \)  2 W

MAXIMUM CIRCUIT VALUES

Grid-No.1-Circuit Resistance.  \( R_{g1(ckt)} \)
For fixed-bias operation  0.1 MΩ
For cathode-bias operation  0.25 MΩ

\( ^a \) Unless otherwise specified.
\( ^b \) Defined as the total voltage change from 75 volts on either deflecting electrode with an equal and opposite change on the other deflecting electrode required to switch the plate current from one plate to the other.

OPERATING CONSIDERATIONS

Magnetic fields adversely affect the intrinsic operating plate-current balance of the 6ME8. To minimize this effect, the tube should be mounted as far as possible from all devices producing extraneous magnetic fields such as transformers, chokes, or similar components. It is recommended that an external shield be used in those applications critical for plate-current balance.
Typical Plate Characteristics

$E_h = 6.3 V$

PLATE No.2 CONNECTED TO PLATE No.1 AT SOCKET
DEFLECTING-ELECTRODE-No.1 VOLTS = 75
DEFLECTING-ELECTRODE-No.2 VOLTS = 75
GRID-No.3 VOLTS = 350

TOTAL PLATE MILLIAMPERES

PLATE VOLTS

92CM-14470
Transfer Characteristics

$E_h = 6.3 \text{ V}$
PLATE - No.1 VOLTS = 250
PLATE - No.2 VOLTS = 250
DEFLECTING - ELECTRODE - No.1 VOLTS = 75
DEFLECTING - ELECTRODE - No.2 VOLTS = 75

GRID - No.1 VOLTS

TOTAL PLATE MILLIAMPERES

GRID - No.3 MILLIAMPERES

92CS-14468

92CS-14469
Transfer Characteristics

$E_h = 6.3 \text{ V}$
PLATE-No.1 VOLTS = 250
PLATE-No.2 VOLTS = 250
DEFLECTING-ELECTRODE No.1 VOLTS = 75
DEFLECTING-ELECTRODE No.2 VOLTS = 75
GRID-No.3 VOLTS = 350

PLATE-No.1 OR PLATE-No.2 MILLIAMPERES ($I_{b1}$ OR $I_{b2}$)

DATA 3
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