## TWIN DIODE—MEDIUM-MU TRIODE

### 9-PIN MINIATURE TYPE

**Intended for use in equipment having series heater-string arrangement**

### GENERAL DATA

**Electrical:**

Heater, for Unipotential Cathodes:
- Voltage: 6.3 ac or dc volts
- Current: 0.6 amp
- Warm-up time (Average): 11 sec

*For definition of heater warm-up time and method of determining it, see sheet HEATER WARM-UP TIME MEASUREMENT at front of this Section.*

**Direct Interelectrode Capacitances:**

<table>
<thead>
<tr>
<th>Triode Unit</th>
<th>Value (μf)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grid to plate</td>
<td>2.6</td>
</tr>
<tr>
<td>Grid to heater and cathode</td>
<td>2.8</td>
</tr>
<tr>
<td>Plate to heater and cathode</td>
<td>0.31</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Diode Units</th>
<th>Value (μf)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diode-No.1 plate to triode grid</td>
<td>0.07 max.</td>
</tr>
<tr>
<td>Diode-No.2 plate to triode grid</td>
<td>0.11 max.</td>
</tr>
<tr>
<td>Diode-No.1 cathode to all other electrodes</td>
<td>4.8</td>
</tr>
<tr>
<td>Diode-No.2 cathode to all other electrodes</td>
<td>4.8</td>
</tr>
<tr>
<td>Diode-No.1 plate to diode-No.2 plate</td>
<td>0.06 max.</td>
</tr>
<tr>
<td>Diode-No.1 plate to diode-No.1 cathode and heater</td>
<td>1.9</td>
</tr>
<tr>
<td>Diode-No.2 plate to diode-No.2 cathode and heater</td>
<td>1.9</td>
</tr>
<tr>
<td>Diode-No.1 cathode to diode-No.1 plate and heater</td>
<td>4.6</td>
</tr>
<tr>
<td>Diode-No.2 cathode to diode-No.2 plate and heater</td>
<td>4.6</td>
</tr>
<tr>
<td>Diode-No.1 plate to all other electrodes</td>
<td>3</td>
</tr>
<tr>
<td>Diode-No.2 plate to all other electrodes</td>
<td>3</td>
</tr>
</tbody>
</table>

### Characteristics, Class A1 Amplifier (Triode Unit):

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plate Voltage</td>
<td>90 250 volts</td>
</tr>
<tr>
<td>Grid Voltage</td>
<td>0 -9 volts</td>
</tr>
<tr>
<td>Amplification Factor</td>
<td>22 20</td>
</tr>
<tr>
<td>Plate Resistance (Approx.)</td>
<td>4700 7150 ohms</td>
</tr>
<tr>
<td>Transconductance</td>
<td>4700 2800 μmhos</td>
</tr>
<tr>
<td>Plate Current</td>
<td>13.5 8 ma</td>
</tr>
<tr>
<td>Plate Current for grid volts</td>
<td>-12.5 -1.7 ma</td>
</tr>
<tr>
<td>Grid Voltage (Approx.) for plate μa</td>
<td>-7 -18 volts</td>
</tr>
</tbody>
</table>

0: see next page.
TWIN DIODE—MEDIUM-MU TRIODE

Mechanical:
Operating Position: Any
Maximum Overall Length: 2-5/8" 
Maximum Seated Length: 2-3/8" 
Length, Base Seat to Bulb Top (Excluding tip): 2" ± 3/32" 
Maximum Diameter: 7/8" 
Dimensional Outline: See General Section 
Bulb: T6-1/2 
Base: Small-Button Noval 9-Pin (JETEC No.E9-1) 
Basing Designation for BOTTOM VIEW: 9ER

Pin 1—Diode-No.2 Plate 
Pin 2—Diode-No.2 Cathode 
Pin 3—Diode-No.1 Cathode 
Pin 4—Heater

Pin 5—Heater 
Pin 6—Diode-No.1 Plate 
Pin 7—Triode Plate 
Pin 8—Triode Grid 
Pin 9—Triode Cathode

TRIODE UNIT — AMPLIFIER — Class A1

Maximum Ratings, Design-Center Values:
PLATE VOLTAGE: 300 max. volts 
GRID VOLTAGE:
Positive bias value: 0 max. volts 
AVERAGE CATHODE CURRENT: 20 max. ma 
PLATE DISSIPATION: 3.5 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-Circuit Resistance: 1 max. megohm

TRIODE UNIT — VERTICAL DEFLECTION AMPLIFIER

Maximum Ratings, Design-Center Values Except as Noted:
For operation in a 525-line, 30-frame system
DC PLATE VOLTAGE: 300 max. volts 
PEAK POSITIVE—PULSE PLATE VOLTAGE:
(Absolute maximum): 1200 max. volts 
PEAK NEGATIVE—PULSE GRID VOLTAGE: 250 max. volts 
CATHODE CURRENT:
Peak: 70 max. ma 
Average: 20 max. ma 
PLATE DISSIPATION: 3.5 max. watts 
PEAK HEATER—CATHODE VOLTAGE:
Heater negative with respect to cathode: 200 max. volts 
Heater positive with respect to cathode: 200 max. volts 

See next page.
Maximum Circuit Values:
Grid-Circuit Resistance:
For cathode-bias operation .... 2.2 max. megohms

**DIODE UNITS — Two**

**Maximum Ratings, Design-Center Values:**

Values are for Each Unit

- **PEAK PLATE CURRENT**: 54 max. ma
- **DC PLATE CURRENT**: 9 max. ma
- **PEAK HEATER-CATHODE VOLTAGE**:
  - Heater negative with respect to cathode: 200 max. volts
  - Heater positive with respect to cathode: 200\* max. volts

\* Without external shield.
\* The dc component must not exceed 100 volts.
\* As described in "Standards of Good Engineering Practice Concerning Television Broadcast stations," Federal Communications Commission.
\* 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.
\* Under no circumstances should this absolute value be exceeded.

**AVERAGE PLATE CHARACTERISTIC**

**E_f = 6.3 VOLTS**

<table>
<thead>
<tr>
<th>PLATE MILLIAMPERES</th>
<th>DC PLATE VOLTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>12</td>
<td>12</td>
</tr>
</tbody>
</table>

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RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA 2
AVERAGE PLATE CHARACTERISTICS
TRIODE UNIT

$E_p = 6.3$ VOLTS

PLATE MILLIAMPERES

GRID VOLTAGE $E_g = 0$

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AVERAGE CHARACTERISTICS
TRIODE UNIT

E_P = 6.3 VOLTS

PLATE VOLTS E_P = 300
0-200
100-0

AMPLIFICATION FACTOR (a)

18000
16000
14000
12000
10000
8000
6000
4000
2000
0

PLATE RESISTANCE (r_P) — OHMS

6500
5000
4000
3000
2000
1000
0

GRID VOLTS

TRANSCONDUCTANCE (g_m) — MICROMHOES

E_P = 300

0-200
100-0

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