**THYRATRON**

**GAS TETRODE**

**GENERAL DATA**

**Electrical:**

Heater, for Unipotential

<table>
<thead>
<tr>
<th>Cathode:</th>
<th>Min.</th>
<th>Av.</th>
<th>Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage (AC or DC)</td>
<td>5.7</td>
<td>6.3</td>
<td>5.9 volts</td>
</tr>
<tr>
<td>Current at 6.3 volts</td>
<td>2.35</td>
<td>2.6</td>
<td>2.85 amp</td>
</tr>
</tbody>
</table>

Cathode:

Minimum Heating Time, prior to tube conduction | 30 seconds |

Maximum Outage Time, without reheating | 5 seconds |

Direct Interelectrode Capacitances

(Approx., without external shield):

| Grid No.1 to Anode | 0.23 μf |
| Input | 5.8 μf |
| Output | 3.9 μf |

Maximum Critical Grid-No.1 Current, with ac anode-supply volts (rms) = 460, and average anode current = 0.5 amp | 3 μamp |

Anode Voltage Drop (Approx.) | 10 volts |

Grid-No.1 Control Ratio (Approx.) with grid-No.1 resistor (megohms) = 0; grid-No.2 resistor (megohms) = 0; and dc grid-No.2 volts = 0 | 150 |

Grid-No.2 Control Ratio (Approx.) with grid-No.1 resistor (megohms) = 0; grid-No.2 resistor (megohms) = 0; and dc grid-No.1 volts = 0 | 650 |

**Mechanical:**

Mounting Position | Any |

Maximum Overall Length | 4-1/4" |

Maximum Seated Length | 3-11/16" |

Maximum Diameter | 1-23/32" |

Bulb | T-12 |

Base | Short Jumbo-Shell Octal 6-Pin (JETEC No.66-73) |

**BOTTOM VIEW**

- Pin 1 = Cathode
- Pin 2 = Heater
- Pin 3 = Grid No.1
- Pin 5 = Anode
- Pin 7 = Heater
- Pin 8 = Grid No.2

**RELAY AND GRID-CONTROLLED RECTIFIER SERVICE**

For Anode-Supply Frequency of 60 cps

**Maximum Ratings, Absolute Values:**

- **PEAK ANODE VOLTAGE:**
  - Forward | 650 max. volts |
  - Inverse | 1300 max. volts |

**JULY 1, 1952**

**TUBE DEPARTMENT**

**TENTATIVE DATA**

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY
THYRATRON

GRID-No.2 (SHIELD-GRID) VOLTAGE:
Peak, before anode conduction ........ -100 max. volts
Average*, during anode conduction ... -10 max. volts

GRID-No.1 (CONTROL-GRID) VOLTAGE:
Peak, before anode conduction ........ -200 max. volts
Average*, during anode conduction ... -10 max. volts

CATHODE CURRENT:
Peak ........................................ 5 max. amp
Average* .................................... 0.5 max. amp
Fault, for duration of 0.1 sec. max. .. 20 max. amp

GRID-No.2 CURRENT:
Average* .................................... 0.05 max. amp

GRID-No.1 CURRENT:
Average* .................................... 0.05 max. amp

PEAK HEATER-CATHODE VOLTAGE:
Heater negative with respect to cathode 100 max. volts
Heater positive with respect to cathode 25 max. volts

AMBIENT TEMPERATURE RANGE ........... -75 to +90 °C

Maximum Circuit Values:
Grid-No.1-Circuit Resistance .......... 2 max. megohms

* Averaged over any interval of 30 seconds maximum.
OPERATIONAL RANGE
OF CRITICAL GRID VOLTAGE

TYPE 6012 GRID-N°2 (SHIELD) VOLTS=0
RANGES SHOWN ARE FOR TWO VALUES
OF GRID-N°1 RESISTOR-0.1 MEG. AND
2 MEG.-AND TAKE INTO ACCOUNT INITIAL
DIFFERENCES BETWEEN INDIVIDUAL
TUBES AND SUBSEQUENT DIFFERENCES
DURING TUBE LIFE. FOR HEATER-
VOLTAGE RANGE OF 5.7 TO 6.9 VOLTS
AND FOR AN AMBIENT TEMPERATURE
RANGE OF FROM -75° TO 90° C.

RANGE FOR
2 MEGOHMS

RANGE FOR
0.1 MEGOHM

CON-
DUCTING

CRITICAL

NON-
CONDUCTING

AC ANODE VOLTS (RMS-60°C)

DC GRID-N°1 SUPPLY VOLTS

92CS-7748T

JULY 1, 1952

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY
GAS THYRATRON
NEGATIVE-CONTROL TETRODE TYPE

GENERAL DATA

**Electrical:**

Heater, for Unipotential Cathode:

<table>
<thead>
<tr>
<th>Min.</th>
<th>Av.</th>
<th>Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.7</td>
<td>6.3</td>
<td>6.9</td>
</tr>
</tbody>
</table>

Current at 6.3 volts: 2.6 2.85 amp

Cathode:

Minimum heating time prior to tube conduction: 30 sec

Maximum outage time without reheating: 5 sec

Direct Interelectrode Capacitances (Approx.):

Grid No.1 to anode: 0.23 μf

Grid No.1 to cathode, grid No.2, and heater: 5.8 μf

Anode to cathode, grid No.2, and heater: 3.9 μf

Ionization Time (Approx.):

For conditions: dc anode volts = 100, grid-No.2 volts = 0, grid-No.1 square-pulse volts = +50, and peak anode amperes during conduction = 5. 0.5 μsec

Deionization Time (Approx.):

See Table I

Maximum Critical Grid-No.1 Current:

For conditions: ac anode-supply volts = 460 (rms), and average anode amperes = 0.5. 3 μamp

Anode Voltage Drop (Approx.): 10 volts

Grid-No.1 Control Ratio (Approx.):

For conditions: grid-No.1 resistor (megohms) = 0, grid-No.2 resistor (megohms) = 0, and grid-No.2 volts = 0. 150

Grid-No.2 Control Ratio (Approx.):

For conditions: grid-No.1 resistor (megohms) = 0, grid-No.2 resistor (megohms) = 0, and grid-No.1 volts = 0. 650

**Mechanical:**

Mounting Position: Any 3-7/8" ±

Maximum Overall Length: 3-5/16" ±

Maximum Seated Length: 1-23/32" ±

Bulb: T-12

Base: Large-Wafer Octal 6-Pin with External Barriers and Sleeve (JETEC No.B6-100)

Without external shield.

4-56 DATA 1

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY
**GAS THYRATRON**

Basing Designation for BOTTOM VIEW ............... 6CO

1. Pin 1 – Cathode
2. Pin 2 – Heater
3. Pin 3 – Grid No.1
4. Pin 4
5. Pin 5 – Anode
6. Pin 6
7. Pin 7 – Heater
8. Pin 8 – Grid No.2

**RELAY AND GRID-CONTROLLED RECTIFIER SERVICE**

For anode-supply frequency of 60 cps

**Maximum Ratings, Absolute Values:**

**PEAK ANODE VOLTAGE:**
- Forward ...................... 650 max. volts
- Inverse ...................... 1300 max. volts

**GRID-No.2 (SHIELD-GRID) VOLTAGE:**
- Peak, before tube conduction .................. -100 max. volts
- Average# during tube conduction .............. -10 max. volts

**GRID-No.1 (CONTROL-GRID) VOLTAGE:**
- Peak, before tube conduction .................. -200 max. volts
- Average# during tube conduction .............. -10 max. volts

**CATHODE CURRENT:**
- Peak .................................. 5 max. amp
- Average# ................................ 0.5 max. amp
- Fault, for duration of 0.1 second max. ...... 20 max. amp

**AVERAGE GRID-No.2 CURRENT#** ............... +0.05 max. amp

**AVERAGE GRID-No.1 CURRENT#** ............... +0.05 max. amp

**PEAK HEATER-CATHODE VOLTAGE:**
- Heater negative with respect to cathode .... 100 max. volts
- Heater positive with respect to cathode .... 25 max. volts

**AMBIENT-TEMPERATURE RANGE.** ............... -75 to +90 °C

**Maximum Circuit Values:**

**Grid-No.1-Circuit Resistance** ............... 2 max. megohms

# Averaged over any interval of 30 seconds maximum.

---

Indicates a change.
# TABLE I

<table>
<thead>
<tr>
<th>DC Anode Volts</th>
<th>125</th>
<th>250</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC Anode Amperes</td>
<td>0.5</td>
<td>1.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DEIONIZATION</td>
<td></td>
<td></td>
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<tr>
<td>TIME (Approx.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>μsec</td>
<td></td>
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<tr>
<td></td>
<td>175</td>
<td>225</td>
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<tr>
<td></td>
<td>350</td>
<td>375</td>
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<tr>
<td></td>
<td>650</td>
<td>700</td>
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<tr>
<td></td>
<td>100</td>
<td>125</td>
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<td>125</td>
<td>150</td>
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<tr>
<td></td>
<td>250</td>
<td>275</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>$E_{cc1}$</th>
<th>$E_{cc2}$</th>
<th>$R_{g1}$</th>
<th>$E_{cc1}$</th>
<th>$R_{g2}$</th>
<th>$E_{cc2}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC Grid-No.1 Supply Voltage (Volts)</td>
<td>DC Grid-No.2 Supply Voltage (Volts)</td>
<td>Grid-No.1 Resistor (Megohms)</td>
<td>Grid-No.2 Resistor (Ohms)</td>
<td>-13</td>
<td>1000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.001</td>
<td>0.1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>100</td>
<td>125</td>
<td>125</td>
<td>175</td>
<td>0.001</td>
<td>0.1</td>
</tr>
<tr>
<td>-100</td>
<td>1000</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Series resistor between grid No.2 and cathode.

**Diagram:**

- **T12 BULB**
  - 3 5/16" MAX.
  - 3 7/8" MAX.
  - LARGE-WAfer OCTAL 6-PIN WITH EXTERNAL BARRIERS AND SLEEVE JETEC N° B6-100

**Dimensions:**

- 19/16" MAX.
- 123/32" MAX.

**Note:**

RCA 6012 GAS THYRATRON

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA 2

4-56
OPERATIONAL RANGE OF CRITICAL GRID-N^1 VOLTAGE

GRID-N^2 (SHIELD) VOLTS = 0
RANGES SHOWN ARE FOR TWO VALUES OF GRID-N^1 RESISTOR, 0.1 MEG. AND 2 MEG., AND TAKE INTO ACCOUNT INITIAL DIFFERENCES BETWEEN INDIVIDUAL TUBES AND SUBSEQUENT DIFFERENCES DURING TUBE LIFE. FOR HEATER-VOLTAGE RANGE OF 5.7 TO 6.9 VOLTS AND FOR AN AMBIENT TEMPERATURE RANGE OF FROM -75° TO +90°C.

RANGE FOR 2 MEGOHMS

RANGE FOR 0.1 MEGOHM

CONDUCTING

CRITICAL

NON-CONDUCTING

AC ANODE VOLTS (RMS-60-J)

-16
-12
-8
-4
0

DC GRID-N^1 SUPPLY VOLTS

92CS-7748T1

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY
AVerAGE CONTROL CHARACTERISTICS

$E_G = 6.3 \text{ VOLTS}$

GRID - N\textsuperscript{2} RESISTOR (OHMS) = 0
GRID - N\textsuperscript{1} RESISTOR (OHMS) = 0

DC ANODE VOLTS
TUBE DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY
CHARACTERISTIC CURVES

AVG. GRID-NR1 CHARACTERS
BEFORE TUBE CONDUCTION

\[ E_g = 6.3 \text{ VOLTS} \]
- GRID-NR2 (SHIELD) VOLTS = 0
- GRID-NR2 RESISTOR (OHMS) = 0
- GRID-NR1 RESISTOR (OHMS) = 0

\[ \text{DC ANODE VOLTS} = 25 \]

\[ +0.010 \]
\[ +0.005 \]
\[ 0 \]
\[ -0.005 \]
\[ -0.010 \]
\[ -0.015 \]
\[ -0.020 \]
\[ -0.025 \]
\[ -0.030 \]

\[ \text{DC GRID-NR1 MICROAMPERES} \]

\[ \text{DC GRID-NR1 SUPPLY VOLTS} \]
\[ 92CM-7763TI \]

AVG. GRID-NR1 CHARACTERS
DURING TUBE CONDUCTION

\[ E_g = 6.3 \text{ VOLTS} \]
- GRID-NR2 (SHIELD) VOLTS = 0
- GRID-NR2 RESISTOR (OHMS) = 0
- GRID-NR1 RESISTOR (OHMS) = 0

\[ \text{DC ANODE MA} = 100 \]

\[ +20 \]
\[ +10 \]
\[ 0 \]
\[ -10 \]
\[ -20 \]

\[ \text{DC GRID-NR1 MILLIAMPERES} \]

\[ \text{DC GRID-NR1 SUPPLY VOLTS} \]
\[ 92CM-7764TI \]