THYRATRON
GAS TETRODE TYPE

GENERAL DATA

Electrical:
Heater, for Unipotential Cathode:
Voltage. .......... 6.3 .......... ac or dc volts
Current. .......... 0.6 .......... amp
Cathode:
Heating Time, prior to
...tube conduction. ...10 .......... sec
direct interelectrode Capacitance (approx.):
Grid No.1 to Anode. ..0.2 .......... \(\mu\)f
Ionization Time (Approx.). ....5 .......... \(\mu\)sec
Deionization Time (Approx.) 1000 .......... \(\mu\)sec
Maximum Critical Grid-
No.1 Current. ....4 .......... \(\mu\)amp
Anode Voltage Drop(Approx.) 11 .......... volts
Approximate Control Characteristics
(With 0.1-megohm grid-No.1 resistor):
Peak Anode Voltage. ....30 100 650 .......... volts
Grid-No.1 Voltage. ....0 -1.5 -3.75 .......... volts
Grid-No.2 Voltage. ....0 0 0 .......... volts

Mechanical:
Mounting Position. ......... Any
Maximum Overall Length. ..... 25/8" 
Seated Length. ....... 1-31/32" ± 3/32" 
Maximum Diameter. ..... 1-5/16" 
Bulb. ........ Metal Shell MT-8
Base. ........ Small-Wafer Octal 8-Pin
Basing Designation for BOTTOM VIEW .......... 6BS

RELAY and GRID-CONTROLLED RECTIFIER SERVICE

Maximum Ratings, Absolute Values:

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

GRID-No.2 (SHEILD-GRID) VOLTAGE:
Peak, before anode conduction. ....-100 max. volts
Average, during anode conduction. ....-5 max. volts

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

\(\Box\) see next page. 

\(\Rightarrow\) indicates a change.
### THYRATRON

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cathode Current:</td>
<td></td>
</tr>
<tr>
<td>Peak</td>
<td>1.0 max.  amp</td>
</tr>
<tr>
<td>Average</td>
<td>0.1 max.  amp</td>
</tr>
<tr>
<td>Surge, for duration of 0.1 sec.</td>
<td>10 max.   amp</td>
</tr>
<tr>
<td>Grid-No.2 Current:</td>
<td></td>
</tr>
<tr>
<td>Average</td>
<td>10 max.   ma</td>
</tr>
<tr>
<td>Grid-No.1 Current:</td>
<td></td>
</tr>
<tr>
<td>Average</td>
<td>10 max.   ma</td>
</tr>
<tr>
<td>Peak Heater-Cathode Voltage:</td>
<td></td>
</tr>
<tr>
<td>Heater negative with respect to cathode</td>
<td>100 max. volts</td>
</tr>
<tr>
<td>Heater positive with respect to cathode</td>
<td>25 max. volts</td>
</tr>
<tr>
<td>Ambient Temperature Range:</td>
<td>-55 to +90 °C</td>
</tr>
</tbody>
</table>

* Averaged over any interval of 30 sec. max.
OPERATIONAL RANGE
OF CRITICAL GRID-NR1 VOLTAGE

TYPE 502-A
E_f=6.3 VOLTS
GRID-NR 2 VOLTS=0

800
600
400
200

ANODE VOLTS (DC OR PEAK AC)

CONDUCTING
CRITICAL
NON-CONDUCTING

-8 -4 -2 0 +2
DC GRID-NR1 VOLTS
92CM-7074T

AVERAGE GRID CHARACTERISTICS
DURING ANODE CONDUCTION

TYPE 502-A
E_f=6.3 VOLTS
GRID-NR 2 VOLTS=0

0

DC ANODE MA=50
DC ANODE MA=100

-80 -60 -40 -20 0
DC GRID-NR1 VOLTS
92CM-7072T

SEPT. 30, 1948
TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY
502-A
GAS THYRATRON
NEGATIVE-CONTROL TETRODE TYPE WITH METAL SHELL

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>7 ac or dc volts</td>
</tr>
<tr>
<td>Current at 6.3 volts</td>
<td>-</td>
<td>0.6 0.66</td>
</tr>
</tbody>
</table>

Cathode:

Minimum heating time
prior to tube conduction ................................ 10 sec

Direct Interelectrode Capacitances:

Grid No.1 to anode ...................................... 0.2 \( \mu \text{f} \)
Grid No.1 to cathode & shell, grid
No.2, and heater ........................................ 2.5 \( \mu \text{f} \)

Ionization Time (Approx.) ................................ 0.5 \( \mu \text{sec} \)

Deionization Time (Approx.):

For conditions: dc anode ma = 100,
grid-No.1-circuit resistor (ohms) = 1000, and dc grid-No.1 supply
volts = -250 ........................................... 10 \( \mu \text{sec} \)

For conditions: dc anode ma = 100,
grid-No.1-circuit resistor (ohms) = 1000, and dc grid-No.1 supply
volts = -15 ............................................ 150 \( \mu \text{sec} \)

Maximum Critical Grid-No.1 Current:

For conditions: anode volts (rms) = 460, and dc grid-No.1 volts adjusted to cutoff
.......................................................... 2 \( \mu \text{amp} \)

Anode Voltage Drop .................................... 8 volts

Mechanical:

Mounting Position ..................................... Any

Maximum Overall Length ................................ 2-5/8"

Seated Length ......................................... 1-31/32" ± 3/32"

Maximum Diameter ................................... 1-5/16"

Weight (Approx.) ...................................... 2 oz

Bulb ...................................................... Metal Shell MT8G

Base ................................................. Small-Wafer Octal 8-Pin (JETEC No.88-21)

BOTTOM VIEW

Pin 1 - No Connection
Pin 2 - Heater
Pin 3 - Anode
Pin 4 - No Connection
Pin 5 - Grid No.1
Pin 6 - Grid No.2
Pin 7 - Heater
Pin 8 - Cathode, Shell

RELAY and GRID-CONTROLLED RECTIFIER SERVICE

Maximum Ratings, Absolute Values:

PEAK ANODE VOLTAGE:

Forward ............................................. 180 max. 650 max. volts
Inverse ............................................. 360 max. 1300 max. volts

MAY 1, 1955

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY
GRID-No. 2 (SHIELD-GRID)

VOLTAGE:

Peak, before tube conduction . . . . . . . . -100 max. -100 max. volts
Average*, during tube conduction . . . . . . . . -5 max. -5 max. volts

GRID-No. 1 (CONTROL-GRID)

VOLTAGE:

Peak, before tube conduction . . . . . . . . -250 max. -250 max. volts
Average*, during tube conduction . . . . . . . . -10 max. -10 max. volts

CATHODE CURRENT:

Peak . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 1.0 max. 1.0 max. amp
Average* . . . . . . . . . . . . . . . . . . . . . . . . . . . . 0.2 max. 0.1 max. amp
Fault, for duration of 0.1 second max. . . . . . . . . . 10 max. 10 max. amp

GRID-No. 2 CURRENT:

Average* . . . . . . . . . . . . . . . . . . . . . . . . . . . . +0.01 max. +0.01 max. amp

GRID-No. 1 CURRENT:

Average* . . . . . . . . . . . . . . . . . . . . . . . . . . . . +0.01 max. +0.01 max. amp

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode . . . . 100 max. 100 max. volts
Heater positive with respect to cathode . . . . 25 max. 25 max. volts

AMBIENT-TEMPERATURE RANGE . . . . . -55 to +90 -55 to +90 °C

* Averaged over 1 cycle.
* Averaged over any interval of 30 seconds maximum.

For Dimensional Outline, see GENERAL SECTION
OPERATIONAL RANGE OF CRITICAL GRID-NR1 VOLTAGE

- $E_g = 6.3 \text{ VOLTS} \pm 10\%$
- GRID NR2 CONNECTED TO CATHODE
- GRID-NR1 RESISTOR (OHMS) = 0 TO 0.1 MEGOHM

THIS RANGE INCLUDES INITIAL AND LIFE VARIATIONS OF INDIVIDUAL TUBES AND COVERS AN AMBIENT TEMPERATURE RANGE OF -55 TO +90°C.

DC GRID-NR1 VOLTS

ANODE VOLTS (DC OR PEAK AC)

MAY 1, 1955
TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY
**OPERATIONAL RANGES OF CRITICAL GRID-N°1 VOLTAGE FOR VARIOUS GRID-N°2 VOLTAGES**

<table>
<thead>
<tr>
<th>RANGE</th>
<th>GRID-N°2 VOLTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>0</td>
</tr>
<tr>
<td>B</td>
<td>-5</td>
</tr>
<tr>
<td>C</td>
<td>-10</td>
</tr>
<tr>
<td>D</td>
<td>-20</td>
</tr>
</tbody>
</table>

\[ \varepsilon_f = 6.3 \text{ VOLTS} \]