Beam Power Tube
For Pulse-Modulator Service

**Electrical:**

- **Heater, for Unipotential Cathode:**
  - Voltage (AC or DC) \(6.3 \pm 10\%\) volts
  - Current at heater volts = 6.3 \(1.25\) amp
- **Transconductance, for plate volts = 200,**
  - grid-No.2 volts = 200, and plate ma. = 100 \(7000\) \(\mu\)mhos
- **Mu-Factor, Grid No.2 to Grid No.1 for**
  - plate volts = 200, grid-No.2 volts = 200, and plate ma. = 100 \(4.5\)
- **Direct Interelectrode Capacitances:**
  - Grid No.1 to plate \(0.24\) max. \(\text{pf}\)
  - Grid No.1 to cathode & grid No.3 & internal shield, grid No.2, base sleeve, and heater. \(13.0\) \(\text{pf}\)
  - Plate to cathode & grid No.3 & internal shield, grid No.2, base sleeve, and heater. \(8.5\) \(\text{pf}\)

**Mechanical:**

- **Operating Position:** Any
- **Overall Length:** 3-13/16" ± 1/8"
- **Seat Length:** 3-1/8" ± 1/8"
- **Maximum Diameter:** 1-23/32"
- **Weight (Approx.):** 2.3 oz
- **Bulb:** T12
- **Cap (Alternates):** Small (JEDEC No.C1-1)
  - Large-Wafer Octal with Sleeve:
    - 8-Pin Micanol (JEDEC Group 1, No.B8-86)
  - Large-Wafer Octal with External Barriers and Sleeve:
    - 8-Pin Micanol (JEDEC Group 1, No.B8-98)
  - Basing Designation for BOTTOM VIEW. \(7\)CK

**MODULATOR — Rectangular-Wave Modulation**

**Maximum and Minimum CCsb Ratings, Absolute-Maximum Values:**

*For Duty Factor\(^c\) between 0.001 and 1 and maximum averaging time of 10,000 \(\mu\)sec in any interval*

**DC PLATE SUPPLY VOLTAGE\(^d\).** See Rating Chart \(I\) Indicates a change.

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\(^a\) Indicates a change.

\(^b\) Indicates a change.

\(^c\) Indicates a change.

\(^d\) Indicates a change.

RADIO CORPORATION OF AMERICA
Electron Tube Division
Harrison, N. J.
INSTANTANEOUS PLATE VOLTAGE... 115% of DC Plate Supply Volts
DC GRID-No.2 SUPPLY VOLTAGE\textsuperscript{d}... 500 max. volts
\textarrow{DC GRID-No.1 SUPPLY VOLTAGE\textsuperscript{d}... 300 max. volts}
\{ Minimum-See Rating Chart I \}

GRID-No.1 VOLTAGE:
Instantaneous-negative value... 400 max. volts
Peak-positive value... 100 max. volts
PEAK PLATE CURRENT... See Rating Chart II
PEAK GRID-No.2 CURRENT... 0.75 max. amp
PEAK GRID-No.1 CURRENT... 0.5 max. amp
PLATE INPUT... 80 max. watts
GRID-No.2 INPUT... 1.75 max. watts
GRID-No.1 INPUT... 0.5 max. watt
PLATE DISSIPATION\textsuperscript{e}... See Rating Chart I
PEAK HEATER-CATHODE VOLTAGE:
Heater negative with respect to cathode... 135 max. volts
Heater positive with respect to cathode... 135 max. volts
BULB TEMPERATURE (At hottest point on bulb surface)... 200 max. °C

Typical Operation:
DC Plate Supply Voltage... 3000 volts
DC Grid-No.2 Supply Voltage... 300 volts
DC Grid-No.1 Supply Voltage... -175 volts
Peak Positive Grid-No.1 Voltage... 65 volts
Plate Current:
Peak... 1.5 amp
Average... 0.015 amp
DC Grid-No.2 Current... 0.004 amp
DC Grid-No.1 Current... 0.0025 amp
Load Resistance (R\textsubscript{L}), 100 watts,
non-inductive... 1500 ± 5% ohms

Maximum Circuit Values:
Grid-No.1-Circuit Resistance... 30000 max. ohms

\textsuperscript{a} Without external shield and base sleeve connected to ground.
\textsuperscript{b} Continuous commercial Service.
\textsuperscript{c} Duty Factor for the 6293 is defined as the "on" time in microseconds divided by 10,000 microseconds.
"On" time is defined as the sum of the durations of all the individual pulses which occur during any 10,000-microsecond interval.
"Pulse Duration" is defined as the time interval between the two points on the pulse at which the instantaneous value is 70 per cent of the peak value. The peak value is defined as the maximum value of a smooth curve through the average of the fluctuations over the top portion of the pulse.
\textsuperscript{d} For tube protection, it is essential that sufficient resistance be used in the plate supply circuit, the grid-No.2 supply circuit, and the grid-No.1 supply circuit so that the short-circuit current is limited to 0.5 ampere in each circuit.
\textsuperscript{e} Averaged over any interval not exceeding 10,000 microseconds. Care should be used in determining the plate dissipation. A calculated value based on rectangular pulses can be considerably in error when the actual pulses have a finite rise and fall time. Plate dissipation should preferably be determined by measuring the bulb temperature under actual operating conditions; then, with the tube in the same socket and under the same ambient-temperature conditions, apply to the tube sufficient dc input to obtain the same bulb temperature. This value of dc input is a measure of the plate dissipation. Indicates a change.
CHARACTERISTICS RANGE VALUES FOR EQUIPMENT DESIGN

<table>
<thead>
<tr>
<th>Note</th>
<th>Min.</th>
<th>Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heater Current.</td>
<td>1</td>
<td>1.175</td>
</tr>
<tr>
<td>Grid No.1 to plate.</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>Grid No.1 to cathode &amp; grid No.3 &amp; internal shield, grid No.2, base sleeve, and heater</td>
<td>2</td>
<td>12.0</td>
</tr>
<tr>
<td>Plate to cathode &amp; grid No.3 &amp; internal shield, grid No.2, base sleeve, and heater</td>
<td>2</td>
<td>7.3</td>
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<tr>
<td>Plate Current</td>
<td>3</td>
<td>46</td>
</tr>
<tr>
<td>Grid-No.2 Current</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Peak Plate Current</td>
<td>1,4</td>
<td>2.4</td>
</tr>
</tbody>
</table>

Note 1: With 6.3 volts ac on heater.
Note 2: With no external shield. Base sleeve (pin No.8) is grounded.
Note 3: With 6.3 volts ac on heater, dc plate voltage of 300 volts, dc grid-No.2 voltage of 200 volts, and dc grid-No.1 voltage of -33 volts.
Note 4: With the tube in the test circuit (below) under the following conditions: rectangular-wave modulation applied to grid No.1 pulse duration of 1 microsecond approx.; pulse repetition rate of 3000 cps approx.; dc plate supply voltage of 2000 volts; dc grid No.2 supply voltage of 500 volts; dc grid-No.1 supply voltage of -300 volts; peak positive grid-No.1 swing of 100 volts; and load resistance (Rl) of 375 ± 5% ohms, 50 watts, non-inductive.

OPERATING CONSIDERATIONS

Plate shows no color when tube is operated at maximum CCS ratings.

All dimensions in inches.
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**RATING CHART I**

- E<sub>p</sub>=6.3 VOLTS
- AVERAGING TIME=10000 MICROSECONDS MAX.

![Diagram showing rating chart with grid and axes labeled](image-url)
$E_\phi = 6.3 \text{ Volts}$

Averaging time = 10000 microseconds max.