# Beam Power Tube—Sharp-Cutoff Pentode

## DUODECAR TYPE

### GENERAL DATA

**Electrical:**

**Heater Characteristics and Ratings:**
- Voltage (AC or DC) ................. 6.3 ± 0.6 volts
- Current at heater volts = 6.3 ........ 1.200 amp
- Peak heater-cathode voltage (Each unit):
  - Heater negative with
    respect to cathode ............. 200 max. volts
  - Heater positive with
    respect to cathode ............. 200 max. volts

**Direct Interelectrode Capacitances (Approx.):**

<table>
<thead>
<tr>
<th>Capacitance Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grid No.1 to plate</td>
<td>0.26  pf</td>
</tr>
<tr>
<td>Grid No.1 to cathode &amp; grid No.3, grid No.2, internal shield, and heater</td>
<td>12.0 pf</td>
</tr>
<tr>
<td>Plate to cathode &amp; grid No.3, grid No.2, internal shield, and heater</td>
<td>12.0 pf</td>
</tr>
</tbody>
</table>

**Beam Power Unit:**

<table>
<thead>
<tr>
<th>Capacitance Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grid No.1 to plate</td>
<td>0.034 pf</td>
</tr>
<tr>
<td>Grid No.3 to plate</td>
<td>2.8 pf</td>
</tr>
<tr>
<td>Grid No.1 to cathode, grid No.2, grid No.3, internal shield, and heater</td>
<td>6.5 pf</td>
</tr>
<tr>
<td>Grid No.3 to cathode, grid No.1, grid No.2, plate, internal shield, and heater</td>
<td>7.5 pf</td>
</tr>
<tr>
<td>Grid No.1 to grid No.3</td>
<td>0.24 pf</td>
</tr>
</tbody>
</table>

**Pentode Unit:**

<table>
<thead>
<tr>
<th>Capacitance Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plate of beam power unit to plate of pentode unit</td>
<td>0.12 pf</td>
</tr>
</tbody>
</table>

**Characteristics, Class A₁ Amplifier (Pentode Unit):**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plate Supply Voltage</td>
<td>150 volts</td>
</tr>
<tr>
<td>Grid-No.3 Supply Voltage</td>
<td>Connected to cathode at socket</td>
</tr>
<tr>
<td>Grid-No.2 Supply Voltage</td>
<td>100 volts</td>
</tr>
<tr>
<td>Cathode Resistor</td>
<td>560 ohms</td>
</tr>
<tr>
<td>Plate Resistance (Approx.)</td>
<td>0.15 megohm</td>
</tr>
<tr>
<td>Transconductance, Grid No.1 to Plate</td>
<td>1000 (\mu)hos</td>
</tr>
<tr>
<td>Transconductance, Grid No.3 to Plate</td>
<td>400 (\mu)hos</td>
</tr>
<tr>
<td>Plate Current</td>
<td>1.3 ma</td>
</tr>
<tr>
<td>Grid-No.2 Current</td>
<td>2 ma</td>
</tr>
<tr>
<td>Grid-No.1 Voltage (Approx.) for plate (\mu)a = 10</td>
<td>−4.5 volts</td>
</tr>
<tr>
<td>Grid-No.3 Voltage (Approx.) for plate (\mu)a = 10</td>
<td>−4.5 volts</td>
</tr>
</tbody>
</table>
Mechanical:
Operating Position ........................................... Any
Type of Cathodes ............................................. Coated Unipotential
Maximum Overall Length .................................. 2.375”
Seated Length ............................................... 1.750” to 2.000”
Diameter ....................................................... 1.062” to 1.188”
Bulb .............................................................. T9
Base ............................................................. Small-Button Duodecarn 12-Pin (JEDEC No.E12-70)
Basing Designation for BOTTOM VIEW ................... 12BU

Pin 1 – Heater
Pin 2 – Pentode Cathode
Pin 3 – Pentode
Grid No. 1
Pin 4 – Pentode
Grid No. 3
Pin 5 – Internal Shield
Pin 6 – Pentode Plate
Pin 7 – Pentode
Grid No. 2
Pin 8 – Beam Power
Grid No. 1
Pin 9 – Beam Power
Cathode, Beam Power Plate
Pin 10 – Beam Power
Grid No. 2
Pin 11 – Beam Power Plate
Pin 12 – Heater

PENTODE UNIT — FM SOUND DETECTOR

Maximum Ratings, Design-Maximum Values:

PLATE VOLTAGE ........................................... 330 max. volts
GRID-No. 3 (SUPPRESSOR-GRID) VOLTAGE ........... 28 max. volts
GRID-No. 2 (SCREEN-GRID) SUPPLY VOLTAGE ........... 330 max. volts
GRID-No. 2 VOLTAGE ........................................ See Grid-No. 2 Input Rating Chart at front of Receiving Tube Section

GRID-No. 1 (CONTROL-GRID) VOLTAGE:
Positive-bias value ........................................ 0 max. volts
PLATE DISSIPATION ....................................... 1.7 max. watts
GRID-No. 2 INPUT:
For grid-No. 2 voltages up to 165 volts ............ 1.1 max. watts
For grid-No. 2 voltages between 165 and 330 volts See Grid-No. 2 Input Rating Chart at front of Receiving Tube Section

BEAM POWER UNIT — AMPLIFIER — Class A1

Maximum Ratings, Design-Maximum Values:

PLATE VOLTAGE ........................................... 150 max. volts
GRID-No. 2 (SCREEN-GRID) VOLTAGE ............... 135 max. volts
AVERAGE CATHODE CURRENT ........................ 65 max. ma
PLATE DISSIPATION ....................................... 6.5 max. watts
GRID-No. 2 INPUT ........................................ 1.8 max. watts

Typical Operation and Characteristics:

Plate Voltage ............................................... 120 volts
Grid-No. 2 Voltage ........................................ 110 volts
Grid-No. 1 (Control-Grid) Voltage .................... -8 volts
Peak AF Grid-No. 1 Voltage ............................ 8 volts
Zero-Signal Plate Current.................. 49 ma
Max.-Signal Plate Current.................. 50 ma
Zero-Signal Grid-No.2 Current.............. 4 ma
Max.-Signal Grid-No.2 Current.............. 8.5 ma
Plate Resistance (Approx.)................. 10000 ohms
Transconductance.......................... 7500 μmhos
Load Resistance............................ 2500 ohms
Total Harmonic Distortion.................. 10 per cent
Max.-Signal Power Output................... 2.3 watts

a The dc component must not exceed 100 volts.
b Without external shield.

DIMENSIONS IN INCHES
* APPLIES TO MINIMUM DIAMETER EXCEPT IN AREA OF SEAL.