For replacement use type 12BS3A/12DW4A.
Refer to type 6BS3A.
Refer to chart at end of section.
For replacement use type 12BY7A/12BV7/12DQ7.
Refer to type 6BV11.
Refer to chart at end of section.
For replacement use type 12BY7A/12BV7/12DQ7.
For replacement use type 12BY7A/12BV7/12DQ7.

**SHARP-CUTOFF PENTODE**

**12BY7A**

**12BV7**

**12DQ7**

Miniature types used as video amplifier in television receivers. Outlines section, 6E; require miniature 9-contact socket.

**Heater Arrangement:** Series 12.6
**Heater Voltage (ac/dc):** 6.3 volts
**Heater Current:** 0.3 ampere
**Heater Warm-up Time (Average):** — seconds
**Heater-Cathode Voltage:**

- **Peak value:** ±200 volts
- **Average value:** 100 volts

**Direct Interelectrode Capacitances:**
- Grid No.1 to Plate: 0.063 pF
- Grid No.1 to Cathode, Heater, Grid No.2, Grid No.3, and Internal Shield: 10.2 pF
- Plate to Cathode, Heater, Grid No.2, and Internal Shield: 3.5 pF

**Class A Amplifier**

**MAXIMUM RATINGS (Design-Maximum Values)**

- **Plate Supply Voltage:** 330 volts
- **Grid-No.3 (Suppressor-Grid) Voltage, Positive value:** 0 volts
- **Grid-No.2 (Screen-Grid) Voltage:** 190 volts
- **Grid-No.1 (Control-Grid) Voltage:** 55 volts
- **Positive-bias value:** 0 volts
- **Plate Dissipation:** 8.5 watts
- **Grid-No.2 Input:** 1.2 watts

---

**TYPE 12BY7A**

**GRID No.3 AND INTERNAL SHIELD CONNECTED TO CATHODE AT SOCKET, GRID-No.2 VOLTS = 180**

<table>
<thead>
<tr>
<th>Grid-No.1 Volts</th>
<th>Plate (Milliamperes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>+0.5 E&lt;sub&gt;C1&lt;/sub&gt; = 0</td>
<td>20</td>
</tr>
<tr>
<td>+1.0 E&lt;sub&gt;C1&lt;/sub&gt; = 0</td>
<td>10</td>
</tr>
<tr>
<td>+1.5 E&lt;sub&gt;C1&lt;/sub&gt; = 0</td>
<td>0</td>
</tr>
<tr>
<td>-0.5 E&lt;sub&gt;C1&lt;/sub&gt; = 0</td>
<td>20</td>
</tr>
<tr>
<td>-1.0 E&lt;sub&gt;C1&lt;/sub&gt; = 0</td>
<td>10</td>
</tr>
<tr>
<td>-1.5 E&lt;sub&gt;C1&lt;/sub&gt; = 0</td>
<td>0</td>
</tr>
<tr>
<td>-2.0 E&lt;sub&gt;C1&lt;/sub&gt; = 0</td>
<td>20</td>
</tr>
<tr>
<td>-2.5 E&lt;sub&gt;C1&lt;/sub&gt; = 0</td>
<td>10</td>
</tr>
<tr>
<td>-3.0 E&lt;sub&gt;C1&lt;/sub&gt; = 0</td>
<td>0</td>
</tr>
<tr>
<td>-3.5 E&lt;sub&gt;C1&lt;/sub&gt; = 0</td>
<td>20</td>
</tr>
<tr>
<td>-4.0 E&lt;sub&gt;C1&lt;/sub&gt; = 0</td>
<td>10</td>
</tr>
<tr>
<td>-5.0 E&lt;sub&gt;C1&lt;/sub&gt; = 0</td>
<td>0</td>
</tr>
</tbody>
</table>

**PLATE VOLTS** 92CS—9234T1
CHARACTERISTICS
Plate Supply Voltage ........................................... 250 volts
Grid No. 3 .................................................... Connected to cathode at socket
Grid-No.2 Supply Voltage .................................... 180 volts
Cathode-Bias Resistor .......................................... 100 ohms
Plate Resistance (Approx.) .................................. 93000 ohms
Transconductance .............................................. 11000 μmhos
Plate Current ................................................ 26 mA
Grid-No.2 Current ........................................... 5.75 mA
Grid-No.1 Voltage (Approx.) for plate current of 20 μA .... -11.6 volts
MAXIMUM CIRCUIT VALUES
Grid-No.1-Circuit Resistance:
  For fixed-bias operation .................................. 0.25 megohm
  For cathode-bias operation ............................... 1 megohm

12BZ6
Refer to type 6BZ6.

12BZ7
Refer to chart at end of section.

12C5
Refer to type 6CU5.

12C8
Refer to chart at end of section.

12CA5
Refer to type 6CA5.

12CK3
Refer to chart at end of section.

12CL3
Refer to type 6CL3.

12CN5
Refer to chart at end of section.

12CR6
Refer to chart at end of section.

12CS6
Refer to type 6CS6.

12CT3
HALF-WAVE VACUUM RECTIFIER
17CT3, 25CT3
Miniature type used as damper tube in horizontal-
deflection circuits of black-and-white and small-screen
color television receivers. Outlines section, 6H; requires
miniature 9-contact socket. Socket terminals 1, 3, 7,
and 8 should not be used as tie points for external-
circuit components. This tube, like other power-handling
pipes, should be adequately ventilated. Types 17CT3 and 25CT3 are
detical with type 12CT3 except for heater ratings.

<table>
<thead>
<tr>
<th>Tube</th>
<th>Heater Voltage (ac/dc)</th>
<th>Heater Current</th>
<th>Heater Warm-up Time (Average)</th>
<th>Direct Interelectrode Capacitances (Approx.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>12CT3</td>
<td>6.3</td>
<td>0.6</td>
<td>11</td>
<td>Cathode to Plate and Heater: 12 pF</td>
</tr>
<tr>
<td>17CT3</td>
<td>16.8</td>
<td>0.45</td>
<td>11</td>
<td>Plate to Cathode and Heater: 9.5 pF</td>
</tr>
<tr>
<td>25CT3</td>
<td>25.3</td>
<td>0.3</td>
<td>11</td>
<td>Heater to Cathode: 2.8 pF</td>
</tr>
</tbody>
</table>

Damper Service
For operation in a 525-line, 30-frame system

MAXIMUM RATINGS (Design-Maximum Values)
Peak Inverse Plate Voltage# .................................. 5000 volts
Peak Plate Current ........................................... 1200 mA
Average Plate Current ....................................... 250 mA
Plate Dissipation ........................................... 4.75 watts
Heater-Cathode Voltage:
  Peak value ............................................... +300 -5000 volts
  Average value ............................................ +100 -900 volts
Bulb Temperature (At hottest point) ......................... 220 °C

CHARACTERISTICS, Instantaneous Value
Tube Voltage Drop for plate current of 250 mA .............. 16 volts

# Pulse duration must not exceed 15% of a horizontal scanning cycle (10 microseconds).
Refer to chart at end of section.
Refer to type 6CU5.

For replacement use type 12BQ6GTB/12CU6.
Refer to chart at end of section.
Refer to chart at end of section.
Refer to chart at end of section.
Refer to chart at end of section.
Refer to type 6DK6.
Refer to chart at end of section.
Refer to chart at end of section.
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Refer to chart at end of section.
Refer to chart at end of section.
Refer to chart at end of section.
Refer to chart at end of section.
Refer to chart at end of section.

For replacement use type 12GW6/12DQ6B.
Refer to chart at end of section.
For replacement use type 12BY7A/12BV7/12DQ7.

Refer to chart at end of section.
Refer to type 6DT5.
Refer to type 6DT8.
Refer to chart at end of section.
Refer to chart at end of section.
Refer to chart at end of section.
For replacement use type 12BS3A/12DW4A.
Refer to chart at end of section.
Refer to chart at end of section.
Refer to chart at end of section.
For replacement use type 12EK6/12DZ6/12EA6.
Refer to chart at end of section.
For replacement use type 12EK6/12DZ6/12EA6.

Refer to chart at end of section.
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Refer to chart at end of section.

12CT8
12CU5/12C5
12CU6
12CX6
12D4
12DB5
12DE8
12DK6
12DK7
12DL8
12DM4
12DM4A
12DQ6A
12DQ6B
12DQ7
12DS7
12DS7A
12DT5
12DT8
12DU7
12DV8
12DW4A
12DW7
12DY8
12DZ6
12EA6
12EC8
12ED5
12EG6
12EH5
12EK6/12DZ6/12EA6
12EL6
12EM6
12EN6
12EQ7
12F5GT
12F8