The 12BY7-A is a miniature power pentode designed primarily for use as the video output amplifier in television receivers. Features of the tube include extremely high transconductance, low interelectrode capacitances, and high power sensitivity.

Electrically and mechanically, the 12BY7-A is a replacement for the 12BY7. In addition, however, the 12BY7-A exhibits a controlled heater warm-up characteristic which makes the tube particularly suited for use in television receivers which employ series-connected heaters. When the 12BY7-A is used in conjunction with other 600-milliampere types which exhibit essentially the same heater warm-up characteristic, heater voltage surges across the individual tubes are minimized during the warm-up period.

**GENERAL**

**ELECTRICAL**

<table>
<thead>
<tr>
<th>Series</th>
<th>Parallel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cathode—Coated Unipotential</td>
<td></td>
</tr>
<tr>
<td>Heater Voltage, AC or DC</td>
<td>12.6</td>
</tr>
<tr>
<td>Heater Current</td>
<td>0.3</td>
</tr>
<tr>
<td>Heater Warm-up Time*</td>
<td>.</td>
</tr>
<tr>
<td>Direct Interelectrode Capacitances†</td>
<td></td>
</tr>
<tr>
<td>Grid-Number 1 to Plate, maximum</td>
<td>.063 µf</td>
</tr>
<tr>
<td>Input</td>
<td>10.2 µf</td>
</tr>
<tr>
<td>Output</td>
<td>3.5 µf</td>
</tr>
</tbody>
</table>

**MECHANICAL**

Mounting Position—Any
Envelope—T-6½, Glass
Base—E9-1, Small Button 9-Pin

**MAXIMUM RATINGS**

**DESIGN-CENTER VALUES**

| Plate Voltage | 300 Volts |
| Screen Voltage | 180 Volts |
| Positive DC Grid-Number 1 Voltage | 0 Volts |
| Negative DC Grid-Number 1 Voltage | 50 Volts |
| Plate Dissipation | 6.5 Watts |
| Screen Dissipation | 1.1 Watts |

Heater-Cathode Voltage

- Heater Positive with Respect to Cathode | 200 Volts |
- Heater Negative with Respect to Cathode | 200 Volts |

Grid-Number 1 Circuit Resistance

- With Fixed Bias | 0.25 Megohms |
- With Cathode Bias | 1.0 Megohms |

**PHYSICAL DIMENSIONS**
CHARACTERISTICS AND TYPICAL OPERATION

CLASS A1 AMPLIFIER

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plate Voltage</td>
<td>250 Volts</td>
</tr>
<tr>
<td>Suppressor, Connected to Cathode at Socket</td>
<td>180 Volts</td>
</tr>
<tr>
<td>Screen Voltage</td>
<td>100 Ohms</td>
</tr>
<tr>
<td>Cathode-Bias Resistor</td>
<td>0.093 Megaohms</td>
</tr>
<tr>
<td>Plate Resistance, approximate</td>
<td>11000 Micromhos</td>
</tr>
<tr>
<td>Transconductance</td>
<td>26 Milliamperes</td>
</tr>
<tr>
<td>Plate Current</td>
<td>5.75 Milliamperes</td>
</tr>
<tr>
<td>Screen Current</td>
<td>-11.6 Volts</td>
</tr>
<tr>
<td>Grid-Number 1 Voltage, approximate</td>
<td>28.5</td>
</tr>
</tbody>
</table>

IG = 20 Microamperes

* Heater warm-up time is defined as the time required in the circuit shown at the right for the voltage across the heater terminals (V) to increase from zero to the heater test Voltage (V1). For this type, E = 25 volts (RMS or DC), V1 = 5.0 volts (RMS or DC), and R = 31.5 ohms.

† Without external shield.

AVERAGE PLATE CHARACTERISTICS

- $E_f =$ RATED VALUE
- $E_{c1} =$ 0 VOLTS

PLATE DISSIPATION
- 6.5 WATTS
AVERAGE PLATE CHARACTERISTICS

Plate Dissipation
6.5 Watts

$E_f =$ rated value
$E_{c2} =$ 180 volts

SCREEN CURRENT ($I_{c2}$) IN MILLIAMPERES
PLATE CURRENT ($I_{b}$) IN MILLIAMPERES

GRID-NUMBER 1 CURRENT ($I_{c1}$) IN MILLIAMPERES

PLATE VOLTAGE IN VOLTS

AVERAGE SCREEN CHARACTERISTICS

$E_f =$ rated value
$E_{c1} =$ 0 volts

Screen Dissipation
1.1 Watts

SCREEN CURRENT IN MILLIAMPERES

PLATE VOLTAGE IN VOLTS
AVERAGE TRANSFER CHARACTERISTICS

$E_f = \text{RATED VALUE}$
$E_b = 250 \text{ VOLTS}$