The 6S4-A is a miniature medium-mu triode for use as the vertical-deflection amplifier in television receivers. The tube features relatively high plate current at low plate voltages and is capable of withstanding the high pulse voltages normally encountered in this application.

The 6S4-A also exhibits a controlled heater warm-up characteristic which makes it especially suited for use in television receivers which employ series-connected heaters. When the 6S4-A is used in conjunction with other 600-milliamper e 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**
- Cathode—Coated Unipotential
- Heater Voltage, AC or DC: 6.3 Volts
- Heater Current: $0.6 \pm 6\%$ Amperes
- Heater Warm-up Time*: 11 Seconds
- Direct Interelectrode Capacitances, approximate†
  - Grid to Plate: 2.4 μF
  - Input: 4.2 μF
  - Output: 0.6 μF

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

**MAXIMUM RATINGS**

**DESIGN-MAXIMUM VALUES UNLESS OTHERWISE INDICATED**
- Vertical-Deflection Amplifier‡
  - DC Plate Voltage: 550 Volts
  - Peak Positive Plate Voltage: 2200§ Volts
  - Peak Negative Grid Voltage: 250 Volts
  - Plate Dissipation¶: 8.5 Watts
  - DC Cathode Current: 30 Milliamperes
  - Peak Cathode Current: 105 Milliamperes

- Heater-Cathode Voltage
  - Heater Positive with Respect to Cathode
    - DC Component: 100 Volts
    - Total DC and Peak: 200 Volts
  - Heater Negative with Respect to Cathode
    - Total DC and Peak: 200 Volts

- Grid Circuit Resistance
  - With Cathode Bias: 2.2 Megohms

Design-Maximum ratings are limiting values of operating and environmental conditions applicable to a bogey tube of a specified type as defined by its published data, and should not be exceeded under the worst probable conditions.

The tube manufacturer chooses these values to provide acceptable serviceability of the tube, taking responsibility for the effects of changes in operating conditions due to variations in tube characteristics.

The equipment manufacturer should design so that initially and throughout life no design-maximum value for the intended service is exceeded with a bogey tube under the worst probable operating conditions with respect to supply-voltage variation, equipment component variation, equipment control adjustment, load variation, signal variation, and environmental conditions.

The tubes and arrangements disclosed herein may be covered by patents of General Electric Company or others. Neither the disclosure of any information herein nor the sale of tubes by General Electric Company conveys any license under patent claims covering combinations of tubes with other devices or elements. In the absence of an express written agreement to the contrary, General Electric Company assumes no liability for patent infringement arising out of any use of the tubes with other devices or elements by any purchaser of tubes or others.
### CHARACTERISTICS AND TYPICAL OPERATION

#### AVERAGE CHARACTERISTICS

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plate Voltage</td>
<td>250 Volts</td>
</tr>
<tr>
<td>Grid Voltage</td>
<td>-8 Volts</td>
</tr>
<tr>
<td>Amplification Factor</td>
<td>16.5</td>
</tr>
<tr>
<td>Plate Resistance, approximate</td>
<td>3700 Ohms</td>
</tr>
<tr>
<td>Transconductance</td>
<td>4500 Micromhos</td>
</tr>
<tr>
<td>Plate Current</td>
<td>4.0 Milliamperes</td>
</tr>
<tr>
<td>Grid Voltage, approximate</td>
<td>-22 Volts</td>
</tr>
</tbody>
</table>

*The time required for the voltage across the heater to reach 80 percent of its rated value after applying 4 times rated heater voltage to a circuit consisting of the tube heater in series with a resistance equal to 3 times the rated heater voltage divided by the rated heater current.

† Without external shield.

‡ For operation in a 525-line, 30-frame television system as described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations," Federal Communications Commission. The duty cycle of the voltage pulse must not exceed 15 percent of one scanning cycle.

§ Value given is to be considered as an Absolute Maximum Rating. In this case, the combined effect of supply voltage variation, manufacturing variation including components in the equipment, and adjustment of equipment controls should not cause the rated value to be exceeded.

¶ In stages operating with grid-leak bias, an adequate cathode-bias resistor or other suitable means is required to protect the tube in the absence of excitation.

### AVERAGE PLATE CHARACTERISTICS

![Plate Characteristics Graph](image-url)