The 18A5 is a beam-power pentode designed for use as the horizontal-deflection amplifier in compact, 300-milliamperes, series-string television receivers. The tube features relatively small size, low power requirements, and high performance capabilities at the low d-c supply voltages normally available in this application. The tube also has a controlled heater warm-up characteristic as required for use in television receivers that employ series-connected heaters.

**GENERAL**

**ELECTRICAL**
- Cathode—Coated Unipotential
- Heater Voltage, AC or DC: 18.5 Volts
- Heater Current: 0.3 ± 6% Amperes
- Heater Warm-up Time*: 11 Seconds
- Direct Interelectrode Capacitances, approximate†:
  - Grid-Number 1 to Plate: 0.7 μF
  - Input: 13 μF
  - Output: 7.0 μF

**MECHANICAL**
- Mounting Position—Any
- Envelope—T-9, Glass
- Base—B6-8, Intermediate Shell Octal 6-Pin
  or B6-60, Short Intermediate Shell Octal 6-Pin

**MAXIMUM RATINGS**

**HORIZONTAL-DEFLECTION AMPLIFIER SERVICE**

**DESIGN-MAXIMUM VALUES**
- DC Plate-Supply Voltage (Boost† DC Power Supply): 350 Volts
- Peak Positive Pulse Plate Voltage: 3000 Volts
- Peak Negative Pulse Plate Voltage: 600 Volts
- Screen Voltage: 160 Volts
- Peak Negative Grid-Number 1 Voltage: 250 Volts
- Plate Dissipation$: 9.0 Watts
- Screen Dissipation: 2.5 Watts
- DC Cathode Current: 90 Milliamperes
- Peak Cathode Current: 310 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-Number 1 Circuit Resistance: 1.0 Megohms
- Bulb Temperature at Hottest Point: 190 C

Design-Maximum Ratings are the limiting values expressed with respect to bogie tubes at which satisfactory tube life can be expected to occur for the types of service for which the tube is rated. Therefore, the equipment designer must establish the circuit design so that initially and throughout equipment life no design-maximum value is exceeded with a bogie tube under the worst probable operating conditions with respect to supply-voltage variation, equipment component variation, equipment control adjustment, load variation, and environmental conditions.
CHARACTERISTICS AND TYPICAL OPERATION

**AVERAGE CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plate Voltage</td>
<td>60</td>
</tr>
<tr>
<td>Screen Voltage</td>
<td>125</td>
</tr>
<tr>
<td>Grid-Number 1 Voltage</td>
<td>0‡</td>
</tr>
<tr>
<td>Plate Resistance, approximate</td>
<td>27000 Ohms</td>
</tr>
<tr>
<td>Transconductance</td>
<td>4800 Micromhos</td>
</tr>
<tr>
<td>Plate Current</td>
<td>165</td>
</tr>
<tr>
<td>Screen Current</td>
<td>15</td>
</tr>
<tr>
<td>Grid-Number 1 Voltage, approximate</td>
<td></td>
</tr>
<tr>
<td>( I_h = 1.0 ) Milliamperes</td>
<td></td>
</tr>
<tr>
<td>Triode Amplification Factor¶</td>
<td>4.6</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.

§ 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.

★ Applied for short interval (two seconds maximum) so as not to damage tube.

¶ Triode connection (screen tied to plate) with \( E_b = E_c^2 = 125 \) volts and \( E_c^1 = -17 \) volts.