THE 6188/6SU7WGT IS A RUGGEDIZED, HIGH MU, TWIN TRIODE IN THE OCTAL BASE, BANTAM CONSTRUCTION. THE TWO TRIODES ARE ELECTRICALLY INDEPENDENT, ALLOWING SIMULTANEOUS USE OF THE TWO IN COMPLETELY DIFFERENT APPLICATIONS. TIGHT GAS AND LEAKAGE CONTROLS ON THE TUBE INCREASE STABILITY AND A SPECIAL PLATE CURRENT BALANCE TEST BETWEEN SECTIONS IS SPECIFIED. THEREFORE, IN ADDITION TO GENERAL PURPOSE APPLICATIONS SUCH AS VOLTAGE AMPLIFIERS, OSCILLATORS AND MULTIVIBRATORS, THE 6188/6SU7WGT MAY BE USED IN APPLICATIONS REQUIRING EXTREME STABILITY SUCH AS BALANCED AMPLIFIERS, AND WHERE LARGE GRID RESISTORS MAY BE NECESSARY. CONTROLS ON THE PRODUCT AVERAGE FOR SUCH CHARACTERISTICS AS PLATE CURRENT, TRANSCONDUCTANCE AND AMPLIFICATION FACTOR ASSURE THAT THESE CRITICAL CHARACTERISTICS WILL REMAIN WELL CENTERED. SINCE IT MUST BE ABLE TO WITHSTAND SEVERE MECHANICAL TESTS TO MEET TEST SPECIFICATION, THE 6188/6SU7WGT IS ESPECIALLY SUITED FOR USE IN MILITARY AND INDUSTRIAL AIRBORNE EQUIPMENT WHICH MAY BE SUBJECTED TO SEVERE SHOCK AND VIBRATION.

RATINGS

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>HEATER VOLTAGE</td>
<td>6.3±0.6 VOLS</td>
</tr>
<tr>
<td>MAXIMUM DC PLATE VOLTAGE</td>
<td>275 VOLS</td>
</tr>
<tr>
<td>MAXIMUM HEATER-CATHODE VOLTAGE</td>
<td>±100 VOLS</td>
</tr>
<tr>
<td>MAXIMUM PLATE DISSIPATION (EACH SECTION)</td>
<td>1.1 WATTS</td>
</tr>
<tr>
<td>MAXIMUM BULB TEMPERATURE</td>
<td>+165 °C</td>
</tr>
</tbody>
</table>

TYPICAL OPERATING CONDITIONS AND CHARACTERISTICS

CLASS A1 AMPLIFIER (EACH SECTION)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLATE VOLTAGE</td>
<td>250 VOLS</td>
</tr>
<tr>
<td>GRID VOLTAGE</td>
<td>-2 VOLS</td>
</tr>
<tr>
<td>PLATE CURRENT</td>
<td>2.3 mA</td>
</tr>
<tr>
<td>PLATE RESISTANCE</td>
<td>44 000 OHMS</td>
</tr>
<tr>
<td>TRANSCONDUCTANCE</td>
<td>1 600 μMhos</td>
</tr>
<tr>
<td>AMPLIFICATION FACTOR</td>
<td>70</td>
</tr>
</tbody>
</table>

CONTINUED ON FOLLOWING PAGE
### Characteristics Range Values for Equipment Design

<table>
<thead>
<tr>
<th>Initial</th>
<th>Prod.</th>
<th>Avg.</th>
<th>500 Hour Life Test</th>
</tr>
</thead>
</table>

- **Heater Current**: 275 mA to 325 mA
- **Heater Cathode Leakage** 
  - (EHk=±100 Vdc): 0 µA to 5.0 µA
  - (Eh=0 V, E=200 Vdc): 0 µA to 5.0 µA
- **Grid Current (Ig)**: 0 µA to 0.5 µA
- **Plate Current (IP)**: 1.55 µA to 3.05 µA
- **AC Amplification**: 8.6 Vac
- **Plate Current (Ic)**
  - (E=4.5 Vdc): 200 µA
  - (E=4.29 Vdc): 500 µA
- **Insulation of Electrodes**
  - R(g-a11): 500 Megohms
  - R(p-a11): 500 Megohms
- **Transconductance**: 1325 to 1875 µmhos
- **Transconductance (Δ)**
  - (E=5.7 V): 15 percent
- **Amplification Factor**: 95 to 105
- **Plate Current Difference**: ±0.1 µA
- **Grid Current Difference**: ±1.5 µA

### Special Requirements

- **Noise and Microphonics**
  - (E=6.35 V, Ehk=0 V, E=200 Vdc, E=0 V, R=0.1 MΩ)
  - Max. 50 mV/µV
- **Low Pressure Voltage Breakdown**
  - (Pressure=55±5 mm Hg, Voltage=500 Vdc)
  - Max. 50 mV/µV
- **Low Frequency Vibration**
  - Max. 50 mV/µV
- **Shock**
  - (Hammer Angle = 30°, Ehk=±100 Vdc)
  - Max. 50 mV/µV
- **Vibrational Fatigue**
  - Max. 50 mV/µV
- **Post Shock and Vibrational Fatigue Test End Points**
  - Vibration
  - Grid Current (Ig)
  - Heater Cathode Leakage (EHk=±100 Vdc)
  - AC Amplification
  - 200 mV/µV
  - 200 mV/µV
  - 200 mV/µV
  - 8.0 Vac
- **1 Hour Stability Life Test**
  - (E=250 Vdc, E=1.0 Vdc, EHk=±100 Vdc, Rg=1.0 MΩ; Ta=Room)
  - Max. 10 percent
- **Stability Life Test End Points**
  - Δ Transconductance (Δ) of Individual Tubes
  - 10 percent
  - 10 percent
- **Intermittent Life Test**
  - (Stability life test conditions or equivalent envelope temperature =±165°C)
  - Max. 10 percent

### Notes

- **A**: Tie 1p to 2p, 1g to 2g, 1k to 2k. (Parasitic suppressor of 50 ohm maximum permitted).
- **B**: See MIL-E-12 4.10.11.2
- **C**: See MIL-E-12 4.8.2
- **D**: The value of Δ Transconductance shall apply to individual tubes and is expressed:

$$\left(\frac{\text{SW at 6.3}}{\text{SW at 5.7}}\right) \times 100$$

CONTINUED ON FOLLOWING PAGE
NOTE - CONT'D.

F. The test circuit to be used is shown schematically in Figure 1. With switch S1 in position (1) adjust Eo on section 2 to give E = 0 on meter M1. Measure Eo at meter M2.

Minimum Resistance of M1=20 WOG.

SECTION #1

SECTION #2

FIGURE #1

G. See MIL-E-1C 4.10.3.5

H. Breakdown is defined as the voltage at which arcing occurs between anode-base pin and adjacent pins. Temp. = 25°F, humidity = 0; voltage shall be of sinusoidal waveform at f=60 CPS. Pressure = 555 mm Hg.

I. See MIL-E-1C 4.9.19.1

J. See MIL-E-1C 4.9.20.3

K. See MIL-E-1C 4.9.20.6

L. See MIL-E-1C 4.9.20.6

N. Envelope temperature is defined as the highest temperature indicated when using a thermocouple of .003 in. max. diameter elements welded to a ring of .025 in. diameter phosphor bronze placed around the bulb.
\( P \text{SIGNAL GENERATOR WITH INTERNAL RESISTANCE SUCH THAT IN COMBINATION WITH } R_1 \text{ GIVES 2000 OHMS RESISTANCE BETWEEN #3 GRID AND GROUND.} \)