THE 5814WA IS A RUGGEDIZED, MEDIUM MU, TWIN TRIODE OF THE NINE PIN MINIATURE CONSTRUCTION. THE TWO TRIODE SECTIONS ARE ELECTRICALLY INDEPENDENT, ALLOWING SIMULTANEOUS USE OF THE TWO IN COMPLETELY DIFFERENT APPLICATIONS. THE HEATER CENTER TAP PERMITS OPERATION FROM EITHER A 6.3 OR 12.6 VOLT SUPPLY. THE TUBE MAY BE ADAPTED TO SUCH APPLICATIONS AS VOLTAGE AMPLIFIER, OSCILLATOR-MIXER COMBINATION, MULTIVIBRATOR, OR PHASE INVERTER. 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 SPECIFICATIONS, THE 5814WA IS ESPECIALLY SUITED FOR USE IN MILITARY OR INDUSTRIAL AIRBORNE EQUIPMENT WHICH MAY BE SUBJECTED TO SEVERE SHOCK AND VIBRATION.

DIRECT INTERELECTRODE CAPACITANCES

<table>
<thead>
<tr>
<th>GRID TO PLATE (RATED)</th>
<th>WITHOUT SHIELD</th>
</tr>
</thead>
<tbody>
<tr>
<td>SECT. #1</td>
<td>SECT. #2</td>
</tr>
<tr>
<td>1.5</td>
<td>1.5</td>
</tr>
<tr>
<td>1.6</td>
<td>1.6</td>
</tr>
<tr>
<td>0.50</td>
<td>0.35</td>
</tr>
</tbody>
</table>

RATINGS

| HEATER VOLTAGE | 6.3±10% | 12.6±10% |
| MAXIMUM DC PLATE VOLTAGE | 330 |
| MAXIMUM PLATE DISSIPATION (EACH SECTION) | 3.0 |
| MAXIMUM DC HEATER-CATHODE VOLTAGE | ±200 |
| MAXIMUM DC CATHODE CURRENT | 22 mA |
| MAXIMUM BULB TEMPERATURE | +165 °C |

TYPICAL OPERATING CONDITIONS AND CHARACTERISTICS

| HEATER VOLTAGE | 6.3 | 12.6 | 6.3 | 12.6 |
| HEATER CURRENT | 0.35 | 0.175 | 0.35 | 0.175 |
| PLATE VOLTAGE | 100 | 250 |
| GRID VOLTAGE B | 0 | -8.5 |
| AMPLIFICATION FACTOR | 19.5 | 17 |
| PLATE RESISTANCE | 6250 | 7700 |
| TRANSCONDUCTANCE | 3100 | 2200 |
| PLATE CURRENT | 11.8 | 10.5 |

CONTINUED ON FOLLOWING PAGE
## CHARACTERISTICS RANGE VALUES FOR EQUIPMENT DESIGN

** Except as modified below **

<table>
<thead>
<tr>
<th>INITIAL</th>
<th>PROD.</th>
<th>AVG.</th>
<th>500 HOUR LIFE TEST</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MIN.</td>
<td>MAX.</td>
<td>MIN.</td>
</tr>
</tbody>
</table>

### HEATER CURRENT
- **MIN.** 160
- **MAX.** 190
- **Note:** C

### HEATER-CATHODE LEAKAGE
- **Expression:** \( E_h = 100 \text{Vdc} \)
- **Value:** 10
- **Unit:** \( \mu \text{A} \)

### GRID CURRENT
- **Expression:** \( G \)
- **Value:** 0
- **Unit:** \( \mu \text{A} \)

### PLATE CURRENT
- **Expression:** \( I_p \)
- **Value:** 6.5
- **Unit:** \( \mu \text{A} \)

### TRANSCONDUCTANCE
- **Expression:** \( g \)
- **Value:** 1.75
- **Unit:** \( \text{Mhos} \)

### Δ AVG. TRANSCONDUCTANCE
- **Expression:** \( \Delta g \)
- **Value:** 15
- **Unit:** \( \text{Percent} \)

### INSULATION OF ELECTRODES
- **Expression:** \( E_{i} = 12.6 \text{V}, E_{o} = 110 \text{Vdc} \)
- **Value:** 250
- **Unit:** \( \text{Megohms} \)

### PLATE CURRENT
- **Expression:** \( I_p \)
- **Value:** 20
- **Unit:** \( \mu \text{A} \)

### Δ TRANSCONDUCTANCE
- **Expression:** \( \Delta g \)
- **Value:** 15
- **Unit:** \( \text{Percent} \)

### GRID CURRENT
- **Expression:** \( E_{i} = 14 \text{V} \)
- **Value:** 0
- **Unit:** \( \mu \text{A} \)

### PLATE CURRENT
- **Expression:** \( I_p \)
- **Value:** 3.5
- **Unit:** \( \mu \text{A} \)

### TRANSCONDUCTANCE
- **Expression:** \( g \)
- **Value:** 2500
- **Unit:** \( \text{Mhos} \)

### AMPLIFICATION FACTOR
- **Expression:** \( g \)
- **Value:** 15.5
- **Unit:** \( \text{Percent} \)

### SPECIAL REQUIREMENTS

<table>
<thead>
<tr>
<th>VARIABLE FREQUENCY VIBRATION</th>
<th>MIN.</th>
<th>MAX.</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXP.</td>
<td>2000</td>
<td>100</td>
</tr>
</tbody>
</table>

### VIBRATIONAL FATIGUE
- **Expression:** \( R_p = 0.4 \text{Meg} \)

### SHOCK
- **Expression:** \( R_g = 0.5 \text{Meg} \)

### POST SHOCK AND VIBRATIONAL FATIGUE TEST END POINTS
- **Expression:** \( E_{i} = 100 \text{Vdc}, E_{o} = 0 \text{V} \)

### LOW FREQUENCY VIBRATION
- **Expression:** \( R_p = 50,000 \text{Mhos} \)
- **Value:** 50
- **Unit:** \( \mu \text{A} \)

### LOW PRESSURE VOLTAGE BREAKDOWN
- **Expression:** \( E_{i} = 12.6 \text{Vdc}, E_{o} = 0 \text{Vdc} \)
- **Value:** 100
- **Unit:** \( \mu \text{A} \)

### RF NOISE
- **Expression:** \( E_{o} = 7.0 \text{mV} \)
- **Value:** 3.0
- **Unit:** \( \text{mW} \)

### NOISE AND MICROPHONICS
- **Expression:** \( E_{i} = 55 \text{mV}, E_{o} = 300 \text{Vdc} \)
- **Value:** 50
- **Unit:** \( \text{mV} \)

### CONTINUITY AND SHORT
- **Expression:** \( E_{i} = 2000 \text{Mhos} \)
- **Value:** 50
- **Unit:** \( \text{mV} \)

### 1 HOUR STABILITY LIFE TEST
- **Expression:** \( E_{i} = 50 \text{Vdc}, 60 \text{cycles} \)
- **Value:** 50
- **Unit:** \( \text{Vac} \)

### STABILITY LIFE TEST END POINTS
- **Expression:** \( E_{i} = 50 \text{Vdc} \)
- **Value:** 10
- **Unit:** \( \text{Percent} \)

### 100 HOUR SURVIVAL RATE LIFE TEST
- **Expression:** \( E_{i} = 50 \text{Vdc} \)
- **Value:** 10
- **Unit:** \( \text{Percent} \)

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**Continued on following page**
SPECIAL REQUIREMENTS - CONT’D.

HEATER CYCLING LIFE TEST
\[ E_f = 7.5V, \quad E_h = 4.35 \, V_{dc}, \]
HEATER POSITIVE, \( E_C = E_{B=0} \)

HEATER CYCLING LIFE TEST END POINTS
HEATER-CATHODE LEAKAGE

INTERMITTENT LIFE TEST
\[ (E_h = 4.35 \, V_{dc}, \quad \text{HEATER POS.}, \quad R_g \leq 0.5 \, \text{MEG,} \]
MIN. BULB TEMP. = 165°C

\[ \mu A_{dc} \]

NOTES

A. DIFFICULTY MAY BE ENCOUNTERED IF THIS TUBE IS OPERATED FOR LONG PERIODS OF TIME WITH VERY SMALL VALUES OF cathode CURRENT.

B. THE DC RESISTANCE IN THE GRID CIRCUIT UNDER RATED MAXIMUM CONDITIONS SHOULD NOT EXCEED 0.25.

C. TIE \( 1_p \) TO \( 2_p \), \( 1_g \) TO \( 2_g \), \( 1_k \) TO \( 2_k \). PARASITIC SUPPRESSORS OF 50 OHMS MAXIMUM PERMITTED.

D. SEE MIL-E-1C 4.8.2

E. PRIOR TO THIS TEST TUBES TO BE PREHEATED 5 MINUTES AT CONDITIONS INDICATED BELOW. TEST IMMEDIATELY AFTER PREHEATING. \( E_f = 14.0V, \quad E_{C=0} = 8.5V, \quad R_g \leq 0.5 \, \text{MEG,} \quad E_h = 350 \, \text{VDC,} \quad R_g \leq 0.5 \, \text{MEG.} \)

F. SEE MIL-E-1C 4.9.20.3

G. SEE MIL-E-1C 4.9.20.6

H. SEE MIL-E-1C 4.9.20.5

I. SEE MIL-E-1C 4.7.5

J. GLASS STRAIN TEST CONSISTS OF COMPLETELY SUBMERGING THE TUBE INTO BOILING WATER \( (95^\circ \text{C-200^\circ C}) \) FOR A PERIOD OF 30 SECONDS. THEN IMMEDIATELY PLUNGING INTO COLD WATER \( (0^\circ \text{C-25^\circ C}) \). THE AMOUNT OF WATER SHALL BE AT LEAST \( (2) \) LITERS PER 35 TUBES. TUBES FOR THIS TEST SHALL HAVE BEEN EXHAUSTED A MINIMUM OF 48 HOURS PRIOR TO PERFORMANCE OF THIS TEST. REJECT FOR EVIDENCE OF AIR LEAK.

L. SEE MIL-E-1C 4.10.3.1

M. SEE MIL-E-1C 4.10.3.5

N. THE CATHODE RESISTOR SHALL BE SHunted WITH A CAPACITIVE REACTANCE NOT EXCEEDING 3 OHM @ 60 CYCLES.

P. TIE CATHODES TOGETHER AND GROUND THRU A 1500 OHM RESISTOR. GRIDS ARE GROUNDED.

Q. SEE MIL-E-1C 4.9.20.4

R. BREAKDOWN SHALL BE DEFINED AS THE VOLTAGE AT WHICH ARCING OCCURS BETWEEN ANODE BASE PIN AND ADJACENT PINS.

S. THE VALUE OF TRANSCONDUCTANCE \( (2) \) SHALL APPLY TO INDIVIDUAL TUBES AND IS EXPRESSED:

\[
(50 \, \text{AT 12.6}) - (50 \, \text{AT 11.4}) \times 100
\]

\[ \text{lsM at 12.67} \]