TEST SPECIFICATIONS

Type : 2M130

Description : Continuous Wave Magnetron, 2450MHz, Fixed Frequency.

Absolute Maximum Ratings:

<table>
<thead>
<tr>
<th>Item</th>
<th>Symbol</th>
<th>Min.</th>
<th>Max.</th>
<th>Unit</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Filament Surge Current</td>
<td>-</td>
<td>-</td>
<td>100</td>
<td>Aac</td>
<td></td>
</tr>
<tr>
<td>Filament Voltage, Stand-by</td>
<td>Ef</td>
<td>4.40</td>
<td>5.00</td>
<td>Vac</td>
<td></td>
</tr>
<tr>
<td>Filament Voltage, Operation</td>
<td>Ef</td>
<td>(See Fig.1)</td>
<td>Vac</td>
<td>1,2</td>
<td></td>
</tr>
<tr>
<td>Pre-heating Time</td>
<td>Tk</td>
<td>5</td>
<td>-</td>
<td>sec</td>
<td>1,3</td>
</tr>
<tr>
<td>Peak Anode Voltage</td>
<td>ebm</td>
<td>-</td>
<td>4.3</td>
<td>KVP</td>
<td>1</td>
</tr>
<tr>
<td>Peak Anode Current</td>
<td>ibm</td>
<td>-</td>
<td>2.1</td>
<td>Ap</td>
<td>1</td>
</tr>
<tr>
<td>Average Anode Current</td>
<td>Ib</td>
<td>-</td>
<td>750</td>
<td>mAdc</td>
<td>1</td>
</tr>
<tr>
<td>Average Anode Input</td>
<td>Pi</td>
<td>-</td>
<td>2.6</td>
<td>KW</td>
<td>1</td>
</tr>
<tr>
<td>Load VSWR</td>
<td>(\sigma L)</td>
<td>-</td>
<td>4</td>
<td>-</td>
<td>1,7</td>
</tr>
<tr>
<td>Anode Core Temperature</td>
<td>Tp</td>
<td>-</td>
<td>180</td>
<td>(^\circ C)</td>
<td></td>
</tr>
<tr>
<td>Case Temperature</td>
<td>Tcase</td>
<td>-</td>
<td>120</td>
<td>(^\circ C)</td>
<td></td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-</td>
<td>-30</td>
<td>60</td>
<td>(^\circ C)</td>
<td></td>
</tr>
</tbody>
</table>

Test conditions for electrical characteristics:

- Filament Voltage \(Ef = 4.6\) V (Stand-by), \(Ef = 3.9\) V (operation)
- Average Anode Current \(I_b = 725\) mA
- Load VSWR \(\sigma L = 1.1\) or less
- Cooling Air Flow \(Q = 1.5\) m\(^3\)/min (35 CFM) or greater

Limits and characteristics:

<table>
<thead>
<tr>
<th>Item</th>
<th>Conditions</th>
<th>Symbol</th>
<th>Bogie</th>
<th>Min.</th>
<th>Max.</th>
<th>Unit</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Filament Current, Stand-by</td>
<td>(tk=120) sec Min.</td>
<td>If</td>
<td>20</td>
<td>18.5</td>
<td>21.5</td>
<td>Aac</td>
<td>1,4,5</td>
</tr>
<tr>
<td>Peak Anode Voltage</td>
<td>ebm</td>
<td>4.00</td>
<td>3.85</td>
<td>4.20</td>
<td>kVp</td>
<td>1,4,5,10</td>
<td></td>
</tr>
<tr>
<td>Average Power Output</td>
<td>Po</td>
<td>1550</td>
<td>1750</td>
<td>-</td>
<td>W</td>
<td>1,4,5,10</td>
<td></td>
</tr>
<tr>
<td>Frequency</td>
<td>fo</td>
<td>2455</td>
<td>2440</td>
<td>2470</td>
<td>MHz</td>
<td>1,4,5,10</td>
<td></td>
</tr>
<tr>
<td>Stability</td>
<td>(\sigma L = 3) or less</td>
<td>ST</td>
<td>-</td>
<td>700</td>
<td>-</td>
<td>mAdc</td>
<td>1,4,5,6,8</td>
</tr>
<tr>
<td>Breakdown Voltage</td>
<td>Et</td>
<td>-</td>
<td>10</td>
<td>-</td>
<td>kVdc</td>
<td>9</td>
<td></td>
</tr>
</tbody>
</table>
Notes:
1. Power supply should be single-phase, full-wave rectifier without filter.
2. Filament Voltage should be regulated as shown in Fig.1.
3. To apply to single-phase fullwave rectifier without filter. If power supply is different, the figure shall be reviewed.
4. Block diagram of the test equipment is shown in Sheet NO.1609-0002-1.
5. Launcher and tapered waveguides are shown in Sheet NO.1609-0007-1.
6. Any instability such as mode jump, run away, should not be observed at any phase of the specified VSWR.
7. The load impedance should be kept outside the region on the Riske diagram shown in Fig.2.
8. Operate momentarily 5 sec maximum to avoid destruction of the tube.
9. No continuous spark at 10 KVdc after gradual voltage up.
   (RL =100 K ohms. potential of anode shall be plus.)
10. Figures are specified at 20 ± 1°C of the magnets' temperature. If the magnets' temperature is T°C, ebm(T), Po(T) and fo shall be:
   \[ ebm(T) = (1-0.002(T-20)) \times ebm \]
   \[ Po(T) = (1-0.002(T-20)) \times Po \]
   \[ fo(T) = fo \]
   Measurement shall be done within 15 sec after ebm is supplied.
Fig. 1  Reduction Chart of Filament Voltage
Fig. 2  Rieke Diagram of the 2M130

Operating Conditions:

Power Supply: Single phase, fullwave rectifier without filter
Average Anode Current = 700 mA

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Mobara Works, Hitachi, Ltd.  Date: Aug. 2, 1985  Sh. 3284PS  No. 1603 - 2M130 - 3  Page 4/4
Dimensional outline of the 2M130.

Dimensions: mm.

4-M5 Studs

Note 1

Note 2

Note 3 8-Φ3.75

Note 4
Notes: 1. Anode core temperature measuring point (down stream air).
2. Case temperature measuring point.
3. Detailed drawing of the filament terminal:

4. Filament terminal near this mark (three serial holes) shall be connected with filament transformer so as to be positive polarity when anode current flows.
5. Change of numbers and dimensions of holes on the yoke which are not specified in the drawing should be accepted.
BLOCK DIAGRAM OF TEST EQUIPMENT

Oscilloscope

Moding Counter

Termination

Tube being measured

Launcher and Tapered Waveguide

Variable mismatch

Directional Coupler

Frequency Meter Coupler

Dummy Load (Water cooled)

Power Supply

Peak Voltage Meter

WG-Coax. Converter

Frequency Meter

Attenuator

Thermistor Mount

Thermistor Bridge
LAUNCHER & WAVEGUIDE
( FOR TEST ONLY )

Dimensions in inches
(in millimeters)

5.91 MIN
(150 MIN)

3.75
(95.3)

2.15
(54.6)

5.91
(150)

0.73 ± 0.02
(18.5 ± 0.5)

1.46 ± 0.008
(37 ± 0.2)

1.30 ± 0.008
(33 ± 0.2)

BRJ-2 FLANGE
Note 1.

Note 2.

Note:
1. Area indicated to be red with white letters.
2. Area indicated to be white with red letters.