TENTATIVE DATA FOR EIMAC EM-1050 TRAVELING WAVE TUBE

The Eimac EM-1050 is an intermediate-power traveling wave tube amplifier designed to operate in the 8.0 to 12.0 Gc frequency range. The EM-1050 will provide a minimum saturated power output of 3 watts over this frequency range with a nominal small signal gain of 60 db.

The EM-1050 features rugged ceramic and metal construction and focusing is provided by built-in periodic permanent magnets. These magnets are fully temperature compensated to allow operation from -55 to +85°C. No additional cooling is required at these temperatures due to the integral heat sink/mounting flange supplied with the tube.

GENERAL CHARACTERISTICS

ELECTRICAL

Cathode: Unipotential, oxide coated
Minimum Heating Time ............................................. 60 seconds
Heater Voltage ....................................................... 6.3 volts
Current .................................................................. 0.6 amperes
Noise Figure .................................................................. 25 to 34 decibels
Minimum Tangential Sensitivity (Broadband) .............. -50 dbm
Minimum Saturated Output Power ................................. 3 watts
Frequency Range ....................................................... 8.0 to 12.0 gigacycles
Input and Output Impedance ........................................ 50 ohms nominal

MECHANICAL

Operating Position ..................................................... Any
RF Input Coupling ..................................................... Type N Female Coaxial Fitting
RF Output Coupling ................................................... Type N Female Coaxial Fitting
Focusing .................................................................. Periodic Permanent Magnet
Cooling .................................................................. Passive Heat Sink
Maximum Overall Dimensions ................................. See Outline Drawing
Net Weight (Including Magnets) ................................... 4.5 Pounds

MAXIMUM RATINGS

D-C BEAM VOLTAGE* .................................................. 3500 VOLTS
D-C FOCUS ELECTRODE VOLTAGE* ............................. 50 VOLTS
NEGATIVE WITH RESPECT TO CATHODE .....................
D-C CATHODE CURRENT ........................................ 30 MILLIAMPERES

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TYPICAL OPERATING CHARACTERISTICS

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>8.0 to 12.0 gigacycles</td>
</tr>
<tr>
<td>Minimum Output Power</td>
<td>3.0 watts</td>
</tr>
<tr>
<td>Small Signal Gain</td>
<td>60 decibels</td>
</tr>
<tr>
<td>D-C Beam Voltage*</td>
<td>3300 volts</td>
</tr>
<tr>
<td>D-C Cathode Current</td>
<td>28 milliamperes</td>
</tr>
<tr>
<td>D-C Focus Electrode Voltage*</td>
<td>-40 volts</td>
</tr>
<tr>
<td>D-C Focus Electrode Current</td>
<td>0 milliamperes</td>
</tr>
</tbody>
</table>

*All voltages referred to cathode.

APPLICATION

**Cooling:** The EM-1050 is designed to be heat sink cooled by means of the mounting available and integral with the tube and PPM structure. Under environmental conditions normally encountered in military equipments, additional cooling will not be required.

**Cathode:** The heater voltage should be maintained within ± 5 per cent of the rated value of 6.3 volts if variations in performance are to be minimized and best tube life obtained.

**Helix:** The helix, collector and anode are internally connected to the tube body and are operated at the same potential. Therefore, it is often convenient to operate these elements at chassis potential, with the cathode and focus electrode at appropriate negative potentials. The cathode potential should be maintained within ± 1% to insure proper operation.

**Focus Electrode:** The focus electrode power supply must be regulated within ± 2 per cent to minimize variations in performance.

**Special Applications:** For any additional information concerning this tube or its application, write to Microwave Product Manager, Eitel-McCullough, Inc., San Carlos, California.

ENVIRONMENTAL


**Vibration:** 10 g to 2000 cps (Curve A of Proc. XII, MIL-E-5272C)

**Shock:** 25 g, 11 ± 1 ms

**Acceleration:** Sustained, 25 g’s

**Temperature:** −54°C to + 85°C

**Altitude:** 70,000 ft.

NOTE: This data should not be used for final equipment design.
CONNECTIONS
1. HEATER — BROWN
2. CATHODE HEATER — YELLOW
3. FOCUS ELECTRODE — GREEN
4. BODY GROUND — BLACK

EM-1050