GENERAL DESCRIPTION

The RK7578 is a mechanically tunable pulsed-type magnetron oscillator delivering a minimum peak power output of 800-1200 watts. It is capable of being tuned to any frequency within the 5400 to 5900 Mc range.

The RK7578 is small (1.75" dia. x 3.5") lightweight (14 ounces) and has been designed primarily for missile beacon transponder applications where extreme environmental conditions are encountered. The RK7578 is capable of sustaining shock acceleration of 100G and vibrational acceleration during operation of 15G at frequencies up to 2000 cycles per second.

GENERAL PRECAUTIONS

The precautions to be observed during the application of the RK7578 magnetron are the same as for any oscillator of this type. Experience has indicated that the areas where application problems frequently arise include the magnetron voltage pulse shape — particularly its rate of rise, the load VSWR, and anode current regulation. It is recommended that the Applications Engineering Department be consulted regarding the details of any contemplated equipment design utilizing the RK7578.

GENERAL CHARACTERISTICS

ELECTRICAL

- Heater Voltage — Preheat and Operate: 4.5 to 5.5 Volts
- Heater Current: 1.75 Ampere at 5.0 Volts
- Minimum Preheat Time: 30 Seconds
- Temperature Coefficient: ±0.1 Mc/°C Maximum
- Operational Altitude: 70,000 Feet Maximum
- Operational Vibration Frequency Deviation at 15G, 20 to 2000 cps: 1.5 Mc Peak to Peak Maximum
- Frequency Shift Due to Shock 100G, 1 Millisecond: 1 Mc Maximum
- Frequency Shift Due to 100G Acceleration: 1 Mc Maximum

Typical Operation

- Pulse Duration: 0.25 to 0.75 Microseconds
- Duty Cycle: 0.000025 to 0.002
- Peak Anode Current: 2.0 Amperes
- Peak Anode Voltage: 2.8 Kilovolts
- Peak Power Output: 800-1200 Watts
- Voltage Rise Time (20 to 85%): 0.11 us

MICROWAVE AND POWER TUBE DIVISION

RAYTHEON COMPANY
FOUNDRY AVE., WALTHAM 54, MASS.

from JEDEC release #3471, Oct. 30, 1961
DETAILED MECHANICAL INFORMATION

MOUNTING
The tube may be mounted in any position and must be supported by a suitably designed holder made of non-ferrous material which will utilize the diameter of the tube for support. Magnetic material should be mounted within 2 inches of the tube.

INPUT CONNECTIONS
Two flexible leads approximately 5 inches long provide connections for heater voltage and pulse voltage. One lead is black, the other red. The red lead is the common heater-cathode to which negative high voltage should be connected. A "ground" lug on the body of the tube provides for positive high voltage connection.

R.F. OUTPUT COUPLING
Mates with TNC coaxial Fitting or TNC to ¾" x1½" or 1" x 2" O.D. Waveguide Transition.

TUNER
The tuning mechanism is actuated by a screwdriver adjustable shaft. A set screw is provided to lock the shaft in position prior to the subject of the tube to environmental conditions. Care should be taken not to mechanically tune the tube beyond the extremes of its normal operating range, 5400 to 5900 Mc.

DIMENSIONS
Figure 1 is the mechanical outline drawing.

Figure 1
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