



# ELECTRON TUBE DIVISION

CLIFTON, NEW JERSEY

INTERNATIONAL TELEPHONE AND TELEGRAPH CORPORATION

**F-2508  
BACKWARD WAVE  
OSCILLATOR**

## TENTATIVE

### GENERAL

The F-2508 is a voltage-tunable, wide-band oscillator with a minimum output power of 100 milliwatts over its rated operating frequency range. This permanent magnet focused, highly stable device finds applications as a swept signal source in signal generators; master oscillator for frequency diversity transmitters; or typically as a local oscillator in radar or ECM receivers. The tube features a bifilar helix contained in a rugged envelope of simple mechanical design thus providing a highly reliable, compact unit. No cooling is required when the environment is below +60°C ambient temperature.

### ELECTRICAL

|                              | TYPICAL   | ABSOLUTE             | UNITS     |                           | TYPICAL | ABSOLUTE  | UNITS |
|------------------------------|-----------|----------------------|-----------|---------------------------|---------|-----------|-------|
| Frequency                    | 1.0 - 2.0 | Note 1               | Gcs       | *Grid Voltage for no      |         |           |       |
| Power Output                 | 100 - 800 | 100 min.             | mW.       | Oscillation (RF Cutoff)   |         |           |       |
| Power Output Variation       | 9         | 10 max.              | db        | (with respect to Cathode) | -20     | -30 max.  | Volts |
| Fine Grain Variation, Note 2 | ±1.5      | ±2.5 max.            | db 100 mc | *Collector Voltage, with  |         |           |       |
| VSWR                         | 2.5:1     | 3:1 max.             | —         | respect to Helix          | +100    | +150 max. | Volts |
| Output Impedance             | 50        | 50                   | Ohms      | Capacitance, Cathode to   |         |           |       |
| Heater Voltage               | 6.3       | 6.0 min/<br>6.6 max. | Volts     | all Electrodes            | 42      | 50 max.   | μfd.  |
| Heater Current               | .96       | 1.2 max.             | Amps      | Capacitance, Grid to all  |         |           |       |
| Anode Voltage (with          | +120      | +250 max.            | Volts     | Electrodes                | 30      | 45 max.   | μfd.  |
| respect to Cathode)          |           |                      |           | Capacitance, Helix to all |         |           |       |
| Anode Current                | 0.2       | 1.0 max.             | Ma        | other Electrodes and      |         |           |       |
| Cathode Current              | 15        | 25 max.              | Ma        | Capsule                   | 210     | 300 max.  | μfd.  |
| *Helix Voltage               | Zero      | Zero                 | Volts     | Spurious Output below     |         |           |       |
| Helix Current                | 8.0       | 10.0 max.            | Ma        | Signal                    | 50      | 40 min.   | db    |
| *Cathode Voltage (with       | -250 to   | -200 to              | Volts     |                           |         |           |       |
| respect to Helix)            | -1150     | -1300                |           |                           |         |           |       |

\*The above data shows tube operation with the helix at ground potential (Zero volts). If desired as an alternate, any one of the asterisked elements may be operated at ground potential provided the other electrode potentials are set at the appropriate relative levels.

NOTE 1 The F-2508 will operate over the frequency range of .99 to 2.02 Gcs. with a 3 db reduction in the rated minimum output power.

NOTE 2 This value is determined by selecting the 100 mc region of the frequency range which has the greatest difference in power output. The difference between these power levels is divided by two and the plus or minus sign is affixed to denote the difference from an average power level.

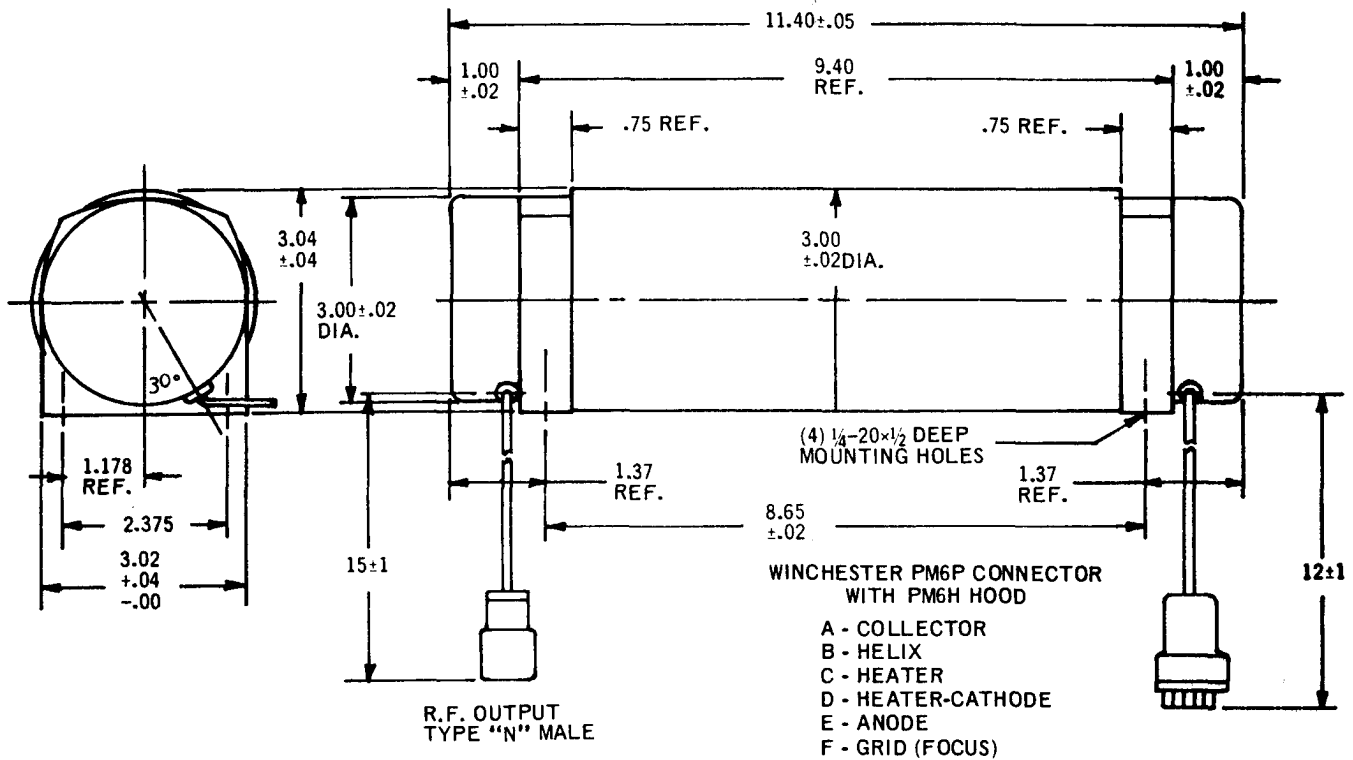
### MECHANICAL

|                                       |                |                |        |                     |    |                |        |
|---------------------------------------|----------------|----------------|--------|---------------------|----|----------------|--------|
| Package Length                        | 11.40          | 11.45 max.     | Inches | Output Cable Length |    |                |        |
| Package Diameter                      | 3.25           | 3.27 max.      | Inches | (to end of Type     |    |                |        |
| Package Weight                        | 14 lbs. -4 oz. | 14.5 max.      | Pounds | "N" Connector)      | 15 | 14 min/16 max. | Inches |
| Power Cable Length                    |                |                |        |                     |    |                |        |
| (to end of Winchester PM6P Connector) | 12             | 11 min/13 max. | Inches |                     |    |                |        |

Additional information for specific applications can be obtained from the

Electron Tube Applications Section  
ITT Electron Tube Division  
Post Office Box 104  
Clifton, New Jersey

**TENTATIVE**  
**PERMANENT - MAGNET BACKWARD-WAVE OSCILLATOR**  
**F-2508**



**TYPICAL TUNING CURVE AND POWER OUTPUT**  
**BWO TYPE F-2508**

