



DESCRIPTION:

The F-7347 is a 1 kilowatt pulse traveling wave amplifier tube having 30 db gain and 2000 to 4000 mc frequency range. It is constructed in a rugged metal-ceramic envelope with a helix type slow wave structure. The integral matching circuit is in 50 ohm coaxial line and is provided with female type TNC connectors. The tube is self-aligning in an external solenoid which is required to provide a uniform magnetic field. A convergent beam gun and oxide impregnated cathode are used. Duty cycles up to .005 and pulse lengths up to 10 microseconds can be used.

A control grid suitable for grid pulsing is provided.

ELECTRICAL RATINGS, ABSOLUTE VALUES:

Heater Voltage	6.3 ($\pm 6\%$)	volts
Heater Current	5.2	amperes
Maximum Anode Voltage (Note 1)	8000	volts
Maximum Helix Current	0.5	ampere peak
Maximum Collector Dissipation (Note 2)	100	watts average
Maximum R-F Input Power	10	watts average
Maximum R-F Output Power	15	watts average
Maximum Duty Cycle	.005	
Maximum Cathode Current	2.5	amperes peak
Maximum Grid Voltage		
Negative	-300	volts
Positive (Note 5)	+400	volts
Maximum Grid Current	.5	ampere peak

ELECTRICAL INFORMATION:

Maximum Cold Input VSWR (Note 7)	4.0	
Maximum Frequency (Note 3)	4000	mc
Minimum Frequency (Note 3)	2000	mc

ELECTRICAL INFORMATION (Continued)

Minimum Transmission Loss at Grid Bias = -67 volts	10 db
Capacitance	
Control grid to all other elements	22 $\mu\mu\text{fd}$

MECHANICAL INFORMATION:

Type of Cathode	Oxide Impregnated Unipotential
Base	Molded Silicone Rubber Base with Flying Leads
Type of Envelope	Metal-Ceramic
Magnetic Field Strength	1200 gauss
Length of Magnetic Field	9.493 inches uniform
Mounting Position	Any
Weight of Tube	1.5 lbs., approx.
R-F Connections	Type N Jack UG-23 B/U
Maximum Tube Temperature	177 °C

TYPICAL OPERATION AS POWER AMPLIFIER:

Center Frequency	3000 mc
Anode Voltage (Note 1)	7500 volts
Cathode Current	1.8 amperes peak
Power Output (at center frequency)	1.8 kw peak
Bandwidth	2.0 to 4.0 kmc
Gain (Note 4)	30 db
Duty	.002
Pulse Width	10 μ seconds
Grid Bias (for cut-off)	-100 volts
Grid Voltage during Pulse (Note 6)	+300 volts
Grid Current during Pulse	0.2 ampere peak

Note 1: All voltages shown are with respect to cathode. Anode and collector are connected internally to the shell. Helix connection is center conductor of coax. External d-c connection is required between shell and helix. Shell is normally operated at ground potential and connection is made to the shell of the solenoid.

Note 2: Conduction cooling for the collector must be provided by a suitable device.

- Note 3: Useful gain and power output exists below 2000 mc and above 4000 mc and can be utilized by adjusting anode voltage to optimize the frequency range desired. However, bandwidth cannot be extended both upward and downward simultaneously and maximum gain and power output outside the normal bandwidth will be lower than rated values.
- Note 4: This gain is obtained over the 2.0 to 4.0 kmc bandwidth at the power level indicated. Since this is in the power saturation region, small signal gain will be approximately 10 db higher.
- Note 5: Positive voltage must not be applied to the grid in the absence of anode voltage.
- Note 6: The positive grid voltage pulse should be the minimum consistent with normal power output; otherwise shortened life or destruction of the tube may result.
- Note 7: Mismatch up to and including a short circuit in input or output lines will not cause oscillation.

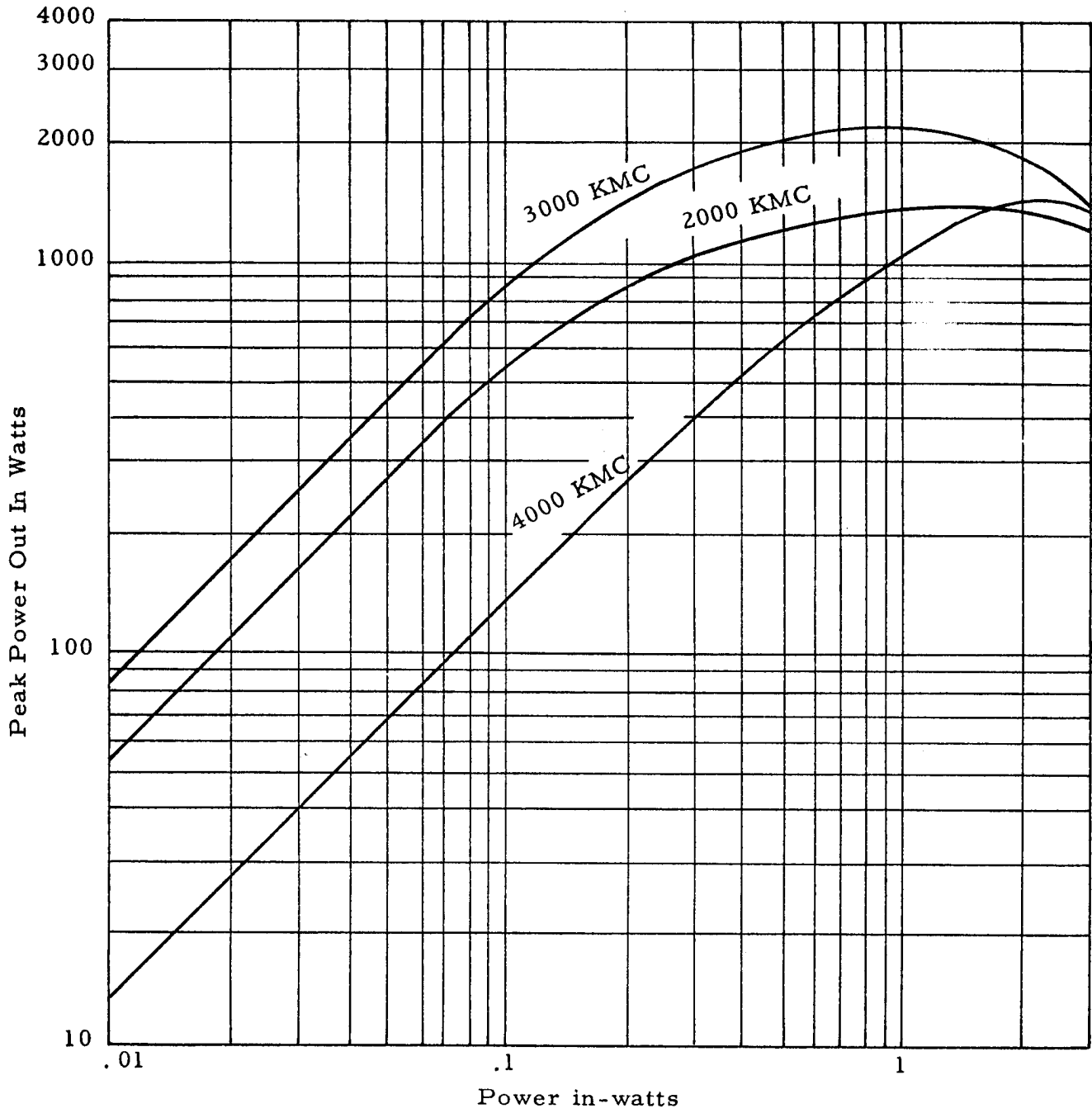
GENERAL OPERATING INSTRUCTIONS:

- (1) Heater warm up of 2 minutes before applying high voltage is recommended.
- (2) High voltage must not be applied in the absence of proper grid bias and magnetic field. Positive grid pulse voltage must not be applied in the absence of high voltage.
- (3) Initial adjustments should be done at low duty cycle (less than .001) to prevent tube damage due to high shell (interception) current.

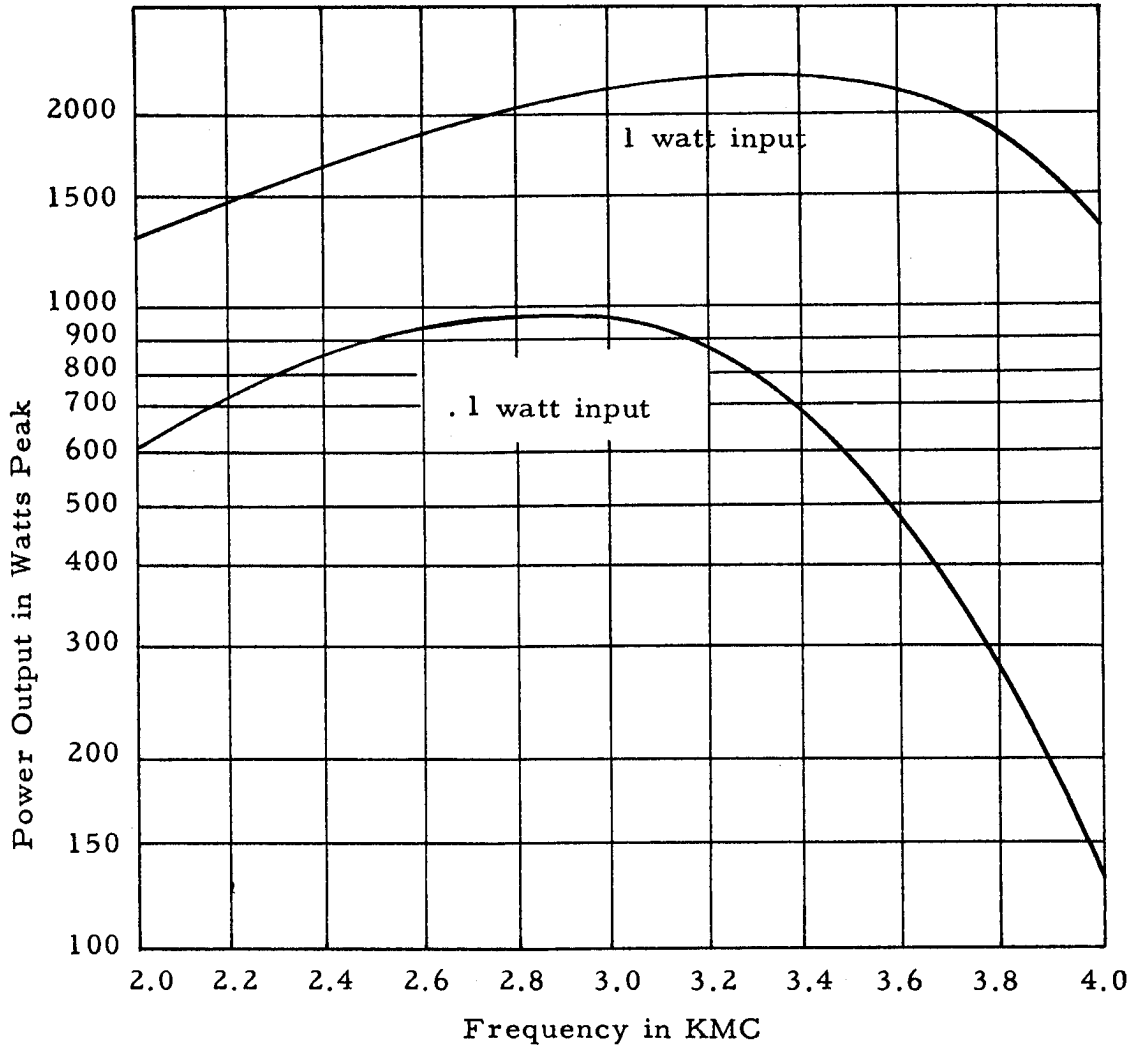
Additional information for specific applications can be obtained from the

Electron Tube Applications Sections
ITT Components Division
P. O. Box 412
Clifton, New Jersey



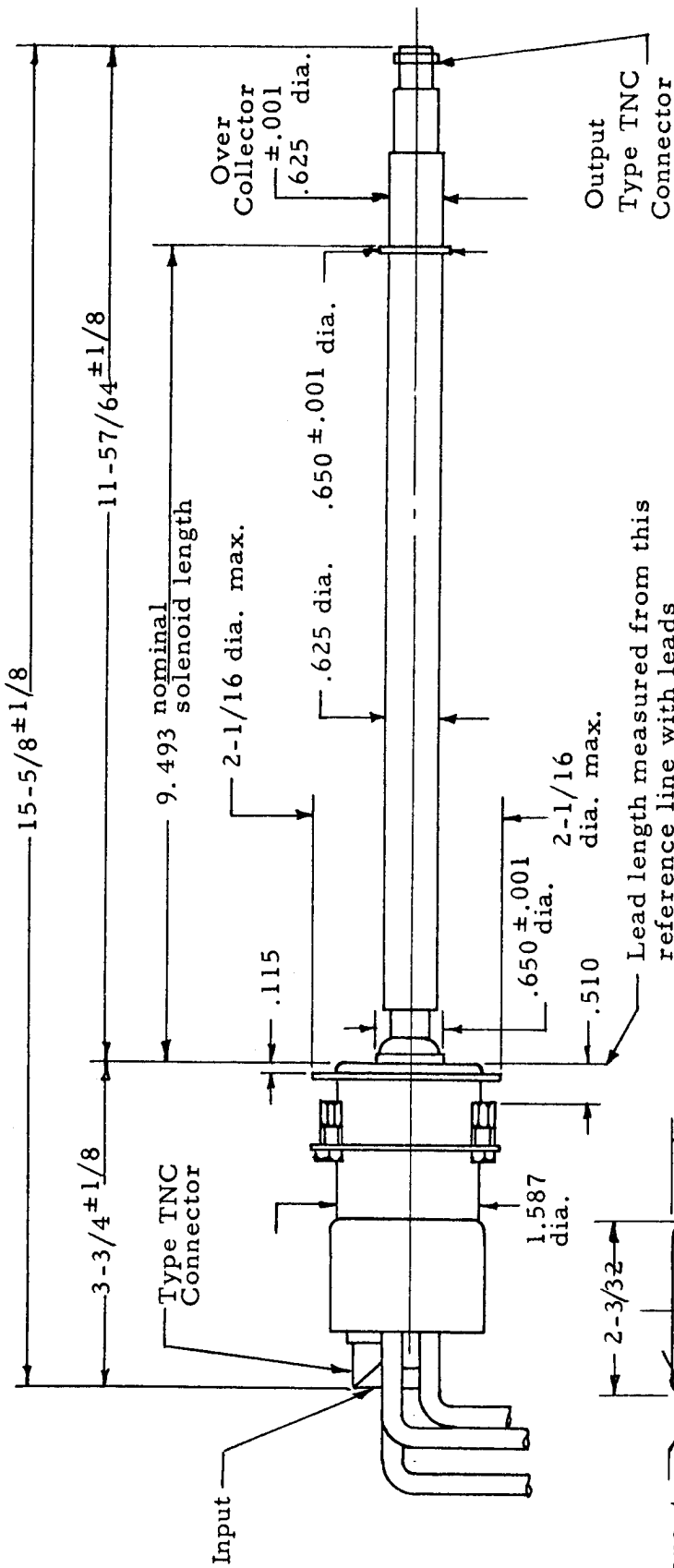


TYPICAL POWER IN-POWER OUT CHARACTERISTIC



TYPICAL P_{out} VS FREQUENCY CHARACTERISTIC





Lead length measured from this reference line with leads extending straight back.

(4) 90° apart on 1.187 R.

Code	Connections	Length	Conn. Color Code
G	Grid	15 ± 1/4	Green
H	Heater	15 ± 1/4	Brown
K	Heater-Cathode	15 ± 1/4	Yellow

OUTLINE - F-7347 TRAVELING WAVE TUBE

