

engineering TUBE DATA

F-7848
TRAVELING
WAVE TUBE



Components Division

T E N T A T I V E

DESCRIPTION:

THE F-7848 IS A 2 KILOWATT PULSE TRAVELING WAVE AMPLIFIER TUBE HAVING 27 DB GAIN AND 5400 TO 5900 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 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 6 MICROSECONDS CAN BE USED:

ELECTRICAL INFORMATION:

HEATER VOLTAGE	6.3	VOLTS
HEATER CURRENT	5.2	AMPERES
FREQUENCY RANGE (NOTE 1)	5400 MC TO 5900	MC
MINIMUM TRANSMISSION LOSS, NO. VOLTAGES APPLIED	60	DB
CAPACITANCE		
CATHODE TO ALL OTHER ELEMENTS	25	UUF D

ELECTRICAL RATINGS, ABSOLUTE VALUES:

HEATER VOLTAGE	6.3 ($\pm 5\%$)	VOLTS
HEATER CURRENT	5.6	AMPERES
MAXIMUM ANODE VOLTAGE (NOTE 2)	17,000	VOLTS
MAXIMUM HELIX CURRENT	0.4	AMPERE PEAK
MAXIMUM COLLECTOR DISSIPATION (NOTE 3)	225	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	3.7	AMPERES PEAK
LOAD VSWR	3.5 : 1	MAX.



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MECHANICAL INFORMATION:

TYPE OF CATHODE	OXIDE IMPREGNATED UNIPOTENTIAL
BASE	LARGE WATER OCTAL BASE
TYPE OF ENVELOPE	METAL CERAMIC
MAGNETIC FIELD STRENGTH	2000 GAUSS
MOUNTING POSITION	ANY
WEIGHT OF TUBE	1.5 LBS. APPROX.
R-F CONNECTIONS	FEMALE TYPE TNC
MAXIMUM TUBE TEMPERATURE	177 °C

TYPICAL OPERATION AS POWER AMPLIFIER OVER FREQUENCY RANGE:

ANODE VOLTAGE (NOTE 1)	10,000	VOLTS
CATHODE CURRENT	2.5	AMPERES PEAK
POWER OUTPUT	2.0	KW PEAK MIN.
GAIN	27	DB MIN.
DUTY	.002	
PULSE WIDTH	2	U SECONDS

NOTE 1: USEFUL GAIN AND POWER OUTPUT EXISTS BELOW 5000 MC AND ABOVE 6000 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 2: ALL VOLTAGES SHOWN ARE WITH RESPECT TO CATHODE. ANODE, HELIX, COLLECTOR, AND OUTER COAX CONDUCTOR OF THE R-F CONNECTIONS ARE CONNECTED INTERNALLY TO THE SHELL. AN INTERNAL DC CONNECTION IS PROVIDED BETWEEN THE CENTER LEAD OF THE R-F COAX TERMINALS AND THE SHELL.

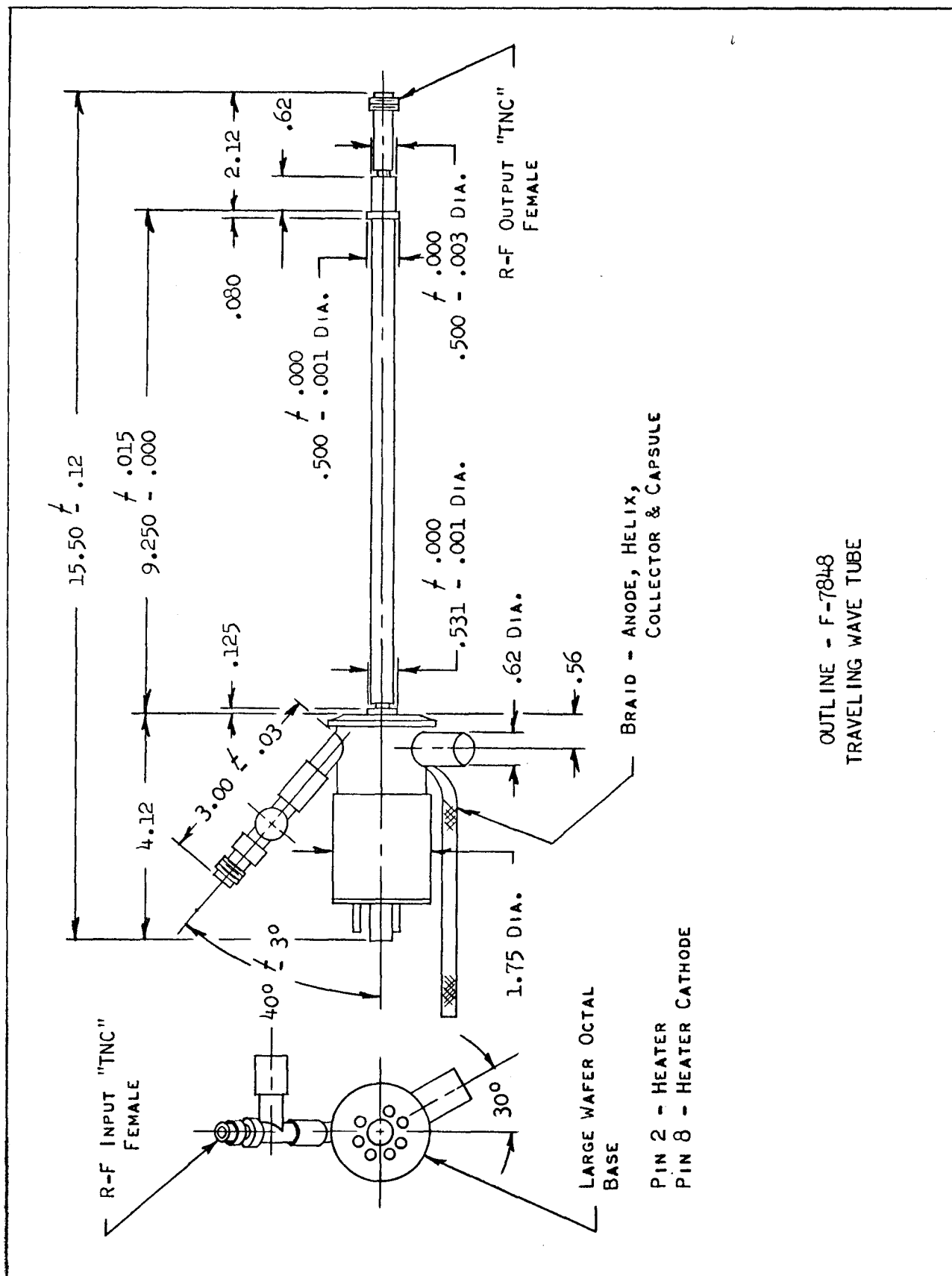
NOTE 3: CONDUCTION COOLING FOR THE COLLECTOR MUST BE PROVIDED BY A SUITABLE DEVICE.

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 MAGNETIC FIELD.
- (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 SECTION
ITT COMPONENTS DIVISION
POST OFFICE BOX 7065
ROANOKE, VIRGINIA



OUTLINE - F-7848
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