



EITEL-McCULLOUGH, INC.
SAN CARLOS, CALIFORNIA

X1059

TRAVELING WAVE TUBE

**4.0-8.0 Gc
2 WATT MIN.
38 db SMALL SIGNAL GAIN**

TENTATIVE DATA SHEET TRAVELING WAVE TUBE X1059

DESCRIPTION

The X1059 is a ruggedized, C-Band, octave bandwidth Traveling Wave Tube with metal-ceramic construction capable of operation under severe environments. Focusing is accomplished by a fully temperature compensated magnet array. This tube may be used in serrodyne applications.

ELECTRICAL SPECIFICATIONS:

Absolute Ratings	Maximum	Minimum
Filament Voltage	6.7	5.9 V
Filament Current	1.5	- A
Helix Current	7.0	- mAdc
Helix Voltage	+2600	- Vdc
Cathode Current	30.0	- mAdc
Control Grid Voltage	-150	0 Vdc
Anode Voltage	+200	0 Vdc
Anode Current	0.250	- mAdc
Duty Cycle	CW	
Beam Power Output	78	- W
Input Power, rf	20	- dbm
Power Reflected From Load	5	- W
Temperature, Body	+175	° C
Temperature, Collector	+175	° C
Ambient Temperature	+120	-54° C
Cathode Warm-Up	-	60 Seconds
Altitude	70,000	- ft

Operating and Performance Data

Filament Voltage	-	6.3 V
Filament Current	-	0.9 A
Helix Voltage	-	+2500 Vdc
Cathode Current	-	30 mAdc
Control Grid Voltage	-	0 Vdc
Control Grid Current	-	0 mAdc
Anode Voltage	-	0 to 200 Vdc
Anode Current	-	0.250 mAdc
Serrodyne Voltage	-	105-115 Vdc
Duty Cycle	-	CW
Frequency Range	-	4.0-8.0 Gc
Small Signal Gain	--Minimum	33 db
	--Typical	38 db
Saturated Power Out	--Minimum	2 W
	--Typical	3 W
Output VSWR (Cold)	-	2.5:1
Input VSWR (Cold)	-	2.0:1
Input and Output Impedance	-	50 ohms

ENVIRONMENTAL SPECIFICATIONS:

The X1059 conforms to MIL-E-5400

Vibration	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10 g's to 2000 cps
Shock	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15 g's (11 ± 1 msec)
Temperature	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-54°C to +120°C
Altitude	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	70,000 Ft.

MECHANICAL SPECIFICATIONS:

Operating Position	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Any
Input Coupling, rf	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Type TNC Coaxial Fitting
Output Coupling, rf	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Type TNC Coaxial Fitting
Focusing	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	PPM
Cooling	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Passive Heat Sink
Dimensions	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	See Outline Drawing
Weight	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4 Pounds
H. V. Leads	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#22 AWG Teflon Ins. Flying Leads

APPLICATION NOTES:

ALL VOLTAGES ARE WITH RESPECT TO CATHODE.

COOLING: The X1059 is designed to be heat sink cooled. Under environmental conditions normally encountered in military equipments, additional cooling is not required.

FILAMENT: The heater voltage should be maintained within $\pm 5\%$ of the rated value of 6.3 volts if variations of performance are to be minimized and best tube life obtained.

CONTROL GRID: The control grid is a high mu control electrode. Normal operation is obtained at zero volts, eliminating the need for an additional control power supply. However, in pulse applications the grid may be used to gate the tube on and off.

SERRODYNE: The helix is isolated from the tube body allowing serrodyne operation for frequency translation applications. The cathode voltage should be maintained within $\pm 1\%$ to insure rated performance.

THIS DATA SHOULD NOT BE USED FOR FINAL EQUIPMENT DESIGN.

