

EITEL-McCULLOUGH, INC.  
SAN CARLOS, CALIFORNIA

TENTATIVE DATA

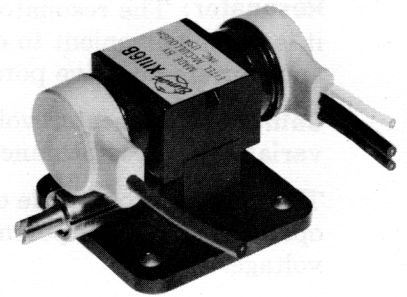
**X1116B**

X BAND  
REFLEX KLYSTRON

**TYPICAL PERFORMANCE**

**ELECTRICAL PERFORMANCE**

Frequency range	11.7 to 12.2 Gc
Mechanically tunable	500 Mc
Power output	30 mW
Electronic tuning range (3 db bandwidth)	40 Mc
Resonator voltage	300 Vdc
Cathode current	25 mA dc
Repeller voltage	-100 Vdc
Modulation sensitivity	2.5 Mc/V
Heater voltage	6.3 V (ac or dc) ±5%
Heater current	1.0 A max.
Mode	6 <sup>3</sup> / <sub>4</sub>
VSWR of load	1.2:1 max.
Temperature coefficient	±150 Kc/°C
Warm-up time	30 sec.



**MAXIMUM RATINGS**

Resonator voltage	425 Vdc
Cathode current	45 mA
Repeller voltage:	
Negative with respect to cathode	-25 to -400 Vdc

NOTE: Damage to the tube may occur if maximum ratings are exceeded.

**MECHANICAL**

Operating position	any
Electrical connections	flexible leads
RF output coupling	WR-75 wave-guide flange
Cooling required	conduction or convection
Net weight	4 <sup>1</sup> / <sub>2</sub> oz.
Shipping weight (approximate)	4 lbs.

**ENVIRONMENTAL PERFORMANCE**

Temperature range	-50 to +100 °C
Altitude	100,000 ft. max.
Vibration	10G, 20 to 2000 cps
Shock	40G, 11 ms

**OUTLINE DIMENSIONS**

Height	1.4 in.
Width	1.5 in.
Length	2.5 in.

## APPLICATION

NOTE: All voltages referred to cathode.

**Cooling:** At sea level this tube will not require forced air cooling when operated at its maximum rated dissipation with an ambient temperature less than 125° Centigrade. The waveguide flange connection will normally provide the required heat sink for conduction cooling. If an insulator is used between the tube and waveguide for DC isolation, forced air cooling may be required to maintain the ceramic-to-metal seal temperatures below the maximum rating of 150° Centigrade.

**Resonator:** The resonator of the X1116B is integral with the body of the klystron. For this reason it is often convenient to operate the resonator at chassis potential, with the repeller and cathode at appropriate negative potentials.

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

The heater and cathode of the X1116B are internally connected. When the resonator of this tube is operated at chassis potential, the heater transformer must be insulated for the cathode-to-resonator voltage.

**Mechanical Tuning:** In the X1116B a fixed-tuned inner cavity is closely coupled through a ceramic window to a secondary cavity outside the vacuum. Mechanical tuning is accomplished by a capacitive slug in the secondary cavity with a tuning rate of approximately 150 megacycles per turn. This design allows repeated tuner cycling without damaging the vacuum seals. The maximum tuner torque is 40 inch-ounces.

A clockwise rotation of the tuner will produce a decrease in frequency.

