

These ratings represent those of current samples of this type. Refer to the Objective Technical Information sheet for design-objective ratings.

This technical information is proprietary and is furnished only as a service to customers.

ZM-3166

TRAVELING-WAVE TUBE

10 Watts CW Output

25 db Saturation Gain

13,000-17,000 Megacycles

Electromagnet

The ZM-3166 is a ruggedized, medium-power, broadband traveling-wave tube for use in the 13,000-to-17,000-megacycle frequency range. It has a saturation gain greater than 25 decibels across the entire band and a CW output of 10 watts.

The tube is of metal-and-ceramic construction and is supplied as a complete packaged assembly which includes the focusing electromagnet, tube, and housing. The entire assembly weighs approximately 20 pounds.

The broad bandwidth, high gain, freedom from tuning adjustments, grid control, and rugged construction make this tube particularly useful in military systems. Applications include CW amplification in radar, electronic countermeasures equipment, microwave relay systems, and radiometry.

Unless otherwise noted, voltages are with respect to the anode which is connected to the solenoid housing and the body of the tube. These parts of the tube should be grounded.

	Minimum	Bogey	Maximum	
ELECTRICAL				
Frequency*	13,000	—	17,000	Megacycles
Heater				
Voltage †	—	6.3	—	Volts
Current	—	0.65	—	Amperes
Focusing Method — Electromagnet				
Saturation Gain	25	30	—	Decibels
Small Signal Gain	34	—	—	Decibels
Saturation Power Output, CW	10	10	—	Watts
Collector Dissipation	—	—	250	Watts
Collector Voltage	—	—	—	
Waveguide VSWR				
Input	—	—	3.0 to 1	
Output	—	—	3.0 to 1	
MECHANICAL				
Mounting Position — Any				
Over-all Dimensions, approximate				
Length			11.0	Inches
Diameter			4.5	Inches
Connectors				
RF Input — UG-419/U				
RF Output — UG-419/U				
Cathode-heater, Heater, Focusing Electrode, Helix, Collector — Flying Leads				
Weight, Tube and Electromagnet, approximate			20	Pounds

THERMAL

Cooling - Liquid**

Flow Rate, minimum (Coolant 50 C or less)	1	Gallon per Minute
Pressure Drop	30-40	Pounds per Square Inch Gage

TYPICAL OPERATING CONDITIONS

	Minimum	Bogey	Maximum	
Cathode Voltage ‡	-4200	-3900	-3700	Volts
Focusing Electrode Voltage, with Respect to Cathode				
Operating †	-15	-5	0	Volts
Cutoff	-500	-450	-400	Volts
Collector Voltage	0	0	0	Volts
Cathode Current	50	55	65	Milliamperes
Solenoid				
Voltage #	-	85	-	Volts
Current †	5.5	7.0	8.0	Amperes
Helix				
Voltage.	-	-	-	
Current ¶	-	0.3	4.0	Milliamperes

*The power-output and gain curves indicate performance possible at rated bandwidth. Increased performance can be obtained under narrow-band operation. For further information consult your nearest Power Tube Department sales office.

† For the bogey performance ratings specified on this sheet, these parameters should be set at the particular value specified in the instructions accompanying each tube. The value specified will be within the range given above. The specific value of heater voltage should be held within plus or minus five percent.

‡ The cathode voltage may be set at various values between -3700 and -4200 volts to obtain different power and gain characteristics.

Coolanol *45 or equivalent. Tubes for water cooling can be supplied on special order.

#Solenoid voltage depends upon coolant temperature.

¶ Since current in excess of the maximum will seriously damage the tube an overcurrent device should be provided for protection.

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