

DESCRIPTION

The VC-766A is a low-power, tunable reflex klystron intended for use as a rugged local oscillator in airborne radar or other systems where small size, light weight, and high frequency stability are required. This conduction cooled tube delivers a power output of at least 15 milliwatts in the frequency range of 10.035 to 10.635 gigahertz. It provides excellent reliability and long operating life under severe environmental conditions.

MAXIMUM RATINGS¹

Resonator Voltage	400 Vdc
Resonator Current	40 mAdc
Reflector Voltage ²	-500 Vdc
Heater Voltage	7.0 V

GENERAL CHARACTERISTICS³

ELECTRICAL

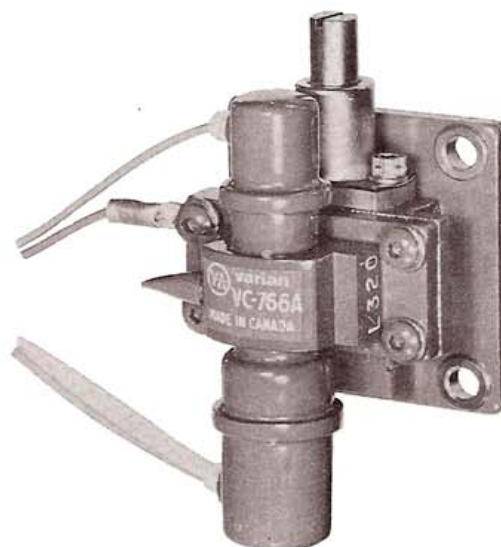
Frequency Coverage ...	10.035 - 10.635 GHz
Power Output, min	15 mW
Heater Voltage	6.3 V
Heater Current, typ	1.17 A
Warm-up Time, min	120 s

ENVIRONMENTAL

Altitude, max	55,000 ft
Envelope Temperature, max	200 °C
Temperature Coefficient	
TA = -58 to +72°C, max	+50, -100 kHz/°C
Frequency Deviation	
Vibration, 20 to 1000 Hz, max	400 kHz (p-p)

TYPICAL OPERATING CONDITIONS³

Frequency	10.335 GHz
Power Output, matched load	45 mW
Resonator Voltage	300 Vdc
Resonator Current	30 mAdc
Reflector Voltage ²	-120 Vdc
Reflector Modulation Sensitivity ..	< 1 MHz/V
Electronic Tuning Range ⁴	45 MHz



PHYSICAL

Dimensions	See Outline Drawing
Weight, approx	140 g, 5 oz
Mounting Position	Any
Cooling	Conduction
RF Output Flange ..	Mates with UG-39/U Flange on WR 90 Waveguide
Supply Connections	Molded Flexible Leads

RANGE VALUES FOR EQUIPMENT DESIGN⁵

	Min	Max
Power Output	15	60 mW
Resonator Voltage	--	300 Vdc
Resonator Current	--	35 mAdc
Reflector Voltage ²	-90	-160 Vdc
Heater Voltage	5.7	7.0 V
Heater Current, at 6.3 V ..	1.08	1.32 A

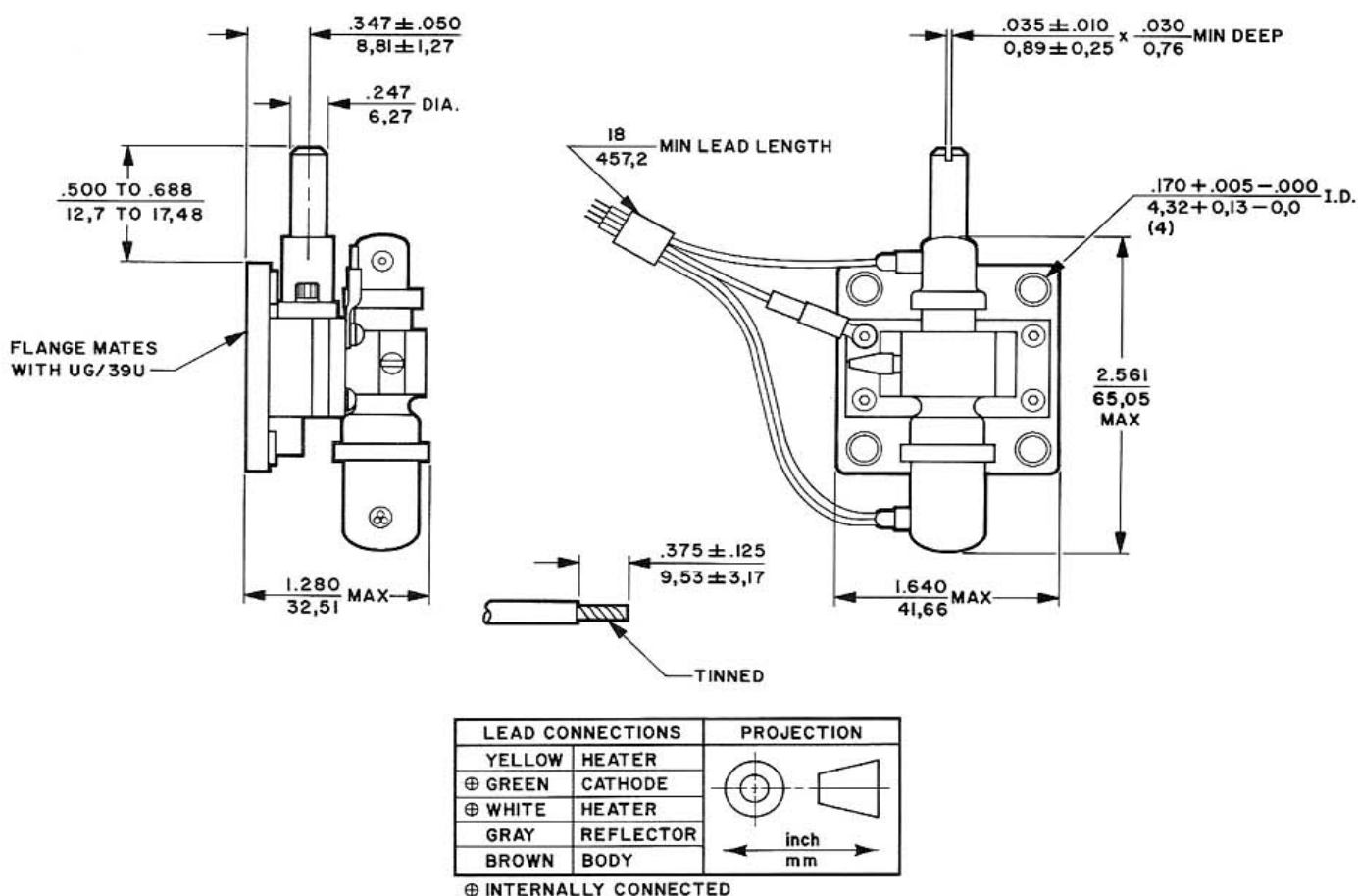
NOTES:

1. Ratings should not be exceeded under continuous or transient conditions. Simultaneous operation at more than one rating may not be possible. Equipment design should limit voltage and environmental variations so that no ratings will ever be exceeded.
2. The reflector must always be at least 20 volts negative with respect to the cathode.
3. Characteristics and operating values are based on per-

formance tests. These figures may change without notice as a result of additional performance data or product refinement. Consult Varian Associates of Canada Ltd. before using this information for equipment design.

4. The electronic tuning range is measured between the half-power points.
5. These values are acceptance limits for this tube. Equipment design should allow for these variations.

OUTLINE DRAWING



OPERATING HAZARDS

Read the following and take all necessary precautions to protect personnel. Safe operating conditions are the responsibility of the equipment designer and the user.

High Voltage. This tube operates at voltages which can be deadly. Equipment must be designed so personnel cannot come in contact with operating voltages. Enclose high-voltage circuits and terminals and provide fail-safe interlocking switch circuits to open the primary circuits of the power supply and to discharge high-voltage condensers whenever access is required.

Microwave Radiation. Exposure of the human body to microwave radiation in excess of 1 milliwatt per

square centimeter is unsafe and can result in blindness or other injury. Personnel must be fully protected from the microwave energy which radiates from this device. All output r-f connections, waveguide flanges, and gaskets must be r-f leakproof and properly engaged. Never operate this device without a microwave-energy-absorbing load attached. Personnel must be prevented from looking into open waveguides or antennas while such a device is energized. (Ref. Proc. IRE, Vol. 49, No. 2, pp. 427-447, Feb. 1961).

Equipment must be designed to fully safeguard all personnel from these hazards. Labels and caution notices must be provided on equipment and in manuals clearly warning of those hazards which cannot be avoided.