



varian
eastern tube division

TECHNICAL DATA

BLK-829

REFLEX KLYSTRON

8.8 GHz

DESCRIPTION

The BLK-829 is a fixed-frequency, trimmable reflex klystron for use primarily in commercial-airline doppler radars, such as the Bendix DRA-12. It is also an ideal oscillator for compact missile, shipboard, and ground-based radar equipment. This tube is a direct replacement for the SRX-4597. The BLK-829 delivers a CW output of at least 450 milliwatts at 8.8 gigahertz. Its special design provides the long life, reliability and consistent performance demanded by commercial airlines. Operating life expectancy is greater than 3000 hours.

MAXIMUM RATINGS¹

Resonator Voltage	550 Vdc
Cathode Current	75 mA _{dc}
Reflector Voltage ²	-1000 Vdc
Body Temperature	200 °C
Altitude	Unlimited

GENERAL CHARACTERISTICS³

ELECTRICAL

Frequency, fixed	8.8 GHz
Trimmable Range	±20 MHz
Power Output, minimum	450 mW
Heater Voltage	6.3 ± 0.6 V
Heater Current, typical	0.95 A

PHYSICAL

Dimensions	See Outline Drawing
Weight, approximate	6 oz
Mounting Position	Any
Cooling	Forced Air
RF Output Flange	Mates with UG-39/U or UG-40/U Flange
Supply Connections	Molded Flexible Leads

ENVIRONMENTAL

Temperature Coefficient, maximum	
TA = -50 to +65 °C	±40 kHz/°C
Shock, 10 ms	15 G

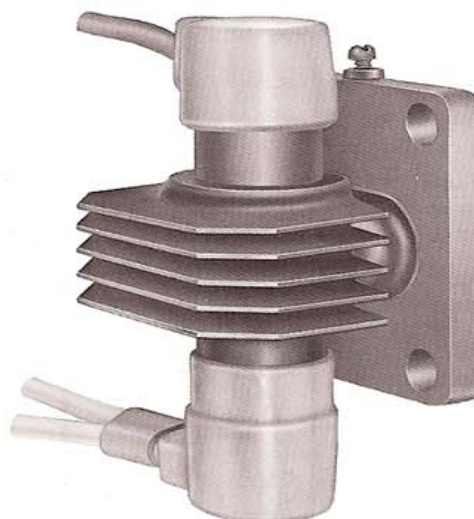
Frequency Deviation, maximum	
Vibration, 20 to 2000 Hz, 5 G ..	50 kHz(p-p)
Reflector Current,	
F = 60 Hz, 10 G	10 μA _{dc}

TYPICAL OPERATING CONDITIONS³

Frequency	8.8 GHz
Power Output, matched load	650 mW
Resonator Voltage	500 Vdc
Cathode Current	40 mA _{dc}
Reflector Voltage ²	-300 Vdc
Reflector Voltage	
Modulation Coefficient	0.95 MHz/V
Electronic Tuning Range ⁴	32 MHz

RANGE VALUES FOR EQUIPMENT DESIGN⁵

	Min	Max
Power Output	450	--- mW
Resonator Voltage	---	550 Vdc
Cathode Current	---	75 mA _{dc}
Reflector Voltage ²	-20	-1000 Vdc
Reflector Voltage		
Modulation Coefficient	0.75	1.25 MHz/V
Heater Current, at 6.3 V	0.85	1.32 A

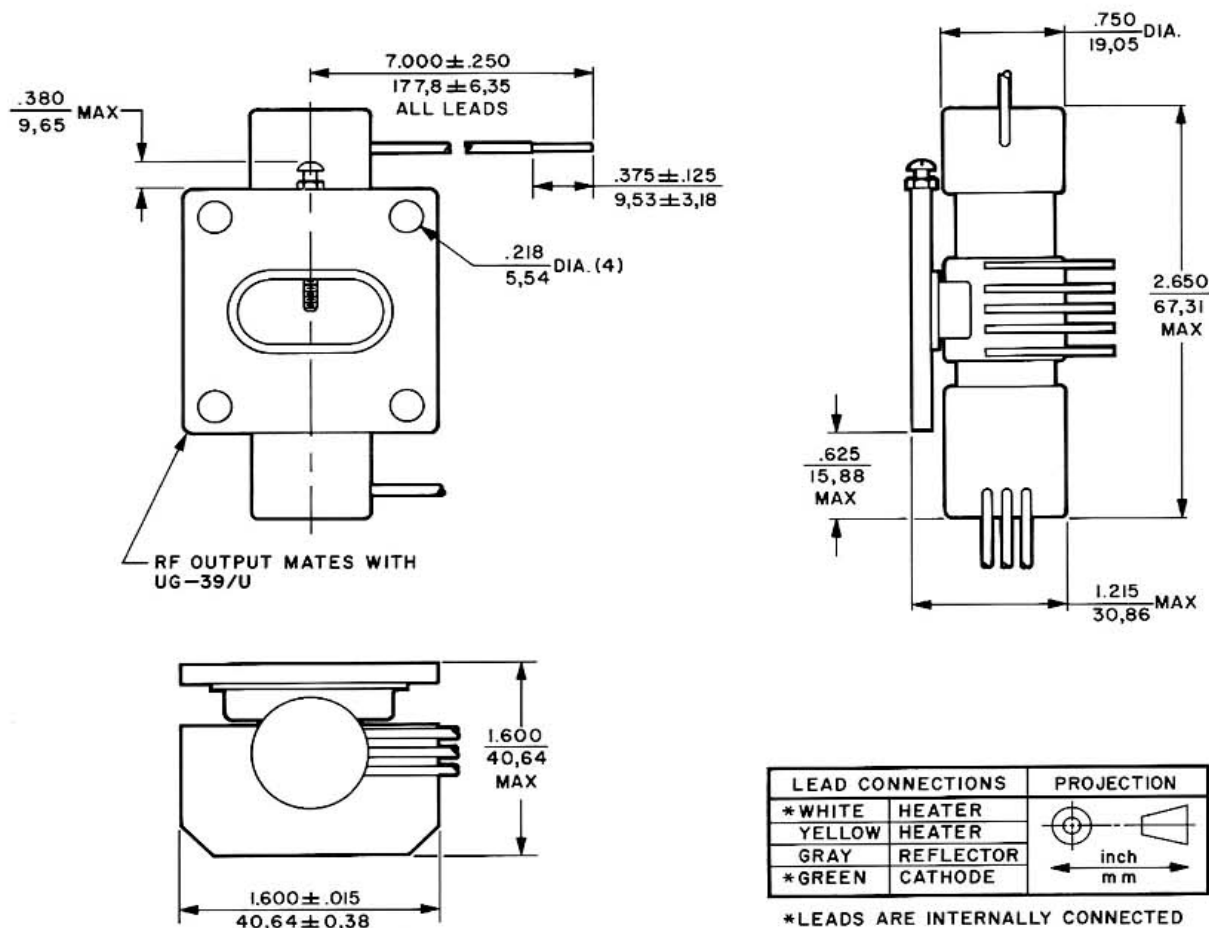


BLK-829

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 performance tests. These figures may change without notice as the result of additional data or product refinement. Consult the Eastern Tube Division before using this information for equipment design.
4. The electronic tuning range is measured 1 dB below the maximum power output level.
5. These values are acceptance limits for the BLK-829. 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.