

GL-7399 TETRODE

**PULSED SERVICE
 GROUNDED-GRID OPERATION**

**FORCED-AIR COOLED
 METAL AND CERAMIC**

INTEGRAL RADIATOR

The GL-7399 is a small-size, four-electrode transmitting tube especially designed for pulsed-amplifier or -oscillator service at L-band frequencies. This tetrode is particularly well suited for use in airborne or ground-based radar equipment.

The tube is capable of providing useful output at frequencies up to approximately 1500 megacycles.

Features of the GL-7399 include long

life and reliability, long pulse width, high peak power and high gain, broad-banding capability, and resistance to shock and vibration.

These together with such design factors as an oxide-coated cathode, coaxial elements, and metal-ceramic construction make the tube well adapted to application in modern systems where performance and reliability are important.

Electrical				Thermal				
	Mini- mum	Bogey mum	Maxi- mum					
Heater Voltage (See Note 1).....	—	6.3	6.8	Cooling—Forced Air† Radiator§				
Heater Current.....		5.6		Plate Dissipation.....	500	400	300	Watts
Amplification.....				Air Flow, 45 C incoming air temperature.....	17.0	12.0	6.5	Min Cubic Feet per Minute
Factor, G ₂ to G ₁		10.5		Static Pressure, approximate anode at room tempera- ture.....	0.9	0.5	0.2	Inches-Water Max C
E _{a2} = 275 Volts DC, E _b = 1000 Volts DC, I _b = 200 Milliampères DC				Anode Hub Temperature▲.....			250	
Cathode Heating Time.....	1			Seals				
Direct Interelectrode Capacitances*				Screen and Control Grid, approximate.....			1	Cubic Foot per Minute
Cathode to Plate†.....		0.012		Heater and Cathode, ap- proximate.....			1	Cubic Foot per Minute
Input.....		24.0		Ceramic Temperature at any Point.....			200	Max C
Output.....		9.3						
Mechanical								
Mounting Position—Any								
Net Weight.....		1.0						

RADIO-FREQUENCY POWER AMPLIFIER—CLASS B

Maximum Ratings

Plate- and Screen-Grid Pulsed, 500 Megacycles	
DC Plate Voltage, during pulse.....	10 Kilovolts
DC Plate Current, during pulse.....	10 Amperes
DC Grid-No. 2 Voltage, during pulse.....	2000 Volts
DC Grid-No. 2 Input ♣.....	15 Watts
Plate Dissipation ♣.....	500 Watts
DC Grid-No. 1 Voltage, not pulsed.....	—175 Volts
DC Grid-No. 1 Current, during pulse.....	2.5 Amperes
Pulse Width ♥♦.....	15 Microseconds
Duty Factor ♥♠.....	0.0012

Typical Operation

Grounded-grid Circuit, 500 Megacycles	
DC Plate Voltage, during pulse.....	9 Kilovolts
DC Grid-No. 2 Voltage, during pulse.....	1400 Volts
DC Grid-No. 1 Voltage, not pulsed.....	—125 Volts
Peak RF Plate Voltage.....	7000 Volts
Peak RF Grid Voltage.....	300 Volts
DC Plate Current, during pulse.....	9.2 Amperes
DC Grid-No. 1 Current, during pulse.....	1.1 Amperes
DC Grid-No. 2 Current, during pulse.....	0.47 Amperes
Driving Power at Tube, during pulse.....	2.6 Kilowatts
Power Output, during pulse (useful).....	52 Kilowatts
Pulse Width ♦.....	15 Microseconds
Duty Factor.....	0.001

Note 1: Because the temperature of the cathode is increased by back bombardment of electrons at UHF, required heater voltage for optimum life decreases with increasing frequency. The amount of heater-voltage reduction is dependent on operating conditions. However, this voltage should not be less than 5.5 volts.

GENERAL  ELECTRIC

Supersedes ET-T1598B dated 9-62

RADIO-FREQUENCY POWER AMPLIFIER—CLASS C

Maximum Ratings

Pulsed Drive, 1250 Megacycles	
DC Plate Voltage.....	5 Kilovolts
DC Plate Current, during pulse.....	6 Amperes
DC Grid-No. 2 Voltage.....	1.1 Kilovolts
DC Grid-No. 2 Input.....	5 Watts
DC Grid-No. 1 Voltage.....	-225 Volts
DC Grid-No. 1 Current.....	1.5 Amperes
Plate Dissipation.....	500 Watts
Pulse Width ♥♦.....	15 Microseconds
Duty Factor ♥♦♦.....	0.01

Typical Operation

Grounded-grid Circuit at 1100 Megacycles, $\frac{3}{4}\lambda$ Output Circuit	
DC Plate Voltage**.....	4.8 Kilovolts
DC Plate Current, during pulse.....	4.2 Amperes
DC Grid-No. 2 Voltage.....	1 Kilovolt
DC Grid-No. 2 Current, during pulse.....	100 Milliamperes
DC Grid-No. 1 Voltage.....	-200 Volts
DC Grid-No. 1 Current, during pulse.....	200 Milliamperes
Driving Power at Tube, during pulse.....	1.5 Kilowatts
Power Output, during pulse (useful).....	11 Kilowatts
Pulse Width♦.....	15 Microseconds
Duty Factor.....	0.01

* Control grid connected directly to screen grid.

† Complete external shielding between cathode and plate.

‡ Forced air cooling should be applied during the application of any voltages.

§ Provision must be made for unobstructed passage of cooling air between radiator fins, and between the anode terminal and adjacent fins.

▲ Measured at the base of the fin adjacent to the plate terminal. See outline drawing on page 4.

♣ Maximum average value.

♥ For applications that require longer pulses or higher duty refer to the tube manufacturer for recommendations.

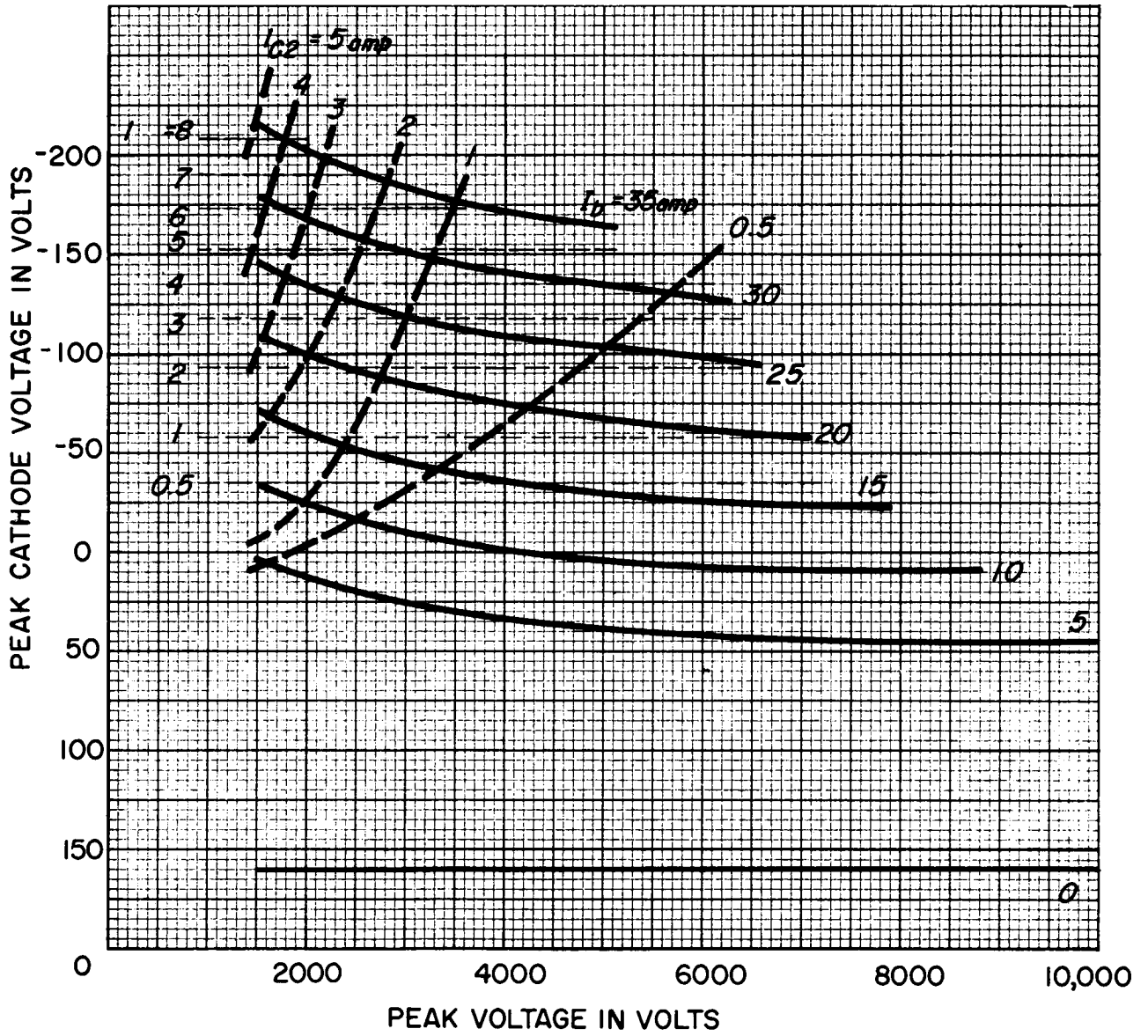
♦ Pulse duration measured between points at 70 percent of peak value. The peak value is defined as the maximum value of a smooth curve through the average of the fluctuations over the top portion of the pulse.

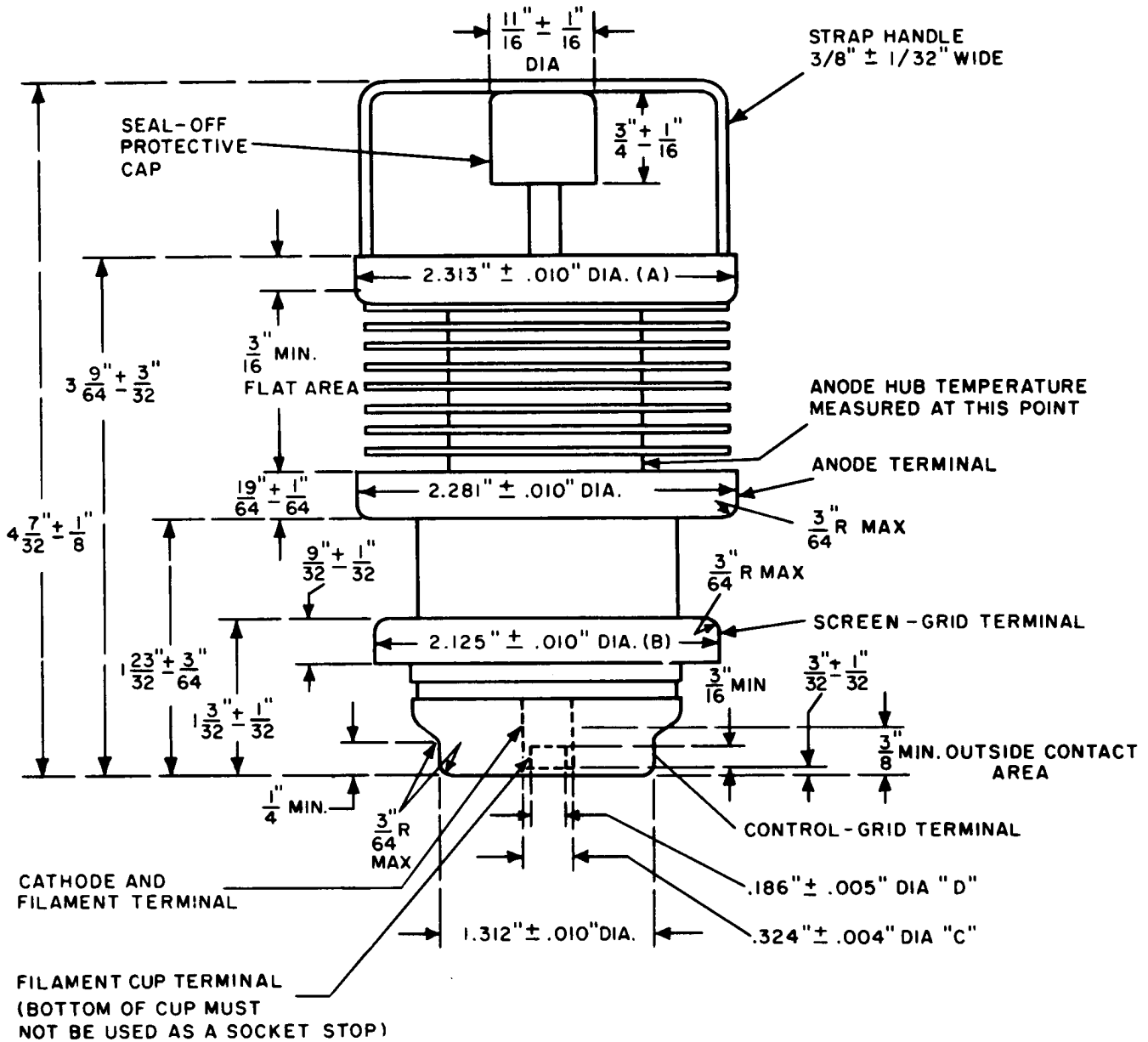
♠ Maximum ratio of on-time to elapsed time during any 12.5-millisecond period.

♢ Maximum ratio of on-time to elapsed time during any 1.5-millisecond period.

** A minimum surge-limiting resistance of 50 ohms must be placed between the plate of the tube and the B+ power supply at steady-state voltages greater than 3.5 kilovolts.

CONSTANT CURRENT CHARACTERISTIC
 GROUNDED-GRID OPERATION
 VOLTAGES MEASURED TO GROUND
 SCREEN VOLTAGE = 1400 VOLTS





CONCENTRICITIES

THE FOLLOWING TOTAL INDICATOR READINGS ARE MEASURED WITH RESPECT TO A CENTERLINE DETERMINED BY THE CENTERS OF THE ANODE TERMINAL AND CONTROL GRID TERMINAL

- DIAMETER A - 0.030 INCHES
- DIAMETER B - 0.016 INCHES
- DIAMETER C - 0.036 INCHES
- DIAMETER D - 0.042 INCHES

TOTAL INDICATOR READING OF FILAMENT CUP TERMINAL DIAMETER (D) MEASURED WITH RESPECT TO CENTER OF CATHODE AND FILAMENT TERMINAL
DIAMETER (C) - 0.016 INCHES

K-69087-72A578

TUBE DEPARTMENT

8-1-62

GENERAL  ELECTRIC

Owensboro, Kentucky

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