ELECTRONIC INNOVATIONS IN ACTION

TUBES

Tetrode

GL-51065

GRID-PULSED SERVICE
GROUNDED-GRID OPERATION

FORCED-AIR COOLED
METAL AND CERAMIC

The GL-51065 is a high-performance, forced-air cooled, metal-ceramic tetrode especially designed for grid-pulsed amplifier service (pulsed RF drive only) at L-band frequencies. This tetrode is particularly well suited for use in radar equipment such as advanced ground-based, ship-board or airborne IFF interrogators. It is capable of providing useful output at frequencies up to approximately 1500 megacycles.

Features of the GL-51065 include long life and reliability, high gain with pulsed RF drive only, long pulse width, and high-duty capability.

	Minimum	Bogey	Maximum	
Electrical				
Heater Voltage*	-	6.3	-	Volts
Heater Current	-	3.8	-	Amperes
Cathode Heating Time	1	-	-	Minute
Direct Interelectrode Capacitances**				
Cathode to Plate †	-	0.006	-	uμf
Input	-	20	-	uμf
Output	-	7.5	-	uμf

Mechanical		
Mounting Position		Any
Net Weight, approximate	13	Ounces

Thermal			
Cooling – Forced-Air‡			
Through Radiator, at Sea Level			
Plate Dissipation	600	400	Watts
Air Flow, 45 C Incoming Air Temperature, minimum	9	4.5	Cubic Feet per Minute
Static Pressure, approximate	0.5	0.2	Inches Water
Radiator Hub Temperature at Point Adjacent to Anode Seal, maximum§		250	C
Seals			
Screen and Control Grid, approximate		1	Cubic Feet per Minute
Heater and Cathode, approximate		1	Cubic Feet per Minute
Ceramic Temperature at Any Point, maximum		200	C

RADIO-FREQUENCY POWER AMPLIFIER

Maximum Ratings		
Pulsed Drive, 1250 Megacycles		
DC Plate Voltage	5	Kilovolts
DC Plate Current, during pulse	6	Amperes
DC Grid-No. 2 Voltage	1	Kilovolt
DC Grid-No. 2 Input	5	Watts
DC Grid-No. 1 Voltage	-200	Volts
Plate Dissipation	600	Watts
Pulse Width ◊	10	Microseconds
Duty Factor ø	0.01	

RADIO-FREQUENCY POWER AMPLIFIER (CONT'D)

Typical Operation

Grounded-Grid Service at 1030 Megacycles, 1/4λ Output Circuit

DC Plate Voltage ØØ	4.5	3.5	Kilovolts
DC Plate Current, during pulse	5.3	3.0	Amperes
DC Grid-No. 2 Voltage	750	750	Volts
DC Grid-No. 2 Current, during pulse	0.110	0.065	Amperes
DC Grid-No. 1 Voltage, approximate	-115	-75	Volts
DC Grid-No. 1 Current, during pulse	0.850	0.400	Amperes
Driving Power at the Tube, during pulse	1.5	0.5	Kilowatts
Power Output, during pulse (useful)	11.0	4.5	Kilowatts
Pulse Width	10	10	Microseconds
Duty Factor	0.01	0.03	

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* Under the typical operating conditions shown the filament voltage should be reduced to approximately 6.0 volts because of back-heating resulting from transit time effects.

** 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.

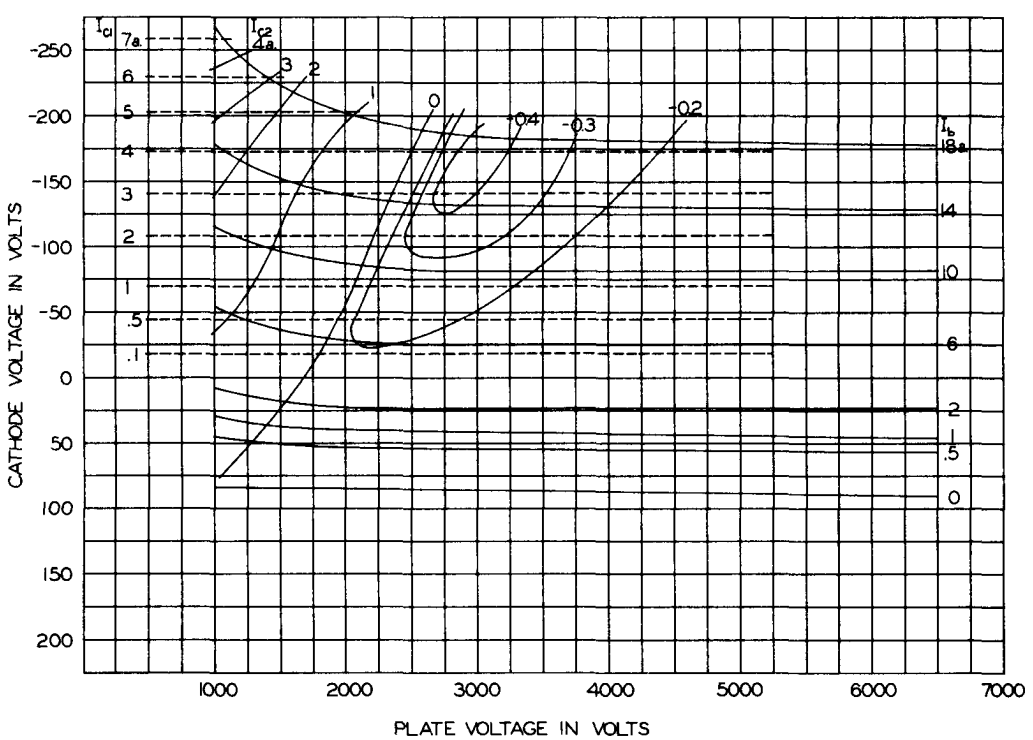
§ Provision must be made for unobstructed passage of cooling air to limit the anode hub temperature to the value specified.

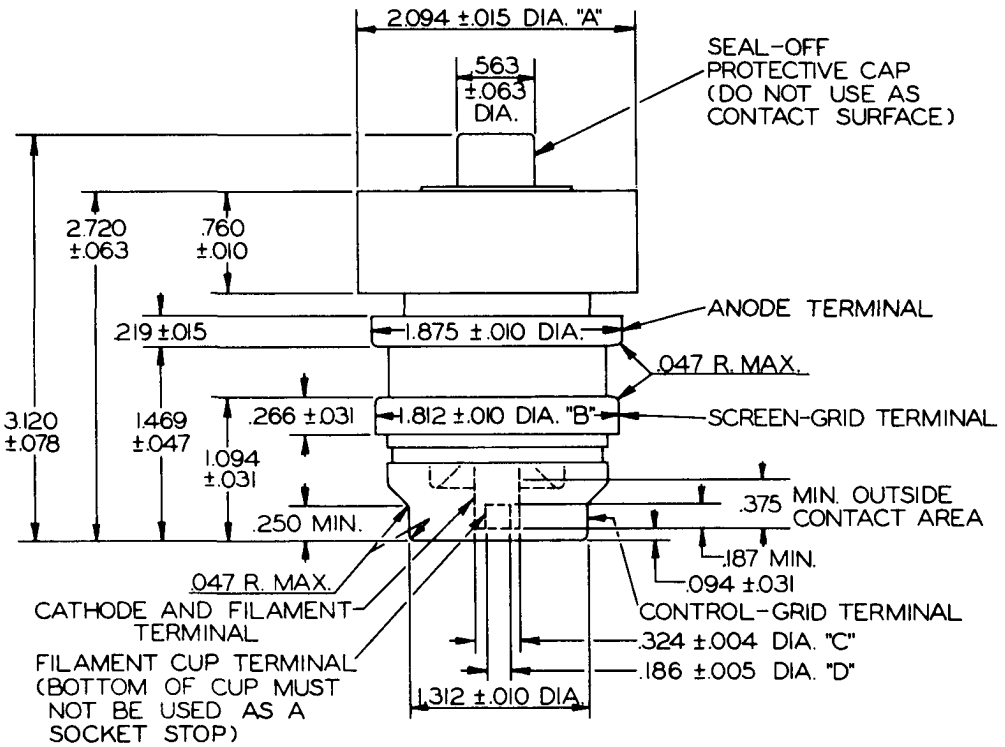
◊ Pulse duration is measured between points at 70 percent of the peak value. The peak value is defined as the maximum value of a smooth curve through the average of the fluctuations over the top portion of the pulse.

Ø Maximum ratio of on-time to elapsed time during any 1-millisecond period. Higher duty may be allowed with lower tube input as indicated under typical operation at 0.03 duty. For applications that require longer pulses or higher duty refer to the tube manufacturer for recommendations.

ØØ 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
SCREEN VOLTAGE = 1000 VOLTS
ALL VOLTAGES REFERENCED TO CONTROL GRID





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.