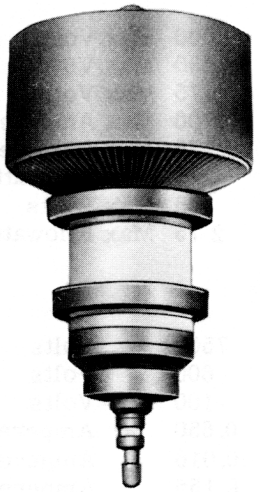
Tetrode

GL-51064



VHF-UHF METAL CERAMIC TETRODE
4 KILOWATTS USEFUL CW OUTPUT
750 WATTS CLASS B LINEAR OUTPUT
FORCED AIR COOLED
INTEGRAL RADIATOR
THORIATED-TUNGSTEN CATHODE

The GL-51064 is a forced-air cooled power tetrode that delivers useful output to approximately 1250 megacycles. This tube is particularly suitable for application as an AM or FM power amplifier in the final output or driver stage of VHF-UHF military communications systems.

The tube features high power gain, as much as 14 db, while delivering up to 4000 watts of useful CW power as a grounded-grid Class C amplifier at 400 megacycles. An output capacitance of only 6.0 $\mu\mu$f, which is significantly low for a tube of its power handling capability, makes the GL-51064 well suited for application in equipments requiring broad electronic bandwidth.

Other features include metal-ceramic construction, a high efficiency axial flow radiator capable of dissipating 2750 watts, and an indirectly heated thoriated tungsten cathode.

Electrical

	Minimum	Bogey	Maximum	
Heater Voltage *	...	5.7	...	Volts
Heater Current at 5.7 Volts	22	24	26	Amperes
Heater Starting Current	...	...	36	Amperes
Heater Cold Resistance	...	0.02	...	Ohms
Cathode Heating Time	1	...	...	Minute
Amplification Factor, G_2 to G_1 Eb = 2000 Volts, I_b = 0.200 Ampere, E_{c2} = 475 Volts	12	17	22	
Direct Interelectrode Capacitances				
Cathode to Plate ‡	...	...	0.006	$\mu\mu$f
Input, G_2 tied to G_1	15.5	17.0	18.5	$\mu\mu$f
Output, G_2 tied to G_1 §	...	6.0	...	$\mu\mu$f

Mechanical

Mounting Position		Vertical
Net Weight, approximate	5.0	Pounds

Thermal

Cooling-Forced Air ¶
Through Radiator, at Sea Level

Plate Dissipation	Air Flow	Static Pressure
2.75 Kilowatts	140 Min CFM	1.9 Inches Water
2.0 Kilowatts	90 Min CFM	0.8 Inches Water
1.5 Kilowatts	55 Min CFM	0.4 Inches Water

Seals	
Screen-Grid to Control-Grid	4 Min CFM
Heater-to-Cathode	8 Min CFM
Anode to Screen-Grid Ceramic Insulator	6 Min CFM
Incoming Air Temperature	25 Max C
Radiator Hub Temperature (Adjacent to Anode Seal)	180 Max C
Temperature at Any Other Point	200 Max C

Forced-air cooling to be applied before and during the application of any voltages. Forced-air cooling must be maintained for one minute after the removal of all voltages.

RADIO-FREQUENCY POWER AMPLIFIER AND OSCILLATOR – CLASS C

Maximum Ratings, Absolute Values	420 mcs	1000 mcs	
DC Plate Voltage	8000	6000	Max Volts
DC Grid-No. 2 Voltage	650	650	Max Volts
DC Grid-No. 1 Voltage	-175	-175	Max Volts
DC Plate Current	0.700	0.700	Max Amperes
DC Grid-No. 1 Current	0.175	0.175	Max Amperes
Plate Input	5.6	4.2	Max Kilowatts
Grid-No. 2 Input	25	25	Max Watts
Plate Dissipation	2.75	2.75	Max Kilowatts

Typical Operation – Grounded-Grid Circuit @ 400 mcs			
DC Plate Voltage	5500	7500	Volts
DC Grid-No. 2 Voltage	600	600	Volts
DC Grid-No. 1 Voltage	-100	-100	Volts
DC Plate Current	0.450	0.650	Amperes
DC Grid-No. 2 Current	0.012	0.016	Amperes
DC Grid-No. 1 Current	0.085	0.155	Amperes
Driving Power, approx	90	150	Watts
Power Output, useful ø	2000	4000	Watts
Power Gain, approx	13.5	14.3	db

RADIO-FREQUENCY POWER AMPLIFIER – CLASS B LINEAR SERVICE

Maximum Ratings at 420 Megacycles, Absolute Values		
DC Plate Voltage	8000	Max Volts
DC Grid-No. 2 Voltage	650	Max Volts
DC Plate Current	585	Max Milliamperes
Plate Input	4150	Max Watts
Grid-No. 2 Input	16	Max Watts
Plate Dissipation	2750	Max Watts

Typical Operation at 400 Mcs, Carrier Conditions for Maximum Modulation Factor of 1.0		
DC Plate Voltage	7500	Volts
DC Grid-No. 2 Voltage	600	Volts
DC Grid-No. 1 Voltage, approx	-50	Volts
DC Plate Current	330	Milliamperes
DC Grid-No. 2 Current	5	Milliamperes
DC Grid-No. 1 Current	30	Milliamperes
Driving Power, approx	17.5	Watts
Power Output, useful ø	750	Watts
Power Gain, approx	16	db

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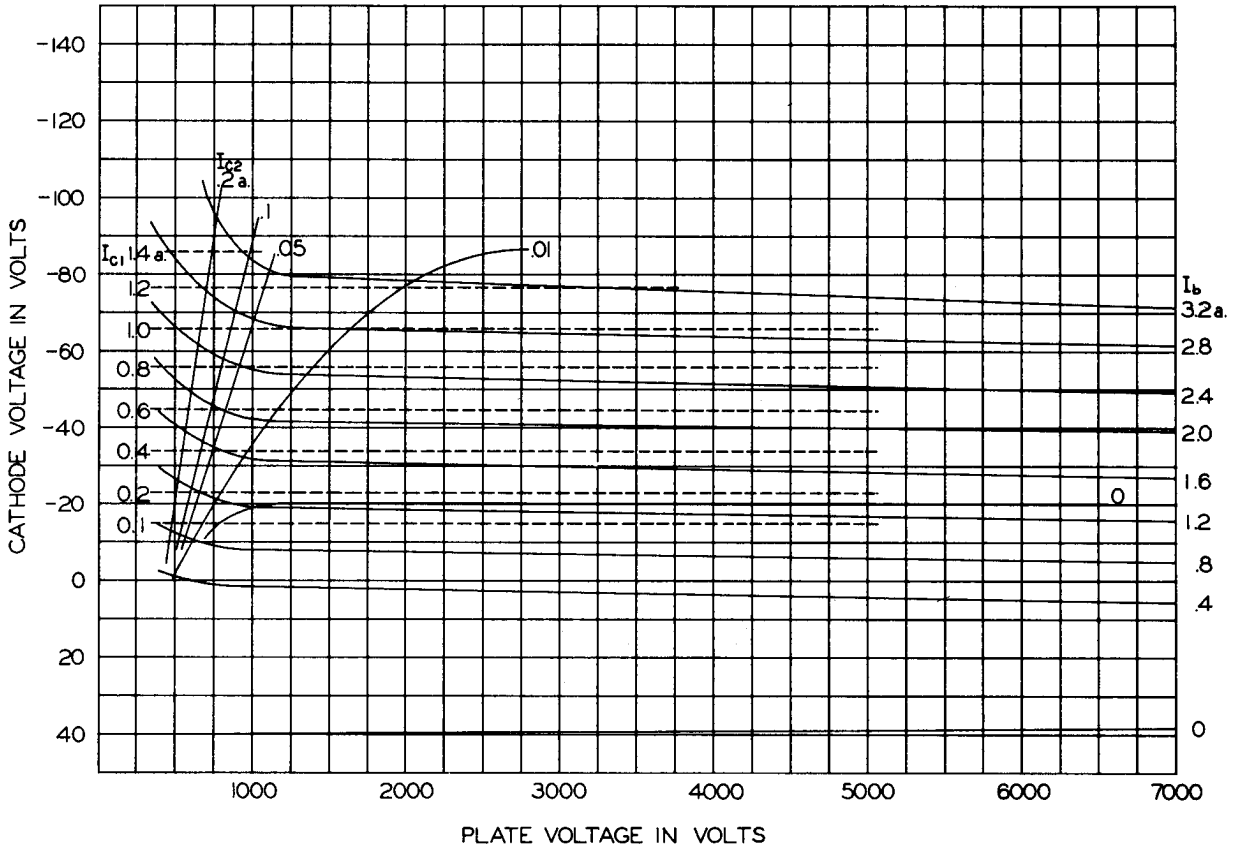
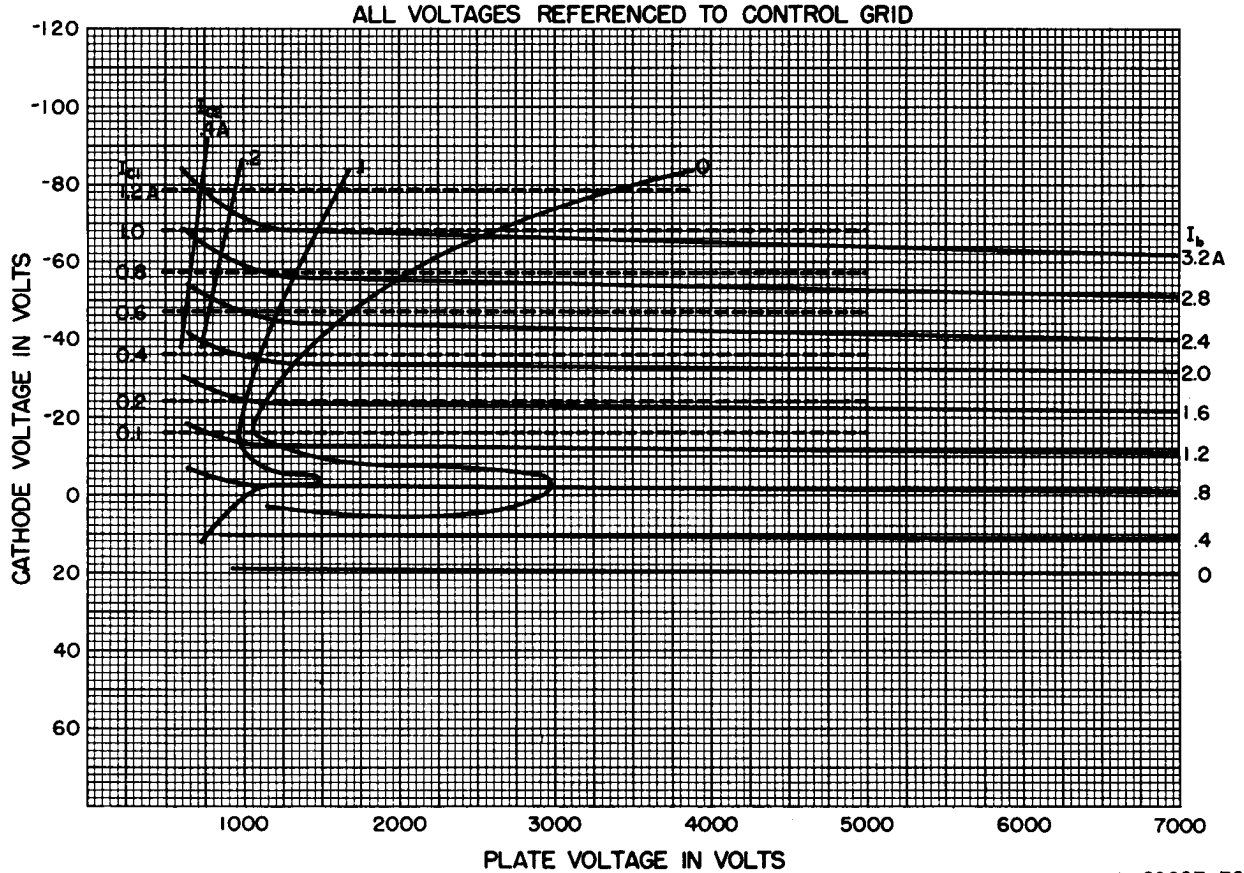
* Because the temperature of the cathode is increased by back bombardment of electrons at UHF, required heater voltage for optimum life decreases with increasing frequency. The amount of heater voltage reduction is dependent on operating conditions.

‡ Measured with complete external shielding between cathode and anode.
§ Output capacitance measured between anode and screen grid. Control grid connected directly to screen grid.
¶ The volume of cooling air indicated for the various seals is for sea-level conditions and approximate only. Distribution of cooling air will vary with the cavity configuration about the tube. For most satisfactory operation the maximum temperature of any point on the tube should be below specified limits.
ø Useful power output including power transferred from driver stage.

CONSTANT CURRENT CHARACTERISTIC
SCREEN VOLTAGE = 500 VOLTS
ALL VOLTAGES REFERENCED TO CONTROL GRID



CONSTANT CURRENT CHARACTERISTIC
SCREEN VOLTAGE = 650 VOLTS
ALL VOLTAGES REFERENCED TO CONTROL GRID



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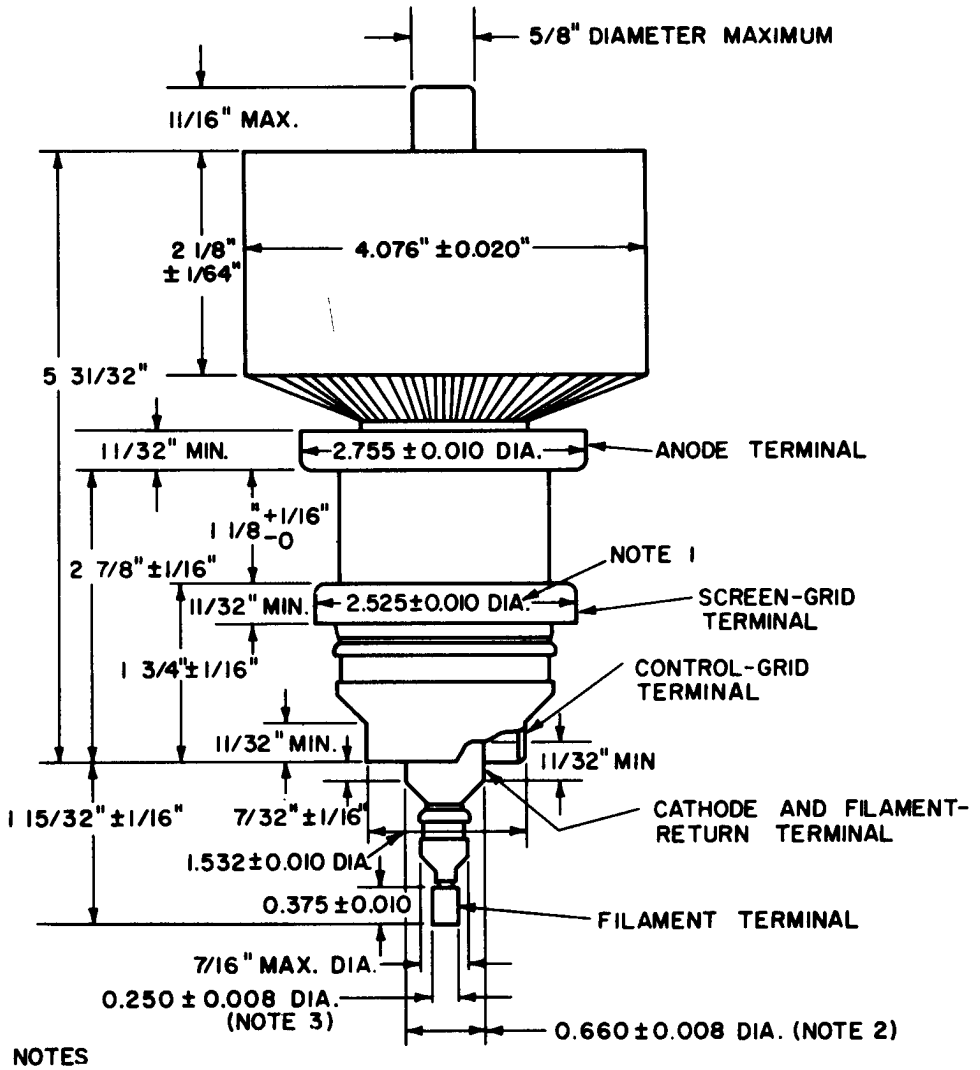

NOTES
1. MAXIMUM ECCENTRICITY 0.010
2. MAXIMUM ECCENTRICITY 0.015
3. MAXIMUM ECCENTRICITY 0.030
WITH RESPECT TO CENTERLINE DETERMINED BY CENTERS OF ANODE TERMINAL AND CONTROL-GRID TERMINAL

TUBE DEPARTMENT
GENERAL ELECTRIC
Schenectady, N. Y. 12305