

# THYRATRON

## DESCRIPTION

The GL-5727 is a miniature, four-electrode, inert-gas-filled thyatron with negative control characteristics which is suitable for use in relay and grid-controlled-rectifier applications. Operating characteristics of the tube include a high-control ratio essentially independent of temperature over a wide range, low grid-anode capacitance, and very low

grid current. The GL-5727 is specially designed to assure dependable life and reliable service under the exacting conditions encountered in mobile and aircraft applications. Features include a high degree of mechanical strength and a heater-cathode construction designed to withstand many-thousand cycles of intermittent operation.

## TECHNICAL INFORMATION

### GENERAL

#### Electrical Data

	Minimum	Bogey	Maximum
Heater Voltage	5.7	6.3	6.9 Volts
Heater Current, $E_f = 6.3$ volts		0.60	0.66 Ampere
Cathode Heating Time	10		Seconds
Anode-to-Control-Grid Capacitance		0.026	uuf
Control-Grid to Cathode and Shield-Grid Capacitance		2.4	uuf
Deionization Time, approximate			
$E_{bb} = 125$ volts d-c, $I_b = 0.1$ ampere d-c			Microseconds
$E_{c1} = -100$ volts d-c		35	Microseconds
$E_{c1} = -11$ volts d-c		75	Microseconds
Ionization Time, approximate		0.5	Microseconds
Anode Voltage Drop		8	Volts
Critical Grid Current, $E_{bb} = 460$ volts rms		0.5	Microampere



**TECHNICAL INFORMATION (CONT'D)**

**Mechanical Data**

Type of Cooling—Air  
 Mounting Position—Any  
 Net Weight, maximum . . . . . 0.3 Ounce

**MAXIMUM RATINGS, Absolute Values**

**GRID-CONTROLLED RECTIFIER SERVICE**

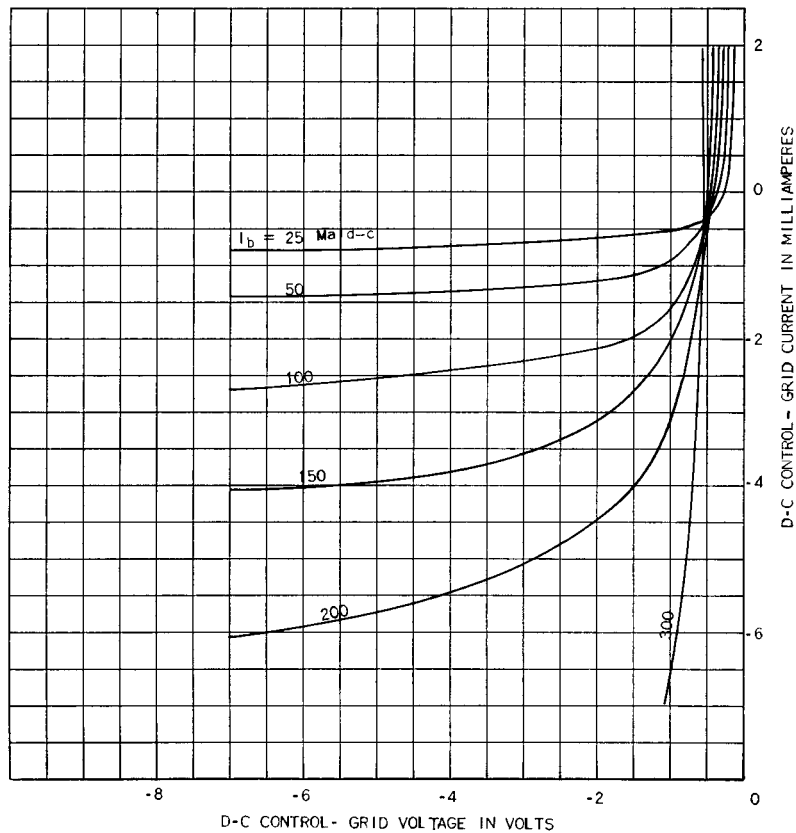
Maximum Peak Anode Voltage	
Inverse . . . . .	1300 Volts
Forward . . . . .	650 Volts
Maximum Cathode Current	
Peak . . . . .	0.5 Ampere
Average . . . . .	0.1 Ampere
Maximum Averaging Time . . . . .	30 Seconds
Fault, Maximum Duration 0.1 Second . . . . .	10 Amperes
Maximum Negative Control-Grid Voltage	
Before Conduction . . . . .	-100 Volts
During Conduction . . . . .	-10 Volts
Maximum Positive Control-Grid Current	
Average, Averaging Time, One Cycle . . . . .	10 Milliamperes
Maximum Negative Shield-Grid Voltage	
Before Conduction . . . . .	-100 Volts
During Conduction . . . . .	-10 Volts
Maximum Positive Shield-Grid Current	
Average, Averaging Time, One Cycle . . . . .	10 Milliamperes
Maximum Heater-Cathode Voltage	
Heater Negative . . . . .	-100 Volts
Heater Positive . . . . .	+25 Volts
Maximum Control-Grid Circuit Resistance . . . . .	0.1 Megohm
Ambient Temperature Limits . . . . .	-75 to +90 C

**PULSE-MODULATOR SERVICE**

Maximum Peak Anode Voltage	
Inverse . . . . .	100 Volts
Forward† . . . . .	500 Volts
Maximum Cathode Current	
Peak . . . . .	10 Amperes
Average . . . . .	0.01 Ampere
Maximum Negative Control-Grid Voltage	
Before Conduction . . . . .	-100 Volts
During Conduction . . . . .	-10 Volts
Maximum Positive Control-Grid Current	
Peak . . . . .	20 Milliamperes
Maximum Negative Shield-Grid Voltage	
Before Conduction . . . . .	-50 Volts
During Conduction . . . . .	-10 Volts
Maximum Positive Shield-Grid Current	
Peak . . . . .	20 Milliamperes
Maximum Pulse Duration . . . . .	5 Microseconds
Maximum Pulse Recurrence Rate . . . . .	500 Pulses per Second
Maximum Duty Cycle . . . . .	0.001
Maximum Rate of Change of Cathode Current . . . . .	100 Amperes per Microsecond
Maximum Heater-Cathode Voltage . . . . .	0 Volt
Maximum Shield-Grid Circuit Resistance . . . . .	25000 Ohms
Minimum Shield-Grid Circuit Resistance . . . . .	2000 Ohms
Maximum Control-Grid Circuit Resistance . . . . .	0.5 Megohm
Ambient Temperature Limits . . . . .	-75 to +90 C
Maximum Impact Acceleration in Any Direction . . . . .	750 G

† After the completion of a pulse, a 20-microsecond delay is required before a positive voltage of more than 10 volts is applied to the tube.

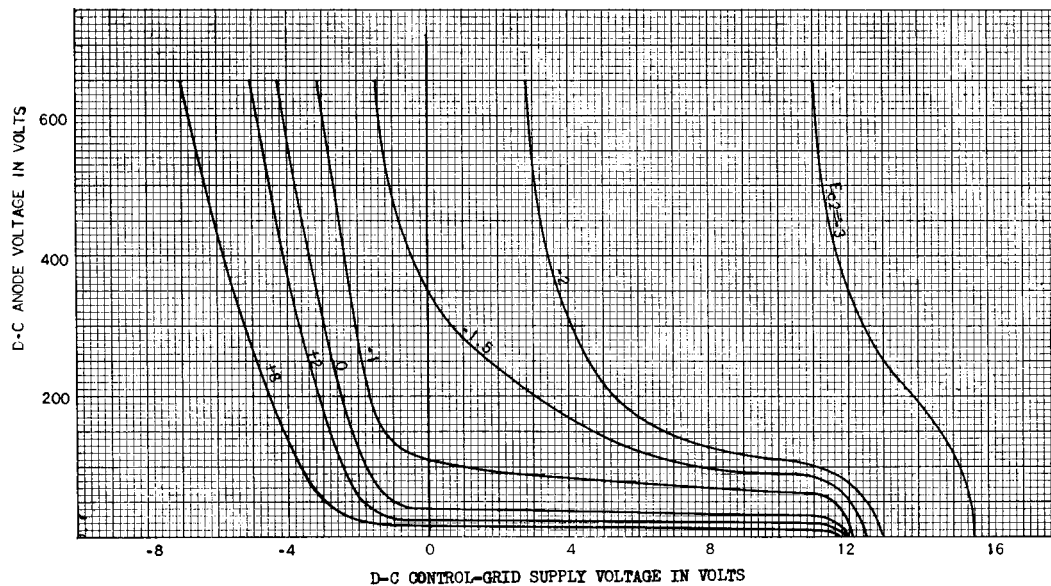
AVERAGE GRID CHARACTERISTICS DURING ANODE CONDUCTION  
 $E_f = 6.3$  VOLTS  
 SHIELD-GRID VOLTS = 0



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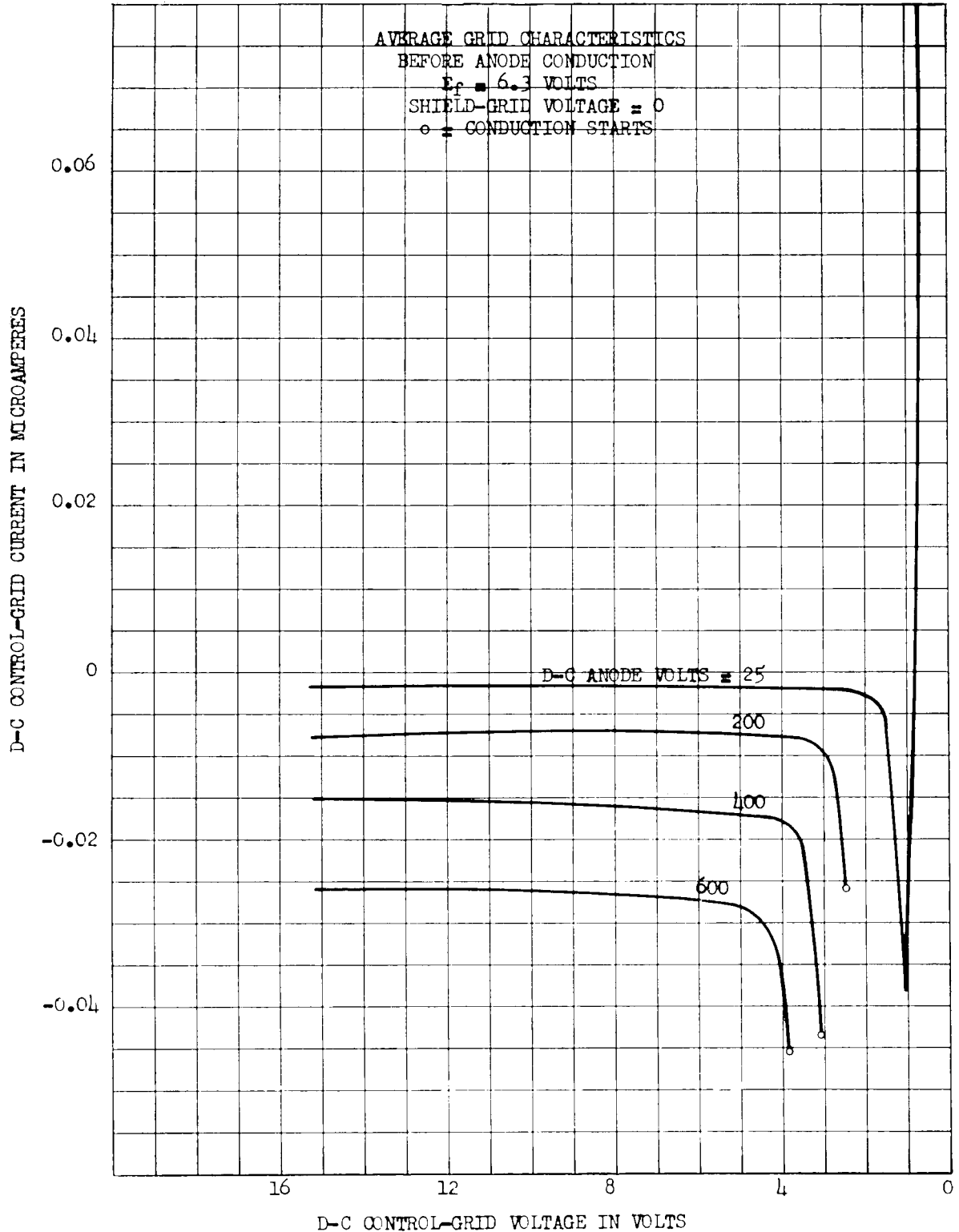
AVERAGE CONTROL CHARACTERISTICS  
 $E_f = 6.3$  VOLTS  
 GRID RESISTOR = 0.1 MEGOHM



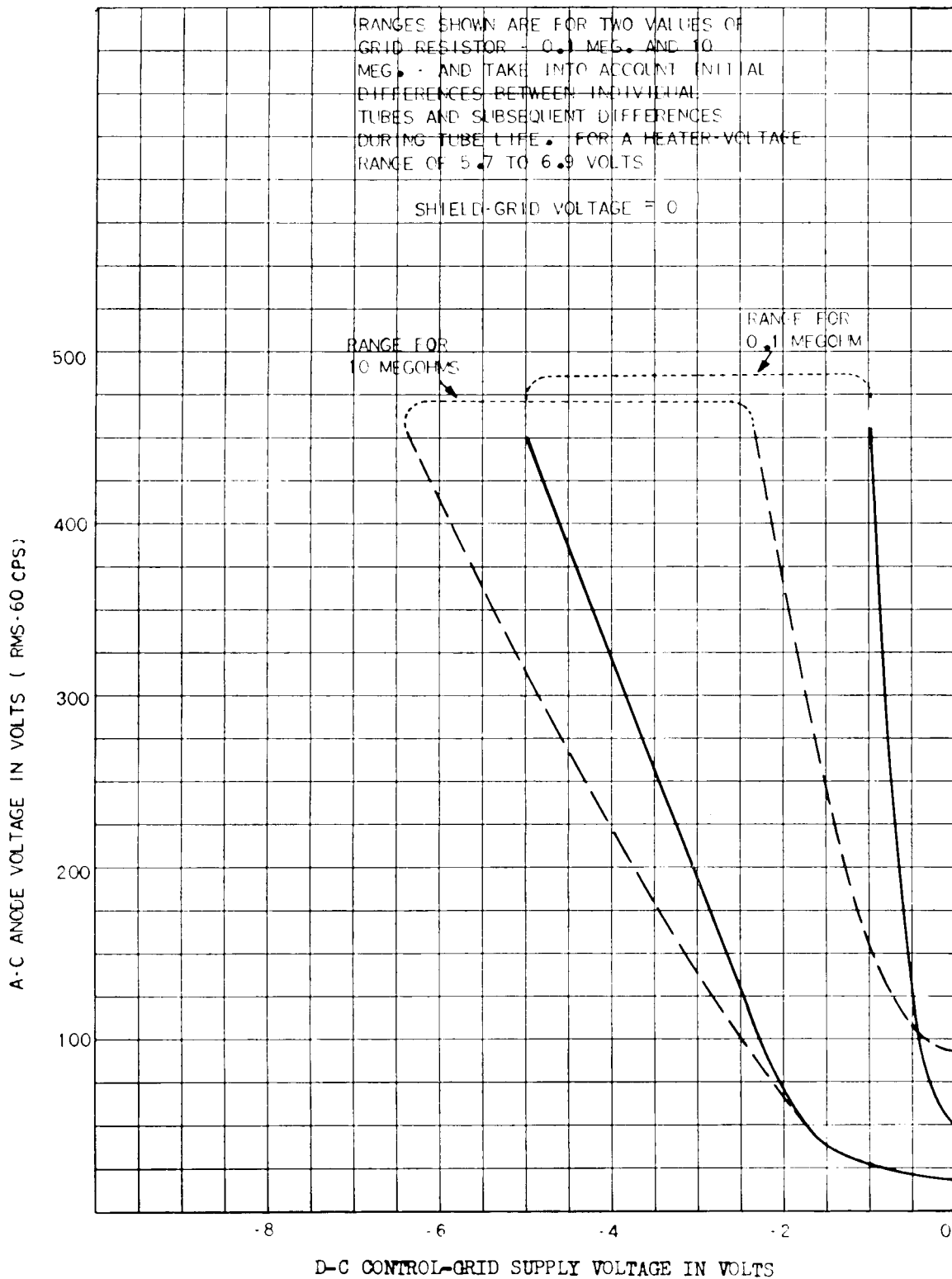
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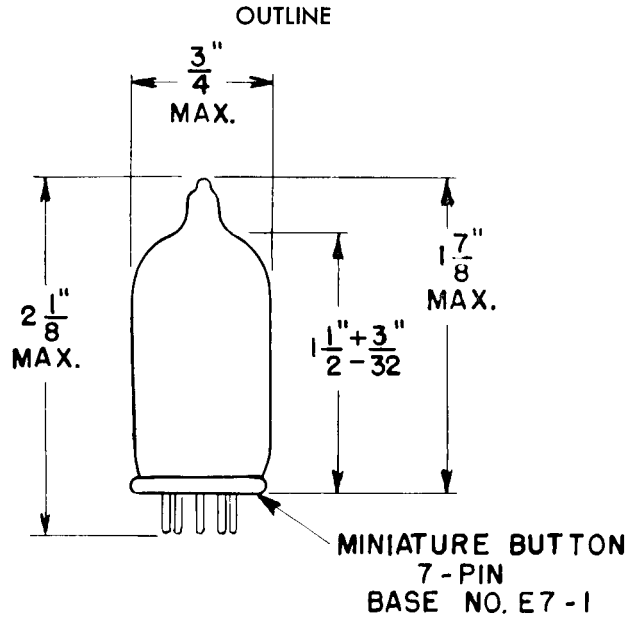
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AVERAGE GRID CHARACTERISTICS  
BEFORE ANODE CONDUCTION

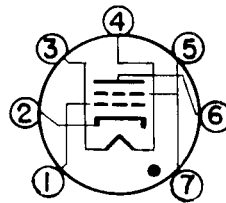


**OPERATIONAL RANGE OF CRITICAL GRID VOLTAGE**





BASING DIAGRAM



7BN

- PIN 1: GRID NO.1
- PIN 2: CATHODE
- PIN 3: HEATER
- PIN 4: HEATER
- PIN 5: GRID NO.2
- PIN 6: ANODE
- PIN 7: GRID NO.2

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Tube Department

**GENERAL  ELECTRIC**

Schenectady, N. Y.