

Amperex Electronic Corporation

A NORTH AMERICAN PHILIPS COMPANY

HICKSVILLE DIVISION

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TUBE TYPE

8867

The Amperex 8867 Neutron[®] ¹ is a magnetically beamed triode featuring an oxide-coated cathode and a heavy copper control element, replacing the fragile conventional thoriated-tungsten filament and fine-wire grid. The result is the first major change in industrial triodes in many years, giving all the advantages stated below.

In addition, the 8867 Neutron has an integral water jacket and flying heater leads. As a Class C amplifier or oscillator, the 8867 will produce a plate power output greater than 3 kW, with a plate input power of 4 kW.

FEATURES

- May be shipped INSTALLED in machine
- Only 30 WATTS heater power, requiring small filament transformer
- IMPOSSIBLE to burn out gate (grid) by removing plate load
- LOW dissipation in the grid resistor (only a few watts)
- HIGH overall oscillator efficiency because of low grid drive requirements
- As a triode amplifier the POWER GAIN approaches 30dB

GENERAL CHARACTERISTICS

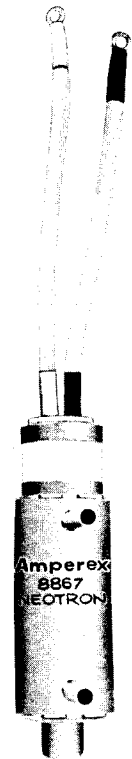
MECHANICAL

Mounting Position	vertical		
Weight			
Tube	1 lb.		
Accessories	5 lbs.		
Accessories			
Magnetic Nest	Amperex type S-332275		
Gate Connector	Amperex type S-332274		
Maximum Operating Temperatures			
Water Inlet Temperature	50°C		
Seal Temperature ²	200°C		
<u>Cooling Characteristics at Anode Dissipation-</u> <u>2000 watts max.</u>			
Inlet Temperature	20	50	°C
Water Flow ³	1.0	1.5	gpm
Pressure Drop	4.5	9	psi

ELECTRICAL

Cathode	nickel oxide matrix
Heater Voltage	5 volts
Heater Current	6.1 amps
Warm-Up Time	2 minutes
Magnetic Field	1150 gauss min.
Amplification Factor	25
Transconductance	4000 μmhos
Direct Interelectrode Capacitances	
Anode to Cathode	0.55 pF
Gate to Cathode	9.1 pF
Anode to Gate	10.1 pF

TYPE	_____	TRIODE
COOLING	_____	WATER
ENVELOPE	_____	CERAMIC
MAX. PWR.		
INPUT	_____	4 kW
MAX. PLATE		
DISS.	_____	2 kW
MAX. FREQ.	_____	5 MHz



Amperex[®]

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Revised Sept. 1974

Amperex[®] ... Tomorrow's Thinking in Today's Products[®]

AMPEREX 8867 NEOTRON

R. F. POWER AMPLIFIER AND OSCILLATOR CLASS C - TELEGRAPHY

(Rectified Three Phase Full Wave or Single Phase Full Wave Filtered)

MAXIMUM RATINGS - Absolute Values

Frequency	5	MHz
D.C. Anode Voltage	5500	volts
D.C. Anode Current	850	mA
Gate to Cathode Voltage	2000	volts
D.C. Gate Current	(see note 4)	
D.C. Cathode Current	850	mA
Anode Input Power	4000	watts
Anode Dissipation	2000	watts
Gate Dissipation	25	watts
Gate Bias Resistor	88	k ohms

TYPICAL OPERATION

	<u>Oscillator</u> CCS	<u>Amplifier</u> CCS	
Frequency	3.5	3.5	MHz
D.C. Anode Voltage	5000	5000	volts
D.C. Anode Current	800	800	mA
D.C. Gate Current (loaded)	5	2	mA
D.C. Gate Current (unloaded)	10	-	mA
Anode Load Impedance	3900	3500	ohms
D.C. Anode Input Power	4000	4000	watts
Anode Dissipation	825	890	watts
R. F. Anode Output Power	3175	3110	watts
Peak Anode R. F. Voltage	4650	4600	volts
Anode Efficiency	79	78	%
D.C. Gate Bias Voltage	-400	-400	volts
Gate Dissipation	4.4	1.6	watts
Peak Gate R. F. Voltage	1275	1200	volts
Peak Positive Gate Voltage	875	800	volts
Gate Bias Resistor	80 k ohms	Fixed Bias	

CLASS C OSCILLATOR

(Full-Wave Rectified, Unfiltered, Single Phase)

MAXIMUM RATINGS - Absolute Values

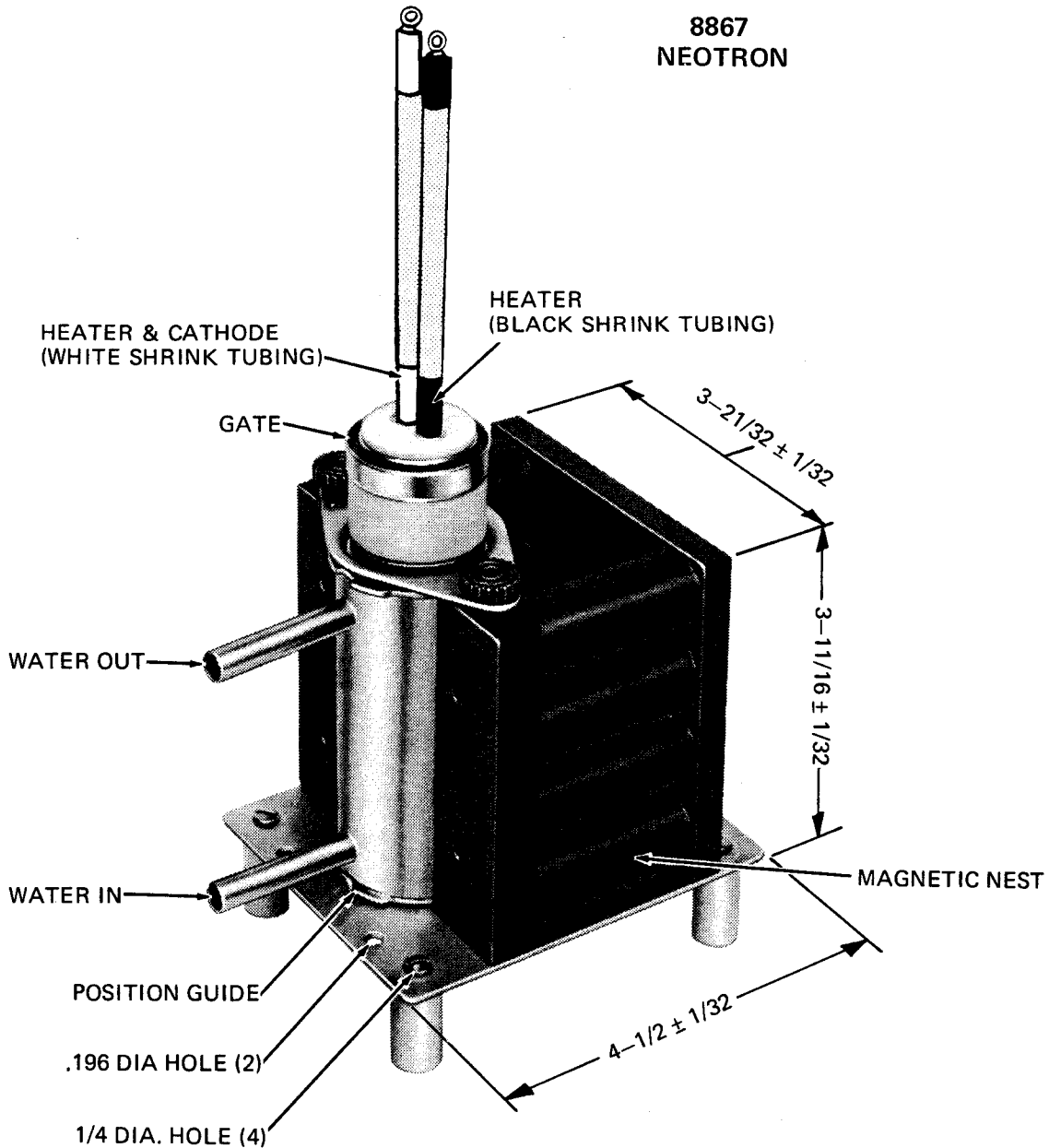
	<u>CCS</u>
Frequency	5 MHz
D.C. Anode Voltage	4500 volts
D.C. Anode Current	725 mA
Gate to Cathode Voltage	2400 volts
D.C. Gate Current	(see note 4)
D.C. Cathode Current	730 mA
D.C. Anode Input Power ⁵	3240 watts
RMS Anode Input Power	4000 watts
Collector Dissipation	2000 watts
Gate Dissipation	25 watts
Gate Bias Resistor	88 k ohms

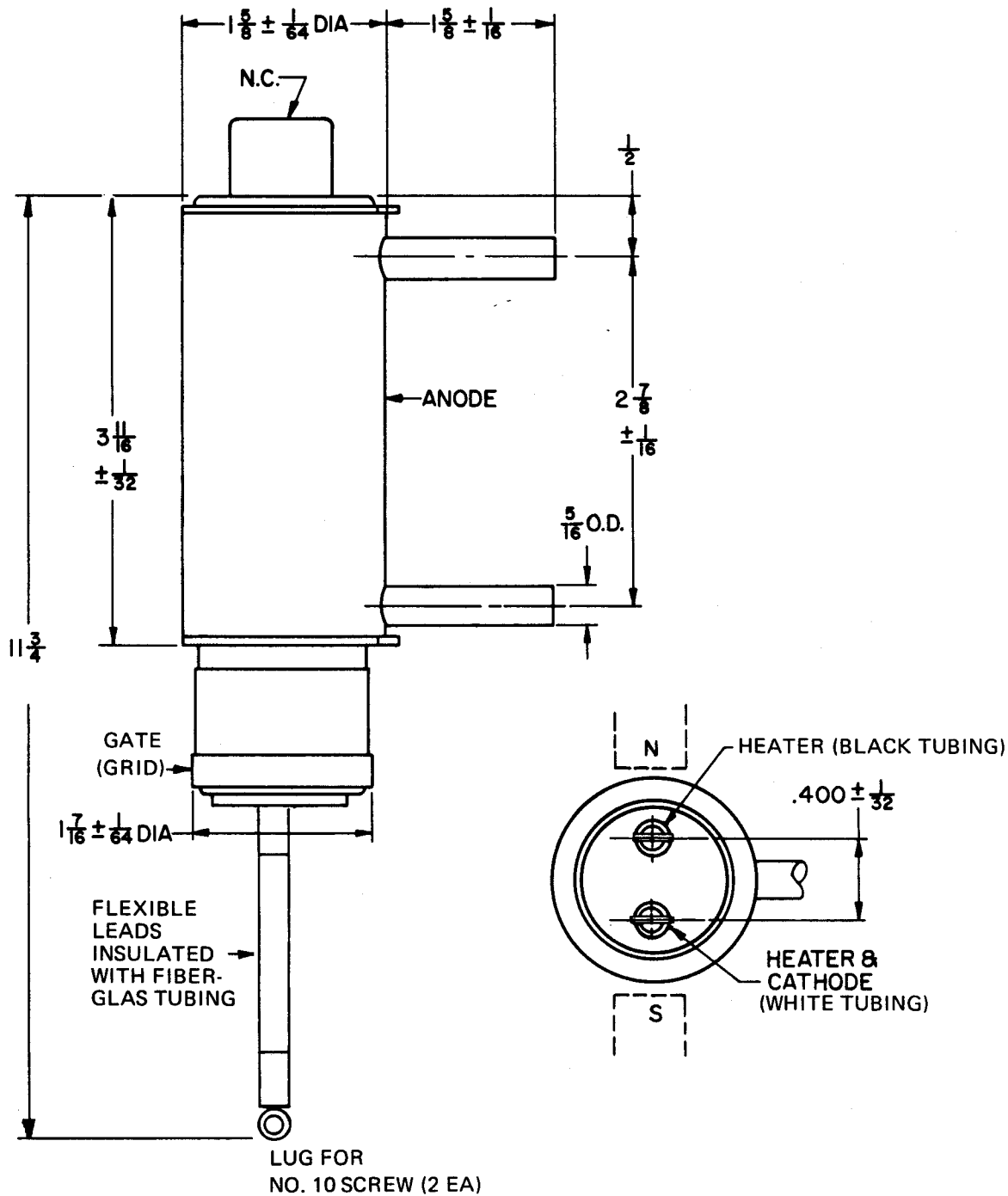
TYPICAL OPERATION

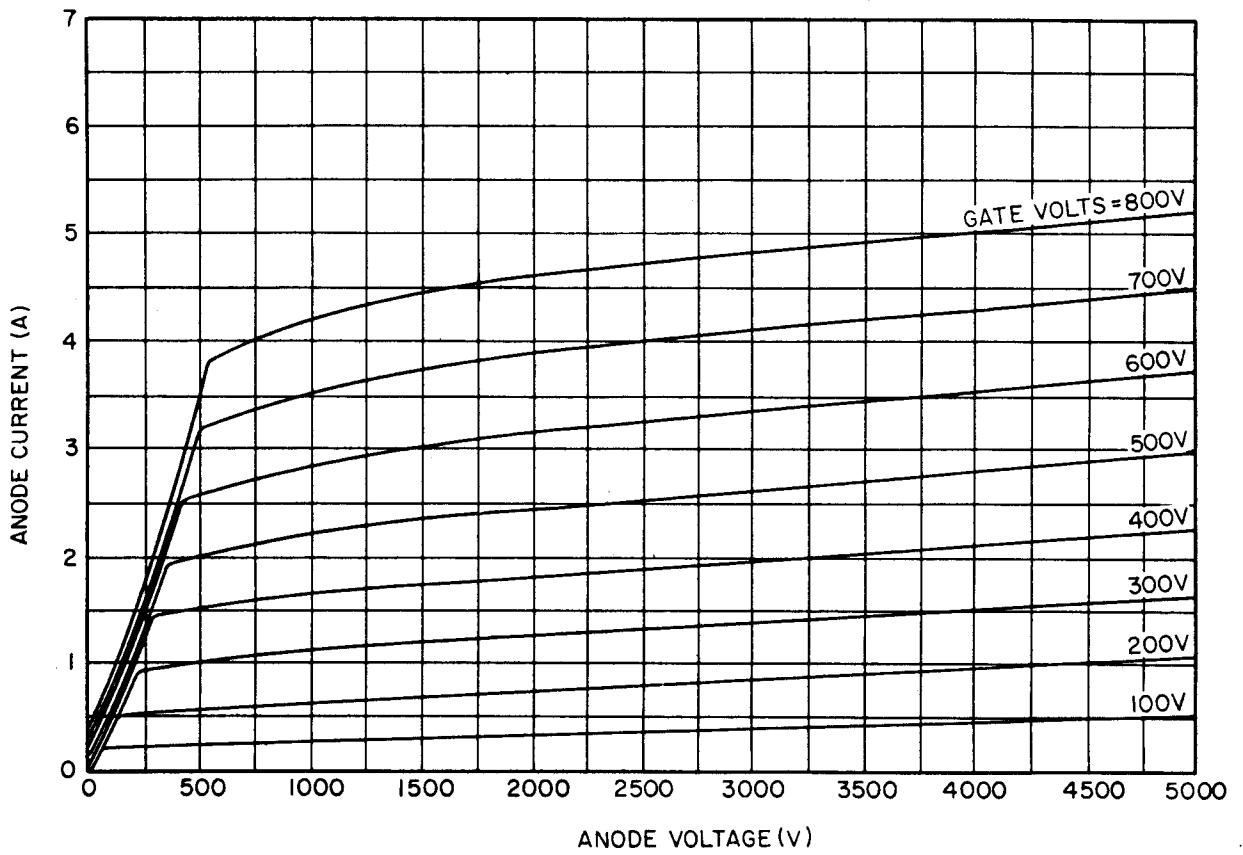
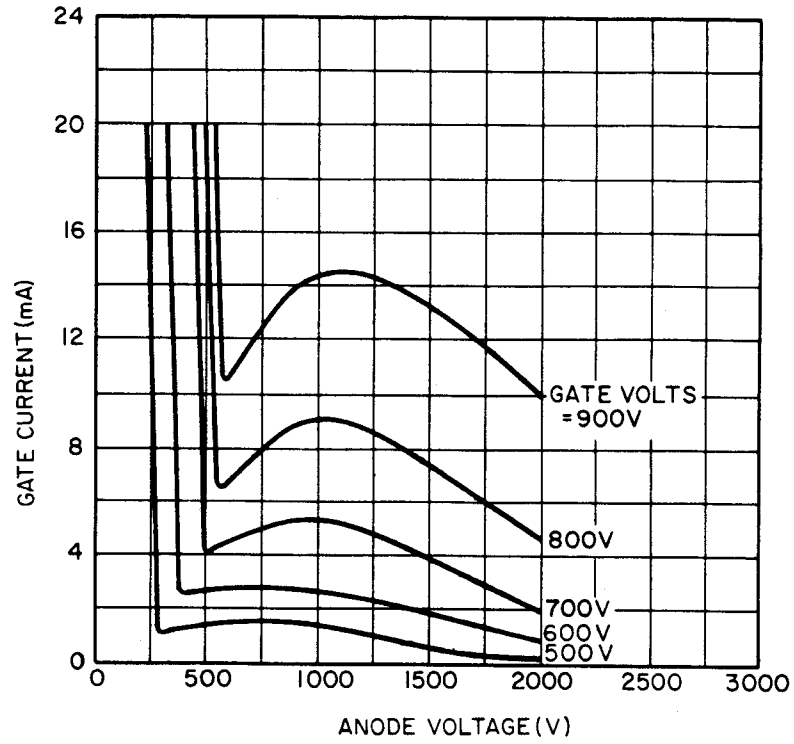
	<u>CCS</u>
Frequency	5 MHz
D.C. Anode Voltage	4500 volts
D.C. Anode Current	720 mA
D.C. Gate Current (loaded)	4.5 mA
D.C. Gate Current (unloaded)	9 mA
Anode Load Impedance	3900 ohms
D.C. Anode Input Power ⁵	3240 watts
R.M.S. Anode Input Power	4000 watts
Anode Dissipation	900 watts
R. F. Anode Output Power	3100 watts
Peak Anode R. F. Voltage	6580 volts
Anode Efficiency	78 %
D.C. Gate Bias Voltage	360 volts
Gate Dissipation	4.4 watts
Peak Gate R. F. Voltage	1800 volts
Peak Positive Gate Voltage	1440 volts
Gate Bias Resistor	80 k ohms

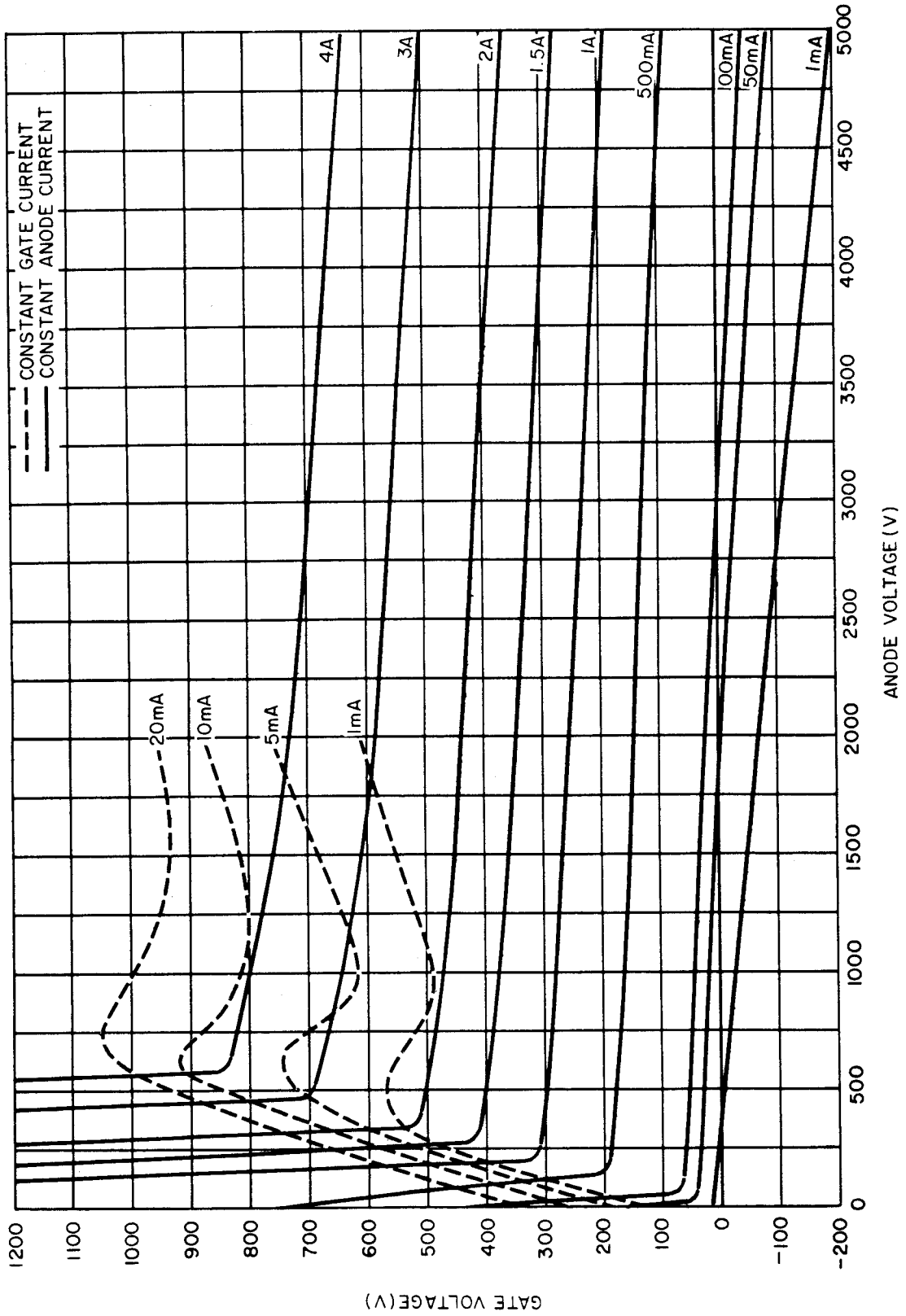
NOTES

- 1 A Neutron® is a Field Effect Tube.
- 2 At higher altitude, higher inlet air temperatures, and higher frequencies, additional cooling must be used in order to stay within maximum seal temperature ratings.
- 3 Water flow must be maintained for at least 1 minute after anode power is removed.
- 4 Limited only by maximum gate dissipation and maximum cathode current.
- 5 Defined as product of average DC Anode Voltage times average DC Anode Current.









8867 CONSTANT CURRENT CHARACTERISTICS