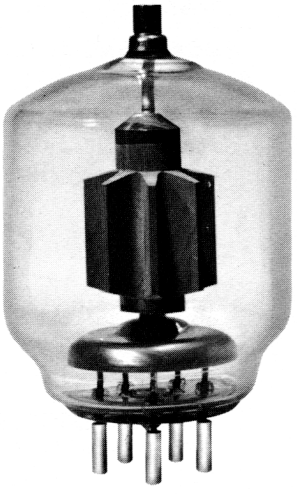
EIMAC
Division of Varian
SAN CARLOS
CALIFORNIA

5867A

AIR-COOLED MEDIUM MU POWER TRIODE



The Eimac 5867A is a power triode designed primarily for use in Industrial Heating applications. The large heat storage capacity of the graphite anode aids in compensating for the wide variations in loading generally associated with this type of sevrice. The 5867A is also suitable for use as an RF or AF Power Amplifier or Modulator.

The 5867A is cooled by radiation from the plate and by circulation of forced-air through the base, around the envelope, and over the plate seal. Cooling is greatly simplified by using the Eimac SK-410 Air-System Socket and SK-406 Air Chimney.

GENERAL CHARACTERISTICS

ELECTRICAL

	Min.	*Nom.*	*Max.*
Filament: Thoriated Tungsten			
Voltage		5.0	volts
Current	13.5		14.7 amperes
Amplification Factor (E_b=2500 V, I_b=100 ma)		25	
Direct Interelectrode Capacitances			
Grid-Plate	5.0		6.2 uuf
Grid-Filament	6.5		8.0 uuf
Plate-Filament			0.5 uuf
Transconductance (I_b=100 ma)		5,000	umhos
Highest Frequency for Maximum Ratings			50 mc

MECHANICAL

Base	see drawing
Mounting	Vertical, base up or down
Cooling	Radiation and forced-air
Maximum Operating Temperatures:	
Plate Seals	220°C
Base Seals	180°C
Maximum Overal Dimensions:	
Height	5.875 inches
Diameter	3.438 inches
Socket	SK-410
Chimney	SK-406
Heat Radiator Connector	HR-6
Net Weight	6 ounces

 1968 by VARIAN

Printed in U.S.A.

RADIO-FREQUENCY POWER AMPLIFIER OR OSCILLATOR

CLASS-C FM or Telegraphy

MAXIMUM RATINGS

DC PLATE VOLTAGE	4,000 MAX. VOLTS
DC GRID VOLTAGE	—500 MAX. VOLTS
DC PLATE CURRENT	400 MAX. Ma.
PLATE DISSIPATION	350 MAX. WATTS
GRID DISSIPATION	30 MAX. WATTS

*Approximate Value.

TYPICAL OPERATION
(Frequencies below 50 mc., per tube)

DC Plate Voltage	2,000	3,000	4,000 volts
DC Grid Voltage	—150	—250	—350 volts
DC Plate Current	400	365	380 ma
DC Grid Current	80	70	80 ma
Peak Grid Driving Voltage	320	430	535 volts
Driving Power*	25	27	40 watts
Plate Input Power	800	1,090	1,520 watts
Plate Output Power	585	840	1,200 watts

CLASS-C OSCILLATOR, INDUSTRIAL APPLICATION SINGLE PHASE, FULL WAVE RECTIFIER, UNFILTERED

MAXIMUM RATINGS

DC PLATE VOLTAGE	3,800 MAX. VOLTS
DC GRID VOLTAGE	—500 MAX. VOLTS
DC PLATE CURRENT	360 MAX. Ma.
PLATE DISSIPATION	350 MAX. WATTS
GRID DISSIPATION	30 MAX. WATTS
PLATE INPUT POWER	1,500 MAX. WATTS

TYPICAL OPERATION
(Frequencies below 50 mc., per tube)

DC Plate Voltage	2,750	3,500 volts
DC Plate Current	340	325 ma
DC Grid Current	60	65 ma
Grid Resistor	3,330	4,500 ohms
Plate Input Power	935	1,400 watts
Plate Output Power	685	1,100 watts

CLASS-C OSCILLATOR, INDUSTRIAL APPLICATION SELF-RECTIFIED

MAXIMUM RATINGS

PLATE VOLTAGE (r.m.s.)	4,500 MAX. VOLTS
DC GRID VOLTAGE	—500 MAX. VOLTS
DC PLATE CURRENT	210 MAX. Ma.
PLATE DISSIPATION	350 MAX. WATTS
GRID DISSIPATION	30 MAX. WATTS
GRID RESISTOR	100,000 MAX. OHMS
PLATE INPUT POWER	900 MAX. WATTS

TYPICAL OPERATION
(Frequencies below 50 mc., per tube)

Plate Voltage (r.m.s.)	3,000	4,000 volts
DC Grid Voltage	—110	—280 volts
DC Plate Current	180	190 ma.
DC Grid Current	32	35 ma.
Plate Input Power	600	840 watts
Plate Output Power	415	630 watts
Grid Resistor	3,000	5,500 ohms

NOTE: "TYPICAL OPERATION" data are obtained by calculation from published characteristic curves and confirmed by direct tests. No allowance for circuit losses, either input or output, has been made.

APPLICATION

MECHANICAL

Mounting

The 5867A must be operated vertically, base up or down. A flexible strap must be provided between the heat dissipating plate connector and the external plate circuit. The tube must be protected from severe vibration and shock.

Cooling

Forced-air cooling is required to maintain base and plate seal temperatures below 180°C and 220°C, respectively. When using the Eimac SK-410 Air system socket and SK-410 Air Chimney, complete with the HR-6 Heat Radiator, a minimum air-flow in the base to anode direction of 12 cfm at sea level is required to provide adequate cooling at an inlet air temperature of 50°C. This flow rate corresponds to a static pressure drop of 0.1 inches of water. At higher inlet air temperatures, higher altitudes, or at frequencies above 50 mc, the air flow rate must be increased to give adequate cooling. Cooling air must be supplied to the tube even when the filament alone is on during standby periods.

When a socket other than the SK-410 is used, provisions must be made for equivalent cooling of the base, envelope and plate seals. In all cases, air flow rates in excess of the minimum requirements will prolong tube life.

ELECTRICAL

Filament Voltage

For maximum tube life the filament voltage, as measured directly at the filament pins, should be the rated 5.0 volts. Variations in the filament voltage must be kept within the range of 4.75 and 5.25 volts.

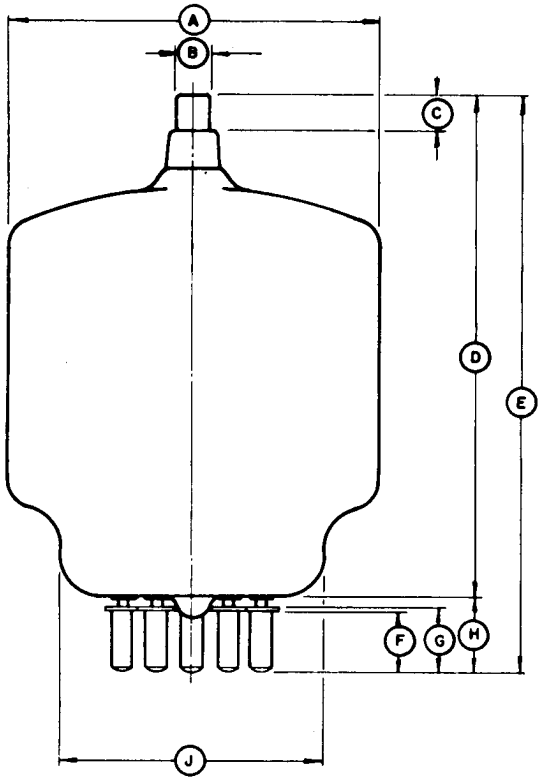
Grid Dissipation

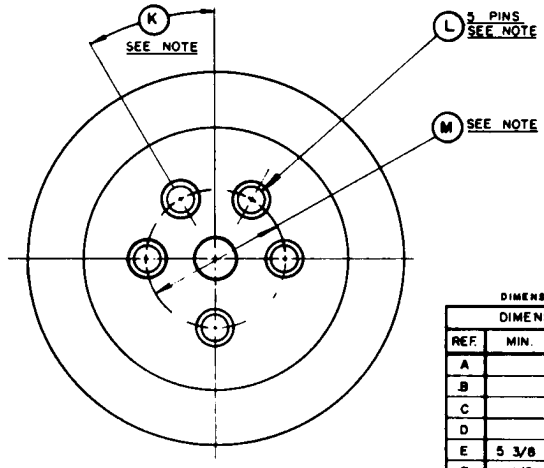
The rated grid dissipation of the Eimac 5867A is 30 watts. Grid dissipation is the approximate product of the dc grid current and the peak positive grid voltage. In equipment where the plate loading varies widely, such as radiofrequency heating oscillators, care should be taken to insure that the grid dissipation does not exceed the 30 watt maximum.

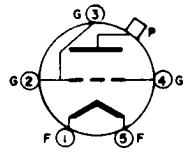
To prevent overheating of a grid pin by RF currents, it is advisable to connect all three grid pins into the circuit.

Special Applications

If it is desired to operate this tube under conditions widely different than those given here, write to Power Grid Tube Marketing, Eitel-McCullough, Inc., 301 Industrial Way, San Carlos, California, for information and recommendations.





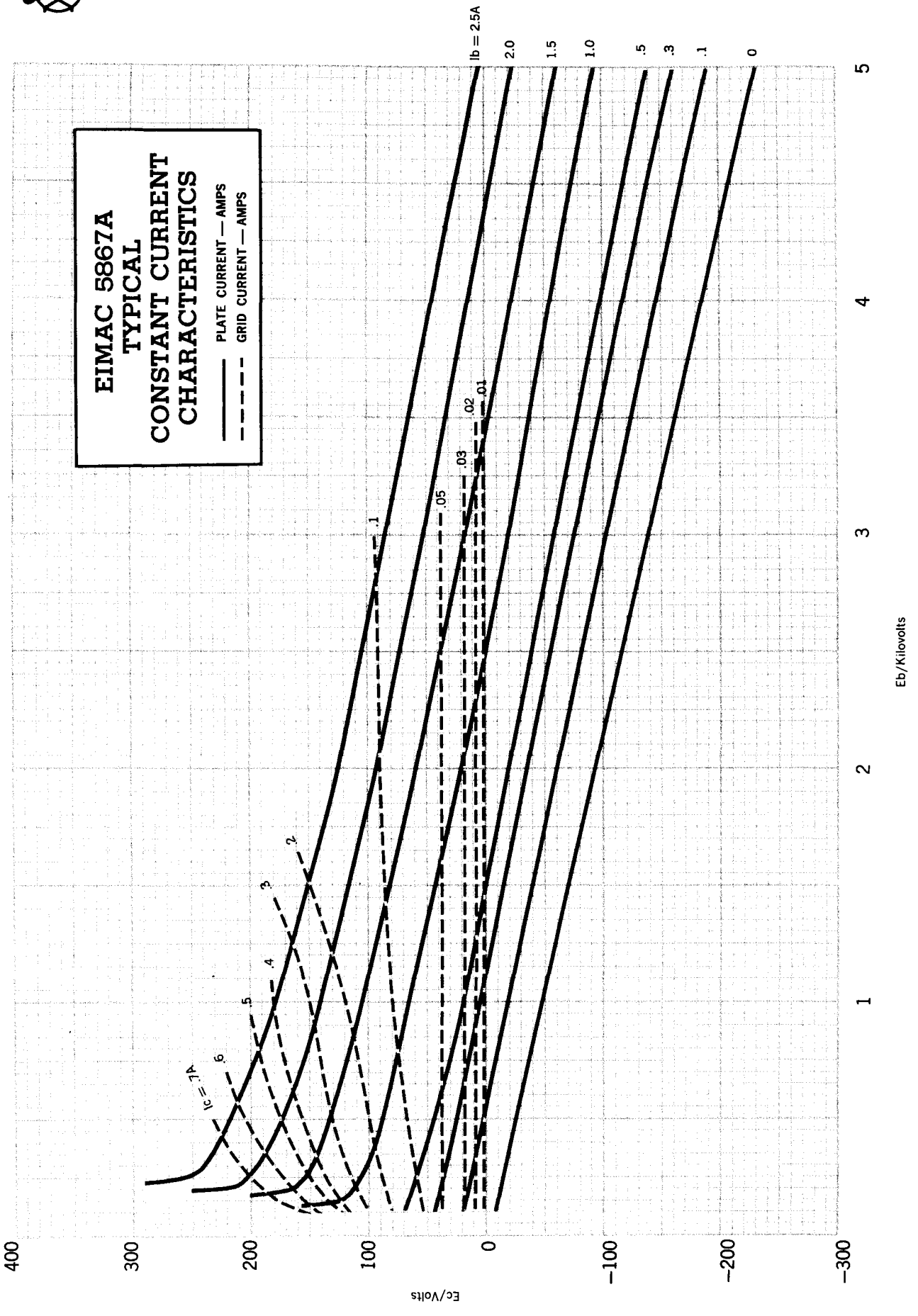


DIMENSIONS IN INCHES

DIMENSIONAL DATA			
REF.	MIN.	MAX.	NOM.
A		3 7/16 D.	
B			.355 D.
C			.356 D.
D			4 27/32
E	5 3/8	5 7/8	
F	1/2	5/8	
G	9/16	11/16	
H			25/32
J		2 7/16 D.	
K			30° TYP
L	.185 D.	.191 D.	
M			1-1/4 D.P.C.

NOTE

BASE PINS (L) ARE SO ALIGNED THAT THEY CAN BE FREELY INSERTED INTO A GAUGE 1/4" THICK WITH HOLE DIA'S OF .204 LOCATED ON TRUE CENTERS BY THE GIVEN DIMENSIONS (K) & (M)


EIMAC 5867A
TYPICAL
CONSTANT CURRENT
CHARACTERISTICS
PLATE CURRENT — AMPS
GRID CURRENT — AMPS
Ib = 2.5A
2.0
1.5
1.0
.5
.3
.1
0
.01
.02
.03
.05
.1
.2
.3
.4
.5
.6
Ic = .7A
400
300
200
100
0
−100
−200
−300
Ec/Volts
1
2
3
4
5
Eb/Kilovolts