



**E I M A C**  
 Division of Varian  
 SAN CARLOS  
 CALIFORNIA

TENTATIVE DATA

**8162**  
**3X3000F7**  
 HIGH-MU  
 POWER TRIODE

The Eimac 8162/3X3000F7 is an external-anode power triode intended to be used as a zero-bias Class-B amplifier in audio or radio-frequency applications. Operation with zero grid bias offers circuit simplicity by eliminating the bias supply. In addition, grounded-grid operation is attractive since a power gain of over twenty times can be obtained with the 8162/3X3000F7.

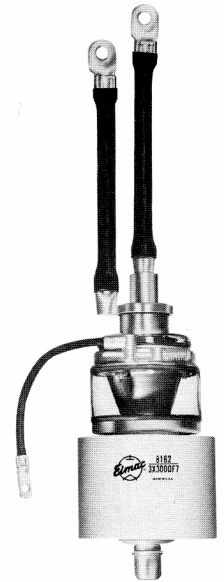
GENERAL CHARACTERISTICS

ELECTRICAL

Filament: Thoriated-Tungsten					
Voltage	-	-	-	7.5	volts
Current	-	-	-	51	amperes
Amplification Factor	-	-	-	200	
Interelectrode Capacitances:					
Grid-Filament	-	-	-	38	uuf
Grid-Plate	-	-	-	24	uuf
Plate-Filament	-	-	-	0.6	uuf
Frequency for Maximum Ratings	-	-	-	30	Mc

MECHANICAL

Base	-	-	-	-	-	See outline drawing
Operating Position	-	-	-	-	-	Vertical, base up or down
Cooling	-	-	-	-	-	Forced air
Maximum Operating Temperatures:						
Anode Core and Seals	-	-	-	-	-	150°C
Maximum Dimensions:						
Height (Does not include filament connectors)	-	-	-	-	-	8.6 inches
Diameter	-	-	-	-	-	4.16 inches
Net Weight	-	-	-	-	-	7.5 pounds



A-F AMPLIFIER OR MODULATOR  
 CLASS-B, GRID-DRIVEN

TYPICAL OPERATION, Two Tubes,  
 Sinusoidal Wave

MAXIMUM RATINGS (Per Tube)

D-C PLATE VOLTAGE	5000 VOLTS
D-C PLATE CURRENT	2.5 AMPS
PLATE DISSIPATION	3 KW
GRID DISSIPATION	225 WATTS

D-C Plate Voltage	4000	volts
D-C Grid Voltage	0	volts
Zero-Sig D-C Plate Current*	0.640	amps
Max-Sig D-C Plate Current	4.00	amps
Max-Sig D-C Grid Current	0.860	amps
Driving Power	120	watts
Peak A-F Driving Voltage (per tube)	185	volts
Load Resistance, Plate-to-Plate	2200	ohms
Max-Sig Plate Output Power	11,000	watts



R-F LINEAR AMPLIFIER  
CLASS-B, GROUNDED-GRID

TYPICAL OPERATION, Single-Tone Conditions

MAXIMUM RATINGS		D-C Plate Voltage	4000	5000	volts
D-C PLATE VOLTAGE	5000 VOLTS	Zero-Sig D-C Plate Current*	0.32	0.44	amps
D-C PLATE CURRENT	2.5 AMPS	Max-Sig D-C Plate Current	2.00	1.56	amps
PLATE DISSIPATION	3 KW	Max-Sig D-C Grid Current	0.42	0.33	amps
GRID DISSIPATION	225 WATTS	Driving Impedance	50	50	ohms
		Resonant Load Impedance	1120	1850	ohms
		Max-Sig Driving Power	360	215	watts
		Peak Envelope Plate Output			
		Power	5500	5500	watts
		Power Gain	15.3	25.6	times

R-F LINEAR AMPLIFIER  
CARRIER CONDITIONS, GRID-DRIVEN

TYPICAL OPERATION

MAXIMUM RATINGS		D-C Plate Voltage	4000	volts
D-C PLATE VOLTAGE	5000 VOLTS	D-C Grid Voltage	0	volts
D-C PLATE CURRENT	2.5 AMPS	Zero-Sig D-C Plate Current*	0.32	amps
PLATE DISSIPATION	3 KW	D-C Plate Current	0.815	amps
GRID DISSIPATION	225 WATTS	D-C Grid Current	0.205	amps
		Driving Impedance †	220	ohms
		Peak Driving Voltage †	160	volts
		Driving Power	15	watts
		Plate Output Power	1100	watts

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

**INPUT CIRCUIT** - When the 3X3000F7 is operated as a grounded-grid r-f amplifier, the use of a resonant tank in the cathode circuit is recommended in order to obtain greatest linearity and power output. For best results with a single-ended amplifier it is suggested that the cathode tank circuit operate at a "Q" of five or more.

**COOLING** - The maximum temperature rating for the anode core and seals of the 3X3000F7 is 150°C. Sufficient forced-air cooling must be provided to keep the temperature of the anode core and the temperatures of the glass-to-metal seals below 150°C. Tube life is usually prolonged if these areas are maintained at temperatures below the maximum rating. Minimum air flow requirements to maintain anode-core and seal temperatures below 150°C with inlet-air temperatures of 40°C and 55°C are tabulated. A maximum ambient temperature of 40°C will apply to most commercial installations, while the 55°C data is useful when designing equipment in conformance with MIL-E-5400 Curve A (Class I).

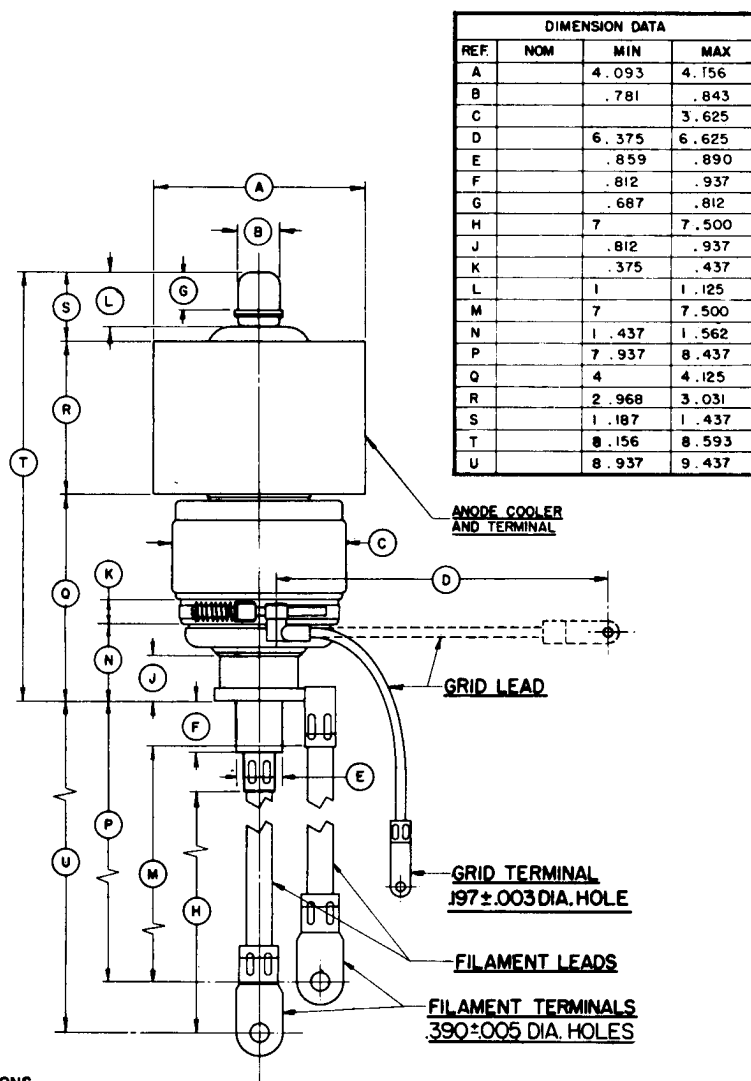
In addition, a minimum air flow of 7 CFM must be directed into the filament stem structure, between the inner and outer filament conductors. This rate of air flow provides sufficient stem cooling at ambient temperatures up to 55°C.

\*Approximate Values

†Modulation Crest Conditions

SEA LEVEL PRESSURE, ANODE-TO-BASE AIR FLOW				
Plate** Dissipation (Watts)	40°C Max Ambient Air Temp.		55°C Max Ambient Air Temp.	
	Air Flow (CFM)	Pressure Drop (Inches of Water)	Air Flow (CFM)	Pressure Drop (Inches of Water)
1000	45	0.43	65	0.65
2000	120	1.6	170	2.5
3000	235	4.0	330	6.0

\*\*Since the power dissipated by the filament is about 375 watts and since grid dissipation can, under some circumstances, represent another 225 watts, allowance has been made in preparing this tabulation for an additional 600 watts dissipation.



ALL DIMENSIONS  
IN INCHES



3X3000F7

