



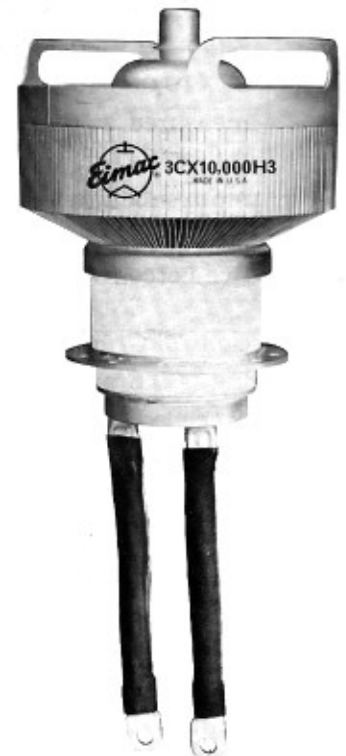
**3CX10,000H3**

**MEDIUM-MU  
AIR-COOLED  
POWER TRIODE**

**TECHNICAL DATA**

The Eimac 3CX10,000H3 is an air-cooled, ceramic-metal power triode designed primarily for use in industrial radio-frequency heating services. Its air-cooled anode is conservatively rated at 10 kilowatts of plate dissipation.

Input of 40 kilowatts is permissible up to 90 megacycles. Plentiful reserve emission is available from its 750 watt filament. The grid structure is rated at 250 watts, making this tube an excellent choice for severe applications.



**GENERAL CHARACTERISTICS**

**ELECTRICAL**

	<i>Min.</i>	<i>Nom.</i>	<i>Max.</i>	
Filament: Thoriated-Tungsten				
Voltage	- - - - -	7.5		Volts
Current	- - - - - 94		104	Amps
Amplification Factor	- - - - -	20		
Interelectrode Capacitances, Grounded Cathode:				
Grid-Filament	- - - - - 48		58	$\mu\mu\text{f}$
Plate-Filament	- - - - - 1.2		1.5	$\mu\mu\text{f}$
Grid-Plate	- - - - - 30		38	$\mu\mu\text{f}$
Frequency for Maximum Ratings	- - - - -		90	Mc

**MECHANICAL**

Base	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	See Outline
Operating Position	- - - - -	- - - - -	- - - - -	- - - - -	Vertical, base up or down	
Cooling	- - - - -	- - - - -	- - - - -	- - - - -	Forced Air	
Maximum Operating Temperature	- - - - -	- - - - -	- - - - -	- - - - -	250°C	
Maximum Dimensions:						
Height	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	See Outline
Diameter	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	See Outline
Net Weight	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	12 Pounds

**RF INDUSTRIAL OSCILLATOR**

Class-C (Filtered DC Power Supply)

**MAXIMUM RATINGS:**

DC PLATE VOLTAGE	- - - - -	10,000 VOLTS
DC PLATE CURRENT	- - - - -	4.0 AMPS
DC GRID VOLTAGE	- - - - -	-1000 VOLTS
DC GRID CURRENT	- - - - -	0.6 AMP
PLATE INPUT POWER	- - - - -	40 KW
PLATE DISSIPATION	- - - - -	10 KW

\*Loaded Conditions

**TYPICAL OPERATION\***

DC Plate Voltage	- - - - -	7000	9000	Volts
DC Plate Current	- - - - -	4.0	4.0	Amps
DC Grid Voltage	- - - - -	-670	-930	Volts
DC Grid Current	- - - - -	.275	.430	Amps
Peak Positive Grid Voltage	- - - - -	340	390	Volts
Driving Power	- - - - -	260	570	Watts
Plate Input Power	- - - - -	28	36	kW
Plate Dissipation	- - - - -	9	7	kW
Plate Output Power	- - - - -	19	29	kW
Approximate Load Impedance	- - - - -	720	1100	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.

(Effective 3-15-66) Copyright 1966 by Varian Associates



## APPLICATION

### ELECTRICAL

**Filament** — The rated filament voltage for the 3CX10,000H3 is 7.5 volts. Filament voltage, as measured at the tube, should be maintained at this value for consistent performance and maximum tube life. In no case should it be allowed to vary from 7.5 volts by more than plus or minus five percent.

**Control Grid Operation** — The grid current rating is 0.6 ampere dc. This value should not be exceeded for more than very short periods such as during tuning and over-current protection in the grid circuit should be provided. Ordinarily it will not be necessary to operate with more than 0.2 to 0.4 amp grid current to obtain reasonable efficiency. In industrial heating service with varying loads, grid current should be monitored continuously with a dc current meter. The maximum grid dissipation rating is 250 watts.

**Plate Operation** — Plate over-current protection should be provided to remove plate voltage quickly in the event of an over-load or an arc-over at the load. In addition current limiting power supply resistors should be used. These precautions are especially important in industrial service with its wide variations in loading.

Spark gaps from plate to ground should be used to prevent transient voltages from flashing across the tube envelope during any fault conditions.

**High Frequency Operation**—The 3CX10,000H3 is usable to 140 Mc. At this frequency, plate voltage must be reduced to 7000 volts in Class C service.

### MECHANICAL

**Mounting** —The 3CX10,000H3 must be mounted vertically, either base up or down. A grid flange is provided for bolting to a grid strap or a grid deck. Heavy flexible leads are provided for the filament voltage connection.

**Cooling** — The maximum temperature rating for the external surfaces of the 3CX10,000H3 is 250°C. Sufficient forced-air cooling must be provided to keep the temperature of the anode core and the temperature of the ceramic-metal seals below 250°C. Tube life is usually prolonged if these areas are maintained at temperatures below this maximum rating. Minimum air-flow requirements to maintain anode-core and seal temperatures below 225°C with an inlet-air temperature of 50°C are tabulated.

Plate** Dissipation Watts	Sea Level		5000 Feet	
	Air Flow CFM	Pressure Drop Inches Water	Air Flow CFM	Pressure Drop Inches Water
4000	85	0.18	105	0.21
6000	145	0.38	175	0.46
8000	215	0.68	260	0.82
10,000	295	1.08	360	1.32
12,000	390	1.62	470	1.95

\*\*Since the power dissipated by the filament is about 750 watts and since grid dissipation can, under some circumstances, represent another 25 watts, allowance has been made in preparing this tabulation for an additional 1000 watts dissipation.

Additional stem cooling air must be provided. 10 CFM of air directed against the center filament contact  $\frac{3}{4}$ " below the outer filament contact ring by a  $1\frac{1}{2}$ " I.D. air duct arranged at a 45° angle with the center line of the tube will provide adequate cooling.

**Special Application** — If it is desired to operate this tube under conditions widely different from those given here, write to Power Grid Tube Div., Eimac, A Division of Varian Associates Inc., 301 Industrial Way, San Carlos, Calif. for information and recommendations.

DIMENSION DATA

DIM.	REF.	MIN.	MAX.
A		6.928	7.050
B		855	895
D	1.875		
E	3.250		
H		.590	.700
J	.125		
K		4.425	4.445
L		5.030	5.090
M		3.950	4.300
N		2.412	2.788
P		8.250	8.750
R		.800	.860
T		.375	
V	.250		
Z	2.000		
AA		8.500	9.000
AD	.390		

NOTE: REF. DIMS. ARE FOR INFORMATION ONLY & ARE NOT REQ'D FOR INSP. PURPOSES.

ANODE

AIR

DO NOT CONTACT

GRID FLANGE

V 12 HOLES

FILAMENT LEADS

\* CONTACT SURFACE  
ALL DIMENSIONS IN INCHES

