

ELECTRICAL

3CW25,000A3

MEDIUM-MU

WATER-COOLED **POWER TRIODE**

3CW25.000A3

The Eimac 3CW25,000A3 is a water-cooled, ceramic-metal power triode designed primarily for use in industrial radio-frequency heating services. Its water-cooled anode is rated at 25 kilowatts of plate dissipation with low water flow and pressure drop.

Full input of 60 kilowatts is permissable up to 100 megacycles. Plentiful reserve emission is available from its one kilowatt filament. The grid structure is rated at 500 watts making this tube an excellent choice for severe applications.

It is also recommended as a grounded grid FM amplifier, a conventional platemodulated amplifier or as a linear amplifier in new equipment designs.

GENERAL CHARACTERISTICS

Min.

ELECTRICAL	741111.	INOITI.	MULK		
Filament: Thoriated-Tungsten					and the second s
Voltage	•	6.3		volts	
Current			172	amperes	
Amplification Factor		20			
Interelectrode Capacitances, Grounded					
Grid-Filament			58	$\mu\mu$ f	
Plate-Filament			1.5	$\mu\mu f$	
Grid-Plate	30		38	μμf	
Frequency for Maximum Ratings					100 Mc
, ,					
MECHANICAL					
Base					Coaxial
Recommended Socket					
Operating Position					
Cooling					
Maximum Operating Temperatures:					Trailer & Forced an
Ceramic-to-Metal Seals					250°C
Maximum Dimensions:					250 C
Height					0.4 inches
Diameter					
Net Weight					12 pounds

Nom.

Max

TYPICAL OPERATION RF INDUSTRIAL OSCILLATOR

RF INDUSTRIAL OSCILLATOR	DC Plate Voltage	7000	10,000 volts
Class-C (Filtered DC Power Supply)	DC Plate Current	6.0	
• • • • • • • • • • • • • • • • • • • •	DC Grid Voltage	-600	–800 volts
MAXIMUM RATINGS	DC Grid Current	.66	.315 amps
DC PLATE VOLTAGE 10,000 VOLTS	Peak Positive Grid Voltage .	440	360 volts
DC PLATE CURRENT 6.0 AMPS	Driving Power		365 watts
DC GRID CURRENT 1.0 AMP	Plate Input Power	42	60 kW
PLATE INPUT POWER 60 KW	Plate Dissipation	12	18 kW
	Plate Output Power		42 kW
PLATE DISSIPATION 25 KW	Approximate Load Impedance		750 ohms

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Class-C

MAXIMUM RATINGS DC PLATE VOLTAGE

DC PLATE CURRENT

PLATE DISSIPATION

GRID DISSIPATION . .

RADIO-FREQUENCY POWER AMPLIFIER PLATE-MODULATED

600

17.8

750 watts

27.5 kW

RADIO-FREQUENCY	TYPICAL OPERATION				
LINEAR AMPLIFIER Class-AB ₂	DC Plate Voltage 7000 10000 volts				
MAXIMUM RATINGS	DC Grid Voltage*250 -400 volts				
DC PLATE VOLTAGE 10000 MAX. VOLTS	Zero-Sig Plate Current 2.0 2.0 amps				
DC PLATE CURRENT 6.0 MAX. AMPS	Max-Sig DC Plate Current 6.0 6.0 amps				
PLATE DISSIPATION 25 MAX. KW	Max-Sig DC Grid Current 375 333 mA				
GRID DISSIPATION 500 MAX. WATTS	Peak RF Grid Voltage 530 700 volts				
*Adjust to give specified zero-signal dc plate current	Driving Power 200 240 watts				
Malon to Stree sharmen Tare a Street as brane assessment	Plate Output Power 26.4 41 kW				

Driving Power

Plate Output Power

7000 MAX. VOLTS

5.0 MAX. AMPS 16.5 MAX. KW

500 MAX. WATTS

Note: "TYPICAL OPERATION" data are obtained by calculation from published characteristic curves. No allowance for circuit losses has been made.

APPLICATION

ELECTRICAL

Filament—The rated filament voltage for the 3CW-25,000A3 is 6.3 volts. Filament voltage, as measured at the socket, must be maintained at 6.3 volts plus or minus five percent for maximum tube life and consistent performance.

Control Grid Operation—The grid current rating is one 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 0.4 to 0.6 amperes 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 500 watts.

Plate Operation—The maximum plate input power rating is 60 kilowatts at 10,000 volts and 6.0 amperes dc. This rating applies for Class C amplifier or oscillator

service and for Class AB applications. When used as a plate modulated rf amplifier, input is reduced to 7000 volts at 5.0 amperes dc. Maximum input may be exceeded for short periods during tuning without exceeding plate dissipation ratings.

Plate over-current protection should be provided to remove plate voltage quickly in the event of an overload 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 3CW25,000A3 is usable to 140 Mc. At this frequency, plate voltage must be reduced to 7000 volts in class A, B or C service. For plate-modulated applications at 140 Mc, plate voltage is reduced to 5500 volts.

Mounting—The 3CW25,000A3 must be mounted vertically, either base up or down. Where the tube is installed in a base up position, it is suggested that any clamping pressure or rf contact be made only in the area shown as "V" on the outline drawing.

Socket—The Eimac SK-1300 socket is used with the 3CW25,000A3 for making connections to the filament and grid. Where the socket is to be removable—as in base-up operation—the SK-1310 should be used.

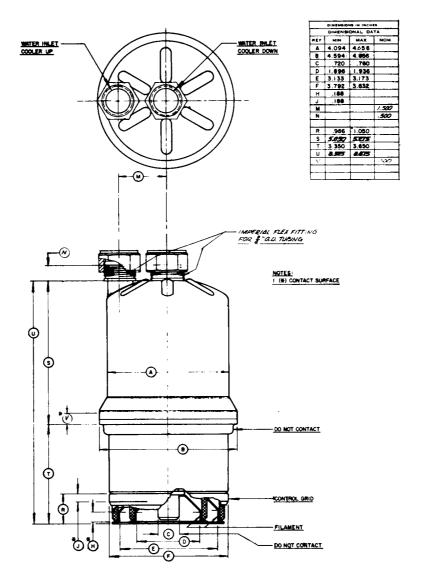
Cooling—Anode cooling is accomplished by circulating water through the integral anode—water jacket. With the tube in the anode-up position the water inlet is the outer water fitting and the outlet will be the center water fitting. When the tube is mounted base up, these are reversed.

The table below lists the minimum water flow requirement for adequate anode cooling at various plate dissipation levels. In all cases, inlet water temperature must be limited to 60°C or below, outlet water temperature must not exceed 70°C nor should inlet water pressure exceed 60 psi.

Minimum Water-Cooling Requirement				
Plate Dissipation (kW)	Water Flow (GPM)	Pressure Drop (PSI)		
10	6	0.2		
15	9	0.4		
20	12	0.7		
25	15	1.1		

Additional forced-air cooling of the tube's base is also required to maintain ceramic-to-metal seal temperatures below the 250°C maximum. Approximately 50 cfm of cooling air directed into the base structure, through the socket will generally satisfy this requirement.

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



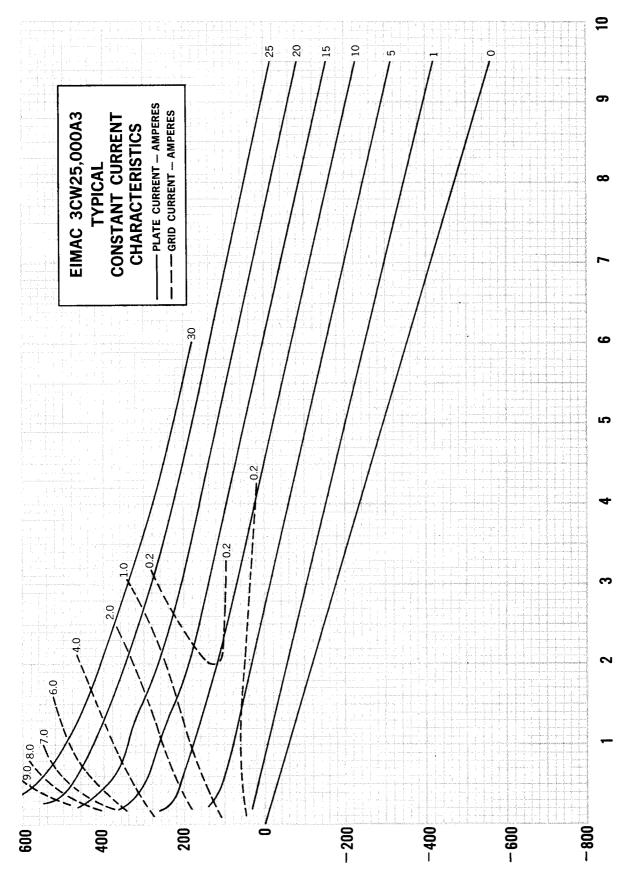


PLATE VOLTAGE - KILOVOLTS