



ELECTRONIC TUBE REFERENCE

3CW20000H7

Power - Triode (over 1000V 100W) electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION
CONSTRUCTION
TRIODE

Water-cooled ceramic-metal industrial power triode for high-power RF generation, amplification, or modulation. Its manufacturer ratings emphasize continuous transmitting duty with high plate dissipation and substantial power handling.

GENERAL CHARACTERISTICS

BASE DESIGNATION	—	BASE PINS	—
NOMINAL HEATER	7.5 V / 100 A	PARALLEL HEATER	— / —
HEATING	Direct	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

SECTION RATINGS

SECTION1 Triode	
AMPLIFICATION FACTOR	200
MAXIMUM PLATE VOLTAGE	20000 V
MAXIMUM PLATE DISSIPATION	20000 W
MAXIMUM GRID DISSIPATION	500 W
MAXIMUM CATHODE CURRENT	40 A
Single triode section; promoted values mapped from printed General Characteristics and Maximum Ratings headings.	

The EIMAC 3CW20000H7 is a water-cooled high-mu ceramic/metal power triode for regulator, switching, pulse, rf, and audio service.

SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1962 Eimac

Published test conditions and operating points. Values on this page are preserved as reported by this source.

1962 EIMAC

Section 1 · Triode

CHARACTERISTICS		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
The EIMAC 3CW20,000H7 is a ceramic/metal power	3 a	The EIMAC 3CW20,000H7 is a ceramic/metal power
The anode dissipation rating is 20,000 watts with water	20000 watts	The anode dissipation rating is 20,000 watts with water
Voltage	7.5 V	GeneralCharacteristics Voltage iininiinnnnns 7.5+ 0.4 V
Current, at 7.5V	7.5 v	GeneralCharacteristics Current, at 7.5V v 100 A
Amplification Factor (Average)	200	GeneralCharacteristics Amplification Factor (Average) 200
L0 1 59 pF	1 pF	GeneralCharacteristics L0 1 59 pF
Cout	0.2 pF	GeneralCharacteristics Cout .. vvviittt 0.2 pF
0 o T 36 pF	0 pF	GeneralCharacteristics 0 o T 36 pF
Frequency of Maximum Rating (CW)	110 MHz	GeneralCharacteristics Frequency of Maximum Rating (CW). ... 110 MHz
2. Capacitance values are for a cold tube as measured in a special	2 a	GeneralCharacteristics 2. Capacitance values are for a cold tube as measured in a special

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
(Effective 5-15-74) © by Varian Printed in U.S.A	5 A	(Effective 5-15-74) © by Varian Printed in U.S.A.
Envelope & Ceramic/Metal Seals	250 °C	Envelope & Ceramic/Metal Seals e 250°C
Net Weight (Approximate)	10.6 v	Net Weight (Approximate) ce e e «v.... 10.6 lbs: 4.8 kg

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
DC PLATE CURRENT	7.5 AMPERES	MaximumRatings DC PLATE CURRENT 7.5 AMPERES GRID DISSIPATION 500 WATTS
PULSE PLATE CURRENT	40 AMPERES	MaximumRatings PULSE PLATE CURRENT 40 AMPERES GRID DISSIPATION 500 WATTS
DC PLATE VOLTAGE	7000 VOLTS	RADIO FREQUENCY LINEAR AMPLIFIER TYPICAL OPERATION. Single-Tone Conditions DC PLATE VOLTAGE 7000 VOLTS B"jt;nsg'?';'ej;dcecu"f"f ---- 0';'5 1-3(2' adc
DC PLATE CURRENT	5 AMPERES	RADIO FREQUENCY LINEAR AMPLIFIER TYPICAL OPERATION. Single-Tone Conditions DC PLATE CURRENT 5.0 AMPERES Resonant Load mpedance 1020 745 Q
PLATE DISSIPATION	20 W	RADIO FREQUENCY LINEAR AMPLIFIER TYPICAL OPERATION. Single-Tone Conditions PLATE DISSIPATION 20 KILOWATTS Max. Signal Driving Power1, . . . , 885 1540 W
GRID DISSIPATION	500 WATTS	RADIO FREQUENCY LINEAR AMPLIFIER TYPICAL OPERATION. Single-Tone Conditions GRID DISSIPATION 500 WATTS Peak Envelope Plate
Output Power . ,	17.7 kW	RADIO FREQUENCY LINEAR AMPLIFIER TYPICAL OPERATION. Single-Tone Conditions Output Power . , ... 17.7 24.2 kW
1. Approximate value. Power Gainl	1	RADIO FREQUENCY LINEAR AMPLIFIER TYPICAL OPERATION. Single-Tone Conditions 1. Approximate value. Power Gainl 20.0 15.7 times
DC PLATE VOLTAGE	7000 VOLTS	MaximumRatings DC PLATE VOLTAGE 7000 VOLTS Max, Signal Plate Current 10.0 10.0 Adc
DC PLATE CURRENT	5 AMPERES	MaximumRatings DC PLATE CURRENT 5.0 AMPERES Max, Signal Grid Current1. 1.2 2.1 Adc
PLATE DISSIPATION	20 W	MaximumRatings PLATE DISSIPATION 20 KILOWATTS Driving Power 1., ... 290 560 W
GRID DISSIPATION	500 WATTS	MaximumRatings GRID DISSIPATION 500 WATTS Peak Audio Driving1
A Load Resistance, plate-to-plate	1030 A	MaximumRatings A Load Resistance, plate-to-plate .. 1030 1520

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
1. Approximate value. Max, Signal Plate Output Powerl. . 31.0 47.7 kW	1 kW	MaximumRatings 1. Approximate value. Max, Signal Plate Output Powerl. . 31.0 47.7 kW
DC PLATE VOLTAGE	7000 VOLTS	MaximumRatings DC PLATE VOLTAGE 7000 VOLTS Plgte Curren: 2.4 Adc
DC PLATE CURRENT	5 AMPERES	MaximumRatings DC PLATE CURRENT 5.0 AMPERES Gl'd current 0.25 Adc
GRID DISSIPATION	500 WATTS	MaximumRatings GRID DISSIPATION 500 WATTS Peak Driving Voltage2..... 310 v
DrivingPower1, . . ,	330 W	MaximumRatings DrivingPower1, . . , ... 330 W
1. Approximate value. Plate Output Power1	1 W	MaximumRatings 1. Approximate value. Plate Output Power1. 5650 W
3CW20,000H7 @a	3 a	MaximumRatings 3CW20,000H7 @a
PLATE DISSIPATION	20 v	MaximumRatings PLATE DISSIPATION 20 KILOWATTS Peak rf Grid Voltage 510 555 v
GRID DISSIPATION	500 WATTS	MaximumRatings GRID DISSIPATION 500 WATTS Grid Driving Power 420 530 W
Plate Output Power1	14 kW	MaximumRatings Plate Output Power1 14 21.3 kW



SOURCE OPERATING CONDITIONS

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1975 Eimac Tube Manual

Published test conditions and operating points. Values on this page are preserved as reported by this source.

1975 EIMAC TUBE MANUAL Section 1 · Triode

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Amplification factor	200	—
Heater/filament voltage	7.5 V	—
Heater/filament current	100 A	—

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum plate voltage	20000 V	—
Maximum plate dissipation	20000 W	—
Maximum grid dissipation	500 W	—
Maximum cathode/plate current	40 A	—
Frequency for maximum ratings	110 MHz	—
Pulse-service plate voltage	20000 V	Pulse
Pulse plate current	40 A	Pulse

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Input/grid-filament capacitance	53–65 pF	—
Output/plate-filament capacitance	0.3–0.3 pF	—
Feedback/grid-plate capacitance	32–40 pF	—

CONSTRUCTION		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Cooling	Water and forced air	—



SOURCE DATA APPENDIX

SOURCE OPERATING CONDITIONS

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1976 Eimac Tube Manual

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1976 EIMAC TUBE MANUAL

Section 1 · Triode

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Amplification factor	200	—
Heater/filament voltage	7.5 V	—

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater/filament current	100 A	—

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum plate voltage	20000 V	—
Maximum plate dissipation	20000 W	—
Maximum grid dissipation	500 W	—
Maximum cathode/plate current	40 A	—
Frequency for maximum ratings	110 MHz	—
Pulse-service plate voltage	20000 V	Pulse
Pulse plate current	40 A	Pulse

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Input/grid-filament capacitance	53–65 pF	—
Output/plate-filament capacitance	0.3–0.3 pF	—
Feedback/grid-plate capacitance	32–40 pF	—

CONSTRUCTION		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Cooling	Water and forced air	—



SOURCE DATA APPENDIX

SOURCE OPERATING CONDITIONS

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199X Svetlana

Published test conditions and operating points. Values on this page are preserved as reported by this source.

199X SVETLANA

Section 1 · Triode

CHARACTERISTICS		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
area, giving superior VHF performance to	200 MHz	T cooled power triode designed for use in zero-bias class B RF, audio amplifier,
Current @	7.5 V	T cooled power triode designed for use in zero-bias class B RF, audio amplifier,
Grid to filament	59 pF	T cooled power triode designed for use in zero-bias class B RF, audio amplifier,
Grid to anode	36 pF	T cooled power triode designed for use in zero-bias class B RF, audio amplifier,
Filament to anode	0.2 pF	T cooled power triode designed for use in zero-bias class B RF, audio amplifier,
Maximum frequency for full ratings (CW)	200 MHz	T cooled power triode designed for use in zero-bias class B RF, audio amplifier,

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
DC plate voltage	7000 V	Maximum Ratings
DC plate current	5 A	Maximum Ratings
Plate dissipation	20000 W	Maximum Ratings
Grid dissipation	500 W	Maximum Ratings
DC plate voltage 7000	7000 V	Typical Operation Grid Current - Amperes
Zero-signal DC plate current* 0.60	600 mA	Typical Operation Grid Current - Amperes
Single-tone DC plate current 3.72	5 A	Typical Operation Grid Current - Amperes
Grid bias 0	0 V	Typical Operation Grid Current - Amperes
Single-tone DC grid current* 0.71	1 A	Typical Operation Grid Current - Amperes
Peak driving power 885	1540 W	Typical Operation Grid Current - Amperes
Single-tone plate output power 17.7	24200 W	Typical Operation Grid Current - Amperes
Resonant load impedance 1020	745 Ohms	Typical Operation Grid Current - Amperes
Driving impedance 35	32 Ohms	Typical Operation Grid Current - Amperes
DC plate voltage	7000 V	Maximum Ratings 0
DC plate current	4 A	Maximum Ratings 0

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate dissipation	20000 W	Maximum Ratings 0
Grid dissipation	500 W	Maximum Ratings 0
DC plate voltage 5000	7000 V	Typical Operation
DC grid voltage -210	-230 V	Typical Operation
DC plate current 4.0	4 A	Typical Operation
DC grid current* 0.84	775 mA	Typical Operation
Peak RF grid voltage* 510	555 V	Typical Operation
Driving power 420	530 W	Typical Operation
Plate output power 14.0	21300 W	Typical Operation
DC plate voltage	7000 V	Maximum ratings (per tube)
DC plate current	5 A	Maximum ratings (per tube)
Grid Voltage =	400 V	Maximum ratings (per tube)
Plate dissipation	20000 W	Maximum ratings (per tube)
Grid dissipation	500 W	Maximum ratings (per tube)
DC grid voltage 0	0 V	Typical Operation (two tubes, sinusoidal waveform) 5 200