



ELECTRONIC TUBE REFERENCE

3CX10000U7

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

CONSOLIDATED TECHNICAL DATA

1 SECTION

CONSTRUCTION

TRIODE

Ceramic-metal industrial power triode designed for high-power RF amplifier, oscillator, or modulator service. Manufacturer data emphasize transmitting duty, substantial plate dissipation, and the cooling provisions required for continuous professional operation.

GENERAL CHARACTERISTICS

BASE DESIGNATION	—	BASE PINS	—
NOMINAL HEATER	15 V / 13.5 A	PARALLEL HEATER	— / —
HEATING	Indirect	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

SECTION RATINGS

SECTION 1 Triode	
AMPLIFICATION FACTOR	200
MAXIMUM PLATE VOLTAGE	6500 V
MAXIMUM PLATE DISSIPATION	10000 W
MAXIMUM GRID DISSIPATION	100 W
MAXIMUM CATHODE CURRENT	4 A
<i>Single triode section; promoted values mapped from printed General Characteristics and Maximum Ratings headings.</i>	

The EIMAC 3CX10000U7 is a forced-air-cooled high-mu vhf/uhf transmitting triode for cathode-driven linear, class-c, and pulsed rf 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 3CX10,000U7 is a ceramic/metal high-mu	3 a	The EIMAC 3CX10,000U7 is a ceramic/metal high-mu
pation rating of 10,000 watts, Cavity amplifier	10000 watts	pation rating of 10,000 watts, Cavity amplifier
The 3CX10,000U7 makes use of a beam-forming cathode	3 a	The 3CX10,000U7 makes use of a beam-forming cathode
Hea*er VO l *age	5 v	GeneralCharacteristics Hea*er VO l *age . . - L] . L] - - L] [] - L] L] L] . ** L] L] ** L] ** - . . . L] L] L] L] l 5. 0 t 0. 5 v
Heater Curren*, e 15,0 Volts o 6 6 & 6 8 8, _06 5 0 0 0 o 0 2 0 0 s 0 o 0 e e 0 @ 13,5 A	150 Volts	GeneralCharacteristics Heater Curren*, e 15,0 Volts o 6 6 & 6 8 8, _06 5 0 0 0 o 0 2 0 0 s 0 o 0 e e 0 @ 13,5 A
Cathode Warmup Time, @ 15,0 Volts (minimum) e e o 8 s s o 06 s o s e s s s e e 300 Sec	150 Volts	GeneralCharacteristics Cathode Warmup Time, @ 15,0 Volts (minimum) e e o 8 s s o 06 s o s e s s s e e 300 Sec
Amplification Factor (average) e 6 o 6 o o 6 5 5 6 6 6 8 8 6 06 0 0 06 6 00 s e 200	6	GeneralCharacteristics Amplification Factor (average) e 6 o 6 o o 6 5 5 6 6 6 8 8 6 06 0 0 06 6 00 s e 200
Cin e & & & 6 @ @ ° @ 8 & 0 & * 0 ® * 6 % 6 ° 0 & o s s s & 0 8 0 o o s 0o 8605 pF	6 pF	GeneralCharacteristics Cin e & & & 6 @ @ ° @ 8 & 0 & * 0 ® * 6 % 6 ° O & o s s s & 0 8 0 o o s 0o 8605 pF
CbUf 8 0 ® & o 6 & 0 & 0 0 & ¢ & & ° & & & S 6 6 & 5 5 o ° 6 o s s s 0 0 v o 2302 pF	8 v	GeneralCharacteristics CbUf 8 O ® & o 6 & 0 & 0 O & ¢ & & ° & & & S 6 6 & 5 5 o ° 6 o s s s 0 0 v o 2302 pF
Cpk ® ® 6 @& o ® & & 8 & s & 6 8 ° G 0 0 S 8 6 0 6 & 3 s 8 & s e s 0 s s s 0+ 0.25 pF	6 pF	GeneralCharacteristics Cpk ® ® 6 @& o ® & & 8 & s & 6 8 ° G O O S 8 6 O 6 & 3 s 8 & s e s 0 s s s 0+ 0.25 pF

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Cw	260 MHZ	GeneralCharacteristics Cw - - o . - - - L . * . * . L] L] . L] - L] L] - L] L] L] * - L] . L] . . [] L] . L] L] L] L] 260 MHZ
PU Sed @ o o o ® & & @ & & @ & & 0 & 0 & & 5 © o & & 6 6 & o & s o & o s = 500 MHz	5 MHZ	GeneralCharacteristics PU Sed @ o o o ® & & & @ & & @ & & O & O & & 5 © o & & 6 6 & o & s o & o s = 500 MHz
3, Capacitance values are for a cold tube as measured in a special shielded fixture in accord	3 a	GeneralCharacteristics 3, Capacitance values are for a cold tube as measured in a special shielded fixture in accord-

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
359150 (Effective 1 Sept 82; supersedes 1 Jan 81) Printed in U,S.A,	359150 A	359150 (Effective 1 Sept 82; supersedes 1 Jan 81) Printed in U,S.A,
Cathode wal'mup Time, Q 15.0 Volts a 6 @ & & & o & & 5 2 0 5 s s e 0 0 300	15 Volts	Cathode wal'mup Time, Q 15.0 Volts a 6 @ & & & o & & 5 2 0 5 s s e 0 0 300 - SSC
Cin L] [] [*	83 pF	Cin L] [] [* - * - - . L) . * . L] - L] * L] L] -] - L] L] . L] L] . - L] [J L[] L] 83.0 90.0 pF
mu'r L] L) * L) *] L) . L) L[] L) L) . L) L) . .] . . *	22.7 pF	mu'r L] L) * L) *] L) . L) L[] L) L) . L) L) . .] . . * . . - - - . L] . - . L[] [] 22.7 23.7 pF
C'n L) L) L . . L) . L) L] [*] . . * . . L) L] L) . L) . 83.0 90.0 pF	83 pF	C'n L) L) L . . L) . L) L] [*] . . * . . L) L] L) . L) . 83.0 90.0 pF
(bu* @ & & ° 8 8 & & 5 0 P * & 6 & 6 & 6 5 s 06 8 & B 0 0 s G s s 0 s 0 0* -= 005 pF	8 pF	(bu* @ & & ° 8 8 & & 5 0 P * & 6 & 6 & 6 5 s 06 8 & B O O s G s s 0 s 0 0* -= 005 pF
%p L] . LJ . . L] L] . L] L) . L] . L) L[] L] L) L)	22.7 pF	%p L] . LJ . . L] L] . L] L) . L] . L) L[] L] L) L) . - . L) LJ L] - L] L) 22.7 23.7 pF
1 values are for a cold tube as measured in a special shielded fixture In accordance with Electronics	1 a	1 values are for a cold tube as measured in a special shielded fixture In accordance with Electronics
DC PLATE VOLTAGE . « « « « « 6500 VOLTS PLATE DISSIPATION 4 & ¢« & o o » 10 KILOWATTS	6500 VOLTS	MaximumRatings DC PLATE VOLTAGE . « « « « « 6500 VOLTS PLATE DISSIPATION 4 & ¢« & o o » 10 KILOWATTS

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
DC PLATE CURRENT . &« « « « » 4.0 AMPERES GRID DISSIPATION + . o o o o o 100 WATTS	4 AMPERES	MaximumRatings DC PLATE CURRENT . &« « « « » 4.0 AMPERES GRID DISSIPATION + . o o o o o 100 WATTS
Channel fo (MHz) Gain (dB) + 1 dB BW (MHz)	1 MHz	MaximumRatings Channel fo (MHz) Gain (dB) + 1 dB BW (MHz)
LOW BAND: EIMAC 4 69 15,3 6.26 Typica! data taken at 2,5 kW single	4 kW	MaximumRatings LOW BAND: EIMAC 4 69 15,3 6.26 Typica! data taken at 2,5 kW single-
HIGH BAND: EIMAC i 201 16,7 6.27 Typical data taken at 2,5 kW single	201 kW	MaximumRatings HIGH BAND: EIMAC i 201 16,7 6.27 Typical data taken at 2,5 kW single-
Three-tone test under CCIR loading: Video -8 dB (below 2.5 kW peak output)	-8 kW	MaximumRatings Three-tone test under CCIR loading: Video -8 dB (below 2.5 kW peak output)
fo = 79 MHz BW 6 MHz Min, + 0,25 dB fo = 177 MHz BW = 6 MHz Min, + 0,25 dB	79 MHz	MaximumRatings fo = 79 MHz BW 6 MHz Min, + 0,25 dB fo = 177 MHz BW = 6 MHz Min, + 0,25 dB
BW fl 7 MHz Min, + 1,0 dB BW = 7 MHz Min, + 1,0 dB	7 MHz	MaximumRatings BW fl 7 MHz Min, + 1,0 dB BW = 7 MHz Min, + 1,0 dB
Driving Power * , , , . . 398 389 W Driving Power * , , , , 407 407 W	398 W	MaximumRatings Driving Power * , , , . . 398 389 W Driving Power * , , , , 407 407 W
Useful Power Output , . . 10 10 KW Useful Power OOutput ., . . 10 10 KW	10 KW	MaximumRatings Useful Power Output , . . 10 10 KW Useful Power OOutput ., . . 10 10 KW
Efficiency * , ¢« ¢« ¢ o ¢« » 53.2 50.5 4 Efficiency * v o v o o o » 50,0 50.5 4	53.2 v	MaximumRatings Efficiency * , ¢« ¢« ¢ o ¢« » 53.2 50.5 4 Efficiency * v o v o o o » 50,0 50.5 4
DC PLATE CURRENT . . « &« 4.0 AMPERES Cathode Voltage (bias) ** +42.9 vdc	4 AMPERES	MaximumRatings DC PLATE CURRENT . . « &« &« 4.0 AMPERES Cathode Voltage (bias) ** +42.9 vdc
GRID DISSIPATION o o o o 100 WATTS Single-Tone Plate Current 2,58 Adc	100 WATTS	MaximumRatings GRID DISSIPATION o o o o 100 WATTS Single-Tone Plate Current 2,58 Adc
Peak rf Driving Voltage * , 120 v	120 v	MaximumRatings Peak rf Driving Voltage * , 120 v
* May vary with particular installation, Driving Power * ., . , . , . 240 W	240 W	MaximumRatings * May vary with particular installation, Driving Power * ., . , . , . 240 W
** Adjust for specified Zero-Signal Plate Current, Single-Tone Usefu! Power Out # 10 kW	10 kW	MaximumRatings ** Adjust for specified Zero-Signal Plate Current, Single-Tone Usefu! Power Out # 10 kW

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
# Measured at the load, Resonant Load Impedance ., . 1100 Ohms	1100 Ohms	MaximumRatings # Measured at the load, Resonant Load Impedance ., . 1100 Ohms
referenced against one tone of a two-equal- 3rd Order « o o o o o o -45 dB	3 a	MaximumRatings referenced against one tone of a two-equal- 3rd Order « o o o o o o -45 dB
design for a maximum anode core temperature of 225	225 a	TYPICAL OPERATION values are obtained by measurement or by calculation from published characteristic design for a maximum anode core temperature of 225
The cooling data shown is for cooling air at 50°C	50 °C	TYPICAL OPERATION values are obtained by measurement or by calculation from published characteristic The cooling data shown is for cooling air at 50°C
10000 462 1.52 13,1 7.75 voltage for the 3CX10,000U7 is 15.0 volts and	10000 volts	TYPICAL OPERATION values are obtained by measurement or by calculation from published characteristic 10000 462 1.52 13,1 7.75 voltage for the 3CX10,000U7 is 15.0 volts and
should be maintained within plus or minus 0,5 volt	5 volt	TYPICAL OPERATION values are obtained by measurement or by calculation from published characteristic should be maintained within plus or minus 0,5 volt
circuit operate at a "Q" of five or more, 300 MHz, where energy absorption by the human body	300 a	MaximumRatings circuit operate at a "Q" of five or more, 300 MHz, where energy absorption by the human body
at 2 MHz, Intermodulation values listed are those stration (OSHA) standard)., It is generally	2 MHz	MaximumRatings at 2 MHz, Intermodulation values listed are those stration (OSHA) standard)., It is generally
of an internal arc, especially in those cases Standard RS~191, This requires the use of a	191 a	MaximumRatings of an internal arc, especially in those cases Standard RS~191, This requires the use of a
ance of 10 ohms in the positive plate power supply Standard RS-191,	10 ohms	MaximumRatings ance of 10 ohms in the positive plate power supply Standard RS-191,
of an internal arc, A maximum of four (4) joules	4 A	MaximumRatings of an internal arc, A maximum of four (4) joules
Carlos, CA 94070 U.S.A	94070 A	MaximumRatings Carlos, CA 94070 U.S.A.
150 A GROUNDED CATHODE	150 A	MaximumRatings 150 A GROUNDED CATHODE

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	15 V	—
Heater/filament current	13.5 A	—

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum plate voltage	6500 V	—
Maximum plate dissipation	10000 W	—
Maximum grid dissipation	100 W	—
Maximum cathode/plate current	4 A	—
Frequency for maximum ratings	500 MHz	—
CW maximum frequency	260 MHz	CW
Pulsed maximum frequency	500 MHz	Pulse
Typical single-tone useful power output	10000 W	ClassAB

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Input/grid-filament capacitance	86.5–86.5 pF	—
Output/plate-filament capacitance	23.2–23.2 pF	—
Feedback/grid-plate capacitance	0.25–0.25 pF	—

CONSTRUCTION		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Cooling	Forced air	—



SOURCE DATA APPENDIX

SOURCE OPERATING CONDITIONS

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1976 Eimac Tube Manual

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CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Amplification factor	200	—
Heater/filament voltage	15 V	—
Heater/filament current	13.5 A	—

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum plate voltage	6500 V	—
Maximum plate dissipation	10000 W	—
Maximum grid dissipation	100 W	—
Maximum cathode/plate current	4 A	—
Frequency for maximum ratings	500 MHz	—
CW maximum frequency	260 MHz	CW
Pulsed maximum frequency	500 MHz	Pulse
Typical single-tone useful power output	10000 W	ClassAB

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Input/grid-filament capacitance	86.5–86.5 pF	—

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Output/plate-filament capacitance	23.2–23.2 pF	—
Feedback/grid-plate capacitance	0.25–0.25 pF	—

CONSTRUCTION		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Cooling	Forced air	—

TUBE TINKER

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