



ELECTRONIC TUBE REFERENCE

8163

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

CONSOLIDATED TECHNICAL DATA

1 SECTION

CONSTRUCTION

TRIODE

Eimac compact zero-bias high-mu power triode for grounded-grid Class B audio and RF amplification, with oscillator capability. Roughly 400 W plate dissipation and operation through VHF provide high power gain from a compact transmitting tube.

GENERAL CHARACTERISTICS

BASE DESIGNATION	—	BASE PINS	5
NOMINAL HEATER	5 V / 14.1 A	PARALLEL HEATER	— / —
HEATING	Direct	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

SECTION RATINGS

SECTION 1 Triode	
AMPLIFICATION FACTOR	200
MAXIMUM PLATE VOLTAGE	4000 V
MAXIMUM PLATE DISSIPATION	400 W
MAXIMUM GRID DISSIPATION	20 W
MAXIMUM CATHODE CURRENT	400 mA
<i>Promoted maximum ratings/characteristics populated from published headings; service-specific values retained in parameters.</i>	

The Eimac 8163/3-400Z is a compact zero-bias high-mu power triode for class-B audio and radio-frequency amplifier service, with RF oscillator capability.

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

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
The EIMAC [1]	8163	The EIMAC 8163/3-400Z is a compact power triode intended to be used
The EIMAC [2]	3	The EIMAC 8163/3-400Z is a compact power triode intended to be used
The EIMAC [3]	-400	The EIMAC 8163/3-400Z is a compact power triode intended to be used
a power gain as high as twenty times can be obtained with the	8163	a power gain as high as twenty times can be obtained with the 8163/
Voltagettt ieeenn	50	Voltagettt ieeenn 50 V
Amplification Factor (Average)	200	Amplification Factor (Average) 200
Interelectrode Capacitances (Average)?	2	Interelectrode Capacitances (Average)? 2Grounded-Grid Connection:
Frequency for Maximum Ratings	110 MHz	Frequency for Maximum Ratings 110 MHz
Published value	2	2. Capacitance values are for a cold tube as measured in a special shielded fixture in accordance with Electronic In-
GROUND-GRID, Class B	1 kW	GROUND-GRID, Class B 1 kW PEP Input)
MAXIMUM RATINGS: Plate Voltage	2500	MAXIMUM RATINGS: Plate Voltage 2500 Vdc
Zero Sig. Plate Current! ,	73	Zero Sig. Plate Current! , 73 mAdc
DC PLATEVOLTAGE [1]	4000 V	DC PLATEVOLTAGE 4000 VOLTS Single Tone Plate Current 400 mAdc
DC PLATEVOLTAGE [2]	400 V	DC PLATEVOLTAGE 4000 VOLTS Single Tone Plate Current 400 mAdc

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
DC PLATE CURRENT	400 mA	DC PLATE CURRENT 0.40 AMPERE Single Tone Gtid Current1.
PLATE DISSIPATION [1]	400 W	PLATE DISSIPATION 400 WATTS Two Tone Plate Current 274 mAdc
PLATE DISSIPATION [2]	274 W	PLATE DISSIPATION 400 WATTS Two Tone Plate Current 274 mAdc
GRID DISSIPATION [1]	20 W	GRID DISSIPATION 20 WATTS Two Tone Grid Currentl, , 82 mAdc
GRID DISSIPATION [2]	82 W	GRID DISSIPATION 20 WATTS Two Tone Grid Currentl, , 82 mAdc
Driving Impedance	114	Driving Impedance 114 Q
Plate Voltage [1]	3000	Plate Voltage 3000 Vdc Max. Sig. Driving Power1 44 W
Plate Voltage [2]	44	Plate Voltage 3000 Vdc Max. Sig. Driving Power1 44 W
Zero Sig. Plate Current1 .. ., [1]	100	Zero Sig. Plate Current1 .. ., 100 mAdc Intermodulation Distortion Products 2. -35 dB
Zero Sig. Plate Current1 .. ., [2]	2	Zero Sig. Plate Current1 .. ., 100 mAdc Intermodulation Distortion Products 2. -35 dB
Zero Sig. Plate Current1 .. ., [3]	-35	Zero Sig. Plate Current1 .. ., 100 mAdc Intermodulation Distortion Products 2. -35 dB
Max. Sig. Plate Current	333	Max. Sig. Plate Current 333 mAdc
Max. Sig. Grid Current1	120	Max. Sig. Grid Current1 120 mAdc TYPICAL OPERATION (Minimum Distortion Products
Driving Impedance [1]	122	Driving Impedance 122 Q with Ep = 1500 Vdc)
Driving Impedance [2]	1500	Driving Impedance 122 Q with Ep = 1500 Vdc)
Resonant Load Impedance	4750	Resonant Load Impedance 4750)
Max. Sig. Driving Power [1]	1	Max. Sig. Driving Power 1. 2w Plate Voltage 1500 Vdc
Max. Sig. Driving Power [2]	2	Max. Sig. Driving Power 1. 2w Plate Voltage 1500 Vdc
Max. Sig. Driving Power [3]	1500	Max. Sig. Driving Power 1. 2w Plate Voltage 1500 Vdc
Peak Envelope Plate Output Power	656	Peak Envelope Plate Output Power . . . 656 W Zero Sig. Plate Current1., . . , ...

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Single Tone Plate Current . . . ,	400	Single Tone Plate Current . . . , 400 mAdc
TYPICAL OPERATION (Minimum Distortion Products) Single Tone Grid Current [1]	1	TYPICAL OPERATION (Minimum Distortion Products) Single Tone Grid Current 1, 163 mAdc
TYPICAL OPERATION (Minimum Distortion Products) Single Tone Grid Current [2]	163	TYPICAL OPERATION (Minimum Distortion Products) Single Tone Grid Current 1, 163 mAdc
Two Tone Plate Current	265	Two Tone Plate Current 265 mAdc
Plate Voltage [1]	2000	Plate Voltage 2000 Vdc Two Tone Grid Current 1. 92 mAdc
Plate Voltage [2]	1	Plate Voltage 2000 Vdc Two Tone Grid Current 1. 92 mAdc
Plate Voltage [3]	92	Plate Voltage 2000 Vdc Two Tone Grid Current 1. 92 mAdc
Published value [1]	62	.. 62 mAdc Driving Impedance 109 Q
Published value [2]	109	.. 62 mAdc Driving Impedance 109 Q
Single Tone Plate Current [1]	400	Single Tone Plate Current 400 mAdc Resonant Load Impedance 1620)
Single Tone Plate Current [2]	1620	Single Tone Plate Current 400 mAdc Resonant Load Impedance 1620)
Single Tone Grid Current [1]	1	Single Tone Grid Current 1. 148 mAdc Peak Envelope Useful Output Power?t, 300 W
Single Tone Grid Current [2]	148	Single Tone Grid Current 1. 148 mAdc Peak Envelope Useful Output Power?t, 300 W
Single Tone Grid Current [3]	300	Single Tone Grid Current 1. 148 mAdc Peak Envelope Useful Output Power?t, 300 W
Two Tone Plate Current [1]	265	Two Tone Plate Current 265 mAdc Max, Sig. Driving Powerl 46 W
Two Tone Plate Current [2]	46	Two Tone Plate Current 265 mAdc Max, Sig. Driving Powerl 46 W
Two Tone Grid Current? [1]	87	Two Tone Grid Current? 87 mAdc Intermodulation Distortion Products2 . -37 dB
Two Tone Grid Current? [2]	-37	Two Tone Grid Current? 87 mAdc Intermodulation Distortion Products2 . -37 dB
Driving Impedance	112	Driving Impedance 112 Q
Resonant Load Impedance [1]	2750	Resonant Load Impedance 2750 Q 1. Approximate value.

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Resonant Load Impedance [2]	1	Resonant Load Impedance 2750 Q 1. Approximate value.
Peak Envelope Useful Output Power! [1]	445	Peak Envelope Useful Output Power! . . 445 W 2. Approximate value: referenced against one tone of
Peak Envelope Useful Output Power! [2]	2	Peak Envelope Useful Output Power! . . 445 W 2. Approximate value: referenced against one tone of
MAXIMUM RATINGS (PER TUBE): Plate Voltage	3000	MAXIMUM RATINGS (PER TUBE): Plate Voltage 3000 Vdc
Grid Voltage	0	Grid Voltage 0 Vdc
DC PLATE VOLTAGE [1]	4000 V	DC PLATE VOLTAGE 4000 VOLTS Zero Sig. Plate Currentl 200 mAdc
DC PLATE VOLTAGE [2]	200 V	DC PLATE VOLTAGE 4000 VOLTS Zero Sig. Plate Currentl 200 mAdc
DC PLATE CURRENT [1]	400 mA	DC PLATE CURRENT 0.40 AMPERE Max. Sig, Plate Current 666 mAdc
DC PLATE CURRENT [2]	666 A	DC PLATE CURRENT 0.40 AMPERE Max. Sig, Plate Current 666 mAdc
PLATE DISSIPATION [1]	400 W	PLATE DISSIPATION 400 WATTS Max. Sig. Grid Current! 240 mAdc
PLATE DISSIPATION [2]	240 W	PLATE DISSIPATION 400 WATTS Max. Sig. Grid Current! 240 mAdc
GRID DISSIPATION	20 W	GRID DISSIPATION 20 WATTS
DrivingPower1	26	DrivingPower1. 26 W
Peak af Driving Voltage(per tube)l	88	Peak af Driving Voltage(per tube)l. . . 88 v
Load Resistance, Plate/Plate	9500	Load Resistance, Plate/Plate 9500 £}
Max. Sig. Plate Output Power1, . . ,	1310	Max. Sig. Plate Output Power1, . . , . 1310 W
Plate Voltage	3000	Plate Voltage 3000 Vdc
Plate Current	333	Plate Current 333 mAdc
DC PLATE VOLTAGE [1]	4000 V	DC PLATE VOLTAGE 4000 VOLTS GridVoltage -75 Vdc
DC PLATE VOLTAGE [2]	-75 V	DC PLATE VOLTAGE 4000 VOLTS GridVoltage -75 Vdc
DC PLATECURRENT [1]	350 mA	DC PLATECURRENT 0.35 AMPERE GridCurrent?. 130 mAdc

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
DC PLATECURRENT [2]	130 A	DC PLATECURRENT 0.35 AMPERE GridCurrent? 130 mAdc
PLATE DISSIPATION [1]	400 W	PLATE DISSIPATION 400 WATTS Peak rf Grid Voltage1 187 v
PLATE DISSIPATION [2]	187 W	PLATE DISSIPATION 400 WATTS Peak rf Grid Voltage1 187 v
GRID DISSIPATION [1]	20 W	GRID DISSIPATION 20 WATTS Grid Driving Power1 ., 25 W
GRID DISSIPATION [2]	25 W	GRID DISSIPATION 20 WATTS Grid Driving Power1 ., 25 W
Plate Output Power1	730	Plate Output Power1 730 W
Plate Voltage	3000	Plate Voltage 3000 Vdc
Plate Current	245	Plate Current 245 mAdc
DC PLATE VOLTAGE [1]	3000 V	DC PLATE VOLTAGE 3000 vOLTS Grid Voltage : -90 Vdc
DC PLATE VOLTAGE [2]	-90 V	DC PLATE VOLTAGE 3000 vOLTS Grid Voltage : -90 Vdc
DC PLATE CURRENT [1]	275 mA	DC PLATE CURRENT 0.275 AMPERE Grid Current? 100 mAdc
DC PLATE CURRENT [2]	100 A	DC PLATE CURRENT 0.275 AMPERE Grid Current? 100 mAdc
PLATE DISSIPATION [1]	270 W	PLATE DISSIPATION 270 WATTS Peak rf Grid Voltage2, 185 v
PLATE DISSIPATION [2]	185 W	PLATE DISSIPATION 270 WATTS Peak rf Grid Voltage2, 185 v
GRID DISSIPATION	20 W	GRID DISSIPATION 20 WATTS
Grid Driving Power2 .,	18	Grid Driving Power2 ., 18 W
Published value [1]	1	1. Drive modulation is required with a high-mu triode. Plate Output Power2 550 W
Published value [2]	550	1. Drive modulation is required with a high-mu triode. Plate Output Power2 550 W
Filament Current, at [1]	5 V	Filament Current, at 5.0 volts i it ittt ittt et ee e 13.5 147 A
Filament Current, at [2]	13.5 V	Filament Current, at 5.0 volts i it ittt ittt et ee e 13.5 147 A
Filament Current, at [3]	147 V	Filament Current, at 5.0 volts i it ittt ittt et ee e 13.5 147 A
Zero Bias Plate Current (Eb = [1])	3000	Zero Bias Plate Current (Eb = 3000 Vdc) . . . e e e e 80 115 mAdc

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Zero Bias Plate Current (Eb = [2])	80	Zero Bias Plate Current (Eb = 3000 Vdc) ... e e e 80 115 mAdc
Zero Bias Plate Current (Eb = [3])	115	Zero Bias Plate Current (Eb = 3000 Vdc) ... e e e 80 115 mAdc
Cut-Off Voltage (Ep = [1])	3000	Cut-Off Voltage (Ep = 3000 Vdc, Ip = 1.0mAdc) e e --- -25 Vdc

TUBE TINKER

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