



ELECTRONIC TUBE REFERENCE

8166

Power - Tetrode (NOT beam) (over 1000V 100W) electronic tube

CONSOLIDATED TECHNICAL
DATA

1 SECTION
CONSTRUCTION
TETRODE

High-power radial-beam transmitting tetrode for amplifier, oscillator, and modulator service, capable of multi-kilowatt output and FM broadcast operation around 110 MHz.

GENERAL CHARACTERISTICS

BASE DESIGNATION	—	BASE PINS	5
NOMINAL HEATER	7.5 V / 21.3 A	PARALLEL HEATER	— / —
HEATING	Direct	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

SECTION RATINGS

SECTION 1 Tetrode	
AMPLIFICATION FACTOR	6.9
MAXIMUM PLATE VOLTAGE	6000 V
MAXIMUM SCREEN VOLTAGE	1000 V
MAXIMUM PLATE DISSIPATION	1000 W
MAXIMUM SCREEN DISSIPATION	75 W
MAXIMUM GRID DISSIPATION	25 W
<i>Promoted maximum ratings/characteristics populated from published headings; service-specific values retained in parameters.</i>	

The EIMAC 8166/4-1000A is a radial-beam tetrode with a maximum plate dissipation rating of 1000 watts. Intended for use as an amplifier, oscillator, or modulator, the 8166/4-1000A is capable of efficient operation. In FM broadcast service on 110 Megahertz, two 8166/4-1000A tetrodes will deliver a useful output power of over 5000 watts. Operating under class AB, modulator conditions with less than 10

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 · Tetrode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
plate dissipation rating of	1000 W	plate dissipation rating of 1000 watts. Intended for use as an amplifier,
rodes will deliver a useful output power of over	5000 W	rodes will deliver a useful output power of over 5000 watts.
watts of peak driving power, two of these tubes will deliver	3900 W	watts of peak driving power, two of these tubes will deliver 3900 watts of
Voltage - - - - - «	7.5 V	Voltage - - - - - « - - - . 7.5 volts
Current [1]	20 A	Current - - - - - 20.0 22.7 amperes
Current [2]	22.7 A	Current - - - - - 20.0 22.7 amperes
Amplification Factor (Grid to Screen) [1]	6.1	Amplification Factor (Grid to Screen) - - - - - 6.1 7.7
Amplification Factor (Grid to Screen) [2]	7.7	Amplification Factor (Grid to Screen) - - - - - 6.1 7.7
Input S T T B T T [1]	23.8 pF	Input S T T B T T 23.8 324 uuf
Input S T T B T T [2]	324 pF	Input S T T B T T 23.8 324 uuf
Output - - - - - « - - = [1]	6.8	Output - - - - - « - - = - - 6.8 9.4 puuf
Output - - - - - « - - = [2]	9.4	Output - - - - - « - - = - - 6.8 9.4 puuf
Transconductance (I,= [1]	300 mA	Transconductance (I,=300 ma) - - - - - 10,000 pmhos
Transconductance (I,= [2]	10000 mA	Transconductance (I,=300 ma) - - - - - 10,000 pmhos
Highest Frequency for Maximum Ratings	110 MHz	Highest Frequency for Maximum Ratings - - - - - 110 MHz
DC PLATE VOLTAGE [1]	60 V	DC PLATE VOLTAGE - 60 00 VOLTS

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
DC PLATE VOLTAGE [2]	0 V	DC PLATE VOLTAGE - 60 00 VOLTS
DC SCREEN VOLTAGE [1]	10 V	DC SCREEN VOLTAGE - 10 00 VOLTS
DC SCREEN VOLTAGE [2]	0 V	DC SCREEN VOLTAGE - 10 00 VOLTS
DC GRID VOLTAGE [1]	-5 V	DC GRID VOLTAGE - - —5 00 VOLTS
DC GRID VOLTAGE [2]	0 V	DC GRID VOLTAGE - - —5 00 VOLTS
DC PLATE CURRENT	700 mA	DC PLATE CURRENT - - 700 MA
PLATE DISSIPATION	1000 W	PLATE DISSIPATION - 1000 WATTS
SCREEN DISSIPATION	75 W	SCREEN DISSIPATION - 75 WATTS
GRID DISSIPATION	25 W	GRID DISSIPATION - - 25 WATTS
one tube) DC Plate Voltage [1]	4000 V	one tube) DC Plate Voltage - - - - - . 4000 5000 6000 volts
one tube) DC Plate Voltage [2]	5000 V	one tube) DC Plate Voltage - - - - - . 4000 5000 6000 volts
one tube) DC Plate Voltage [3]	6000 V	one tube) DC Plate Voltage - - - - - . 4000 5000 6000 volts
DC Plate Voltage [1]	3000 V	DC Plate Voltage - - - - - 3000 4000 5000 6000 volts DC Screen Voltage L 450 500 500 volts
DC Plate Voltage [2]	4000 V	DC Plate Voltage - - - - - 3000 4000 5000 6000 volts DC Screen Voltage L 450 500 500 volts
DC Plate Voltage [3]	5000 V	DC Plate Voltage - - - - - 3000 4000 5000 6000 volts DC Screen Voltage L 450 500 500 volts
DC Plate Voltage [4]	6000 V	DC Plate Voltage - - - - - 3000 4000 5000 6000 volts DC Screen Voltage L 450 500 500 volts
DC Plate Voltage [5]	450 V	DC Plate Voltage - - - - - 3000 4000 5000 6000 volts DC Screen Voltage L 450 500 500 volts
DC Plate Voltage [6]	500 V	DC Plate Voltage - - - - - 3000 4000 5000 6000 volts DC Screen Voltage L 450 500 500 volts
DC Plate Voltage [7]	500 V	DC Plate Voltage - - - - - 3000 4000 5000 6000 volts DC Screen Voltage L 450 500 500 volts
DC Screen Voltage - e e e [1]	500 V	DC Screen Voltage - e e e . 500 500 500 500 volts DC Grid Voltage - - - - . - —150 —160 —180 volts
DC Screen Voltage - e e e [2]	500 V	DC Screen Voltage - e e e . 500 500 500 500 volts DC Grid Voltage - - - - . - —150 —160 —180 volts
DC Screen Voltage - e e e [3]	500 V	DC Screen Voltage - e e e . 500 500 500 500 volts DC Grid Voltage - - - - . - —150 —160 —180 volts

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
DC Screen Voltage - e e e [4]	500 V	DC Screen Voltage - e e e . 500 500 500 500 volts DC Grid Voltage - - - - . . - 150 -160 -180 volts
DC Screen Voltage - e e e [5]	-150 V	DC Screen Voltage - e e e . 500 500 500 500 volts DC Grid Voltage - - - - . . - 150 -160 -180 volts
DC Screen Voltage - e e e [6]	-160 V	DC Screen Voltage - e e e . 500 500 500 500 volts DC Grid Voltage - - - - . . - 150 -160 -180 volts
DC Screen Voltage - e e e [7]	-180 V	DC Screen Voltage - e e e . 500 500 500 500 volts DC Grid Voltage - - - - . . - 150 -160 -180 volts
DC Grid Voltage [1]	-150 V	DC Grid Voltage - - - - . -150 =150 -200 -200 volts DOC Plate Cyrrrent - - - . - . . 1.15 1.25 1.25 amps
DC Grid Voltage [2]	150 V	DC Grid Voltage - - - - . -150 =150 -200 -200 volts DOC Plate Cyrrrent - - - . - . . 1.15 1.25 1.25 amps
DC Grid Voltage [3]	-200 V	DC Grid Voltage - - - - . -150 =150 -200 -200 volts DOC Plate Cyrrrent - - - . - . . 1.15 1.25 1.25 amps
DC Grid Voltage [4]	-200 V	DC Grid Voltage - - - - . -150 =150 -200 -200 volts DOC Plate Cyrrrent - - - . - . . 1.15 1.25 1.25 amps
DC Grid Voltage [5]	1.15 V	DC Grid Voltage - - - - . -150 =150 -200 -200 volts DOC Plate Cyrrrent - - - . - . . 1.15 1.25 1.25 amps
DC Grid Voltage [6]	1.25 V	DC Grid Voltage - - - - . -150 =150 -200 -200 volts DOC Plate Cyrrrent - - - . - . . 1.15 1.25 1.25 amps
DC Grid Voltage [7]	1.25 V	DC Grid Voltage - - - - . -150 =150 -200 -200 volts DOC Plate Cyrrrent - - - . - . . 1.15 1.25 1.25 amps
DC Plate Current - - - - =« [1]	700 mA	DC Plate Current - - - - =« - 700 700 700 ma DC Screen Current N L 280 240 250 ma
DC Plate Current - - - - =« [2]	700 mA	DC Plate Current - - - - =« - 700 700 700 ma DC Screen Current N L 280 240 250 ma
DC Plate Current - - - - =« [3]	700 mA	DC Plate Current - - - - =« - 700 700 700 ma DC Screen Current N L 280 240 250 ma
DC Plate Current - - - - =« [4]	280 mA	DC Plate Current - - - - =« - 700 700 700 ma DC Screen Current N L 280 240 250 ma
DC Plate Current - - - - =« [5]	240 mA	DC Plate Current - - - - =« - 700 700 700 ma DC Screen Current N L 280 240 250 ma

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
DC Plate Current - - - - =« [6]	250 mA	DC Plate Current - - - - =« - 700 700 700 ma DC Screen Current N L 280 240 250 ma
DC Screen Current - -« [1]	146 mA	DC Screen Current - -« - - 146 140 ma DC Grid Current - - - - e - 80 80 100 ma
DC Screen Current - -« [2]	140 mA	DC Screen Current - -« - - 146 140 ma DC Grid Current - - - - e - 80 80 100 ma
DC Screen Current - -« [3]	80 mA	DC Screen Current - -« - - 146 140 ma DC Grid Current - - - - e - 80 80 100 ma
DC Screen Current - -« [4]	80 mA	DC Screen Current - -« - - 146 140 ma DC Grid Current - - - - e - 80 80 100 ma
DC Screen Current - -« [5]	100 mA	DC Screen Current - -« - - 146 140 ma DC Grid Current - - - - e - 80 80 100 ma
DC Grid Current - - - - .« [1]	38 mA	DC Grid Current - - - - .« . 38 42 ma Screen Dissipation (per 1ube) - - - - 63 60 63 watts
DC Grid Current - - - - .« [2]	42 mA	DC Grid Current - - - - .« . 38 42 ma Screen Dissipation (per 1ube) - - - - 63 60 63 watts
DC Grid Current - - - - .« [3]	1 mA	DC Grid Current - - - - .« . 38 42 ma Screen Dissipation (per 1ube) - - - - 63 60 63 watts
DC Grid Current - - - - .« [4]	63 mA	DC Grid Current - - - - .« . 38 42 ma Screen Dissipation (per 1ube) - - - - 63 60 63 watts
DC Grid Current - - - - .« [5]	60 mA	DC Grid Current - - - - .« . 38 42 ma Screen Dissipation (per 1ube) - - - - 63 60 63 watts
DC Grid Current - - - - .« [6]	63 mA	DC Grid Current - - - - .« . 38 42 ma Screen Dissipation (per 1ube) - - - - 63 60 63 watts
Screen Dissipation B [1]	73 W	Screen Dissipation B 73 70 watts Driving Power (approx.) - - - - 350 400 400 watts
Screen Dissipation B [2]	70 W	Screen Dissipation B 73 70 watts Driving Power (approx.) - - - - 350 400 400 watts
Screen Dissipation B [3]	350 W	Screen Dissipation B 73 70 watts Driving Power (approx.) - - - - 350 400 400 watts
Screen Dissipation B [4]	400 W	Screen Dissipation B 73 70 watts Driving Power (approx.) - - - - 350 400 400 watts
Screen Dissipation B [5]	400 W	Screen Dissipation B 73 70 watts Driving Power (approx.) - - - - 350 400 400 watts
Grid Dissipation - - e e [1]	5 W	Grid Dissipation - - e e . 5 6 watts Plate Input Power D L - 4600 6250 7500 watts
Grid Dissipation - - e e [2]	6 W	Grid Dissipation - - e e . 5 6 watts Plate Input Power D L - 4600 6250 7500 watts
Grid Dissipation - - e e [3]	4600 W	Grid Dissipation - - e e . 5 6 watts Plate Input Power D L - 4600 6250 7500 watts

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Grid Dissipation - - e e [4]	6250 W	Grid Dissipation - - e e . 5 6 watts Plate Input Power D L - 4600 6250 7500 watts
Grid Dissipation - - e e [5]	7500 W	Grid Dissipation - - e e . 5 6 watts Plate Input Power D L - 4600 6250 7500 watts
Peak RF Grid Input Voltage (approx.) [1]	290 V	Peak RF Grid Input Voltage (approx.) - 290 350 volts Plate Dissipation (per tube) - - - - 650 850 900 watts
Peak RF Grid Input Voltage (approx.) [2]	350 V	Peak RF Grid Input Voltage (approx.) - 290 350 volts Plate Dissipation (per tube) - - - - 650 850 900 watts
Peak RF Grid Input Voltage (approx.) [3]	650 V	Peak RF Grid Input Voltage (approx.) - 290 350 volts Plate Dissipation (per tube) - - - - 650 850 900 watts
Peak RF Grid Input Voltage (approx.) [4]	850 V	Peak RF Grid Input Voltage (approx.) - 290 350 volts Plate Dissipation (per tube) - - - - 650 850 900 watts
Peak RF Grid Input Voltage (approx.) [5]	900 V	Peak RF Grid Input Voltage (approx.) - 290 350 volts Plate Dissipation (per tube) - - - - 650 850 900 watts
Driving Power (approx.)* - - n [1]	15 W	Driving Power (approx.)* - - - - n 15 watts Useful Output Power - - - . . 3000 4200 5200 watts
Driving Power (approx.)* - - n [2]	3000 W	Driving Power (approx.)* - - - - n 15 watts Useful Output Power - - - . . 3000 4200 5200 watts
Driving Power (approx.)* - - n [3]	4200 W	Driving Power (approx.)* - - - - n 15 watts Useful Output Power - - - . . 3000 4200 5200 watts
Driving Power (approx.)* - - n [4]	5200 W	Driving Power (approx.)* - - - - n 15 watts Useful Output Power - - - . . 3000 4200 5200 watts
Plate Dissipation - - . « [1]	670 W	Plate Dissipation - - . « - . 670 800 watts ment in operating equipment. The output power is useful power measured in a
Plate Dissipation - - . « [2]	800 W	Plate Dissipation - - . « - . 670 800 watts ment in operating equipment. The output power is useful power measured in a
Plate Output Power [1]	1430 W	Plate Output Power - - - - - 1430 3400 watts load circuit. The driving power is that taken by the tube and a practical reso-
Plate Output Power [2]	3400 W	Plate Output Power - - - - - 1430 3400 watts load circuit. The driving power is that taken by the tube and a practical reso-
*Apparent driving power requirements increase above [1]	30 MHz	*Apparent driving power requirements increase above 30 MHz. At 110 MHz the nant circuit. In many cases with further refinement and improved techniques,

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
*Apparent driving power requirements increase above [2]	110 MHz	*Apparent driving power requirements increase above 30 MHz. At 110 MHz the nant circuit. In many cases with further refinement and improved techniques,
PLATE-MODULATED RADIO-FREQUENCY TYPICAL OPERATION (Frequencies below	110	PLATE-MODULATED RADIO-FREQUENCY TYPICAL OPERATION (Frequencies below 110MHz, one tube)
DC Plate Voltage [1]	3000 V	DC Plate Voltage - - - - - 3000 4000 5000 5500*volts
DC Plate Voltage [2]	4000 V	DC Plate Voltage - - - - - 3000 4000 5000 5500*volts
DC Plate Voltage [3]	5000 V	DC Plate Voltage - - - - - 3000 4000 5000 5500*volts
DC Plate Voltage [4]	5500 V	DC Plate Voltage - - - - - 3000 4000 5000 5500*volts
AMPLIFIER DC Screen Voltage [1]	500 V	AMPLIFIER DC Screen Voltage - - - - - 500 500 500 500 volts
AMPLIFIER DC Screen Voltage [2]	500 V	AMPLIFIER DC Screen Voltage - - - - - 500 500 500 500 volts
AMPLIFIER DC Screen Voltage [3]	500 V	AMPLIFIER DC Screen Voltage - - - - - 500 500 500 500 volts
AMPLIFIER DC Screen Voltage [4]	500 V	AMPLIFIER DC Screen Voltage - - - - - 500 500 500 500 volts