



ELECTRONIC TUBE REFERENCE

F5604

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

CONSOLIDATED TECHNICAL DATA

1 SECTION

CONSTRUCTION

TRIODE

Rugged forced-air-cooled power triode for RF amplification, oscillation, Class B modulation, and industrial RF heating. Approximately 10 kW plate dissipation and high plate-voltage capability support substantial professional RF power.

GENERAL CHARACTERISTICS

BASE DESIGNATION	—	BASE PINS	—
NOMINAL HEATER	11 V / 176 A	PARALLEL HEATER	— / —
HEATING	Direct	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

SECTION RATINGS

SECTION 1 Triode	
AMPLIFICATION FACTOR	19.5
MAXIMUM PLATE VOLTAGE	12500 V
MAXIMUM PLATE DISSIPATION	10000 W
MAXIMUM CATHODE CURRENT	12.4 A
Published maximum ratings and characteristics audited; remaining numeric data retained densely in parameter table.	

Federal F-5604 rugged forced-air-cooled power triode for RF amplifier, oscillator, Class B modulator and RF-heating service; 10 kW dissipation.

SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1962 ITT

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

1962 ITT

Section 1 · Triode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Published value	10 W	10 Kilowatts Plate Dissipation
pating	10	pating 10 kilowatts. The cathode is a pure tungsten
filament. Maximum ratings apply up to	22.5	filament. Maximum ratings apply up to 22.5 megacycles.
Operation at	45	Operation at 45 megacycles is permissible with plate
p Filament Voltage	11 V	p Filament Voltage 11.0 Volts
p Filament Current	176 A	p Filament Current 176 Amperes
p Filament Starting Current	270 mA	p Filament Starting Current 270 Amperes max.
) Peak Cathode Current	2.4 A	) Peak Cathode Current 2.4 Amperes
p Filament Cold Resistance	52	p Filament Cold Resistance .0052 Ohms
Grid-Plate	25	Grid-Plate 25 puf
Grid-Filament	30	Grid-Filament 30 puf
Plate-Filament	1.25	Plate-Filament 1.25 puf
Air Temperature	45	Air Temperature 45° C
Temperature	230	Temperature 230°C
Temperature	160	Temperature 160° C
Published value	10 W	10 Kilowatts Plate Dissipation rugged construction, a longer life of
DC Plate Voltage	12500 V	DC Plate Voltage 12,500 Volts Maximum Ratings
Max. Signal DC Plate Current**	2.75 mA	Max. Signal DC Plate Current** 2.75 Amperes
) . DC Plate Yoltage	10500	) . DC Plate Yoltage 10,500 Volts

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Max. Signal Plate Input** [1]	32.5 V	Max. Signal Plate Input** 32.5 Kilowatts DC Grid Voltage —2.000 Volts
Max. Signal Plate Input** [2]	-2 V	Max. Signal Plate Input** 32.5 Kilowatts DC Grid Voltage —2.000 Volts
Plate Dissipation** [1]	10 A	Plate Dissipation** 10 Kilowatts DC Plate Current 1.5 Amperes
Plate Dissipation** [2]	1.5 A	Plate Dissipation** 10 Kilowatts DC Plate Current 1.5 Amperes
DC Grid Current	450 mA	DC Grid Current 0.45 Ampere
Typical Operation Plate Input	15	Typical Operation Plate Input 15 Kilowatts
Plate Dissipation	6.6 W	Plate Dissipation 6.6 Kilowatts
D C Plate Voltage	12000 V	D C Plate Voltage 12,000 Volts Typical Operation
DC Grid Voltage —b0 [1]	0 V	DC Grid Voltage —b00 Volts DC Plate Voltage 10,000 Volts
DC Grid Voltage —b0 [2]	10000 V	DC Grid Voltage —b00 Volts DC Plate Voltage 10,000 Volts
Peak A-F Grid to Grid Voltage [1]	2380	Peak A-F Grid to Grid Voltage 2,380 Volts DC Grid Voltage —1,300 Volts
Peak A-F Grid to Grid Voltage [2]	-1300	Peak A-F Grid to Grid Voltage 2,380 Volts DC Grid Voltage —1,300 Volts
Zero Signal DC Plate Current [1]	600 mA	Zero Signal DC Plate Current 0.6 Amperes PD? kPF-ff %""d Vc;lfage -9 32 X?HS
Zero Signal DC Plate Current [2]	-9 A	Zero Signal DC Plate Current 0.6 Amperes PD? kPF-ff %""d Vc;lfage -9 32 X?HS
Zero Signal DC Plate Current [3]	32 A	Zero Signal DC Plate Current 0.6 Amperes PD? kPF-ff %""d Vc;lfage -9 32 X?HS
EA;xm.\umL&g;a; D.C+ Plate Current	4.5 A	EA;xm.\umL&g;a; D.C+ Plate Current 4.5 Amperes
eclhve °a eésistance [1]	900 W	eclhve °a eésistance 900 Oh Driving Power, approx. 280 Watts
eclhve °a eésistance [2]	280 W	eclhve °a eésistance 900 Oh Driving Power, approx. 280 Watts
(plate to plate) [1]	590 W	(plate to plate) 5,90 ms Power Output, approx. 11.9 Kilowatts
(plate to plate) [2]	11.9 W	(plate to plate) 5,90 ms Power Output, approx. 11.9 Kilowatts
_ rid Voltage	-2 V	_ rid Voltage —2, olts

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
CLASS B TELEPHONY DC Plate Current	3 A	CLASS B TELEPHONY DC Plate Current 3 Amperes
(Carrier conditions per tube for use with a maximum DC Grid Current	0.45 mA	(Carrier conditions per tube for use with a maximum DC Grid Current 0.45 Ampere
modulation factor of [1]	1	modulation factor of 1.0) Plate Inpuf 32.5 Kilowatts
modulation factor of [2]	32.5	modulation factor of 1.0) Plate Inpuf 32.5 Kilowatts
Maximum Ratings Plate Dissipation	10 W	Maximum Ratings Plate Dissipation 10 Kilowatts
DC Plate Voltage	12500 V	DC Plate Voltage 12,500 Volts Typical Operation
DC Plate Current [1]	4 V	DC Plate Current .4 Amperes DC Plate Voltage ~ 8,000 10,000 12,000 Volts
DC Plate Current [2]	8000 V	DC Plate Current .4 Amperes DC Plate Voltage ~ 8,000 10,000 12,000 Volts
DC Plate Current [3]	10000 V	DC Plate Current .4 Amperes DC Plate Voltage ~ 8,000 10,000 12,000 Volts
DC Plate Current [4]	12000 V	DC Plate Current .4 Amperes DC Plate Voltage ~ 8,000 10,000 12,000 Volts
Plate I“‘P’{+) i6 KllowaHs Filament Voltage [1]	10.5 V	Plate I“‘P’{+) i6 KllowaHs Filament Voltage 10.5 10.7 10.9 Volts
Plate I“‘P’{+) i6 KllowaHs Filament Voltage [2]	10.7 V	Plate I“‘P’{+) i6 KllowaHs Filament Voltage 10.5 10.7 10.9 Volts
Plate I“‘P’{+) i6 KllowaHs Filament Voltage [3]	10.9 V	Plate I“‘P’{+) i6 KllowaHs Filament Voltage 10.5 10.7 10.9 Volts
Plate Dissipation [1]	10 V	Plate Dissipation 10 Kilowatts DC Grid Voltage —5680 —870 —I,170 Volts
Plate Dissipation [2]	-5680 V	Plate Dissipation 10 Kilowatts DC Grid Voltage —5680 —870 —I,170 Volts
Plate Dissipation [3]	-870 V	Plate Dissipation 10 Kilowatts DC Grid Voltage —5680 —870 —I,170 Volts
Plate Dissipation [4]	170 V	Plate Dissipation 10 Kilowatts DC Grid Voltage —5680 —870 —I,170 Volts
Typical Operation Voltage [1]	1300 V	Typical Operation Voltage 1,300 1,620 2,130 Volts
Typical Operation Voltage [2]	1620 V	Typical Operation Voltage 1,300 1,620 2,130 Volts
Typical Operation Voltage [3]	2130 V	Typical Operation Voltage 1,300 1,620 2,130 Volts

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
DC Plate Current [1]	1.5 A	DC Plate Current 1.5 2.0 2.5 Amperes
DC Plate Current [2]	2 A	DC Plate Current 1.5 2.0 2.5 Amperes
DC Plate Current [3]	2.5 A	DC Plate Current 1.5 2.0 2.5 Amperes
DC Plate Voltage	10000 V	DC Plate Voltage 10,000 Volts DC Grid Current,
DC Grid Voltage [1]	-500 V	DC Grid Voltage —500 Volts approx. 19 .20 .22 Ampere
DC Grid Voltage [2]	19 V	DC Grid Voltage —500 Volts approx. 19 .20 .22 Ampere
DC Grid Voltage [3]	20 V	DC Grid Voltage —500 Volts approx. 19 .20 .22 Ampere
DC Grid Voltage [4]	22 V	DC Grid Voltage —500 Volts approx. 19 .20 .22 Ampere
Peak R-F Grid Voltage	490 V	Peak R-F Grid Voltage 490 Volts Driving Power,
DC Plate Current [1]	800 mA	DC Plate Current 0.8 Ampere approx. 250 320 470 Waits
DC Plate Current [2]	250 A	DC Plate Current 0.8 Ampere approx. 250 320 470 Waits
DC Plate Current [3]	320 A	DC Plate Current 0.8 Ampere approx. 250 320 470 Waits
DC Plate Current [4]	470 A	DC Plate Current 0.8 Ampere approx. 250 320 470 Waits
Driving Power, approx.}	70 W	Driving Power, approx.} 70 Watts Power Output,
Power Output, approx	2.8 W	Power Output, approx. 2.8 Kilowatts
» comp	10 W	» comp 10 Kilowatts Plate Dissipation
PLATE CHARACTERISTICS (	3	PLATE CHARACTERISTICS (3%
POWER TRIODE i /	7 W	POWER TRIODE i /7
Published value	10	10 Kilowatts Plate Dissipati(m man's pride and Federal's satisfaction



SOURCE DATA APPENDIX

1962 ITT Industrial and Transmitting Tubes

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

1962 ITT INDUSTRIAL AND TRANSMITTING TUBES

Section 1 · Triode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
FilamentStartingCurrent	270 A	—
Peak Cathode Current	12.4 A	—
AnodeCoolingMethod	Forced Air	—
MaximumOperatingFrequency	22.5 MHz full rating; 45 MHz reduced rating	—
Maximum Anode Dissipation	10000 W	Absolute maximum / applicable service

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