



ELECTRONIC TUBE REFERENCE

F5658

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

CONSOLIDATED TECHNICAL DATA

1 SECTION

CONSTRUCTION

TRIODE

Water-cooled high-frequency power triode for RF amplification, oscillation, and Class B modulation. Approximately 20 kW plate dissipation and 12.5 kV capability provide major professional transmitter power through the HF range.

GENERAL CHARACTERISTICS

BASE DESIGNATION	—	BASE PINS	—
NOMINAL HEATER	12 V / 290 A	PARALLEL HEATER	— / —
HEATING	Direct	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

SECTION RATINGS

SECTION 1 Triode	
AMPLIFICATION FACTOR	20.5
MAXIMUM PLATE VOLTAGE	12500 V
MAXIMUM PLATE DISSIPATION	20000 W
<i>Published maximum ratings and characteristics audited; remaining numeric data retained densely in parameter table.</i>	

Federal F-5658 water-cooled high-frequency power triode for RF amplifier, oscillator and Class B modulator service; 20 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	20 W	20 Kilowatts Plate Dissipation
ble of dissipating	20	ble of dissipating 20 kilowatts. The cathode is a
for high-frequency applications up to	15	for high-frequency applications up to 15 megacycles
) Filament Voltage	12 V	) Filament Voltage 12 Volts
) Filament Current	290 A	) Filament Current 290 Amperes
p Filament Starting Current	450 mA	p Filament Starting Current 450 Amperes max.
) Filament Cold Resistance	36	) Filament Cold Resistance .0036 Ohms
Grid-Plate	24	Grid-Plate 24 puf
Grid-Filament	39	Grid-Filament 39 puf
Plate-Filament	2	Plate-Filament 2 pupf
Water Flow on Anode	15	Water Flow on Anode 15 GPM
Temperature	70	Temperature 70° C
tensive ICIfOI'CI'fOI'Y experimenfution: Maximum Glass Temperature	160	tensive ICIfOI'CI'fOI'Y experimenfution: Maximum Glass Temperature 160° C
Type F	5658	Type F-5658 Frequency
Published value [1]	20 W	20 Kilowatts Plate Dissipation Class C—Unmodulated 100 75 50 Per Cent
Published value [2]	100 W	20 Kilowatts Plate Dissipation Class C—Unmodulated 100 75 50 Per Cent
Published value [3]	75 W	20 Kilowatts Plate Dissipation Class C—Unmodulated 100 75 50 Per Cent
Published value [4]	50 W	20 Kilowatts Plate Dissipation Class C—Unmodulated 100 75 50 Per Cent

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum Signal DC Plate Currentt	5 mA	Maximum Signal DC Plate Currentt 5 Amperes Maximum Ratings, Absolute Values
Maximum Signal Plate Inputt [1]	40 V	Maximum Signal Plate Inputt 40 Kilowatts DC Plate Voltage 10,500 Volts
Maximum Signal Plate Inputt [2]	10500 V	Maximum Signal Plate Inputt 40 Kilowatts DC Plate Voltage 10,500 Volts
Plate Dissipationt [1]	15 V	Plate Dissipationt 15 Kilowatts DC Grid Voltage — 1,600 Volts
Plate Dissipationt [2]	1600 V	Plate Dissipationt 15 Kilowatts DC Grid Voltage — 1,600 Volts
DC Plate Current	3.6 A	DC Plate Current 3.6 Amperes
Typical Operation DC Grid Current	800 mA	Typical Operation DC Grid Current 0.8 Amperes
{Unless otherwise specified, values are for two tubes) Plate Input	36	{Unless otherwise specified, values are for two tubes) Plate Input 36 Kilowatts
Plate Dissipation	12 W	Plate Dissipation 12 Kilowatts
DC Plate Voltage [1]	7500 V	DC Plate Voltage 7,500 10,000 Volts
DC Plate Voltage [2]	10000 V	DC Plate Voltage 7,500 10,000 Volts
DC Grid Voltage [1]	-340 V	DC Grid Voltage —340 —450 VVolts
DC Grid Voltage [2]	-450 V	DC Grid Voltage —340 —450 VVolts
Yoltage [1]	1450	Yoltage 1,450 1,680 Volts DC Plate Yoltage 10,000 Volts
Yoltage [2]	1680	Yoltage 1,450 1,680 Volts DC Plate Yoltage 10,000 Volts
Yoltage [3]	10000	Yoltage 1,450 1,680 Volts DC Plate Yoltage 10,000 Volts
Zero Signal DC Plate DC Grid Voltage —	1200 V	Zero Signal DC Plate DC Grid Voltage — 1,200 Volts
Current [1]	1 V	Current 1.0 1.0 Amperes Peak R-F Grid Voltage 1,840 Volts
Current [2]	1 V	Current 1.0 1.0 Amperes Peak R-F Grid Voltage 1,840 Volts
Current [3]	1840 V	Current 1.0 1.0 Amperes Peak R-F Grid Voltage 1,840 Volts
Maximum Signal DC DC Plate Current	3.6 mA	Maximum Signal DC DC Plate Current 3.6 Amperes
Plate Current [1]	6.7 mA	Plate Current 6.7 7.0 Amperes DC Grid Current, approximate 0.64 Amperes

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate Current [2]	7 mA	Plate Current 6.7 7.0 Amperes DC Grid Current, approximate 0.64 Amperes
Plate Current [3]	0.64 mA	Plate Current 6.7 7.0 Amperes DC Grid Current, approximate 0.64 Amperes
Effective Load Resis- Driving Power, approximate	1100 W	Effective Load Resis- Driving Power, approximate 1,100 Watts
tance, Plate to Plate [1]	2300 W	tance, Plate to Plate 2,300 3,100 Ohms Power Output, approximate 27 Kilowatts
tance, Plate to Plate [2]	3100 W	tance, Plate to Plate 2,300 3,100 Ohms Power Output, approximate 27 Kilowatts
tance, Plate to Plate [3]	27 W	tance, Plate to Plate 2,300 3,100 Ohms Power Output, approximate 27 Kilowatts
Power, Approx [1]	490 W	Power, Approx. 490 540 Watts
Power, Approx [2]	540 W	Power, Approx. 490 540 Watts
Output, Approx [1]	31.5 W	Output, Approx. 31.5 46 Kilowatts RADIO-FREQUENCY POWER AMPLIFIER AND
Output, Approx [2]	46 W	Output, Approx. 31.5 46 Kilowatts RADIO-FREQUENCY POWER AMPLIFIER AND
RADIO-FREQUENCY POWER AMPLIFIER—CLASS B DC Plate Voltage	12500 V	RADIO-FREQUENCY POWER AMPLIFIER— CLASS B DC Plate Voltage 12,500 Volts
DC Grid Voltage –	1600 V	DC Grid Voltage — 1,600 Volts
modulation factor of [1]	1 A	modulation factor of 1.0) DC Plate Current 5.0 Amperes
modulation factor of [2]	5 A	modulation factor of 1.0) DC Plate Current 5.0 Amperes
DC Grid Current	800 mA	DC Grid Current 0.8 Amperes
Maximum Ratings, Absolute Values Plate Input	60	Maximum Ratings, Absolute Values Plate Input 60 Kilowatts
DC Plate Voltage [1]	12500 V	DC Plate Voltage 12,500 Volts Plate Dissipation 20 Kilowatts
DC Plate Voltage [2]	20 V	DC Plate Voltage 12,500 Volts Plate Dissipation 20 Kilowatts
DC Plate Current	4 A	DC Plate Current 4 Amperes
Plate Input	32	Plate Input 32 Kilowatts Typical Operation
Plate Dissipation [1]	20 V	Plate Dissipation 20 Kilowatts DC Plate Voltage 10,000 12,000 Volts
Plate Dissipation [2]	10000 V	Plate Dissipation 20 Kilowatts DC Plate Voltage 10,000 12,000 Volts

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate Dissipation [3]	12000 V	Plate Dissipation 20 Kilowatts DC Plate Voltage 10,000 12,000 Volts
DC Grid Voltage [1]	-710 V	DC Grid Voltage —710 —870 Volts
DC Grid Voltage [2]	-870 V	DC Grid Voltage —710 —870 Volts
DC Plate Voltage [1]	7500 V	DC Plate Voltage 7,500 10,000 Volts Voltage 1,230 1,460 Volts
DC Plate Voltage [2]	10000 V	DC Plate Voltage 7,500 10,000 Volts Voltage 1,230 1,460 Volts
DC Plate Voltage [3]	1230 V	DC Plate Voltage 7,500 10,000 Volts Voltage 1,230 1,460 Volts
DC Plate Voltage [4]	1460 V	DC Plate Voltage 7,500 10,000 Volts Voltage 1,230 1,460 Volts
DC Grid Voltage – [1]	-340 V	DC Grid Voltage —340 —460 Volts DC Plate Current 3.8 4.5 Amperes
DC Grid Voltage – [2]	-460 V	DC Grid Voltage —340 —460 Volts DC Plate Current 3.8 4.5 Amperes
DC Grid Voltage – [3]	3.8 V	DC Grid Voltage —340 —460 Volts DC Plate Current 3.8 4.5 Amperes
DC Grid Voltage – [4]	4.5 V	DC Grid Voltage —340 —460 Volts DC Plate Current 3.8 4.5 Amperes
Peak R-F Grid Voltage [1]	570 V	Peak R-F Grid Voltage 570 595 Volts DC Grid Current,
Peak R-F Grid Voltage [2]	595 V	Peak R-F Grid Voltage 570 595 Volts DC Grid Current,
DC Plate Current [1]	3.3 mA	DC Plate Current 3.3 2.75 Amperes approximate 0.5 0.55 Amperes
DC Plate Current [2]	2.75 mA	DC Plate Current 3.3 2.75 Amperes approximate 0.5 0.55 Amperes
DC Plate Current [3]	0.5 mA	DC Plate Current 3.3 2.75 Amperes approximate 0.5 0.55 Amperes
DC Plate Current [4]	0.55 mA	DC Plate Current 3.3 2.75 Amperes approximate 0.5 0.55 Amperes
\$At crest of audio-frequency cycle with modulation factor of	1	\$At crest of audio-frequency cycle with modulation factor of 1.0 conditions,
seals	20 W	seals. 20 Kilowatts Plate Dissipation
Published value [1]	22	22 8 5 GRID CHARAGTERISTICS
Published value [2]	8	22 8 5 GRID CHARAGTERISTICS
Published value [3]	5	22 8 5 GRID CHARAGTERISTICS

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
More than	100000 W	More than 100,000 letters requesting FEDERAL POWER TRIODE



SOURCE DATA APPENDIX

SOURCE OPERATING CONDITIONS

SOURCE PDF

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	450 A	—
AnodeCoolingMethod	Water	—
MaximumOperatingFrequency	15 MHz full rating; 45 MHz reduced rating	—
Maximum Anode Dissipation	20000 W	Absolute maximum / applicable service

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
GridPlateCapacitance	24 pF	—
GridFilamentCapacitance	3 pF	—
PlateFilamentCapacitance	2 pF	—

TUBE TINKER

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