

ELECTRONIC TUBE REFERENCE

893AR

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

CONSOLIDATED TECHNICAL DATA
1 SECTION
CONSTRUCTION
TRIODE

Forced-air-cooled high-power transmitting triode for RF amplification, oscillation, and Class B modulation. Rated around 20 kW plate dissipation and 20 kV plate voltage for substantial fixed-station transmitter service.

GENERAL CHARACTERISTICS

BASE DESIGNATION	—	BASE PINS	—
NOMINAL HEATER	20 V / —	PARALLEL HEATER	— / —
HEATING	Direct	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

SECTION RATINGS

SECTION1 Triode	
AMPLIFICATION FACTOR	34.5
MAXIMUM PLATE VOLTAGE	20000 V
MAXIMUM PLATE DISSIPATION	20000 W
MAXIMUM CATHODE CURRENT	7 A
Promoted ratings/characteristics mapped from printed headings; device/service-specific values retained in parameters.	

Forced-air-cooled high-power transmitting triode for RF amplifier, oscillator, or Class-B modulator service, rated through approximately 5 MHz.

SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1950 General Electric Transmitting Types

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

1950 GENERAL ELECTRIC TRANSMITTING TYPES

Section 1 · Triode

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Amplification Factor	34.5	—

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum Plate Voltage	20000 V	—
Maximum Plate Dissipation	20000 W	—
Maximum Cathode Current	7 A	—
Maximum Frequency at Full Rating	5 MHz	—

SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1971 Machlette Laboratories

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

1971 MACHLETTE LABORATORIES

Section 1 · Triode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
The ML [1]	893 kV	The ML-893A-R is a three-electrode tube designed specifically ratings of 20 kVdc plate voltage and 70 kW plate input apply
The ML [2]	20 kV	The ML-893A-R is a three-electrode tube designed specifically ratings of 20 kVdc plate voltage and 70 kW plate input apply
The ML [3]	70 kV	The ML-893A-R is a three-electrode tube designed specifically ratings of 20 kVdc plate voltage and 70 kW plate input apply
Filament Voltage (Notes [1])	1	Filament Voltage (Notes 1 and 2) oo 20 Volts
Filament Voltage (Notes [2])	2	Filament Voltage (Notes 1 and 2) oo 20 Volts

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Filament Voltage (Notes [3])	20	Filament Voltage (Notes 1 and 2) oo 20 Volts
Filament Current at [1]	20 V	Filament Current at 20 Volts (Notes 1 and 2) 175 183 190 Ampa
Filament Current at [2]	1 V	Filament Current at 20 Volts (Notes 1 and 2) 175 183 190 Ampa
Filament Current at [3]	2 V	Filament Current at 20 Volts (Notes 1 and 2) 175 183 190 Ampa
Filament Current at [4]	175 V	Filament Current at 20 Volts (Notes 1 and 2) 175 183 190 Ampa
Filament Current at [5]	183 V	Filament Current at 20 Volts (Notes 1 and 2) 175 183 190 Ampa
Filament Current at [6]	190 V	Filament Current at 20 Volts (Notes 1 and 2) 175 183 190 Ampa
Filament Starting Current (Note [1])	1 A	Filament Starting Current (Note 1) e - — 275 Amps
Filament Starting Current (Note [2])	275 A	Filament Starting Current (Note 1) e - — 275 Amps
Plate Dissipation – Per Cont of Rating oo, [1]	100	Plate Dissipation — Per Cont of Rating oo, 100 R0 65
Plate Dissipation – Per Cont of Rating oo, [2]	65	Plate Dissipation — Per Cont of Rating oo, 100 R0 65
Air Flow – Cubic Feet per Minute .ot [1]	1800	Air Flow — Cubic Feet per Minute .ot 1800 1250 1000
Air Flow – Cubic Feet per Minute .ot [2]	1250	Air Flow — Cubic Feet per Minute .ot 1800 1250 1000
Air Flow – Cubic Feet per Minute .ot [3]	1000	Air Flow — Cubic Feet per Minute .ot 1800 1250 1000
Maximum Anode Temperature	230 mA	Maximum Anode Temperature 230 °C
Maximum Glass Temperature	150 mA	Maximum Glass Temperature 150 °C
Note	30	Note 30 Air flow to be directed into stem through tubing in center of base.
D-C Plate Voltage	20000 V	D-C Plate Voltage 20000 volts
Max. Signal D-C Plate Current§	4 A	Max. Signal D-C Plate Current§ . 4.0 amps
Max. Signal Plate Input§ [1]	60000 V	Max. Signal Plate Input§ 60000 watts D-C Plate Voltage bttt ne s anenens 12000 volts
Max. Signal Plate Input§ [2]	12000 V	Max. Signal Plate Input§ 60000 watts D-C Plate Voltage bttt ne s anenens 12000 volts
Plate Dissipation§ ...c.ocoveieeeniieccenmnnescrscneesiaerneennnes [1]	20000 A	Plate Dissipation§ ...c.ocoveieeeniieccenmnnescrscneesiaerneennnes 20000 watts D-C Plate CUIrent ccc0eeerieniinenenienresneceecsneseenn 2 amps
Plate Dissipation§ ...c.ocoveieeeniieccenmnnescrscneesiaerneennnes [2]	2 A	Plate Dissipation§ ...c.ocoveieeeniieccenmnnescrscneesiaerneennnes 20000 watts D-C Plate CUIrent ccc0eeerieniinenenienresneceecsneseenn 2 amps

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
D.C Grid Voltage	-3000 V	D.C Grid Voltage -3000 volts
D-C Grid Current	400 mA	D-C Grid Current 0.4 amps
Typical Operation® Plate Input	24000 W	Typical Operation® Plate Input 24000 watts
D.C Plate Voltage [1]	12000 V	D.C Plate Voltage 12000 15000 18000 volts Plate Dissipation .. 12000 watts
D.C Plate Voltage [2]	15000 V	D.C Plate Voltage 12000 15000 18000 volts Plate Dissipation .. 12000 watts
D.C Plate Voltage [3]	18000 V	D.C Plate Voltage 12000 15000 18000 volts Plate Dissipation .. 12000 watts
D.C Plate Voltage [4]	12000 V	D.C Plate Voltage 12000 15000 18000 volts Plate Dissipation .. 12000 watts
Zero Signal D-C Plate Current [1]	800 mA	Zero Signal D-C Plate Current ... 0.8 0.8 0.8 amps
Zero Signal D-C Plate Current [2]	800 mA	Zero Signal D-C Plate Current ... 0.8 0.8 0.8 amps
Zero Signal D-C Plate Current [3]	800 mA	Zero Signal D-C Plate Current ... 0.8 0.8 0.8 amps
Max. Signal D-C Plate Current [1]	7 A	Max. Signal D-C Plate Current ... 7 6 5.5 amps Typical Operation
Max. Signal D-C Plate Current [2]	6 A	Max. Signal D-C Plate Current ... 7 6 5.5 amps Typical Operation
Max. Signal D-C Plate Current [3]	5.5 A	Max. Signal D-C Plate Current ... 7 6 5.5 amps Typical Operation
D-C Grid Voltage ooovvoevoeeeeineen ~ [1]	260 V	D-C Grid Voltage ooovvoevoeeeeineen ~260 =350 —450 volts D-C Plate Voltage 10000 10000 12000 volts
D-C Grid Voltage ooovvoevoeeeeineen ~ [2]	350 V	D-C Grid Voltage ooovvoevoeeeeineen ~260 =350 —450 volts D-C Plate Voltage 10000 10000 12000 volts
D-C Grid Voltage ooovvoevoeeeeineen ~ [3]	-450 V	D-C Grid Voltage ooovvoevoeeeeineen ~260 =350 —450 volts D-C Plate Voltage 10000 10000 12000 volts
D-C Grid Voltage ooovvoevoeeeeineen ~ [4]	10000 V	D-C Grid Voltage ooovvoevoeeeeineen ~260 =350 —450 volts D-C Plate Voltage 10000 10000 12000 volts
D-C Grid Voltage ooovvoevoeeeeineen ~ [5]	10000 V	D-C Grid Voltage ooovvoevoeeeeineen ~260 =350 —450 volts D-C Plate Voltage 10000 10000 12000 volts
D-C Grid Voltage ooovvoevoeeeeineen ~ [6]	12000 V	D-C Grid Voltage ooovvoevoeeeeineen ~260 =350 —450 volts D-C Plate Voltage 10000 10000 12000 volts
Peak A-F Grid-to-Grid Voltage [1]	1480 V	Peak A-F Grid-to-Grid Voltage ... 1480 1560 1720 volts D-C Plate Current ... 1.5 2 2 amps
Peak A-F Grid-to-Grid Voltage [2]	1560 V	Peak A-F Grid-to-Grid Voltage ... 1480 1560 1720 volts D-C Plate Current ... 1.5 2 2 amps
Peak A-F Grid-to-Grid Voltage [3]	1720 V	Peak A-F Grid-to-Grid Voltage ... 1480 1560 1720 volts D-C Plate Current ... 1.5 2 2 amps

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Peak A-F Grid-to-Grid Voltage [4]	1.5 V	Peak A-F Grid-to-Grid Voltage ... 1480 1560 1720 volts D-C Plate Current ... 1.5 2 2 amps
Peak A-F Grid-to-Grid Voltage [5]	2 V	Peak A-F Grid-to-Grid Voltage ... 1480 1560 1720 volts D-C Plate Current ... 1.5 2 2 amps
Peak A-F Grid-to-Grid Voltage [6]	2 V	Peak A-F Grid-to-Grid Voltage ... 1480 1560 1720 volts D-C Plate Current ... 1.5 2 2 amps
Effective Load Resistance (plate D-C Grid Voltage ~ [1])	800 V	Effective Load Resistance (plate D-C Grid Voltage ~800 —800 -1000 volts
Effective Load Resistance (plate D-C Grid Voltage ~ [2])	-800 V	Effective Load Resistance (plate D-C Grid Voltage ~800 —800 -1000 volts
Effective Load Resistance (plate D-C Grid Voltage ~ [3])	-1000 V	Effective Load Resistance (plate D-C Grid Voltage ~800 —800 -1000 volts
to plate) v [1]	4000 V	to plate) v 4000 6000 8000 ohms Peak R-F Grid Voltage 1200 1280 1500 volts
to plate) v [2]	6000 V	to plate) v 4000 6000 8000 ohms Peak R-F Grid Voltage 1200 1280 1500 volts
to plate) v [3]	8000 V	to plate) v 4000 6000 8000 ohms Peak R-F Grid Voltage 1200 1280 1500 volts
to plate) v [4]	1200 V	to plate) v 4000 6000 8000 ohms Peak R-F Grid Voltage 1200 1280 1500 volts
to plate) v [5]	1280 V	to plate) v 4000 6000 8000 ohms Peak R-F Grid Voltage 1200 1280 1500 volts
to plate) v [6]	1500 V	to plate) v 4000 6000 8000 ohms Peak R-F Grid Voltage 1200 1280 1500 volts
Max. Signal Driving Power [1]	220 A	Max. Signal Driving Power 220 190 140 watts D-C Grid Current, approximate 0.10 0.16 0.14 amps
Max. Signal Driving Power [2]	190 A	Max. Signal Driving Power 220 190 140 watts D-C Grid Current, approximate 0.10 0.16 0.14 amps
Max. Signal Driving Power [3]	140 A	Max. Signal Driving Power 220 190 140 watts D-C Grid Current, approximate 0.10 0.16 0.14 amps
Max. Signal Driving Power [4]	100 mA	Max. Signal Driving Power 220 190 140 watts D-C Grid Current, approximate 0.10 0.16 0.14 amps
Max. Signal Driving Power [5]	160 mA	Max. Signal Driving Power 220 190 140 watts D-C Grid Current, approximate 0.10 0.16 0.14 amps
Max. Signal Driving Power [6]	140 mA	Max. Signal Driving Power 220 190 140 watts D-C Grid Current, approximate 0.10 0.16 0.14 amps
Max. Signal Power Output. Driving Power, approximate [1]	120 mA	Max. Signal Power Output. Driving Power, approximate 120 210 210 watts
Max. Signal Power Output. Driving Power, approximate [2]	210 mA	Max. Signal Power Output. Driving Power, approximate 120 210 210 watts

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Max. Signal Power Output. Driving Power, approximate [3]	210 mA	Max. Signal Power Output. Driving Power, approximate 120 210 210 watts
Power Output, approximate [1]	11000 mA	Power Output, approximate 11000 15000 18000 watts
Power Output, approximate [2]	15000 mA	Power Output, approximate 11000 15000 18000 watts
Power Output, approximate [3]	18000 mA	Power Output, approximate 11000 15000 18000 watts
D-C Plate Voltage oo	20000 V	D-C Plate Voltage oo 20000 volts
D-C Grid Voltage ..o ~	3000 V	D-C Grid Voltage ..o ~3000 volts
D-C Grid Current	4 A	D-C Grid Current ... 04 amps
Plate Input	70000 W	Plate Input ... 70000 watts
Plate DIssipation ..o	20000 W	Plate DIssipation ..o 20000 watts
Plate Dissipation	20000 W	Plate Dissipation ... 20000 watts
D-C Plate Voltage ..o [1]	12000 V	D-C Plate Voltage ..o 12000 15000 15000 volts D-C Plate Voltage ..o 12000 15000 15000 volts D-C Plate Voltage ..o 12000 15000 15000 volts
D-C Plate Voltage ..o [2]	15000 V	D-C Plate Voltage ..o 12000 15000 15000 volts D-C Plate Voltage ..o 12000 15000 15000 volts D-C Plate Voltage ..o 12000 15000 15000 volts
D-C Plate Voltage ..o [3]	15000 V	D-C Plate Voltage ..o 12000 15000 15000 volts D-C Plate Voltage ..o 12000 15000 15000 volts D-C Plate Voltage ..o 12000 15000 15000 volts
D-C Plate Voltage ..o [4]	12000 V	D-C Plate Voltage ..o 12000 15000 15000 volts D-C Plate Voltage ..o 12000 15000 15000 volts D-C Plate Voltage ..o 12000 15000 15000 volts
D-C Plate Voltage ..o [5]	15000 V	D-C Plate Voltage ..o 12000 15000 15000 volts D-C Plate Voltage ..o 12000 15000 15000 volts D-C Plate Voltage ..o 12000 15000 15000 volts
D-C Plate Voltage ..o [6]	18000 V	D-C Plate Voltage ..o 12000 15000 15000 volts D-C Plate Voltage ..o 12000 15000 15000 volts D-C Plate Voltage ..o 12000 15000 15000 volts
D-C Plate Current [1]	1.5 A	D-C Plate Current . . 1.5 1.5 2.0 amps D-C Plate Current ... 35 3.6 3.6 amps
D-C Plate Current [2]	1.5 A	D-C Plate Current . . 1.5 1.5 2.0 amps D-C Plate Current ... 35 3.6 3.6 amps
D-C Plate Current [3]	2 A	D-C Plate Current . . 1.5 1.5 2.0 amps D-C Plate Current ... 35 3.6 3.6 amps
D-C Plate Current [4]	35 A	D-C Plate Current . . 1.5 1.5 2.0 amps D-C Plate Current ... 35 3.6 3.6 amps
D-C Plate Current [5]	3.6 A	D-C Plate Current . . 1.5 1.5 2.0 amps D-C Plate Current ... 35 3.6 3.6 amps
D-C Plate Current [6]	3.6 A	D-C Plate Current . . 1.5 1.5 2.0 amps D-C Plate Current ... 35 3.6 3.6 amps

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
D-C Grid Voltage ..o, ~ [1]	250 V	D-C Grid Voltage ..o, ~250 =340 ~340 volts D-C Grid Voltage wee =800 =900 —1000 volts
D-C Grid Voltage ..o, ~ [2]	340 V	D-C Grid Voltage ..o, ~250 =340 ~340 volts D-C Grid Voltage wee =800 =900 —1000 volts
D-C Grid Voltage ..o, ~ [3]	340 V	D-C Grid Voltage ..o, ~250 =340 ~340 volts D-C Grid Voltage wee =800 =900 —1000 volts

TUBE TINKER

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