



ELECTRONIC TUBE REFERENCE

893A

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

CONSOLIDATED TECHNICAL DATA

1 SECTION

CONSTRUCTION

TRIODE

Water-cooled high-power transmitting triode with pure-tungsten filament for RF amplifier, oscillator, and Class B modulator service. Rated around 20 kW plate dissipation and 20 kV plate voltage for major fixed transmitter installations.

GENERAL CHARACTERISTICS

BASE DESIGNATION	—	BASE PINS	—
NOMINAL HEATER	20 V / 183 A	PARALLEL HEATER	— / —
HEATING	Direct	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

SECTION RATINGS

SECTION 1 Triode	
AMPLIFICATION FACTOR	34.5
MAXIMUM PLATE VOLTAGE	20000 V
MAXIMUM PLATE DISSIPATION	20000 W
MAXIMUM CATHODE CURRENT	7 A
<i>Promoted ratings/characteristics mapped from printed headings; device/service-specific values retained in parameters.</i>	

Water-cooled high-power transmitting triode for RF amplifier, oscillator, or Class-B modulator service, with pure-tungsten filament.



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 Signal Power Output	70 kW	AudioFrequency,ClassB



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 is a three-electrode tube designed specifically of 20 kVdc plate voltage and 70 kW plate input apply at fre-

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
The ML [2]	20 kV	The ML-893A is a three-electrode tube designed specifically of 20 kVdc plate voltage and 70 kW plate input apply at fre-
The ML [3]	70 kV	The ML-893A is a three-electrode tube designed specifically of 20 kVdc plate voltage and 70 kW plate input apply at fre-
Filament Voltage (Notes [1])	1 V	Filament Voltage (Notes 1T and 2) i — 20 — Volts
Filament Voltage (Notes [2])	2 V	Filament Voltage (Notes 1T and 2) i — 20 — Volts
Filament Voltage (Notes [3])	20 V	Filament Voltage (Notes 1T and 2) i — 20 — Volts
Filament Current at Bogey Voltage (Notes [1])	1 A	Filament Current at Bogey Voltage (Notes 1T and 2) oo, 175 183 190 Amps
Filament Current at Bogey Voltage (Notes [2])	2 A	Filament Current at Bogey Voltage (Notes 1T and 2) oo, 175 183 190 Amps
Filament Current at Bogey Voltage (Notes [3])	175 A	Filament Current at Bogey Voltage (Notes 1T and 2) oo, 175 183 190 Amps
Filament Current at Bogey Voltage (Notes [4])	183 A	Filament Current at Bogey Voltage (Notes 1T and 2) oo, 175 183 190 Amps
Filament Current at Bogey Voltage (Notes [5])	190 A	Filament Current at Bogey Voltage (Notes 1T and 2) oo, 175 183 190 Amps
Filament Starting Current (N0te [1])	1 A	Filament Starting Current (N0te 1) ie — — 275 Amps
Filament Starting Current (N0te [2])	275 A	Filament Starting Current (N0te 1) ie — — 275 Amps
Maximum Outgoing Water Temperature c.coccvicieiniiiiieniniinrcnnncieennns	70 mA	Maximum Outgoing Water Temperature c.coccvicieiniiiiieniniinrcnnncieennns 70 °C
Air Flow to Stem (IN0tE [1])	3	Air Flow to Stem (IN0tE 3) oot 2 «m
Air Flow to Stem (IN0tE [2])	2	Air Flow to Stem (IN0tE 3) oot 2 «m
Maximum Glass Temperature coovoiceiieiniriinnnie e	150 mA	Maximum Glass Temperature coovoiceiieiniriinnnie e 150 °C
Note	3	Note 3: Air flow to be directed into stem through tubing in center of hase.
Max. Signal D-C Plate CurrentH oo	4 A	Max. Signal D-C Plate CurrentH oo 4.0 amps Maximum Ratings, Absolute Vulues
D-C Plate Voltage	12000 V	D-C Plate Voltage 12000 volts

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Muax. Signal Plate Input	60000 W	Muax. Signal Plate Input ... 60000 watts
D-C Plate Current	2 A	D-C Plate Current . 2 amps
Plate Dissipationf .o	20000 W	Plate Dissipationf .o 20000 watts
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
Plate Input .o	24000 W	. . Plate Input .o 24000 watts
Typical Operation® Plate Dissipation cccoovviivinnnciininn	12000 W	Typical Operation® Plate Dissipation cccoovviivinnnciininn. 12000 watts
D-C Plate Voltage o, [1]	12000 V	D-C Plate Voltage o, 12000 15000 18000 volts
D-C Plate Voltage o, [2]	15000 V	D-C Plate Voltage o, 12000 15000 18000 volts
D-C Plate Voltage o, [3]	18000 V	D-C Plate Voltage o, 12000 15000 18000 volts
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 Voluge [1]	260 V	D-C Grid Voluge 260 =330 ~450 volts D- C Plate Voltage ...cccoovviiniinns 10000 10000 12000 volts
D-C Grid Voluge [2]	330 V	D-C Grid Voluge 260 =330 ~450 volts D- C Plate Voltage ...cccoovviiniinns 10000 10000 12000 volts
D-C Grid Voluge [3]	450 V	D-C Grid Voluge 260 =330 ~450 volts D- C Plate Voltage ...cccoovviiniinns 10000 10000 12000 volts
D-C Grid Voluge [4]	10000 V	D-C Grid Voluge 260 =330 ~450 volts D- C Plate Voltage ...cccoovviiniinns 10000 10000 12000 volts

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
D-C Grid Voluge [5]	10000 V	D-C Grid Voluge 260 =330 ~450 volts D-C Plate Voltage ...ccoovviiniinns 10000 10000 12000 volts
D-C Grid Voluge [6]	12000 V	D-C Grid Voluge 260 =330 ~450 volts D-C Plate Voltage ...ccoovviiniinns 10000 10000 12000 volts
Peak A-F Grid-to-Grid Voltage [1]	180 V	Peak A-F Grid-to-Grid Voltage ... 180 1560 1720 volts D.C Plate Current .) s
Peak A-F Grid-to-Grid Voltage [2]	1560 V	Peak A-F Grid-to-Grid Voltage ... 180 1560 1720 volts D.C Plate Current .) s
Peak A-F Grid-to-Grid Voltage [3]	1720 V	Peak A-F Grid-to-Grid Voltage ... 180 1560 1720 volts D.C Plate Current .) s
Max. Signal Driving Power [1]	220 mA	Max. Signal Driving Power 220 190 140 watts cax R-L
Max. Signal Driving Power [2]	190 mA	Max. Signal Driving Power 220 190 140 watts cax R-L
Max. Signal Driving Power [3]	140 mA	Max. Signal Driving Power 220 190 140 watts cax R-L
o D-Co Grid. Current [1]	100 mA	o D-Co Grid. Current . 0.1 0.16 0.14 amps
o D-Co Grid. Current [2]	160 mA	o D-Co Grid. Current . 0.1 0.16 0.14 amps
o D-Co Grid. Current [3]	140 mA	o D-Co Grid. Current . 0.1 0.16 0.14 amps
APPIOXIILIE oo [1]	52000 W	APPIOXIILIE oo 52000 GOOOO TOO00 watts Driving Power ..o, 120 210 210 watts
APPIOXIILIE oo [2]	0 W	APPIOXIILIE oo 52000 GOOOO TOO00 watts Driving Power ..o, 120 210 210 watts
APPIOXIILIE oo [3]	120 W	APPIOXIILIE oo 52000 GOOOO TOO00 watts Driving Power ..o, 120 210 210 watts
APPIOXIILIE oo [4]	210 W	APPIOXIILIE oo 52000 GOOOO TOO00 watts Driving Power ..o, 120 210 210 watts
APPIOXIILIE oo [5]	210 W	APPIOXIILIE oo 52000 GOOOO TOO00 watts Driving Power ..o, 120 210 210 watts
Power Output ..oooviiiiiciiniininns [1]	11000 W	Power Output ..oooviiiiiciiniininns 11000 15000 18000 watts

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Power Output ..oooviiiiiciiniininns [2]	15000 W	Power Output ..oooviiiiiciiniininns 11000 15000 18000 watts
Power Output ..oooviiiiiciiniininns [3]	18000 W	Power Output ..oooviiiiiciiniininns 11000 15000 18000 watts
Maximum Ratings, Absolute Values D-C Plate Voltage oo	20000 V	Maximum Ratings, Absolute Values D-C Plate Voltage oo 20000 volts
D-C Plate Current	4 A	D-C Plate Current .. 4 amps
D-C Plate Voltage	20000 V	D-C Plate Voltage 20000 volts
D-C Grid Voltage	-3000 V	D-C Grid Voltage -3000 volts
D-C Plate Current	2 A	D-C Plate Current 2.0 amps
D-C Grid Current	0 mA	D-C Grid Current 0.-f amps
Plate Input .o	70000 W	Plate Input .o 70000 watts
Plate Dissipation	20000 W	Plate Dissipation 20000 watts
Plate Dissipation	20000 W	Plate Dissipation ... 20000 watts
D-C Plate Voltage [1]	12000 V	D-C Plate Voltage 12000 15000 15000 volts D-C Plate Voltage ocoenviicenncns 12000 15000 18000 volts
D-C Plate Voltage [2]	15000 V	D-C Plate Voltage 12000 15000 15000 volts D-C Plate Voltage ocoenviicenncns 12000 15000 18000 volts
D-C Plate Voltage [3]	15000 V	D-C Plate Voltage 12000 15000 15000 volts D-C Plate Voltage ocoenviicenncns 12000 15000 18000 volts
D-C Plate Voltage [4]	12000 V	D-C Plate Voltage 12000 15000 15000 volts D-C Plate Voltage ocoenviicenncns 12000 15000 18000 volts
D-C Plate Voltage [5]	15000 V	D-C Plate Voltage 12000 15000 15000 volts D-C Plate Voltage ocoenviicenncns 12000 15000 18000 volts
D-C Plate Voltage [6]	18000 V	D-C Plate Voltage 12000 15000 15000 volts D-C Plate Voltage ocoenviicenncns 12000 15000 18000 volts
D-C Plate Current [1]	1.5 A	D-C Plate Current ... 1.5 1.5 2.0 amps D- C Plate Current .. 3.5 3.6 3.6 amps

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
D-C Plate Current [2]	1.5 A	D-C Plate Current ... 1.5 1.5 2.0 amps D-C Plate Current .. 3.5 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 .. 3.5 3.6 3.6 amps
D-C Plate Current [4]	3.5 A	D-C Plate Current ... 1.5 1.5 2.0 amps D-C Plate Current .. 3.5 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 .. 3.5 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 .. 3.5 3.6 3.6 amps
D-C Grid Voltage [1]	2250 V	D-C Grid Voltage ... 2250 =340 <340 volts D-C Grid Voltage -800 -900 -1000 volts
D-C Grid Voltage [2]	340 V	D-C Grid Voltage ... 2250 =340 <340 volts D-C Grid Voltage -800 -900 -1000 volts
D-C Grid Voltage [3]	340 V	D-C Grid Voltage ... 2250 =340 <340 volts D-C Grid Voltage -800 -900 -1000 volts
D-C Grid Voltage [4]	-800 V	D-C Grid Voltage ... 2250 =340 <340 volts D-C Grid Voltage -800 -900 -1000 volts
D-C Grid Voltage [5]	-900 V	D-C Grid Voltage ... 2250 =340 <340 volts D-C Grid Voltage -800 -900 -1000 volts
D-C Grid Voltage [6]	-1000 V	D-C Grid Voltage ... 2250 =340 <340 volts D-C Grid Voltage -800 -900 -1000 volts
D-C Grid Current, approximate [1]	35 V	D-C Grid Current, approximate ... 35 30 50 ma Peak R-F Grid Voltage ... 1430 1520 1630 volts
D-C Grid Current, approximate [2]	30 V	D-C Grid Current, approximate ... 35 30 50 ma Peak R-F Grid Voltage ... 1430 1520 1630 volts
D-C Grid Current, approximate [3]	50 V	D-C Grid Current, approximate ... 35 30 50 ma Peak R-F Grid Voltage ... 1430 1520 1630 volts
D-C Grid Current, approximate [4]	1430 V	D-C Grid Current, approximate ... 35 30 50 ma Peak R-F Grid Voltage ... 1430 1520 1630 volts
D-C Grid Current, approximate [5]	1520 V	D-C Grid Current, approximate ... 35 30 50 ma Peak R-F Grid Voltage ... 1430 1520 1630 volts

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
D-C Grid Current, approximate [6]	1630 V	D-C Grid Current, approximate ... 35 30 50 ma Peak R-F Grid Voltage ... 1430 1520 1630 volts
Peak R-F God Voltage o [1]	350 V	Peak R-F God Voltage o 350 395 450 volts D-C Grid Current ..., 0.26 0.25 0.21 amps
Peak R-F God Voltage o [2]	395 V	Peak R-F God Voltage o 350 395 450 volts D-C Grid Current ..., 0.26 0.25 0.21 amps
Peak R-F God Voltage o [3]	450 V	Peak R-F God Voltage o 350 395 450 volts D-C Grid Current ..., 0.26 0.25 0.21 amps

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