



ELECTRONIC TUBE REFERENCE

8906AL

Power - Triode Single (under 10W) electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION

CONSTRUCTION

TRIODE

Ruggedized high-mu ceramic-metal planar triode for grid-pulsed, plate-pulsed, or CW oscillator, amplifier, multiplier, modulator, and regulator service to approximately 3 GHz.

GENERAL CHARACTERISTICS

BASE DESIGNATION	—	BASE PINS	—
NOMINAL HEATER	5.7 V / 950 mA	PARALLEL HEATER	— / —
HEATING	Indirect	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

SECTION RATINGS

SECTION1 Triode	
TRANSCONDUCTANCE	0.03 S
AMPLIFICATION FACTOR	80
MAXIMUM PLATE VOLTAGE	3500 V
MAXIMUM PLATE DISSIPATION	10 W
MAXIMUM GRID DISSIPATION	2 W
MAXIMUM CATHODE CURRENT	5 A
Promoted values are taken from printed General Characteristics / Maximum Ratings. Additional published conditions and operating data are preserved in parameters.	

Stamford, Conn. 06907 « Tel. 203-348-7511 « TWX 203-327-2496 The ML-8906, ML-8907 and ML-8906/AL are ruggedized, coating impregnated in a nickel matrix. This construction, high-mu planar triodes of ceramic-and-metal construction in combination with proper plate series impedance, reduces designed for use as grid-pulsed, plate-pulsed or CW oscil- to a minimum failures of the cathode due to voltage surges. lators, amplifiers or frequency multipliers in transmitting The ceramic insulators of these tubes are provided with service at frequencies up to 3 GHz. They may also be used spew shields to

minimize changes in grid-plate capacitance as pulse modulators, pulse amplifiers or voltage regulators. with life. Other features of these tubes include high cathode



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 · Triode

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Grid-Cathode Capacitance	8 pF	—
Grid-Plate Capacitance	1.98 pF	—
Plate-Cathode Capacitance	0.06 pF	—

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Peak Pulse Plate Voltage	4500 V	—
Pulse Plate Current	5 A	—
Frequency Maximum	3 GHz	—
Typical Plate Voltage	2000 V	GridPulsed;Frequency=1.09GHz



SOURCE OPERATING CONDITIONS

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
service at frequencies up to	3 mA	service at frequencies up to 3 GHz. They may also be used spew shields to minimize changes in grid-plate capacitance

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
The ML	8907	The ML-8907 is fitted with a radiator for forced-air cooling. current capability, low interelectrode capacitance, high trans-
Transconductance (Ib= [1]	100 mA	Transconductance (Ib=100 mA, Eb=600 V)
Transconductance (Ib= [2]	600 mA	Transconductance (Ib=100 mA, Eb=600 V)
Maximum Envelope or Anode Temperature	250 mA	Maximum Envelope or Anode Temperature 250 °C
CW RF Power Oscillator or Amplifier – Class C Driving Power during Pulse	400	CW RF Power Oscillator or Amplifier — Class C Driving Power during Pulse ... 400
Useful Peak Power Output, approximate	2.5 mA	Useful Peak Power Output, approximate 2.5
Maximum Ratings, Absolute Values Typical Operation, Grid-Pulsed RE Oscillator, ML	8906 mA	Maximum Ratings, Absolute Values Typical Operation, Grid-Pulsed RE Oscillator, ML-8906/AL
DC Plate Voltage [1]	2500	DC Plate Voltage 2500 Frequency cccccccccccccccccccc e, 1.1
DC Plate Voltage [2]	1.1	DC Plate Voltage 2500 Frequency cccccccccccccccccccc e, 1.1
DC Grid Voltage --- [1]	150	DC Grid Voltage ---~150 Heater Voltage ... 5.7
DC Grid Voltage --- [2]	5.7	DC Grid Voltage ---~150 Heater Voltage ... 5.7
Grid negative to cathode Duty Factor ...t	0.001	Grid negative to cathode Duty Factor ...t 0.001
DC Plate Voltage oooooooooooooooooooo	2000	DC Plate Voltage oooooooooooooooooooo 2000
Grid positive to cathode ... DC Grid Voltage cccccccccccccccccccc e	-75	Grid positive to cathode ... DC Grid Voltage cccccccccccccccccccc e —75
DC Plate Current Peak Video Plate Current cccccccccccccccccccc	1.1	DC Plate Current Peak Video Plate Current cccccccccccccccccccc, 1.1
Plate Dissipation Peak Video Grid Current	8	Plate Dissipation Peak Video Grid Current 8
Forced-air cooling (ML [1]	8907 mA	Forced-air cooling (ML-8907) ... 100 Useful Peak Power Output, approximate 850

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Forced-air cooling (ML [2])	100 mA	Forced-air cooling (ML-8907) ... 100 Useful Peak Power Output, approximate 850
Forced-air cooling (ML [3])	850 mA	Forced-air cooling (ML-8907) ... 100 Useful Peak Power Output, approximate 850
Conduction and convection (ML [1])	8906	Conduction and convection (ML-8906, Typical Operation, Plate-Pulsed RF Amplifier, ML-8906/AL
Conduction and convection (ML [2])	8906	Conduction and convection (ML-8906, Typical Operation, Plate-Pulsed RF Amplifier, ML-8906/AL
Grid Dissipation [1]	1.5	Grid Dissipation ... 1.5 Heater Voltage 5.7
Grid Dissipation [2]	5.7	Grid Dissipation ... 1.5 Heater Voltage 5.7
Frequency ..o [1]	2.5 GHz	Frequency ..o 2.5 GHz Pulse DURATION ccccooovioveiiiiiiiiaeieeice 3.5
Frequency ..o [2]	3.5 GHz	Frequency ..o 2.5 GHz Pulse DURATION ccccooovioveiiiiiiiiaeieeice 3.5
Typical Operation, Cathode Drive Amplifier Duty Factor	0.001	Typical Operation, Cathode Drive Amplifier Duty Factor ... 0.001
e [1]	7 GHz	e 7 GHz Peak Plate Pulse Supply Voltage 2000
e [2]	2000 GHz	e 7 GHz Peak Plate Pulse Supply Voltage 2000
DC Plate Voltage	630	DC Plate Voltage 630 DC Grid Voltage cc.ooovioveiiiiieeiee
DC Grid Voltage, approximate [1]	-5 mA	DC Grid Voltage, approximate —5 Peak Video Plate Current ... 2
DC Grid Voltage, approximate [2]	2 mA	DC Grid Voltage, approximate —5 Peak Video Plate Current ... 2
DC Cathode Current [1]	140	DC Cathode Current 140 Peak Video Grid Current ... 1
DC Cathode Current [2]	1	DC Cathode Current 140 Peak Video Grid Current ... 1
DC Grid Current [1]	25	DC Grid Current 25 Driving Power coooooiiiiiii 300
DC Grid Current [2]	300	DC Grid Current 25 Driving Power coooooiiiiiii 300

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Driving Power, approximate [1]	4 mA	Driving Power, approximate 4 Useful Peak Power Output, approximate 2
Driving Power, approximate [2]	2 mA	Driving Power, approximate 4 Useful Peak Power Output, approximate 2
Useful Power Output cocoiii [1]	45	Useful Power Output cocoiii 45 Typical Operation, Plate-Pulsed RF Oscillator, ML-8906, ML-8907
Useful Power Output cocoiii [2]	8906	Useful Power Output cocoiii 45 Typical Operation, Plate-Pulsed RF Oscillator, ML-8906, ML-8907
Useful Power Output cocoiii [3]	8907	Useful Power Output cocoiii 45 Typical Operation, Plate-Pulsed RF Oscillator, ML-8906, ML-8907
Frequency	2.5	Frequency ... 2.5 Heater Voltage ..
Heater Voltage	5	Heater Voltage ... 5.0 Pulse Duration ...
DC Plate Voltage	1000	DC Plate Voltage ... 1000 Duty Factor
DC Grid Voltage, approximate U TORTS --	20 mA	DC Grid Voltage, approximate U TORTS --20 Peak Plate Pulse Supply Voltage
DC Plate Current	140	DC Plate Current ... 140 Peak Video Plate Current
DC Grid Current, approximate	30 mA	DC Grid Current, approximate ... 30 Peak Video Grid Current oocvvnveiienee
Useful Power Output coooiiiiei	30 mA	Useful Power Output coooiiiiei 30 Useful Peak Power Output, approximate
* The heater voltage is reduced approximately	15 mA	* The heater voltage is reduced approximately 15% in this application
ML [1]	8906	ML-8906, ML-8907 ..., 200 Cutoft Amplification Factor ...
ML [2]	8907	ML-8906, ML-8907 ..., 200 Cutoft Amplification Factor ...
ML [3]	200	ML-8906, ML-8907 ..., 200 Cutoft Amplification Factor ...
ML [1]	8906	ML-8906/AL ... 250 Pulse Duration cc.oooo.

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
ML [2]	250	ML-8906/AL ... 250 Pulse Duration cc.0000.
Pulse Grid Current	2.5	Pulse Grid Current ... 2.5 **For applications requiring longer pulse duration or higher duty
Pulse Duration	6	Pulse Duration ... 6 Filament Current
Duty Factor TR, [1]	0.0033	Duty Factor TR, 0.0033 ML-8906, ML-8907 (at 6.0V) ... 90 1.05
Duty Factor TR, [2]	8906	Duty Factor TR, 0.0033 ML-8906, ML-8907 (at 6.0V) ... 90 1.05
Duty Factor TR, [3]	8907	Duty Factor TR, 0.0033 ML-8906, ML-8907 (at 6.0V) ... 90 1.05
Duty Factor TR, [4]	6	Duty Factor TR, 0.0033 ML-8906, ML-8907 (at 6.0V) ... 90 1.05
Duty Factor TR, [5]	90	Duty Factor TR, 0.0033 ML-8906, ML-8907 (at 6.0V) ... 90 1.05
Duty Factor TR, [6]	1.05	Duty Factor TR, 0.0033 ML-8906, ML-8907 (at 6.0V) ... 90 1.05
Frequency [1]	3	Frequency ... 3 ML-8906/AL (at 5.7 V) 87 1.02
Frequency [2]	8906	Frequency ... 3 ML-8906/AL (at 5.7 V) 87 1.02
Frequency [3]	5.7	Frequency ... 3 ML-8906/AL (at 5.7 V) 87 1.02
Frequency [4]	87	Frequency ... 3 ML-8906/AL (at 5.7 V) 87 1.02
Frequency [5]	1.02	Frequency ... 3 ML-8906/AL (at 5.7 V) 87 1.02
* **For applications requiring longer pulse duration or higher duty Cut- Off Bias (Note [1])	1	* **For applications requiring longer pulse duration or higher duty Cut-Off Bias (Note 1) ..ot — —30
* **For applications requiring longer pulse duration or higher duty Cut- Off Bias (Note [2])	-30	* **For applications requiring longer pulse duration or higher duty Cut-Off Bias (Note 1) ..ot — —30
factor, consult the Machlett Engineering Department. Grid-Plate Capacitance (Note [1])	2 mA	factor, consult the Machlett Engineering Department. Grid-Plate Capacitance (Note 2) ocoeen. 1.85 1.20

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
factor, consult the Machlett Engineering Department. Grid-Plate Capacitance (Note [2])	1.85 mA	factor, consult the Machlett Engineering Department. Grid-Plate Capacitance (Note 2) ocoeen. 1.85 1.20
factor, consult the Machlett Engineering Department. Grid-Plate Capacitance (Note [3])	1.2 mA	factor, consult the Machlett Engineering Department. Grid-Plate Capacitance (Note 2) ocoeen. 1.85 1.20
Typical Operation, Grid-Pulsed RF Amplifier, ML [1]	8906	Typical Operation, Grid-Pulsed RF Amplifier, ML-8906, ML-8907 Grid-Cathode Capacitance (Note 2) 70 90
Typical Operation, Grid-Pulsed RF Amplifier, ML [2]	8907	Typical Operation, Grid-Pulsed RF Amplifier, ML-8906, ML-8907 Grid-Cathode Capacitance (Note 2) 70 90
Typical Operation, Grid-Pulsed RF Amplifier, ML [3]	2	Typical Operation, Grid-Pulsed RF Amplifier, ML-8906, ML-8907 Grid-Cathode Capacitance (Note 2) 70 90
Typical Operation, Grid-Pulsed RF Amplifier, ML [4]	70	Typical Operation, Grid-Pulsed RF Amplifier, ML-8906, ML-8907 Grid-Cathode Capacitance (Note 2) 70 90
Typical Operation, Grid-Pulsed RF Amplifier, ML [5]	90	Typical Operation, Grid-Pulsed RF Amplifier, ML-8906, ML-8907 Grid-Cathode Capacitance (Note 2) 70 90
Frequency ..., [1]	1.1 pF	Frequency ..., 1.1 Plate-Cathode Capacitance (Note 2) ccceei. — .06 pf
Frequency ..., [2]	2 pF	Frequency ..., 1.1 Plate-Cathode Capacitance (Note 2) ccceei. — .06 pf
Frequency ..., [3]	6 pF	Frequency ..., 1.1 Plate-Cathode Capacitance (Note 2) ccceei. — .06 pf
Heater Voltage	6	Heater Voltage ... 6.0
Pulse Duration [1]	3 mA	Pulse Duration ... 3 Note 1 — Measured at 1 mA of plate current and a plate voltage of
Pulse Duration [2]	1 mA	Pulse Duration ... 3 Note 1 — Measured at 1 mA of plate current and a plate voltage of

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Pulse Duration [3]	1 mA	Pulse Duration ... 3 Note 1 — Measured at 1 mA of plate current and a plate voltage of
Duty Factor [1]	0.002	Duty Factor 0.002 1000 Vdec.
Duty Factor [2]	1000	Duty Factor 0.002 1000 Vdec.
DC Plate Voltage [1]	2200	DC Plate Voltage ... 2200 Note 2 — Capacitance values are given for a cold tube. When the
DC Plate Voltage [2]	2	DC Plate Voltage ... 2200 Note 2 — Capacitance values are given for a cold tube. When the
DC Grid Voltage	-50	DC Grid Voltage ... —50 cathode is heated to its proper temperature, the grid-cathode
Peak Video Plate Current [1]	2.5 mA	Peak Video Plate Current ... 2.5 capacitance will increase by approximately 1 pf due to ther-
Peak Video Plate Current [2]	1 mA	Peak Video Plate Current ... 2.5 capacitance will increase by approximately 1 pf due to ther-
Peak Video Grid Current	1 mA	Peak Video Grid Current ... 1 mal expansion of the cathode support structure.
ED-s4	48 V	ED-s448i0' . . vl PLATES VOLTAGE == VOLTS

TUBE TINKER

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