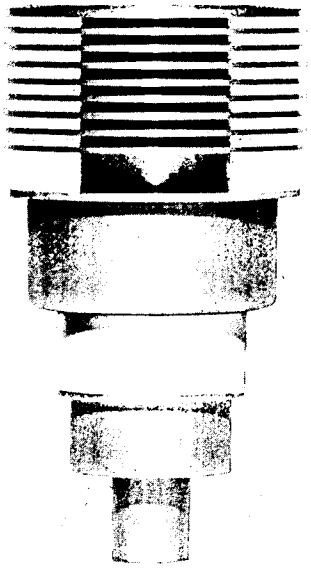


MACHLETT

ML-8403

DESCRIPTION AND RATINGS

DESCRIPTION

The ML-8403 is a ruggedized, high-mu planar triode of ceramic-and-metal construction, designed for use as a grid-pulsed, plate-pulsed, or CW oscillator, frequency multipler, or amplifier in radio transmitting service from low frequency to 3 Gc.

A distinguishing characteristic of this tube is its high cathode-current capability. In addition to low interelectrode capacitance, high transconductance and high mu, this tube also incorporates design features which help to assure frequency-stable operation even under conditions of adverse ambient temperature and varying plate dissipation. The anode is forced-air cooled. The cathode is an indirectly-heated oxide-coated disc.

GENERAL CHARACTERISTICS

Electrical		
Heater Voltage (AC or DC)	6.0	V
Heater Current at 6.0 volts	1.25	A
Cathode Heating Time, minimum	60	sec
Amplification Factor	80	
Interelectrode Capacitance:		
Grid-Plate	3.2	pf
Grid-Cathode	8.0	pf
Plate-Cathode, maximum	.065	pf
Mechanical		
Mounting Position	Optional	
Type of Cooling	Forced Air	
Maximum Anode Temperature	250	°C
Net Weight, approximately	2.5	oz

MAXIMUM RATINGS AND TYPICAL OPERATING CONDITIONS

C-W Oscillator and Amplifier

Maximum Ratings, Absolute Values		
DC Plate Voltage	2000	Vdc
DC Grid Voltage	−150	Vdc
DC Cathode Current	190	mAdc
DC Grid Current	45	mAdc
Peak Positive RF Grid-Cathode Voltage	30	v
Peak Negative RF Grid-Cathode Voltage	−400	v
Plate Dissipation (forced-air cooling)	100	W
Grid Dissipation	2	W
Frequency	2.5	Gc

Plate-Pulsed Oscillator and Amplifier

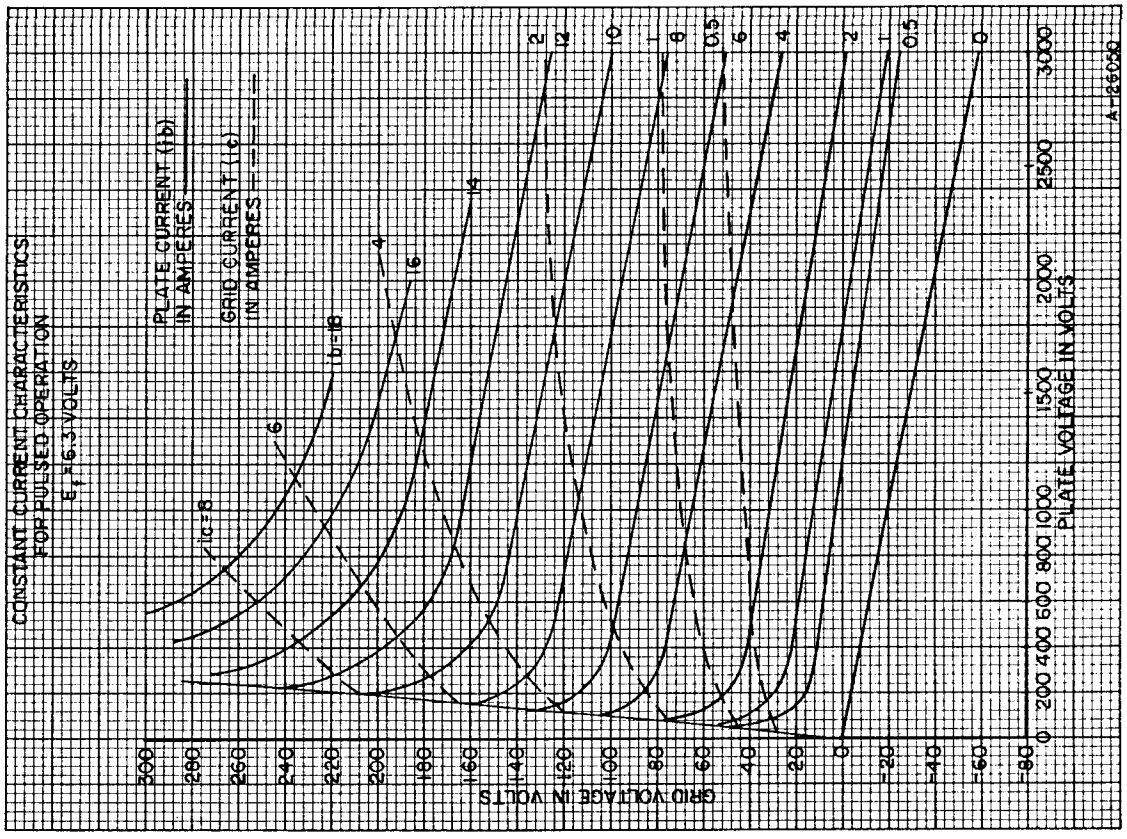
Maximum Ratings, Absolute Values		
Pulse Length	6	μs
Duty Factor	0.0033	*
Peak Plate Pulse Supply Voltage	3500	v
DC Grid Bias Voltage	−150	Vdc†
Peak Plate Current from Pulse Supply	5.0	a
Average Plate Current	13	mA
Average Grid Current	6	mA
Average Plate Dissipation	58	W
Average Grid Dissipation	2	W
Frequency	3	Gc

Grid-Pulsed Oscillator and Amplifier

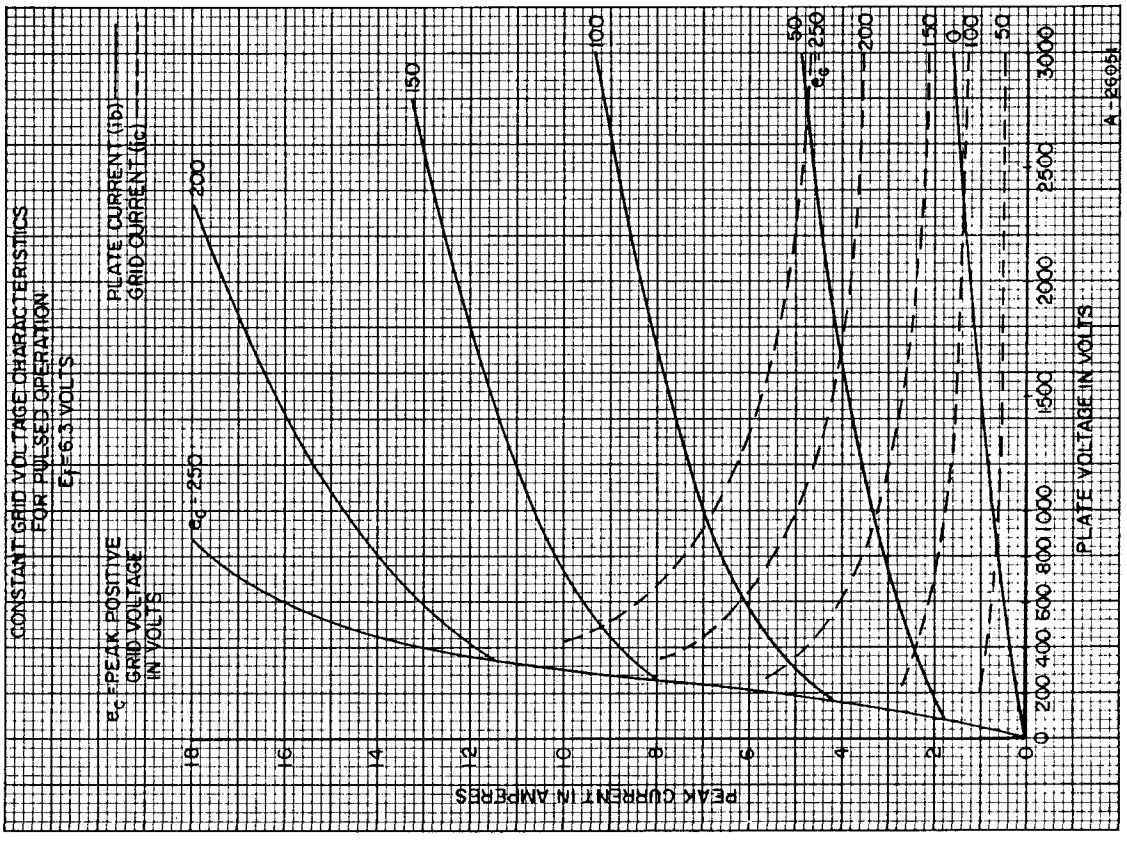
Maximum Ratings, Absolute Values		
Pulse Length	6	μs
Duty Factor	0.0033	*
DC Plate Voltage	2000	Vdc
DC Grid Bias Voltage	−150	Vdc†
Peak Plate Current from DC Supply	5.0	a
Average Plate Current	13	mA
Average Grid Current	6	mA
Average Plate Dissipation	33	W
Average Grid Dissipation	2	W
Frequency	3	Gc
Typical Operation, Oscillator		
Pulse Length	0.5	μs*
Duty Factor	0.005	*
DC Plate Voltage	2000	Vdc
DC Grid Bias Voltage	−150	Vdc
Peak Plate Current from DC Supply	4.0	a
Peak Grid Current	1.0	a
Useful Peak Power Output, approximate	1.0	kw
Frequency	1.0	Gc

*Higher duty factors are permissible at lower peak plate currents. For applications requiring longer pulse lengths or higher duty factors, consult the Machlett Engineering Department.

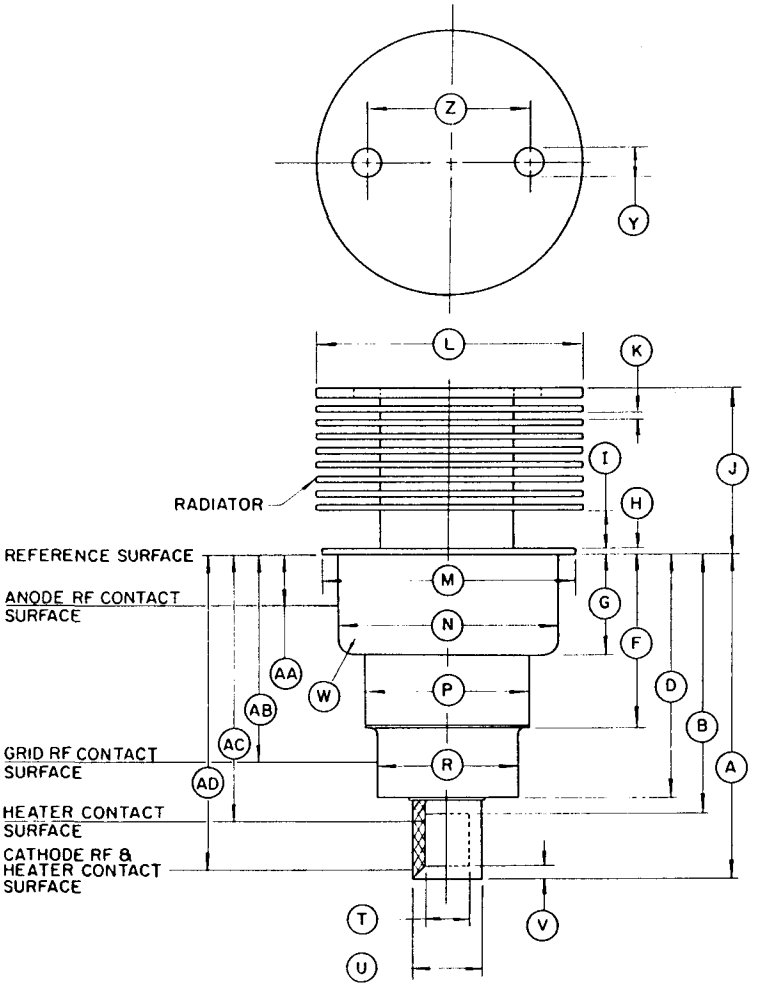
†The maximum instantaneous peak grid-cathode voltage shall be within the range of +250 to −750 volts.



CONSTANT CURRENT CHARACTERISTICS



CONSTANT GRID VOLTAGE CHARACTERISTICS



DIMENSIONS FOR OUTLINE (INCHES)

Ref.	Minimum	Maximum
A	1.500	1.560
B	—	1.214
D	1.125	1.165
F	0.800	0.840
G	0.462	0.477
H	—	0.040
I	0.125	0.185
J	0.766	0.826
K	0.025	0.046
L	1.234	1.264
M	1.180	1.195
N	1.025	1.035
P	0.752	0.792
R	0.655	0.665
T	0.213	0.223
U	0.315	0.325
V	—	0.086
W	—	0.100
Y	0.105	0.145
Z	0.650	0.850

DIMENSIONS FOR ELECTRODE CONTACT SURFACES (INCHES)

Ref.	Dimension	Contact
AA	0.198 ± 0.163	Anode
AB	1.061 ± 0.040	Grid
AC	1.316 ± 0.097	Heater
AD	1.330 ± 0.170	Cathode

NOTES

1. The total indicated runout of the anode and grid contact surfaces with respect to the cathode contact surface will not exceed 0.020 inch.
2. The total indicated runout of the cathode contact surface with respect to the heater contact surface will not exceed 0.012 inch.

DIMENSIONS — ML-8403

THE MACHLETT LABORATORIES, INC.
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