

ML-7333

**Shielded
Grid Triode**
Pulse Power
to 300 kw

MACHLETT

ELECTRON TUBE SPECIALIST

DESCRIPTION

The ML-7333 is a shielded-grid triode designed primarily to operate as a switch tube in hard-tube pulse modulators, for radar and similar applications. In this service it can deliver 300 kilowatts pulse power output with less than 2.5 kilowatts driving power. The ML-7333 will deliver this power while being vibrated at an acceleration of 10G from 50 to 2000 cps.

The ML-7333 has sturdy electrodes arranged to form a cylindrical array of electron-optical systems, featuring a

shield electrode connected internally to the cathode by direct, low-impedance paths. This design permits operation with low grid current, and it results in favorably low grid-plate capacitance. The presence of the ground-potential shield adjacent to the anode, furthermore, protects the cathode and grid from damage by transient arcs.

The cathode is a unipotential, oxide-coated type. The anode is radiation cooled and is capable of dissipating 60 watts.

Note: Data contained herein are based on initial design and test criteria. Before using these data in final equipment designs, consult Machlett for possible revisions.

GENERAL CHARACTERISTICS AND RATINGS

Electrical

Heater Voltage	6.0±5%	Volts
Heater Current	16	Amps
Heater Starting Current, maximum	80	Amps
Cathode Warm-Up Time	10	Minutes*
Amplification Factor	175	
Interelectrode Capacitances		
Grid-Plate	0.8	μf
Grid-Cathode	65	μf
Plate-Cathode	15	μf

Mechanical

Mounting Position	Any
Type of Cooling	Radiation†
Air Flow on Heater Terminal	2-5 cfm
Maximum Glass Temperature	175 °C†
Vibration Acceleration, maximum	10 G
(Ebb=20kVdc, ib=16 a, F=50-2000 cps)	
Net Weight, approximate	1 lb.

*For accelerated cathode warm-up, the filament may be energized at 7.0 volts for 5 minutes and then reduced to 6.0 volts for high-voltage operation. If a filament stand-by voltage of 5.0 volts is used, the minimum cathode warm-up time is 1 minute at 6.0 volts.

†Sufficient air flow must be provided to maintain glass temperatures at less than 175°C under all conditions of operation.

**MAXIMUM RATINGS
AND TYPICAL OPERATING CONDITIONS**
Pulse Modulator or Pulse Amplifier

Maximum Ratings, Absolute Values

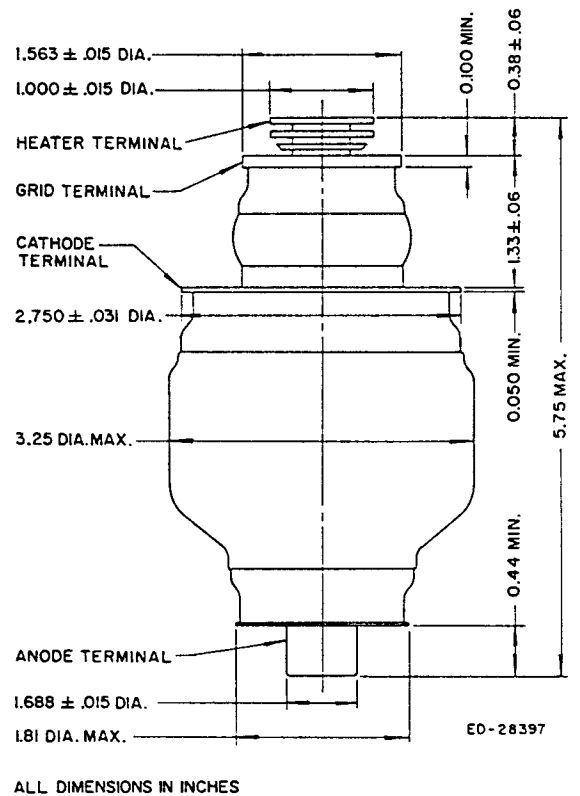
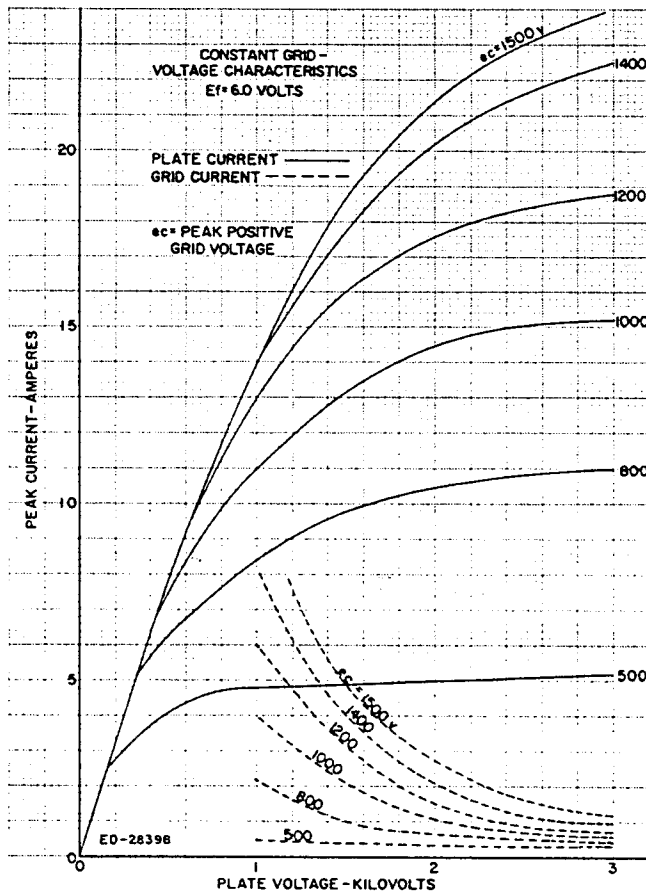
D-C Plate Voltage	20	kV
Peak Plate Voltage	25	kv
D-C Grid Voltage	-200	volts
Peak Positive Grid Voltage	1500	volts
Peak Negative Grid Voltage	-1500	volts
Pulse Cathode Current	18	amps
D-C Plate Current	20	mA
Grid-Dissipation	20	watts
Plate-Dissipation	60	watts
Pulse Duration*	25	μsec
Duty Factor*	0.001	

Typical Operation

D-C Plate Voltage	20	kV
D-C Grid Voltage	-150	volts
Pulse Positive Grid Voltage	1.1	kv
Pulse Plate Current	16.5	amps
Pulse Grid Current	1.8	amps
Pulse Driving Power	2.3	kw
Pulse Power Output	300	kw
Plate Output Voltage	18	kv

*For applications requiring longer pulse duration or higher duty factors, consult the Machlett Engineering Department.

WARNING: Operation of this tube may produce x-rays. Adequate rayproof shielding must therefore be provided in the equipment.



DIMENSIONS — ML-7333

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