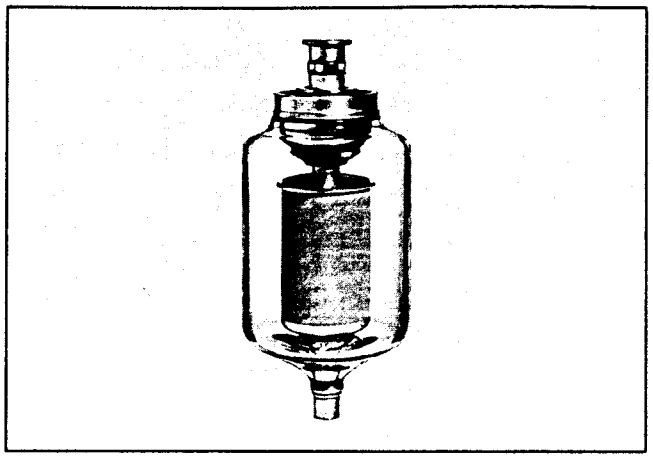
MACHLETT

PRODUCT DATA

ML-LPT 60



APPLICATION

The ML-LPT 60 is a high voltage, high mu 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 pulse output in the order of 1.0 Mw, depending on circuitry and performance requirements.

The ML-LPT 60 is designed for operation in oil or equivalent dielectric fluid, which is required for utilization of the maximum plate voltage ratings.

CONSTRUCTION

The cathode of this tube is a double helix of carburized thoriated-tungsten filament wire, supported at both ends. The molybdenum anode is radiation-cooled and is capable of dissipating 750 W.

WARNING

When operating at peak voltage in excess of 15 kV, this electron tube may give off x-rays which can be harmful unless adequately shielded by the enclosure within which the tube is used. Instructions for protective installation are given in National Bureau of Standards Handbook 93, "Safety Standard for Non-Medical X-Ray and Sealed Gamma Ray Sources." Additional information is available in National Council on Radiation Protection and Measurements Report No. 33, "Medical X-Ray and Gamma Ray Protection for Energies up to 10 MeV." Periodic checks of shielding effectiveness are also required since x-ray radiation levels may increase with the operating life of the tube.

ORDERING NOTES

Refer to **Machlett** price list when ordering.

SPECIFICATION

ELECTRICAL CHARACTERISTICS

Filament Voltage:	12.6 volts
Filament Current:	29 amps
Filament Starting Current, maximum:	120 amps
Filament Cold Resistance:	0.0053 ohm
Grid Cutoff Voltage at 100 kV Plate Voltage, minimum:	−700 volts
Amplification Factor:	180
Interelectrode Capacitances:	
Grid-Plate:	7.5 pf
Grid-Filament:	20.0 pf
Plate-Filament:	0.2 pf

MECHANICAL CHARACTERISTICS

Mounting Position:	Vertical*
Insulating Medium:	Oil or equivalent
Type of Cooling:	Oil convection
Maximum Glass Temperature:	165 °C (329 °F)
Net Weight, approximate:	3 lbs. (1.4 kg)

* When the tube is mounted with the cathode down, forced circulation of the oil in the cathode-end re-entrant cavity will be required.

MAXIMUM RATINGS AND TYPICAL OPERATING CONDITIONS

Pulse Modulator or Pulse Amplifier

Maximum Ratings		
DC Plate Voltage	100	kV▲
Peak Positive Plate Voltage	105	kv‡
DC Grid Voltage	−1500	V
Peak Positive Grid Voltage	1000	v
Peak Negative Grid Voltage	−2000	v
Peak Cathode Current	15	a
Grid Dissipation	50	W
Plate Dissipation	750	W
Pulse Duration	‡	
Duty Factor	‡	
Typical Operation		
DC Plate Voltage	80	kV
DC Grid Voltage	−700	V
Pulse Positive Grid Voltage	700	v
Pulse Plate Current	11	a
Pulse Grid Current	2.7	a
Pulse Driving Power	3.8	kw
Pulse Power Output	830	kw
Pulsed Plate Output Voltage	75	kv
Pulse Duration	500	μ sec
Duty Factor	.005	

Ratings apply only when the tube is immersed in insulating oil or an equivalent dielectric fluid.

‡ The duration of the pulse may be several milliseconds long. The maximum average grid and plate dissipations will determine the duty factor.

Note: For operation under conditions not covered by the above ratings, consult the Machlett Engineering Department.