

PL 10277
Radial Beam
Pulse Tetrode



The Penta Laboratories PL 10277 is a pulse tetrode intended for use in pulse-modulator, pulsed amplifier, and pulsed oscillator service. This compact, high vacuum, radial-beam tetrode, incorporating non-emitting grids and non-emitting plate, is recommended for use in new equipments where high voltage, high current, or high duty factor is encountered. Cooling of the tube is accomplished by radiation from the plate and circulation of forced-air through the base and around the envelope.

ELECTRICAL

Filament: Thoriated Tungsten	Min.	Nom.	Max.	
Voltage	-	5.0		Volts
Current	13.5		14.7	amperes
Amplification Factor (Grid to Screen)	-	5.1		
Direct Interelectrode Capacitances, Grounded Cathode:				
Grid-Plate	-	-	0.17	pf
Input	10.7	14.5		pf
Output	4.2	5.6		pf
Transconductance (I _b =100ma)	-	4,000		μmhos
Highest Frequency for Maximum Ratings	-	-	110	mHz

MECHANICAL

Base	5-pin metal shell
Basing	See drawing
Recommend Socket	PSK-410 Air-System Socket
Operating Position	Vertical, base down or up
Maximum Operating Temperatures:	
Base Seals	200°C
Plate Seal	225°C
Cooling	Radiation and forced-air
Maximum Over-all Dimensions	
Length	6.38 inches
Diameter	3.56 inches

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P E N T A L A B O R A T O R I E S
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ELECTRON TUBES FOR INDUSTRY



PL 10277 Radial Beam Pulse Tetrode

PULSE MODULATOR SERVICE

MAXIMUM RATINGS

DC Plate Voltage	30	Max.	kilovolts
DC Screen Voltage	2.5	Max.	kilovolts
DC Grid Voltage	-1.0	Max.	kilovolt
Peak Plate Current	4.0	Max.	Amperes
Plate Dissipation (Avg.)	400	Max.	Watts
Screen Dissipation (Avg.)	35	Max.	Watts
Grid Dissipation (Avg.)	10	Max.	Watts

TYPICAL OPERATION

DC Plate Voltage	10	15	20	Kilovolts
DC Screen Voltage	1.5	1.5	1.5	Kilovolts
DC Grid Voltage	-450	-490	-525	Volts
Pulse Plate Voltage	8.25	13.25	18.25	kilovolts
Peak Pulse Current	3.5	3.5	3.5	amperes
Pulse Screen Current	0.40	0.40	0.40	ampere
Pulse Grid Current	0.06	0.06	0.06	volts
Pulse Pos. Grid Voltage	60	60	60	volts
Pulse Drive Power	31.0	33.0	35.0	watts
Pulse Plate Input Power	35.0	52.5	70.0	kilowatts
Pulse Plate Output Power	29.0	46.5	64.0	kilowatts
Duty	5.5	5.5	5.5	

RADIO-FREQUENCY PLATE AND SCREEN-ULSED AMPLIFIER AND OSCILLATOR*

MAXIMUM RATINGS

Peak DC Plate Voltage	20	Max.	Kilovolts
DC Screen Voltage	2.5	Max.	Kilovolts
DC Grid Voltage	-1.0	Max.	Kilovolt
Peak Cathode Current**	5.4	Max	Amperes
Plate Dissipation (Avg.)	400	Max.	Watts
Screen Dissipation (Avg.)	35	Max.	Watts
Grid Dissipation (Avg.)	10	Max.	Watts

TYPICAL OPERATION

DC Plate Voltage	10	12.5	15	kilovolts
Pulse Screen Voltage	1.5	1.5	1.5	kilovolts
DC Grid Voltage	-725	-750	-785	volts
Pulse Plate Current**	0.87	0.87	0.87	ampere
Pulse Screen Current	70	70	70	milliamps
Pulse Grid Current	10	10	10	milliamps
Peak RF Grid Voltage	845	870	905	volts
Pulse Drive Power	8.5	8.7	9.0	watts
Pulse Plate Input Power	8.7	11.0	13.0	kilowatts
Pulse Plate Output Power	6.8	8.8	10.5	kilowatts
Duty	20	18	16	



PL 10277 Radial Beam Pulse Tetrode

RADIO-FREQUENCY GRID-PULSED AMPLIFIER AND OSCILLATOR

MAXIMUM RATINGS

DC Plate Voltage	10	Max.	kilovolts
DC Screen Voltage	2.5	Max.	kilovolts
DC Grid Voltage	-1.0	Max.	kilovolt
Peak Cathode Current**	5.4	Max.	Amperes
Plate Dissipation (Avg.)	400	Max.	Watts
Screen Dissipation (Avg.)	35	Max.	Watts
Grid Dissipation (Avg.)	10	Max.	Watts

TYPICAL OPERATION

DC Plate Voltage	5	7.5	10	kilovolts
DC Screen Voltage	1.5	1.5	1.5	kilovolts
DC Grid Voltage	-680	-700	-725	volts
Pulse Plate Current**	0.87	0.87	0.87	ampere
Pulse Screen Current	70	70	70	milliamps
Pulse Grid Current	10	10	10	milliamps
Peak RF Grid Voltage	800	820	845	volts
Pulse Drive Power	8.0	8.2	8.5	watts
Pulse Plate Input Power	4.3	6.5	8.7	kilowatts
Pulse Plate Output Power	2.7	4.7	6.6	kilowatts
Duty	25	22	19	

* When used as a rf Plate-and Screen-Pulsed Amplifier, the grid drive must also be pulsed to avoid over-heating this element during the inter-pulse periods.

** The maximum peak cathode current rating refers to the instantaneous peak cathode current available. This rating is based on available emission throughout life of 80 milliamperes per watt of filament power. The pulse plate current data shown under the Typical Operation section refers to the dc plate current component during the pulse.

TYPICAL OPERATING CONDITIONS - LASER SERIES REGULATOR

Screen Voltage 1.0 KV Duty cycle 100%

Anode voltage (laser off)	10	12	15	kV
Anode voltage (laser firing)	4.5	5.0	5.5	kV
Grid bias voltage	-375	-400	-430	V
Grid Voltage (laser firing)	-95	-104	-118	V
Anode current	80	72	69	mA
Anode dissipation	360	360	360	W
Power to load	440	504	656	W

Screen voltage 1.0 kV, duty cycle 10%

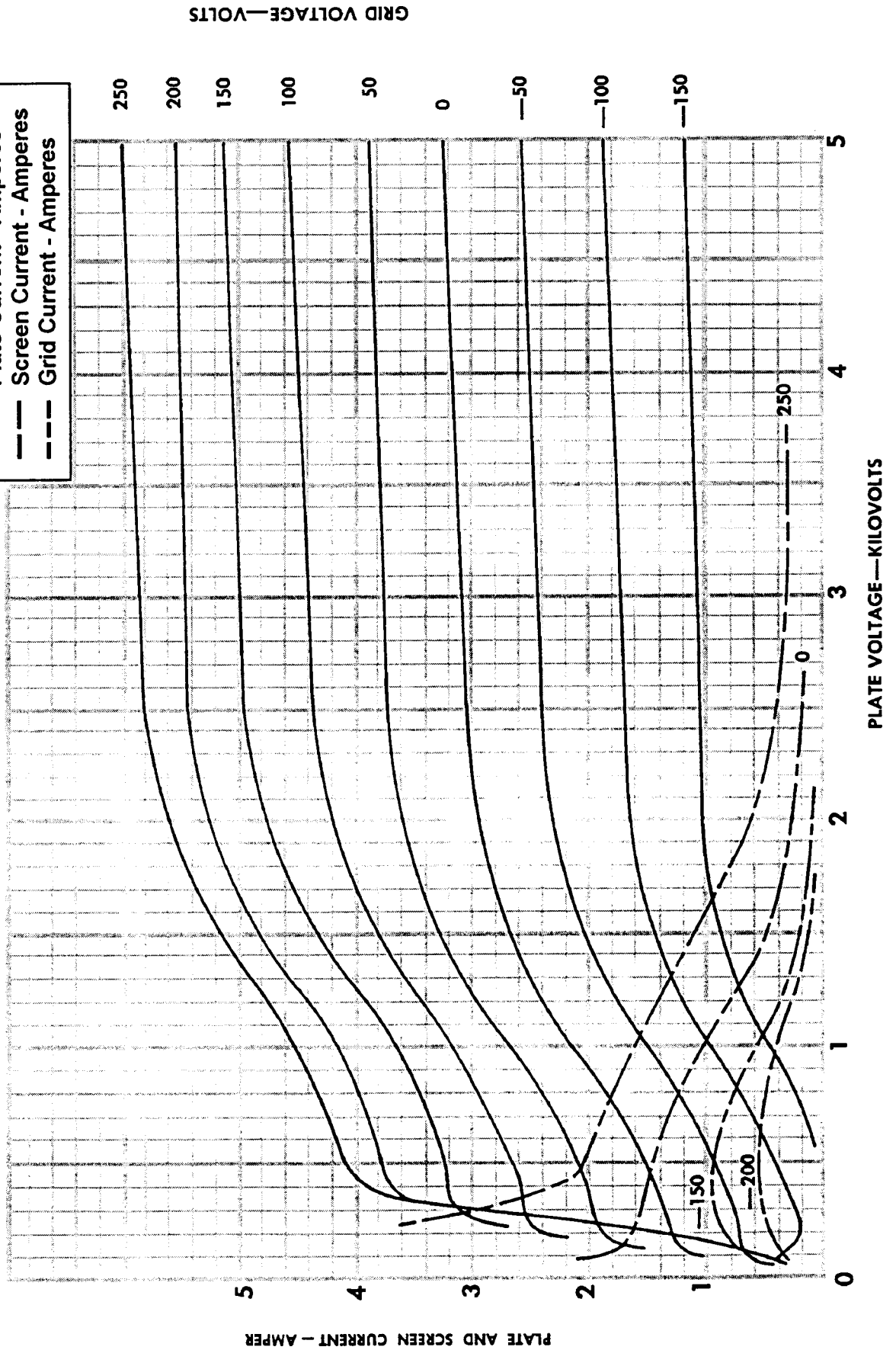
Anode voltage (laser off)	10	12	15	kV
Anode voltage (laser firing)	3.5	4.0	4.5	kV
Grid bias voltage	-375	-400	-430	V
Grid Voltage (laser firing)	-68	-82	-100	V
Pulse Duration	<0.5	<0.5	<0.5	a
Anode current (pulse)	871	853	778	mA
Anode dissipation (pulse)	3400	3460	3500	W
Power to load (pulse)	6300	6900	6944	W



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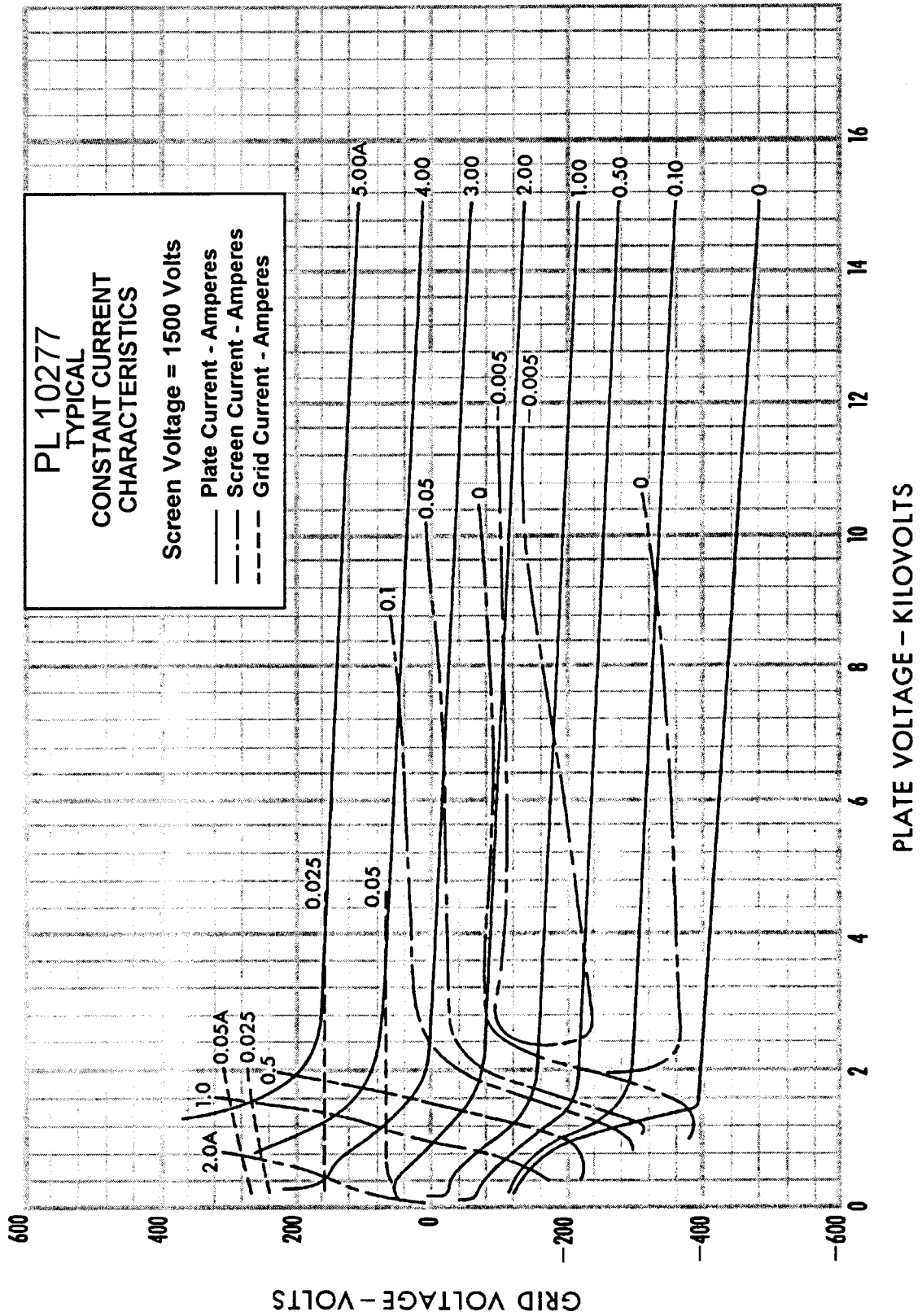
PL 10277
TYPICAL PLATE
CHARACTERISTICS
SCREEN VOLTAGE = 1500 VOLTS

- Plate Current - Amperes
- - - Screen Current - Amperes
- - - Grid Current - Amperes



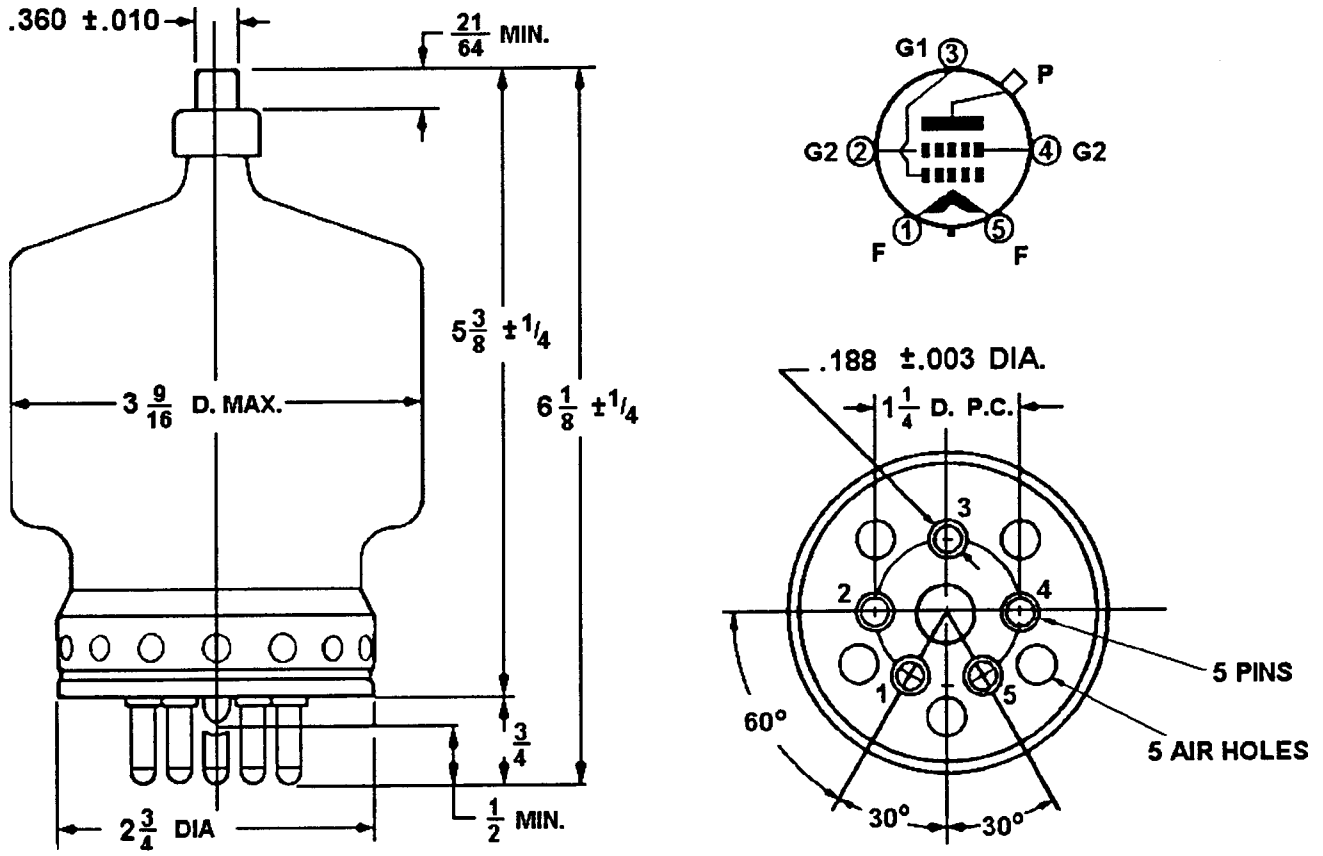


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All Dimensions in Inches

