

PT1159 Hydrogen Thyatron



The Penta PT1159 is a hydrogen filled thyatron featuring low jitter and low anode delay drift. Suitable for use at high pulse repetition rates, in parallel for switching higher powers, or for switching long pulses. A reservoir operating from the cathode heater supply is incorporated.

Electrical Characteristics

Heater Voltage	6.3	Volts
Heater Current	22	Amperes
Cathode	Oxide Coated	
Minimum Preheat Time	5	minutes
Interelectrode Capacitances (approx.)		
Anode to Grid 2	13	pf
Anode to Grid 1	7.5	pf
Anode to Cathode	26	pf

Mechanical

Overall Length	12.500 inch (317.5mm)
Overall Diameter	3.312 inch (84.12 mm)
Net Weight (approx.)	1.5 lbs (0.7 kg)
Mounting Position	Any
Cooling	Natural

Operating Characteristics

	Min.	Typical	Max.
Critical D.C. Anode Voltage for conduction	0.5	2.0	kV
Anode Delay Time	0.15	0.25	us
Anode Delay Time Drift	20	50	ns
Time Jitter	1.0	5.0	ns

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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



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Maximum and Minimum Ratings (absolute values)

Anode

	Min.	Max.	
Peak forward anode voltage	---	33	kV
Peak inverse anode current	---	25	kV
Peak Anode Current	---	1000	Amperes
Average anode current	---	1.25	Amperes
Rate of rise of anode current	---	5000	A/us
Anode heating factor	---	14x10 ⁹	VApps

Grid 2

Unloaded grid 2 drive pulse voltage	200	1000	Volts
Grid 2 pulse duration	1	---	us
Rate of rise of grid 2 pulse	1	---	kV/us
Grid 2 pulse delay	0.5	3.0	us
Peak inverse grid 2 voltage	---	450	Volts
Loaded grid 2 bias voltage	-50	-150	Volts
Forward impedance of grid 2 drive circuit	50	800	Ohms

Grid 1 - DC Primed

D.C. grid 1 unloaded priming voltage	75	200	Volts
D.C. grid 1 priming current	20	100	mA

Grid 1 - Pulsed

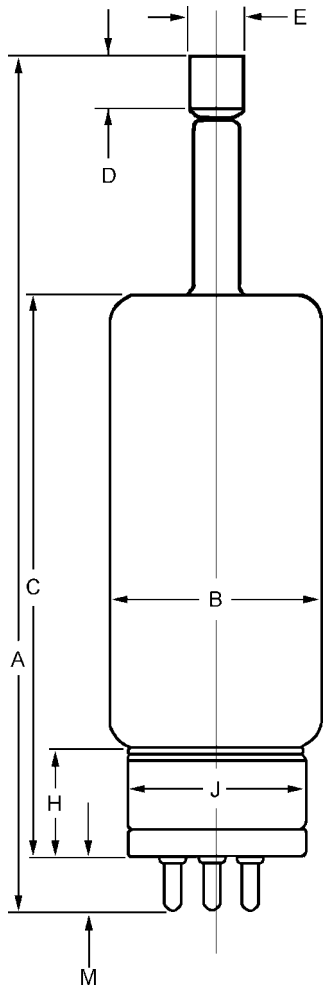
Unloaded grid 1 drive pulse voltage	300	1000	Volts
Grid 1 pulse duration	2.0	---	us
Rate of rise of grid 1 pulse	1.0	---	kV/us
Peak inverse grid 1 voltage	---	450	Volts
Peak grid 1 drive current	0.3	1.0	Amperes

Environmental

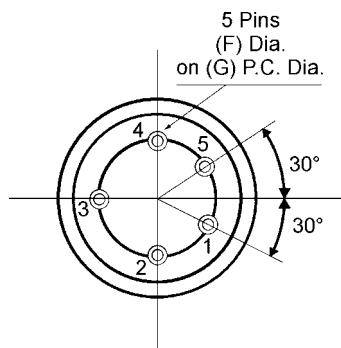
Ambient temperature	-50	+90	°C
Altitude	---	10,000	Feet
	---	3	km



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Ref	Inches	Millimeters	
A	12.500	317.50	Max
B	3.312	84.12	Max
C	10.000	254.00	Max
D	0.500	12.70	Min
E	0.559	14.20	Min
F	0.184	4.67	Min
G	1.250	31.75	
H	1.937	49.20	
J	3.000	76.20	Min
M	0.575	14.61	Min



Pin	Element
1	Heater
2	Cathode, internally connected to heater mid-point
3	Grid 2
4	Grid 1
5	Heater
Top Cap	Anode