



PT5C22 Hydrogen Thyratron



This tube is a unipotential cathode, three element hydrogen filled thyratron designed for network discharge service. In such service, it is suitable for producing pulse outputs of more than 2 megawatts at a average power level of more than 1.6 KW

The special features of this tube are high peak voltage and current ratings and the compact size, low time jitter and the presence of a reservoir, capable of maintaining the hydrogen pressure throughout the useful life of the tube; an improved and stronger envelop top seal is incorporated.

ELECTRICAL

Heater voltage	6.3	Volts
Heater Current	10.5	Amperes
Heater Time (minimum)	5	Minutes

MECHANICAL

Mounting Position	Any
Base	EIA A4-18
Anode Cap	C1-43, Medium, with Corona Shield
Cooling	See Note 1
Net Weight	12 Ounces
Dimensions	See Outline

RATINGS

Max. Peak Anode voltage, Forward	16.0	Kilovolts
Max. Peak Anode Voltage, Inverse (Note 2)	16.0	Kilovolts
Min. Anode Supply Voltage	4.5	Kilovolts
Max. Peak Anode Current	325	Amperes
Max. Average Anode Current	200	Milliamperes
Max. RMS Anode Current (Note 3)	6.3	Amperes
Max. EPY x IB x PRR	3.2×10^9	
Max. Anode Current Rate of Rise	1500	Amperes / μ Sec.
Peak Trigger Voltage	See Note 4	
Max. Peak Inverse Trigger Voltage	200	Volts

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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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Max. Anode Delay Time (Note 5)	0.65	0.70	μ Sec.
Max. Anode Delay Time Drift	0.10	0.10	μ Sec.
Max. Time Jitter (Note 6)	0.005	0.01	μ Sec.
Ambient Temperature	-50° C to +90° C		
Shock Rating	13° Navy. (Flyweight) Shock Machine		

TWO TYPICAL OPERATIONS AS PULSE MODULATOR, DC RESONANT CHARGING

Peak Network Voltage	16.0	12.0	Kilovolts
Pulse Repetition Rate	1000	500	Pulses / Sec.
Pulse Length	1.0	1.5	μ Sec.
Pulse Forming Network Impedance	47.6	25	Ohms
Trigger Voltage	200	200	Volts
Peak Power Output (Resistive Load 92% Zn)	1.31	1.40	Megawatt
Peak Anode Current	175	250	Amperes
Average Anode Current	0.18	0.19	Amperes

NOTE:

1. Cooling permitted. However, there shall be no air blast directly on the bulb.
2. During the first 25 microseconds after conduction, the peak inverse anode voltage shall not exceed 5 KV
3. The root mean square anode current shall be computed as the square root of the product of peak current and the average current.
4. The Pulse produced by the driver circuit shall have the following characteristics when viewed at the socket with the tube disconnected:
 - A. Amplitude 200-300 Volts
 - B. Duration 2 Microseconds (at 70% Points)
 - C. Rate of Rise 200 Volts / Microsecond (min.)
 - D. Impedance 50-500 Ohms

The limits of anode time delay and anode time jitter are based on the minimum trigger. Using the highest permissible trigger voltage and lowest trigger source impedance materially reduces these values below the limits specified.

5. The time of anode delay is measured between the 26 percent point on the rising portion of the unloaded grid voltage pulse and the point at which evidence of anode conduction first appears on the loaded grid pulse.
6. Time jitter is measured at the 50 percent point on the anode current pulse.



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