NATIONAL

5C22
Hydrogen Thyratron

DESCRIPTION

The 5C22 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 an average power level of more than 1.6 KW.

The special features of the 5C22 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 envelope top seal is incorporated.

Electrical Data, General	Nom.	Min.	Max.	
Heater Voltage	6.3	5.9	6.7	Volts AC
Heater Current (At 6.3 Volts)	9.6	11.6		Amperes
Minimum Heating Time		5		Minutes

Mechanical Data, General

Mounting Position ..... Any
Base ..... Super Jumbo 4-Pin with Bayonet A4-18 with Ceramic Insert
Anode Cap C1-5
Cooling (Note 1)
NetWeight ..... 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 DC Amperes
Max. Average Anode Current	200 Milliamperes
Max. RMS Anode Current (Note 3)	6.3 Amperes AC
Max. EPY x IB x PRR	3.2×10^9
Max. Anode Current Rate of Rise	1500 Amperes/µSecond

Peak Trigger Voltage (Note 4)
Max. Peak Inverse Trigger Voltage ..... 200 Volts

	Initial Limit	**End of Life Limit**	
Max. Anode Delay Time (Note 5)	0.65	0.70	Microsecond
Max. Anode Delay Time Drift	0.10	0.10	Microsecond
Max. Time Jitter (Note 6)	0.005	0.01	Microsecond
Ambient Temperature	-50^o to $+90^o$C		

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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 Microseconds
Pulse Forming Network Impedance	7.6	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 DC

NOTE 1: Cooling permitted. However, there shall be no air blast directly on the bulb.

NOTE 2: During the first 25 microseconds after conduction, the peak in. verse anode voltage shall not exceed 5 KV.

NOTE 3: The root mean square anode current shall be computed as the square root of the product of peak current and the average current.

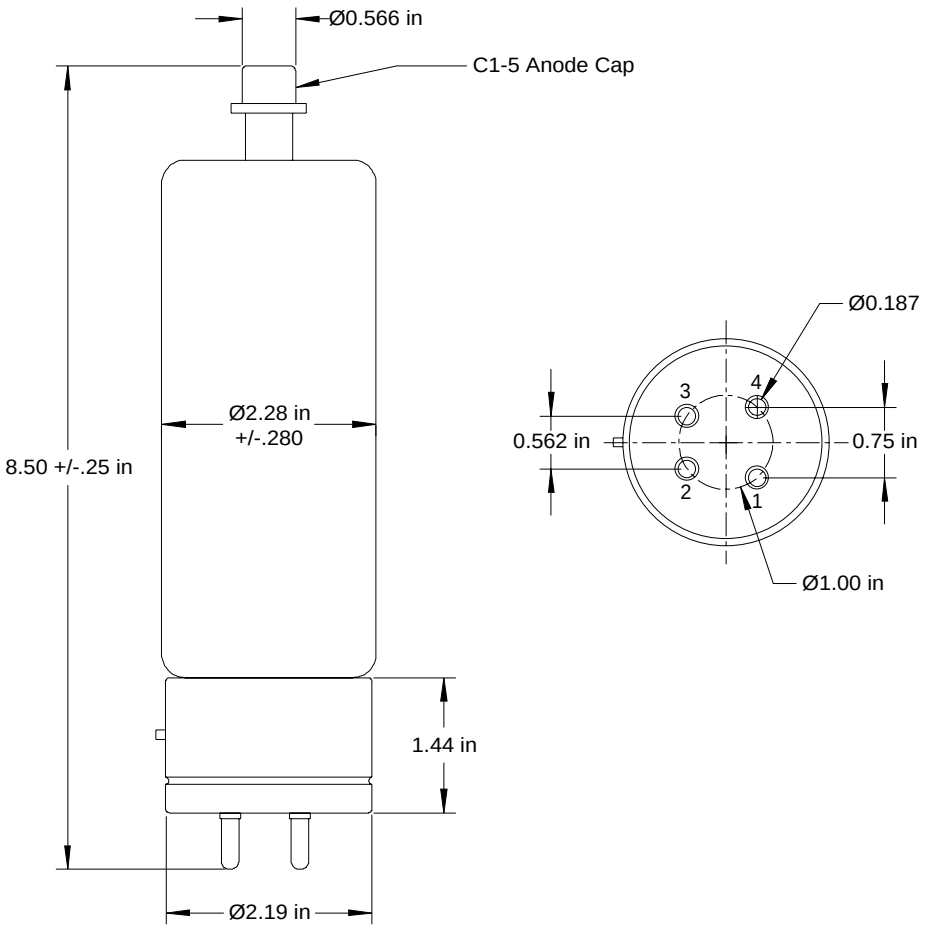
NOTE 4: The pulse produced by the driver circuit shall have the following characteristics when viewed at the 5C22 socket with the tube disconnected:

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.

NOTE 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.

NOTE 6: Time jitter is measured at the 50 percent point on the anode current pulse.



1. GRID
2. HEATER & CATHODE
3. HEATER
4. CATHODE