



ELECTRON TUBE DIVISION

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INTERNATIONAL TELEPHONE AND TELEGRAPH CORPORATION

**HYDROGEN
THYRATRON
8488**

DESCRIPTION:

The 8488 is a unipotential cathode, three element hydrogen filled thyatron 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 8488 features a patented hollow anode connector design which provides direct exposure of the anode to the atmosphere. This permits "battle short" starts without catastrophic failure.

Other features of the 8488 include an internal hydrogen reservoir connected across the filament and capable of producing and maintaining the hydrogen pressure throughout the useful life of the tube. Further features are the high peak voltage and current ratings and the ruggedized construction.

ELECTRICAL DATA, GENERAL:

	<u>Nom.</u>	<u>Min.</u>	<u>Max.</u>			
Heater Voltage	6.3	5.9	6.7	Volts AC	Minimum Heating Time	3 Minutes (Note 7)
Heater Current. $E_h = 6.3$ volts		9.0	11.0	Amperes		

MECHANICAL DATA, GENERAL:

Mounting Position	Any	Anode Cap	Medium Metal, C1-5 with modification.
Base	Super Jumbo 4-pin with Bayonet A4-18 with ceramic insert	Cooling	Note 1
		Net Weight	10 Ounces

DIMENSIONS:

See Outline Drawing.

RATINGS:

Max. Peak Anode Voltage, Forward	16.0 Kilovolts	Max. RMS Anode Current (Note 3)	6.3 Amperes AC
Max. Peak Anode Voltage, Inverse (Note 2)	16.0 Kilovolts	Max. epy x lb x prr	3.9×10^9
Min. Anode Supply Voltage	3.5 Kilovolts DC	Max. Anode Current Rate of Rise	1500 Amperes/ μ second
Max. Peak Average Anode Current	325 Amperes	Peak Trigger Voltage	Note 4
Max. Average Anode Current	225 Milliamperes	Max. Peak Inverse Trigger Voltage	200 Volts

	<u>Initial Limit</u>	<u>End of Life Limit</u>		
Max. Anode Delay Time (Note 5)	0.6	0.6 Microsecond	Ambient Temperature	-50° to + 90° Cent.
Max. Anode Delay Time Drift	0.1	0.1 Microsecond	Shock Rating	24° Navy (Plyweight) Shock Machine
Max. Time Jitter (Note 6)	0.0005	0.01 Microsecond		

Note 1:

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

Note 2:

The peak inverse anode voltage shall not exceed 5.0 KV during the first 25 microseconds after the pulse.

Note 3:

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

Note 4:

The driver pulse, measured at the tube socket with the thyatron grid disconnected, shall have the following characteristics:

A. Voltage	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.

Note 7:

The 8488 will normally begin to operate in approximately 90 seconds. No damage will ensue on a cold start on this basis if anode power is restricted to 75% of ratings. However, the manufacturer should be consulted if this type of operation is contemplated.

