Thyratron

L4189

The L4189 is a ceramic-metal, low-inductance hydrogen thyratron triode engineered for switching sub-microsecond peak power levels up to 350 megawatts. It's commonly used in high-voltage power supplies for medical, lithographic, and industrial marking equipment. The grid-mounting flange allows flexible positioning, while cooling options include natural convection, forced air, or dielectric fluid immersion.

SPECIFICATIONS

Maximum Ratings	Max	Units
Peak Anode Voltage, Forward [1] (epy)	35	kV
Peak Anode Current, tp = 5 µsec (ib)	2,000	A
Peak Anode Current, tp < 1 µsec [2] (ib)	20,000	A
Average Anode Current (lb)	1.25	ADC
RMS Anode Current [3] (lp)	40	A
Anode Delay Time [4] (tad)	0.5	µs
Time Jitter [5] (tj)	0.005	µs
Ambient Temp	-55° to +125°C	

Typical Operation	Symbol	Nom	Min	Max	Units
Peak trigger voltage [6]	Egy	-	750	1500	V
Trigger voltage pulse duration	Tp	2	1	-	µs
Trigger voltage rise time	Tr	-	0.07	0.35	µs
Trigger source impedance	Zg	-	50	250	Ω
Short circuit trigger current	igv	12	5	25	A
Negative control grid bias	Ecc	-100	0	-150	VDC
Heater Voltage	Ef	6.3	5.8	6.8	V
Heater Current (at 6.3 Volts)	If	19	16	22	A
Reservoir Voltage [7]	Eres	6.3	5.8	6.8	V
Reservoir Current (at 6.3 Volts)	Ires	2.5	2	3	A
Warm-up time	tk	-	5	-	Min.

L-4189 Specification Notes:

1. During the first 25 microseconds after conduction, peak inverse anode voltage should be limited to 10 kV in order to obtain maximum tube life.
2. The 20,000 ampere peak current rating presumes low duty, sub-microsecond pulse application.
3. The root mean square anode current is computed as the square root of the product of peak current and the average current ($\sqrt{Ibxib}$).
4. Anode delay time is measured between the 25% point on the rising portion of the unloaded grid voltage pulse and the point at which anode conduction becomes evident on the grid voltage pulse.
5. Time jitter is measured at the 50% point on the leading edge of the anode current pulse.
6. The limits of anode delay time and anode time jitter are based on the minimum trigger. Using the highest permissible trigger voltage and lowest trigger source impedance significantly reduces these values below the limits specified.
7. The recommended reservoir voltage is stamped on the tube and is suitable for most applications. This value can be optimized for a specific application by determining the maximum value that allows normal circuit operation without self-triggering or charging power supply over-current faults. The reservoir voltage should then be reduced by 0.2–0.4 V below this value.

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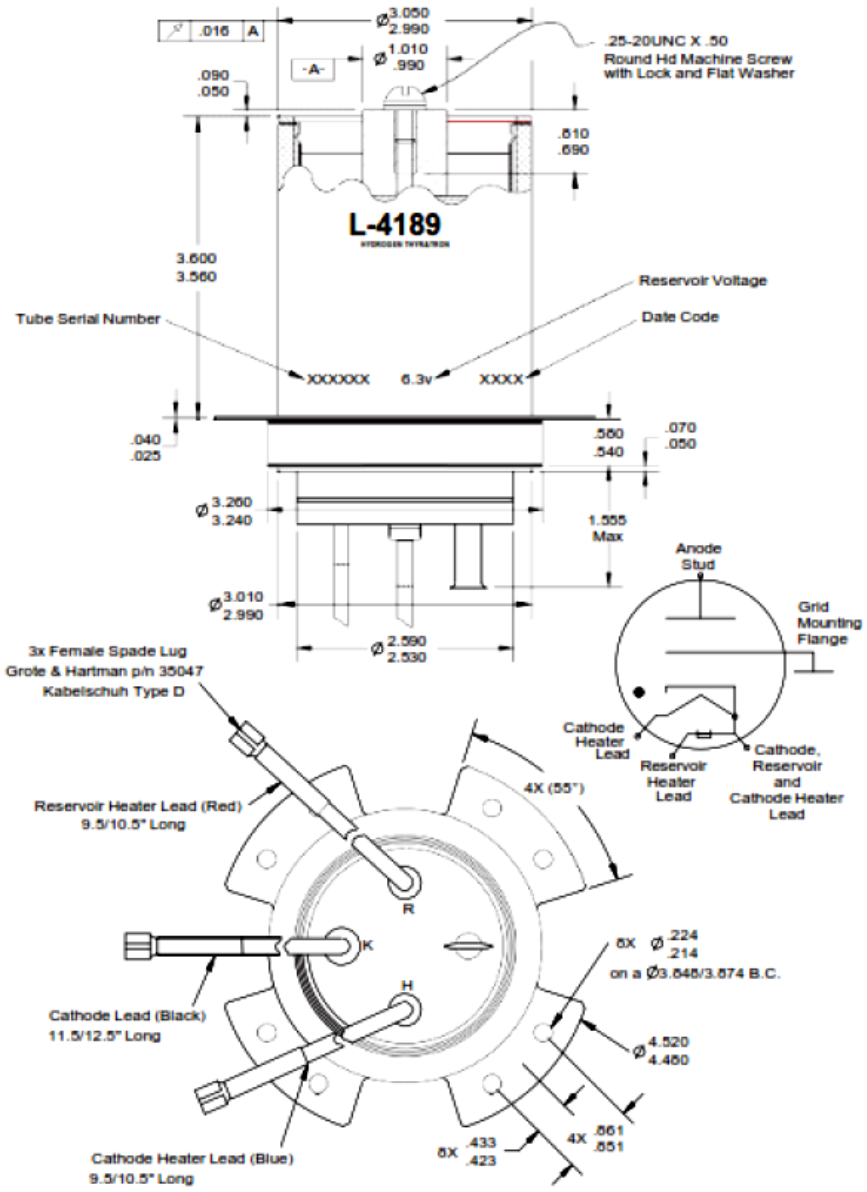
Outline Drawing (inches)



Detailed outline drawings are available on request. Specifications and features are subject to change without notice.

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