E2V Technologies
FX2530/6777
Hydrogen Thyratron

The data to be read in conjunction with the Hydrogen Thyratron Preamble.

ABRIDGED DATA

Hydrogen-filled triode thyratron, positive grid, for pulse operation especially in compact airborne radar systems. A hydrogen reservoir operating from the cathode heater supply is incorporated.

Peak forward anode voltage	8.0	kV max
Peak anode current	85	A max
Average anode current	100	mA max
Anode heating factor	2.5×10^9	VApps max
Peak output power	0.34	MW max

GENERAL

Electrical

Cathode (connected internally to one end of heater)		oxide coated
Heater voltage	6.3	V
Heater current	3.0	A
Cathode heating time (minimum)	3.0	minutes

Mechanical

Overall length	114.3 mm (4.500 inches) max
Overall diameter	40.00 mm (1.575 inches) max
Net weight	60 g (2 ounces) approx
Mounting position	any
Clamping	see note 1
Base	adapted JEDEC A4-89
Top cap	B.S.448-CT2

Cooling . . . . . see note 2

MAXIMUM AND MINIMUM RATINGS
(Absolute values)

	Min	Max	
Anode			
Peak forward anode voltage	–	8.0	kV
Peak inverse anode voltage (see note 3)	–	8.0	kV
Peak anode current	–	85	A
Average anode current	–	100	mA
Rate of rise of anode current (see note 4)	–	1200	A/μs
Anode heating factor	–	2.5×10^9	VApps
Grid			
Unloaded grid drive pulse amplitude	175	–	V
Unloaded grid pulse duration	2.0	–	μs
Rate of rise of grid pulse (see note 4)	350	–	V/μs
Peak inverse grid voltage	–	200	V
Forward impedance of grid drive circuit	–	1500	Ω
Cathode			
Heater voltage	5.7	6.9	V
Cathode heating time	3.0	–	minutes
Environmental			
Ambient temperature	−50	+90	°C

CHARACTERISTICS

	Min	Typical	Max	
Critical DC anode voltage for conduction (see notes 5 and 6)	–	200	800	V
Anode delay time (see notes 6 and 7)	–	0.35	0.5	μs
Anode delay time drift (see notes 6 and 8)	–	0.03	0.1	μs
Jitter (see notes 6 and 9)	–	3	5	ns
Recovery time	see note 10 and curves			
Heater current (at 6.3 V)	2.5	3.0	3.5	A

NOTES

1. The tube should preferably be clamped by the base only. Any clamps used on the bulb must be insulated from ground.
2. Cooling of the anode lead is permissible, but no forced air flow should be directed on to the bulb.
3. In pulsed operation the peak inverse anode voltage, exclusive of a spike of 0.05 μs duration, must not exceed 3.0 kV during the first 25 μs after the pulse.
4. This rate of rise refers to that part of the leading edge of the pulse between 25% and 75% of the pulse amplitude.
5. The minimum supply voltage at which the tube will conduct decreases as the grid drive current is increased. A typical value of 200 V is easily obtained. This in no way affects the ability of the tube to recover.
6. The typical figures are more realistic for tubes operating under normal conditions.
7. The time interval between a point on the leading edge of the unloaded grid pulse at 25% of the pulse amplitude and the point where anode conduction takes place.
8. Normally taken as the drift in delay time over a 5 minute run at full ratings between the second and seventh minutes of operation.
9. The variation of firing time measured at 50% of current pulse amplitude.
10. The recovery characteristics are controlled on a sampling basis.

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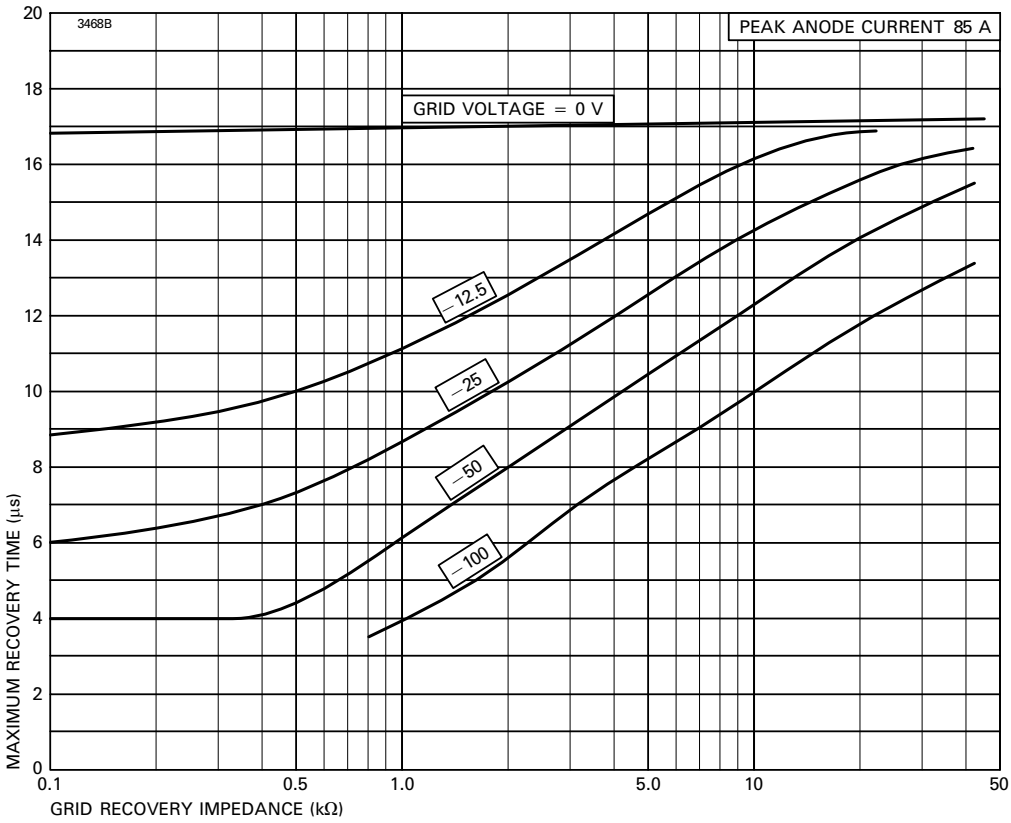
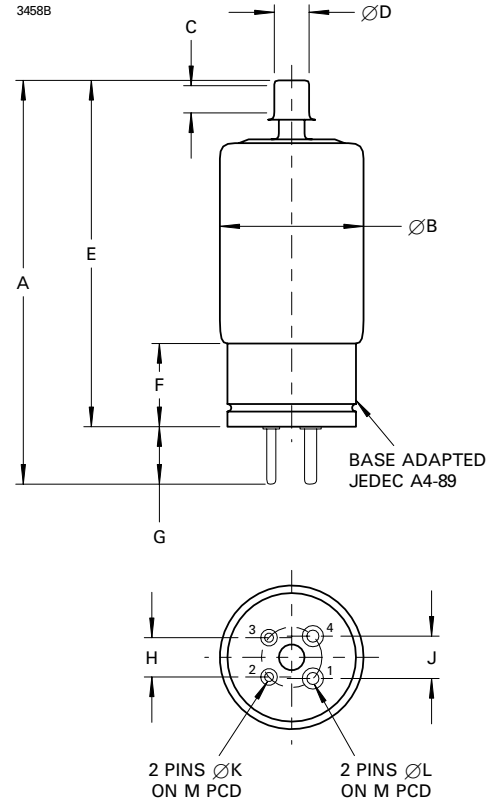
MAXIMUM RECOVERY CHARACTERISTICS



OUTLINE

(All dimensions without limits are nominal)



Ref	Millimetres	Inches
A	114.3 max	4.500 max
B	40.0 max	1.575 max
C	7.62 min	0.300 min
D	9.27 max	0.365 max
E	96.65 ± 3.18	3.805 ± 0.125
F	22.23	0.875
G	15.14 max	0.596 max
H	11.1	0.437
J	11.89	0.468
K	3.175 ± 0.076	0.125 ± 0.003
L	3.962 ± 0.076	0.156 ± 0.003
M	16.26	0.640

Inch dimensions have been derived from millimetres.

Pin	Element
1	Heater
2	Cathode
3	Grid
4	Heater, cathode
Top cap	Anode

HEALTH AND SAFETY HAZARDS

E2V Technologies hydrogen thyratrons are safe to handle and operate, provided that the relevant precautions stated herein are observed. E2V Technologies does not accept responsibility for damage or injury resulting from the use of electronic devices it produces. Equipment manufacturers and users must ensure that adequate precautions are taken. Appropriate warning labels and notices must be provided on equipments incorporating E2V Technologies devices and in operating manuals.

High Voltage

Equipment must be designed so that personnel cannot come into contact with high voltage circuits. All high voltage circuits and terminals must be enclosed and fail-safe interlock switches must be fitted to disconnect the primary power supply and discharge all high voltage capacitors and other stored charges before allowing access. Interlock switches must not be bypassed to allow operation with access doors open.

X-Ray Radiation

All high voltage devices produce X-rays during operation and may require shielding. The X-ray radiation from hydrogen thyratrons is usually reduced to a safe level by enclosing the equipment or shielding the thyratron with at least 1.6 mm ($^{1}/_{16}$ inch) thick steel panels.

Users and equipment manufacturers must check the radiation level under their maximum operating conditions.