

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

ABRIDGED DATA

Flange mounted ruggedized hydrogen-filled triode thyatron, positive grid, for pulse operation. A hydrogen reservoir is incorporated.

Peak forward anode voltage	-	18 kV max
Peak anode current	-	325 A max
Average anode current	-	500 mA max
Anode heating factor	-	3.9×10^9 VApps max
Peak output power	-	2.6 MW max

GENERAL DATA

Electrical

Cathode (connected internally to one end of heater)	-	Oxide coated
Heater voltage	-	$6.3 \pm 5\%$ V
Heater current	-	10.6 A
Tube heating time (minimum)	-	3.0 min

Mechanical

Seated height	-	194.0 mm (7.638 inches) max
Clearance required below mounting flange	-	31.75 mm (1.250 inches) max
Overall diameter (excluding mounting flange)	-	65.1 mm (2.563 inches) max
Net weight	-	400 g (14 ounces) approx.
Mounting position	-	Any
Tube connections	-	See outline
Top cap	-	BS448-CT3
Top cap connector	-	MA359

Cooling - natural



Whilst Teledyne e2v has taken care to ensure the accuracy of the information contained herein it accepts no responsibility for the consequences of any use thereof and also reserves the right to change the specification of goods without notice. Teledyne e2v accepts no liability beyond that set out in its standard conditions of sale in respect of infringement of third party patents arising from the use of tubes or other devices in accordance with information contained herein.

Teledyne UK Limited, Waterhouse Lane, Chelmsford, Essex CM1 2QU United Kingdom Teledyne UK Ltd. is a Teledyne Technologies company.

Telephone: +44 (0)1245 493493 Facsimile: +44 (0)1245 492492

Contact Teledyne e2v by e-mail: Enquiries@Teledyne-e2v.com or visit www.teledyne-e2v.com for global sales and operations centres.

© Teledyne UK Limited 2023

Approved for public release: Teledyne e2v APPROVED (CM 5002586)

A1A-776115 Version 4, April 2023

PULSE MODULATOR SERVICE

MAXIMUM AND MINIMUM RATINGS (Absolute values)

Anode	Min	Max	
Peak forward anode voltage (see note 1)	-	18	kV
Peak inverse anode voltage (see note 2)	-	18	kV
Peak anode current	-	325	A
Average anode current	-	500	mA
Rate of rise of anode current (see note 3)	-	1500	A/μs
Anode heating factor	-	3.9 x 10 ⁹	VApps

Grid	Min	Max	
Unloaded grid drive pulse voltage (see note 4)	200	-	V
Grid pulse duration	2.0	-	μs
Rate of rise of grid pulse (see note 3)	180	-	V/μs
Peak inverse grid voltage	-	200	V
Loaded grid bias voltage	0	-120	V
Forward impedance of grid drive circuit	-	500	Ω

Cathode	Min	Max	
Heater voltage	6.3 ± 5 %		V
Tube heating time	3.0	-	min

Environmental	Min	Max	
Ambient temperature	-50	+90	°C
Altitude	-	3	km
	-	10,000	ft

CHARACTERISTICS

	Min	Typ	Max	
Critical DC anode voltage for conduction (see note 6)	-	0.3	1.0	kV
Anode delay time (see notes 6 and 7)	-	0.3	0.65	μs
Anode delay time (see notes 6 and 8)	-	0.05	0.1	μs
Time jitter (see notes 6 and 9)	-	-	15.0	ns
Recovery time		See note 7		
Heater current (at 6.3 V)	9.6	10.6	11.6	A

NOTES

1. This is the maximum forward hold-off voltage imposed on the thyatron in a pulse modulator circuit. Tubes are tested at 18 kV peak forward anode voltage, with the charging reactor inductance and pulse forming network capacitance resonant at 1000 pps. For instantaneous starting applications the maximum permissible peak forward voltage is 16 kV; this must not be reached in less than 0.04 s and there must be no overshoot.
2. In pulsed operation the peak inverse anode voltage, exclusive of a spike of 0.05 ms duration, must not exceed 5.0 kV during the first 25 μs after the pulse.
3. This rate of rise refers to that part of the leading edge of the pulse between 25% and 75% of the pulse amplitude.
4. Measured with respect to cathode potential.
5. Original samples of this tube type have been successfully tested to transportation tests specified in BS EN 60068-2-64 test Fh and BS EN 60721-3-2 part 3, section 2.
6. The typical figures are obtained on test using conditions of minimum grid drive. Improved performance can be expected by increasing the grid drive.
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.

HEALTH AND SAFETY HAZARDS

Teledyne e2v thyratrons are safe to handle and operate, provided that the relevant precautions stated herein are observed. Teledyne e2v 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 equipment incorporating Teledyne e2v 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 door open.

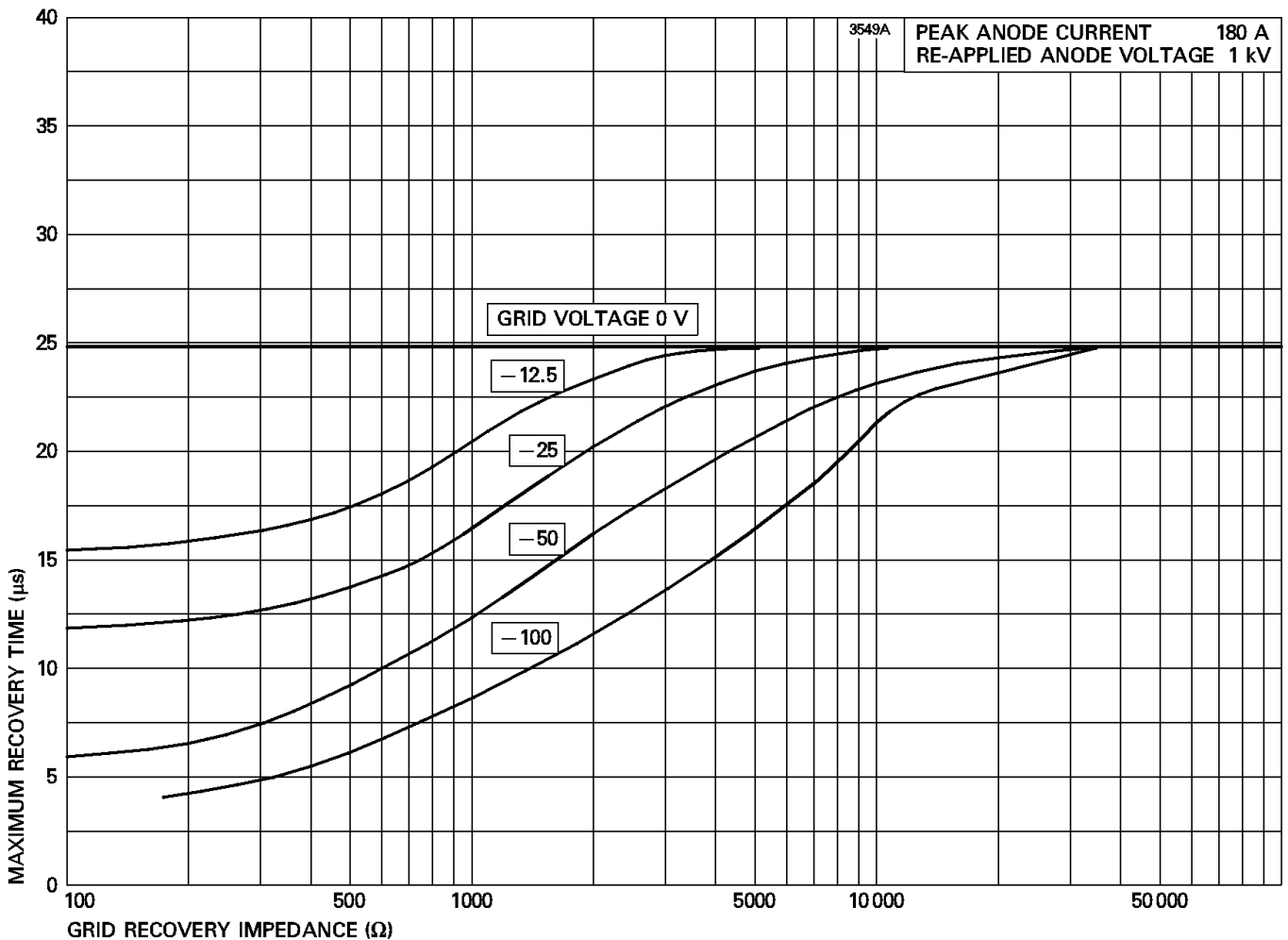


X-Ray Radiation

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.

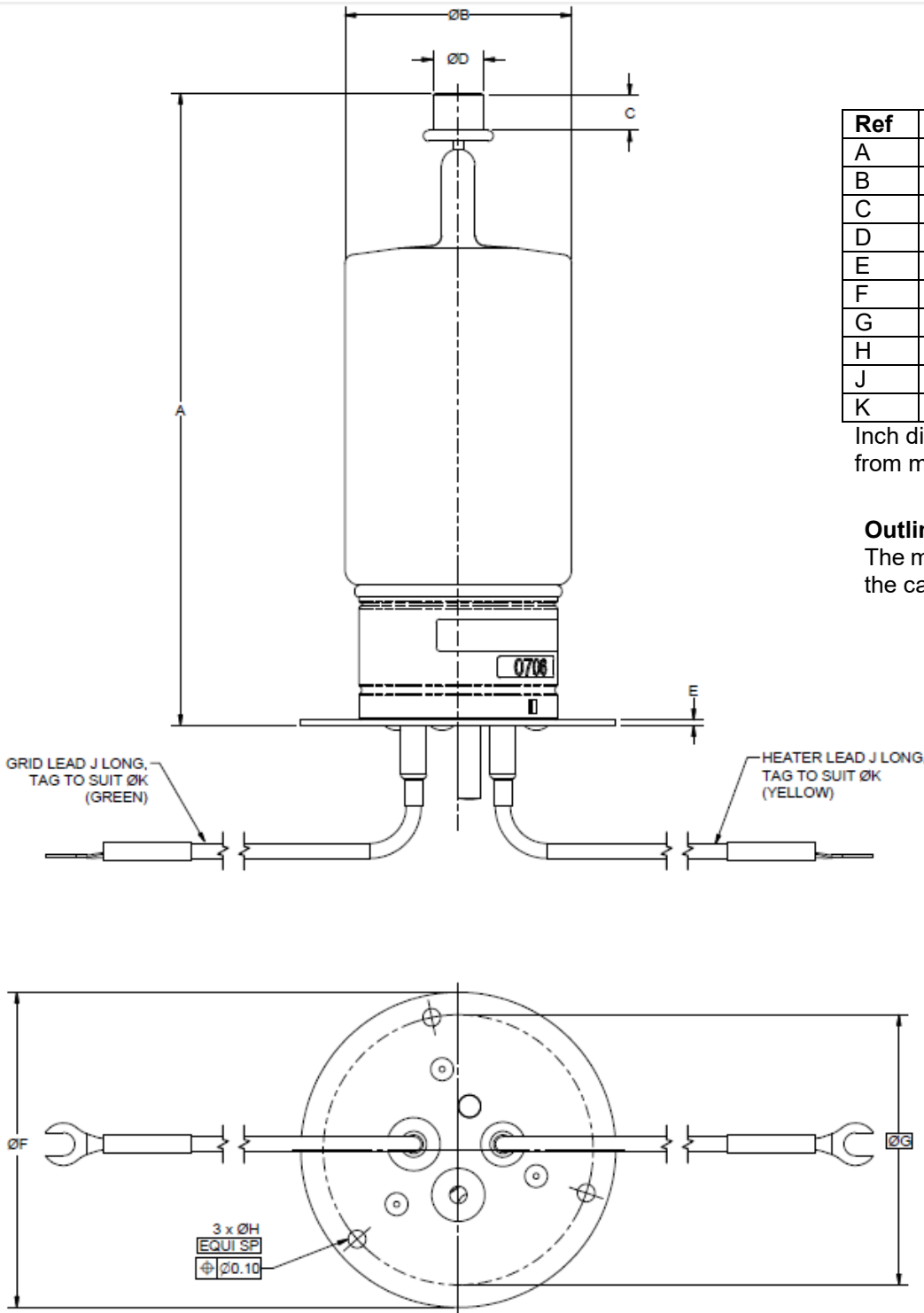
Users and equipment manufacturers must check the radiation level under their maximum operating conditions.

MAXIMUM RECOVERY CHARACTERISTICS



OUTLINE

(All dimensions without limits are nominal)



Ref	Millimetres	Inches
A	184.0 ± 10.0	7.244 ± 0.394
B	65.1 max	2.563 max
C	9.53 min	0.375 min
D	14.38 ± 0.18	0.566 ± 0.007
E	1.6	0.063
F	88.9	3.500
G	76.2	3.000
H	5.0	0.197
J	152.4 min	6.000 min
K	6.0	0.236

Inch dimensions have been derived from millimetres

Outline Note

The mounting flange is the connection for the cathode and the heater return.

