GD1549 **Thyratron Specification**

Anode Characteristics

Peak Forward Anode Voltage: 35kV max [1]

Peak Reverse Anode Voltage: 10kV [2]

Peak Forward Anode Current: 0 kA max

Average Anode Current: 15 A max

Anode Current Rate of Rise: 10kA/μs max [3]

Grid 2 Pulse Parameters

Unloaded Pulse Voltage: 1000V~2000V

Peak Drive Pulse Current: 5A ~ 40A

Rate of rise of Pulse: 10kV/μs min [3]

Pulse Duration: 1μs min

Negative bias Voltage: −50V ~ −200 V [4]

Pulse Delay: 0.5μs~3μs

Peak Inverse Voltage: 450V max

Grid 1 Pulse Parameters

Unloaded Pulse Voltage: 600V ~ 2000V [5]

Drive Current: 5A ~ 40A

Pulse Duration: 2μs min

Rate of rise of Pulse: 1kV/μs min [3]

Peak Inverse Voltage: 450V max

Electrical

Cathode Heater Voltage: 6.3±5%V [6]

Cathode Heater Current (6.3V): 80A ~ 100A

Hydrogen Reservoir heating Voltage: 6.3±5%V [7]

Hydrogen Reservoir heating Current (6.3V): 7A ~ 9A

Preheating Time: 10 min

Mechanical

Outline and Dimension: See outline drawing

Net weight: About 10 kg

Mounting Position: Flange [8]

Cooling Way: Forced air cooling [9]

Characteristics

Critical anode voltage for conduction: 2.0 kV max

Anode Delay Time Firing: 350ns max [10]

Anode Delay Time Drift: 50ns max [11]

Time Jitter: 10ns max [12]

Environmental

Ambient Temperature: 0℃ ~ 40℃

Notes

[1] The maximum anode forward voltage of the thyratron start instantaneously is 30KV cannot be exceeded.

[2] Peak inverse anode voltage (include peak) must not exceed 10KV within 25 μs after impulse current discharge finished, otherwise it will damage the grid and cause spark inside the tube and shorten the working life.

[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] The higher grid 1 is pulsed, the larger must the grid 2 negative bias be, to prevent the tube firing on the grid 1 pulse.

[5] Measured with respect to cathode potential. Pulsing triggering of grid 1 is recommended for longer life time and fewer grid fires

[6] Using the separate power supply is recommended for cathode heating and hydrogen reservoir heating. Special note: the yellow lead is the common end of both loops (the cathode flange is not the heating common end). If the cathode flange is mistakenly energized as a common end, then will caused irreversible damage to the thyratron. To avoid overcurrent damage of hydrogen reservoir heater wire by the peak voltage coupling, can parallel connect a 1 μF and a 1000pF non-inductive capacitor in the circuit, as shown in the figure below.

If the cathode and the hydrogen reservoir are heated by one power supply, the red line of the hydrogen reservoir can be connected to the cathode flange
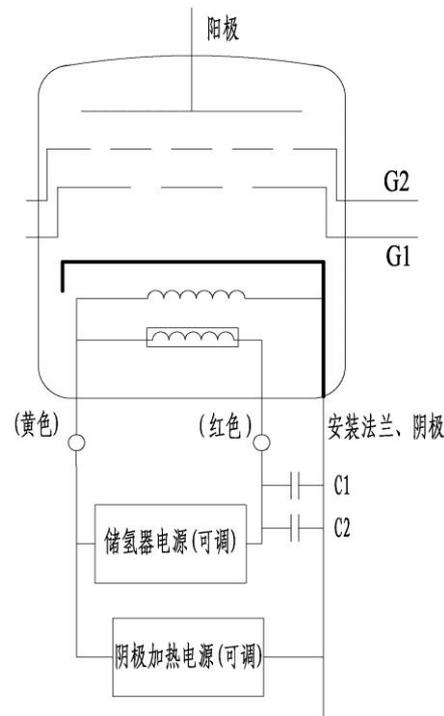
[7] The heating voltage of the hydrogen reservoir can be adjusted within the specified range, so that the air pressure in the tube can be increased to the value that the required anode voltage can withstand.

[8] Thyratron must be installed with a flange and the other electrodes connected with a soft wire. The preferred direction is the vertical anode upward method; do not use the anode downward method.

[9] Adopt air cooling device for cooling, the below figure 2 type of cylinder air duct is preferred, and

required the flow rate of a single fan shall not be less than 7.08m3/min.
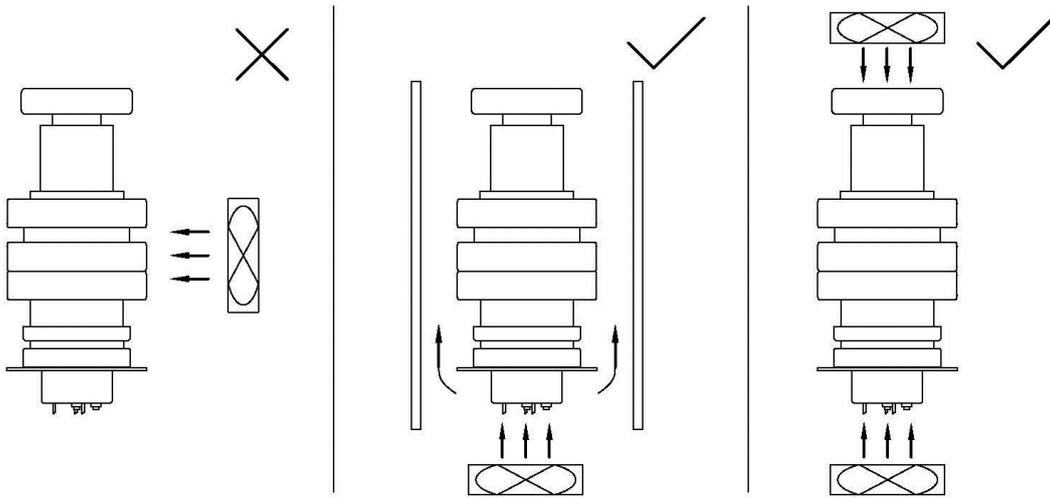
[10] Anode firing delay time, the time interval between the instant at which the rising unloaded grid 2 pulse reaches 26% of its pulse amplitude and the instant when anode conduction takes place.

[11] Anode firing delay time drift, the drift in delay time over a period from 10 seconds to 10 minutes after reaching full voltage, its anode firing delays time of change

[12] To get a short time jitter, the cathode can be heated by a DC power supply and triggered by a double pulse, and the pulse voltage leading edge rise rate of G2 exceeds 20kV/ s.

Grid Electrodes Connection Schematic Diagram

Using two trigger pulses and a negative bias, this connection is beneficial to the cathode to get the long life.
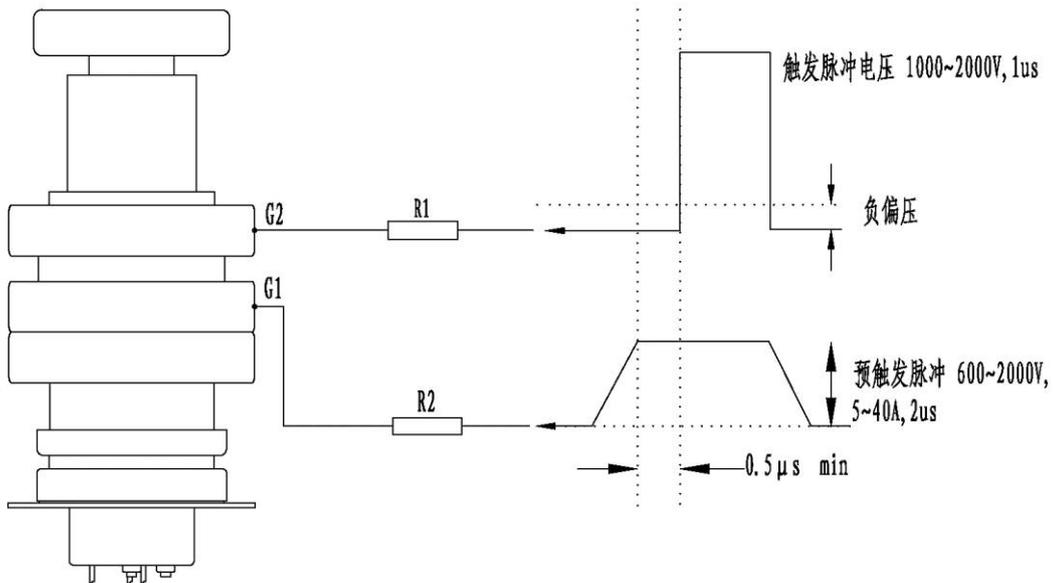
R1 = 12W wire-wound resistance, matches with G2 drive current;

R2 = 12W wire-wound resistance, matches with G1 drive current;

Outline Drawing

φ120.6±2.0

螺钉1/4-20UNC

阳极

φ151.6±3.0

螺钉8-32UNC

二栅

308.8±2.0

一栅

172±5.0

125±5.0

φ117

3

60max

φ78max

阴极、阴极加热
安装法兰

储氢器加热（红色）350mm
压接端头OT2.5-6

A

加热公共端（黄色）350mm
OT-100A纯铜接线端子

φ135.7±0.2

φ152.4

11.8

R4.5

R72.35

A