



## Model S56-12 48kV Solid State Thyatron Replacement

The Model S56 is a high voltage switch for low repetition rate pulsed power systems. It can be used to replace Thyatron as well as gas and vacuum triggered spark gap switches in high voltage applications such as modulators. This switch consists of multiple series connected thyristors specifically designed for high di/dt, high voltage, pulsed power applications. Snubber capacitance and resistive balancing are included and it uses a simple trigger making it much easier to use than a Thyatron, such as E2V's CX1836/A, or a triggered spark gap.

### Operational Ratings (T<sub>j</sub>=80°C)

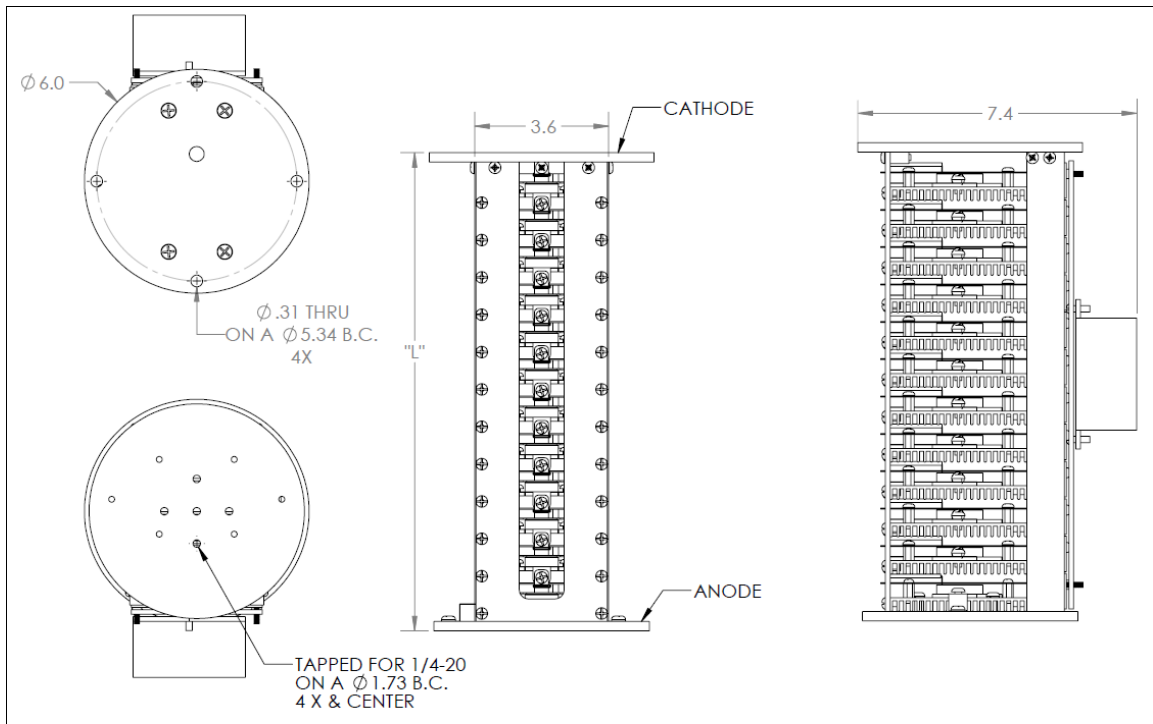
Peak Non-Repetitive Forward Current	14000 Amps
Peak Repetitive Forward Current	9000 Amps
Peak Non-Repetitive Reverse Current	7000 Amps
Peak di/dt	40 kA/μSec
Maximum RMS On-State Current	100 Amps
Operating Temperature Range	0 to 60 °C
Peak Rate of Reapplication of Off-State Voltage <sub>1</sub>	5000 V/μSec
Peak Pulse Repetition Rate	60 Hz

### Typical Operational Characteristics

Turn-On Delay (from external electrical trigger)	120 nSec
Turn-On Delay Jitter	<2 nSec
Turn-Off Time	5 mSec

### Part Number Selection Guide

Part Number	Maximum DC Voltage Rating	Peak Off-State Voltage Rating	Off State Resistance	Capacitance	Maximum Power <sub>2</sub>	On-State Resistance	Switch Height (L)
S56-6-x	24kV	30kV	132MΩ	800pF	300W	60mΩ	7"
S56-8-x	32kV	40kV	176MΩ	600pF	400W	80mΩ	9"
S56-10-x	40kV	50kV	220MΩ	480pF	500W	100mΩ	11"
S56-12-x	48kV	60kV	264MΩ	400pF	600W	120mΩ	13"
S56-15-x	60kV	75kV	330MΩ	329oF	750W	150mΩ	16"



Dimensions in inches

Example Resistance Versus Time Fitting Curve for S56-12:  $R(t) = [120000e^{-(t/2ns)} + 24000e^{-(t/20ns)} + 24e^{-(t/80ns)} + 0.12]\Omega$

### S56 Trigger Options

- |              |  |
|--------------|--|
| -F (Default) | Fiber-optic with ST style bayonet (850nm, 1mW)                         |
| -T           | Electrical trigger (15V, 1A, fast rising pulse)                        |
| -E           | External trigger circuit required (provides the shortest turn-on time) |
| -N           | Same as E but without the auto-trigger feature                         |

### Notes:

- 1: Only valid for -N trigger option. Otherwise, the switch includes an auto-trigger feature which will trigger the switch at 100V/ $\mu$ Sec.
- 2: Assuming at least 160LFM 25°C air flow over switch.