

Model S25

Solid State Switch Module

Using two silicon n-type thyristors in series, combining the aspects of SCR thyristors and high di/dt capability, Silicon Power now provides a module for 8kV voltage stand-off operation. This module features:

- 8kV Peak Off-State Voltage
- 14kA Peak Non-Repetitive Current
- 30kA/ μ S Maximum di/dt
- 60nS turn-on delay time
- Low Inductance



Optional self-powered gate drive circuit, shown on bottom of page 2, connects directly to the module and requires only a 1A, 15V, trigger signal.

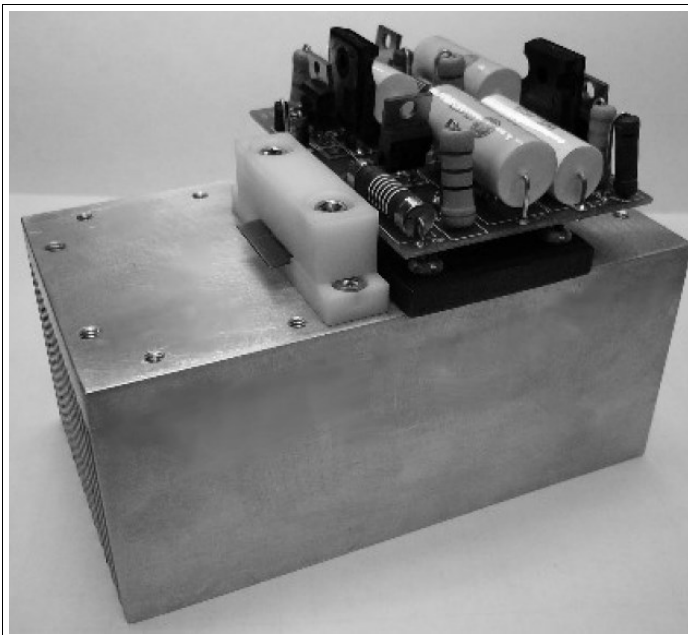
This solid state switch module consists of two silicon thyristors in series, designed specifically for high di/dt, high voltage, pulsed power applications. The module can be provided with a self-powered gate drive circuit, an air-cooled electrically-isolated heat sink, and a clamp for connecting to the low inductance high current strip-line. The self-powered gate drive circuit connects directly to the module and requires only a 1A, 15V, trigger signal. The electrically-isolated air-cooled heat sink can be floated with the module for high voltage, high power switching applications. These together provide a compact high-power high-voltage solid state switch. The modules can be connected in series to obtain switches capable of up to 60kV.

Operational Ratings for Module (T_j=80°C, unless otherwise specified)

Parameter	Value	Units
Peak Non-Repetitive Off-State Voltage	8000	Volts
Peak Repetitive Off-State Voltage	7000	Volts
Peak Non-Repetitive Current	14000	Amps
Peak Repetitive Current (10 μ s pulse, 60 pps)	7000	Amps
Peak di/dt	30	kA/ μ s
Maximum RMS On-State Current (T _j = 120C)	100	Amps
Operational Temperature Range	-40 to 120	C
Peak Rate of Voltage Re-application (dV/dt)	1000	V/ μ s
Peak Reverse Voltage	-10	V

Operational Characteristics for Module

Parameter	Value	Units
Trigger Voltage	15	Volts
Trigger Isolation Voltage	60	kV
Module Thermal Impedance	0.03	C/W
Gate Drive Circuit Shunt Capacitance	6.8	nF
Gate Drive Parallel Balancing Resistance	44	MΩ
Typical Leakage Current (4kV) (T _j = 25C)	90	μA
	130	μA
	890	μA
Turn-on Delay	60	ns
Turn-on Delay Jitter	<2	ns
Turn-Off Time (T _j = 25C)	0.5	ms
	0.75	ms
	1.5	ms
Module Dimensions	80 x 45 x 13	mm

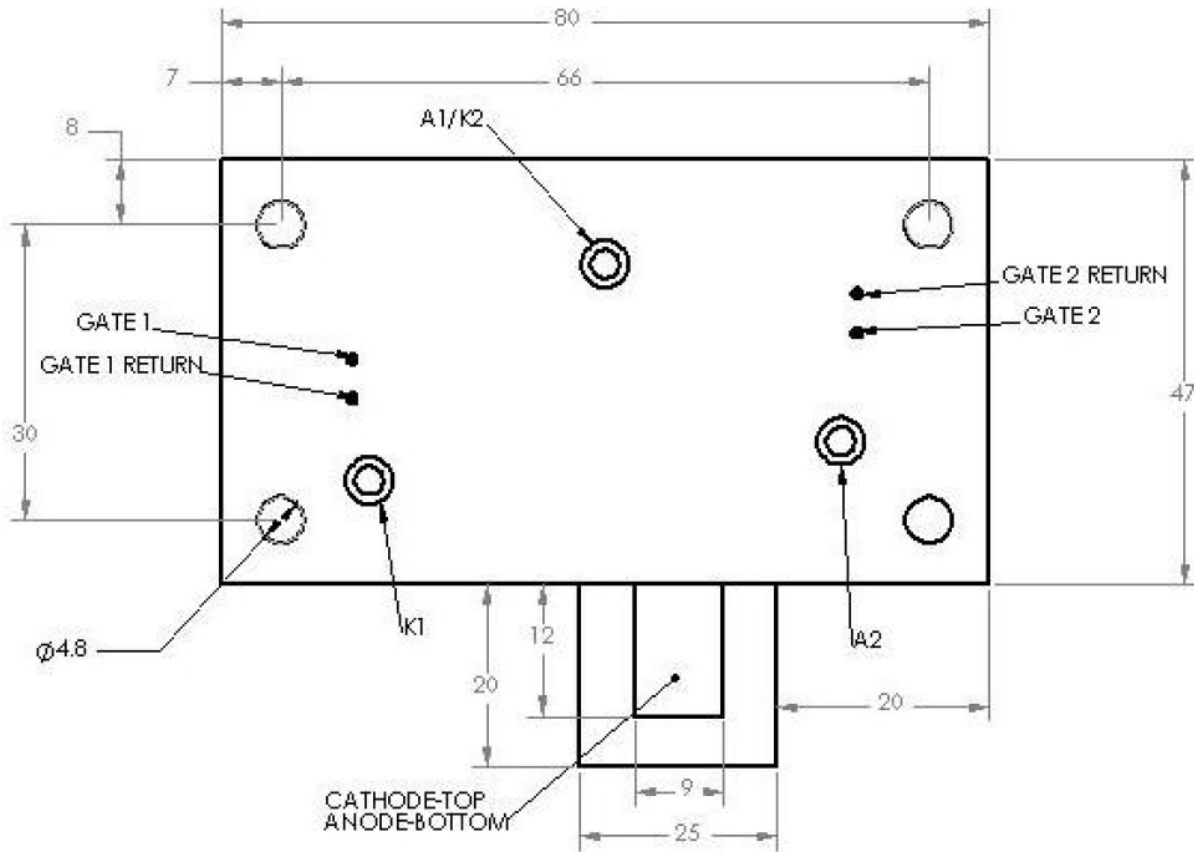


Note: All tests performed with self-powered gate drive circuit and silicon power heat sink using a 3μSec pulse provided by a 1.5μF PFN into a 0.7Ω load.

Thermal impedance of the heat sink shown is 0.22 C/watt when used with forced air cooling. Contact John Waldron, JWaldron@siliconpower.com, for more information.

Silicon Power also provides complete pulsed power systems. Contact sales, sales@appliedpulsedpower.com, for more information.

Dimensions



All units are in mm

Mounting Specification

- Torque specification for mounting screws: 0.1 N-m
- Through holes are meant for 8-32 screws