

# Applied Pulsed Power, Inc.™

2025 Dryden Road  
P.O. Box 348  
Freeville, NY 13068

Phone: 607-844-3426  
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www.appliedpulsedpower.com

## 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, Applied Pulsed Power, Inc. (APP) now provides a module for 8kV voltage stand-off operation.

This module features:

- 8kV Peak Off-State Voltage
- 14kA Peak Non-Repetitive Current
- 30kA/ $\mu$ 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<sub>j</sub>=80°C, unless otherwise specified)

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 $\mu$ sec pulse, 60pps)	7000	Amps
Peak di/dt	30	kA/ $\mu$ Sec



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### Data Sheet

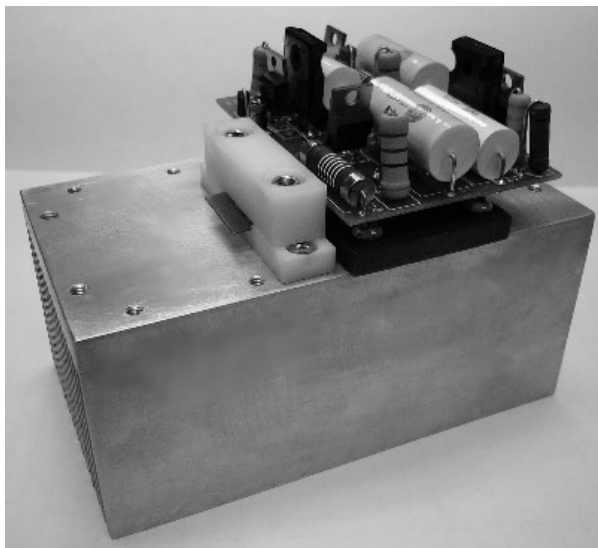
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### Operational Ratings for Module (continued)

Maximum RMS On-State Current ( $T_j=120^\circ\text{C}$ )	100	Amps
Operating Temperature Range	-40 to +120	$^\circ\text{C}$
Peak Rate of Reapplication of Off-State Voltage	1000	$\text{V}/\mu\text{Sec}$
Peak Reverse Voltage	-10	V

### Operational Characteristics for Module

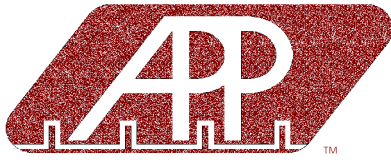
Trigger Voltage	15	Volts
Trigger Isolation Voltage	60	kV
Module Thermal Impedance	0.03	$^\circ\text{C}/\text{watt}$
Gate Drive Circuit Shunt Capacitance	6.8	nF
Typical Leakage Current ( $T_j=25^\circ\text{C}$ )	1	$\mu\text{Amp}$
	( $T_j=80^\circ\text{C}$ )	40 $\mu\text{Amp}$
	( $T_j=120^\circ\text{C}$ )	800 $\mu\text{Amp}$
Turn-On Delay	60	nSec
Turn-On Delay Jitter	<2	nSec
Turn-Off Time ( $T_j=25^\circ\text{C}$ )	0.5	mSec
	( $T_j=60^\circ\text{C}$ )	0.75 mSec
	( $T_j=120^\circ\text{C}$ )	1.5 mSec
Module Dimensions	80x45x13	mm



Note: All tests performed with APP gate drive circuit and APP heat sink using a  $3\mu\text{Sec}$  pulse provided by a  $1.5\mu\text{F}$  PFN into a  $0.7\Omega$  load.

Thermal impedance of the heat sink shown is  $0.22^\circ\text{C}/\text{watt}$  when used with forced air cooling. Contact Howard D. Sanders, [hds@appliedpulsedpower.com](mailto:hds@appliedpulsedpower.com), for more information.

APP also provides complete pulsed power systems. Contact Steven C. Glidden, [scg@appliedpulsedpower.com](mailto:scg@appliedpulsedpower.com), for more information.



**Applied Pulsed Power, Inc.**<sup>™</sup>

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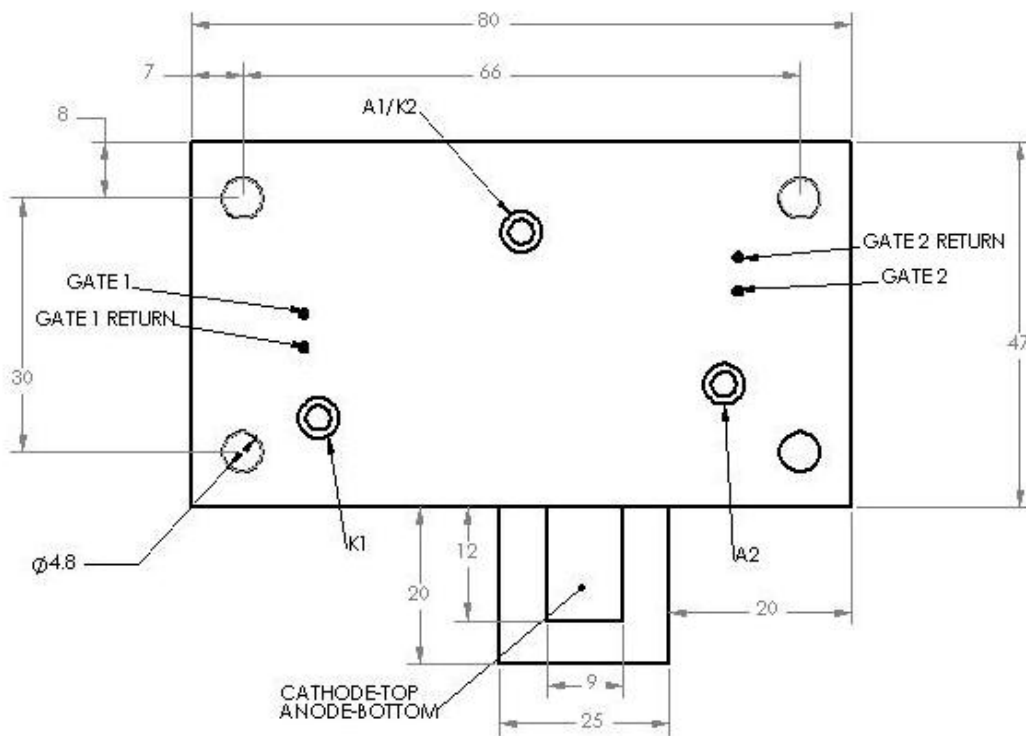
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### Dimensions



All units are in mm

### Mounting Specification

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