

Applied Pulsed Power™

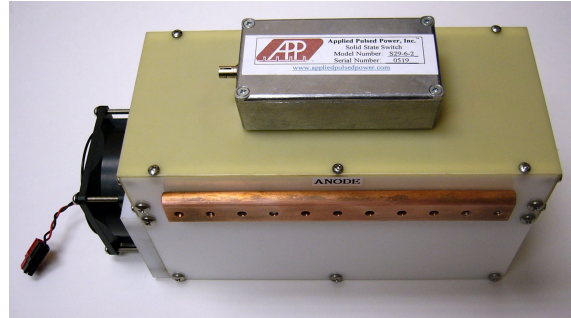
A Division of Silicon Power Corporation

280 Great Valley Parkway
Malvern, PA 19355-1308

Phone: 610-407-4700
www.appliedpulsedpower.com

Model S29/S39 High Current Solid State Switch

The models S29 and S39 are thyristor based switches designed for high peak current applications. These switches have fast turn-on and high di/dt capability.



Features:

- Up to 8kV Peak Off-State Voltage
- Up to 60kA Peak Non-Repetitive Current
- Up to 150kA/μS Maximum di/dt
- Integrated Air Cooled Heat Sink (Model S39 only)

This solid state switch consists of multiple silicon thyristors in parallel/series combination, designed specifically for high di/dt, high voltage, pulsed power applications. The switch can be provided with an integrated self powered gate drive circuit and air-cooled heat sink. The self powered gate drive circuit connects directly to the module and can be triggered via either an electric or fiber-optic input. The switches can handle voltages up to 8kV and currents up to 60kA with current rates of rise as high as 150kA/μS.

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

Model Type	Peak Non-Repetitive Current	Maximum RMS On-State Current	Peak di/dt
S29/S39-X-2	20kA	150A	50kA/μS
S29/S39-X-3	30kA	225A	75kA/μS
S29/S39-X-4	40kA	300A	100kA/μS
S29/S39-X-5	50kA	375A	125kA/μS
S29/S39-X-6	60kA	425A	150kA/μS

Peak Voltage S29/S39-1-X
S29/S39-2-X

4kV
8kV



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Operational Ratings for Module (continued)

On-State Resistance	-2	-3	-4	-5	-6
S29/S39-1-X	5mΩ	3.3mΩ	2.5mΩ	2mΩ	1.7mΩ
S29/S39-2-X	10mΩ	6.7mΩ	5mΩ	4mΩ	3.4mΩ

Operating Temperature Range 0 to +80 °C
Peak Rate of Reapplication of Off-State Voltage 1000 V/μSec

Operational Characteristics for Module

Typical Leakage Current (T_j=120°C) 800 μAmp
Turn-On Delay 100 nSec
Turn-On Delay Jitter <2 nSec
Turn-Off Time (T_j=25°C) 0.5 mSec
(T_j=60°C) 0.75 mSec
(T_j=120°C) 1.5 mSec
Cooling Fan Power Requirement (Model S39) 24 VDC
250 mA

Model S29 Options

L	Integrated Liquid Cooled Heat Sink
C	Isolated Base (base is normally at anode potential)
S	Low Inductance Strip-line Output
F	Self Powered Trigger Circuit with Fiber Optic Input
T	Self Powered Trigger Circuit with Electric Input
P	Integrated Anti-Parallel Diode
D	Integrated Series Diode
R#	Integrated Internal Resistance of #Ω