

# AUX - SSCL1500V800A5KVB

Power Semiconductor Half-Bridge Module™

Data Sheet (Rev 0 - 02/06/09)

Application: SSCL Aux Module

## Description

This module contains 2 Current Controlled Solidtron(CCS) Size 12 SGTOs and 4 Size 12 S-Diodes, packaged for use in a solid state current limiter or similar applications. This module provides connections for the AC input and output bus. The module includes an electrically isolated base-plate. The module is typically used at 60Hz.

The gate drive for the SGTOs are integrated into the module and is powered by an external isolated 15V DC supply.

The CCS SGTO is an n-type Thyristor in a high performance ThinPak™ package. The device gate is similar to that found on a traditional GTO Thyristor. The CCS features the high peak current capability and low On-state voltage drop common to SCR thyristors combined with high di/dt capability.

## Application Specific Operating Conditions

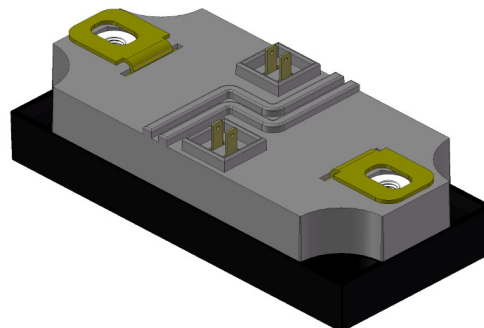
For Each Leg(SGTO+2 Si-Diodes):

- Frequency = 60 Hz
- Blocking Voltage (peak) = 5 kV
- Current (rms) = 100 Amps

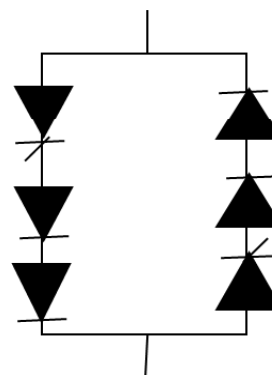
## Features

- Low On-State Voltage
- Low trigger current
- Low Inductance Package

## Package



## Schematic Symbol



## Module Operating Characteristics

	SYMBOL	VALUE	UNITS
Peak Off-State Voltage (60Hz, 3 pulse)	VDRM	5	kV
Off-State Rate of Change of Voltage Immunity	dv/dt	1	kV/uSec
RMS Anode Continuous Current at Tj = 125 oC	IA125	200	A
Repetitive Peak Anode Current (Pulse Width=30 uSec), Tj = 125 oC	IASM	10	kA
I <sup>2</sup> t for 8.3 ms, half-sine wave, I <sub>peak</sub> =4kA	I <sup>2</sup> t		A <sup>2</sup> s
Operating Junction Temperature	TJO	125	°C
Maximum Junction Temperature	TJM	125	°C
Anode-Cathode On-State Voltage at Tj = 125 C, IT=100A	VT	3.6	V

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5,521,436	5,446,316	5,105,536	5,209,390	4,958,211	5,206,186	4,857,983	5,082,795	4,644,637
5,585,310	5,557,656	5,777,346	5,139,972	5,111,268	5,757,036	4,888,627	4,980,741	4,374,389
5,248,901	5,564,226	5,446,316	5,103,290	5,260,590	5,777,346	4,912,541	4,941,026	4,750,666
5,366,932	5,517,058	5,577,656	5,028,987	5,350,935	5,995,349	5,424,563	4,927,772	4,429,011
5,497,013	4,814,283	5,473,193	5,304,847	5,640,300	4,801,985	5,399,892	4,739,387	5,293,070
5,532,635	5,135,890	5,166,773	5,569,957	5,184,206	4,476,671	5,468,668	4,648,174	

CAO 05/28/09

**SGTOs** (T<sub>J</sub>=25°C unless otherwise specified)

Performance Ratings		Measurements				Test Conditions
Parameters	Symbol	Min.	Typ.	Max.	Units	
Peak Off-State Forward Voltage	V <sub>DRM</sub>	5			kV	60 Hz, 3 pulse, T <sub>J</sub> =125°C
Off-State rate of Change of Voltage Immunity	dv/dt			>1	kV/us	
Anode-Cathode Off-State Forward Leakage Current	I <sub>D</sub>			2	uA	V <sub>GK</sub> =0V, V <sub>AK</sub> =4.5kV, T <sub>J</sub> =25°C
				10	uA	T <sub>J</sub> =125oC, Note: 3 & 4
Peak Anode Current (8mSec)	I <sub>P at 8ms</sub>		5		kA	
Pk Rate of Change of Current (measured)	dl/dt			15	kA/us	
Turn-on Delay Time	t <sub>D(ON)</sub>		100		ns	L <sub>s</sub> =8.2nH
Turn-off Delay Time	t <sub>D(OFF)</sub>		TBD			C=0.15 uF Capacitor discharge
Anode-Cathode On-State Voltage	V <sub>T</sub>		3.6		V	I <sub>T</sub> =100A, T <sub>J</sub> =25oC
						I <sub>g</sub> = 500 mA, T <sub>J</sub> =125oC
Thermal Resistance	R <sub>JC</sub>			0.04	°C/W	

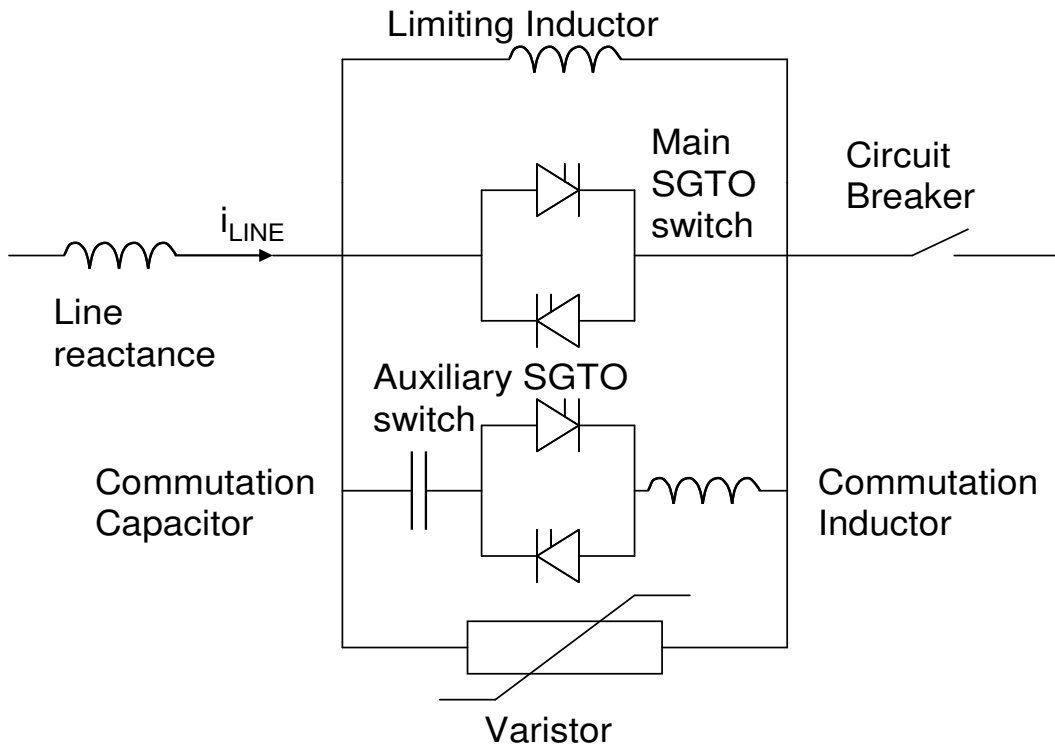
**S Diodes** (T<sub>J</sub>=25°C unless otherwise specified)

Performance Ratings		Measurements				Test Conditions
Parameters	Symbol	Min.	Typ.	Max.	Units	
Repetitive Peak Reverse Voltage	V <sub>RRM</sub>	5			kV	
Off-State rate of Change of Voltage Immunity	dv/dt			>1	kV/us	
RMS Forward Current	I <sub>F(AVG)</sub>		100		A	T <sub>c</sub> = 125°C
Forward Voltage	V <sub>F</sub>		3.6		V	I <sub>F</sub> = 200 A, T <sub>J</sub> = 25°C
						I <sub>F</sub> = 200 A, T <sub>J</sub> = 125°C
Operating Junction and Storage Temperature	T <sub>J</sub> , T <sub>STG</sub>		125		°C	
Thermal Resistance from Junction to Case (Per Diode)	R <sub>JC</sub>			0.04	°C/W	

**Notes**

- 1.) Measurements made with a 10 Ohm shorting resistor connected between the gate and cathode.
- 2.) Additional testing to customer requirement is available
- 3.) Production testing is limited to 2KV prior to encapsulation.
- 4.) Characterization accomplished using  $R_{gk}=10$  ohms.

**Application Note: Solid State Current Limiter**



**SILICON POWER  
CORPORATION**

275 Great Valley Parkway  
Malvern, PA 19355

Ph: 610-407-4700

Fax: 610-407-3688

[www.siliconpower.com](http://www.siliconpower.com)

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Revision History

Rev	Date	EA#	Nature of Change
0	2/6/2009	04272009-NB-0019	Initial Change