



# MSS40 / 50 Series

## BACK TO BACK SCR MODULE

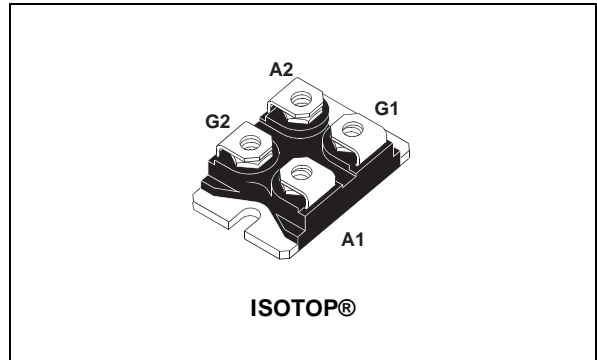
### MAIN FEATURES:

Symbol	Value	Unit
$I_{T(RMS)}$	55 and 70	A
$V_{DRM}/V_{RRM}$	800 and 1200	V
$I_{GT}$	50	mA

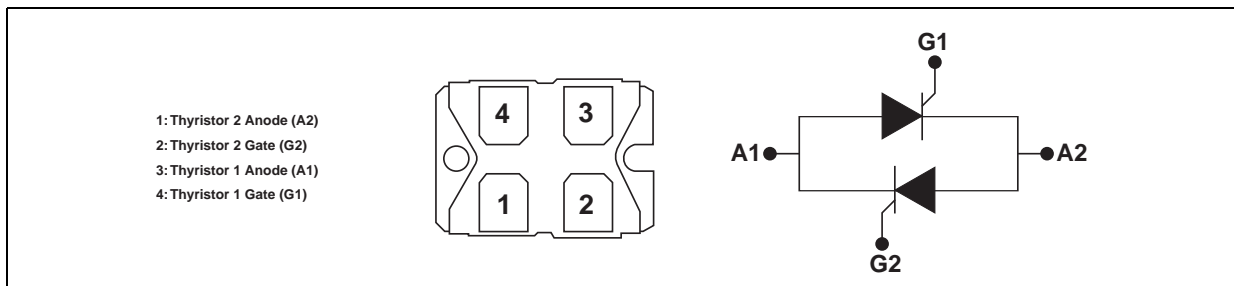
### DESCRIPTION

Packaged in ISOTOP modules, the MSS40 / MSS50 Series is based on two back-to-back SCR configurations, providing high noise immunity. They are suitable for high power applications such as solid state relays, heating control systems, welding equipment, motor control circuits...

The compactness of the ISOTOP package allows high power density and optimized power bus connections. Thanks to their internal ceramic pad, they provide high voltage insulation (2500V RMS), complying with UL standards (File ref: E81734).



### PIN CONNECTIONS



### ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value		Unit	
			MSS40	MSS50		
$I_{T(RMS)}$	RMS on-state current		$T_c = 80^\circ C$		A	
			$T_c = 85^\circ C$			
$I_{TSM}$	Non repetitive surge peak on-state current		$t_p = 16.7\text{ ms}$	$T_j = 25^\circ C$	A	
			$t_p = 20\text{ ms}$			
$I^2 t$	$I^2 t$ Value for fusing	$t_p = 10\text{ ms}$	$T_j = 25^\circ C$	800	1800	$A^2s$
$di/dt$	Critical rate of rise of on-state current $I_G = 2 \times I_{GT}$ , $t_r \leq 100\text{ ns}$	$F = 120\text{ Hz}$	$T_j = 125^\circ C$	50		$A/\mu s$
$I_{GM}$	Peak gate current	$t_p = 20\ \mu s$	$T_j = 125^\circ C$	4		A
$P_{G(AV)}$	Average gate power dissipation		$T_j = 125^\circ C$	1		W
$T_{stg}$ $T_j$	Storage junction temperature range Operating junction temperature range				- 40 to + 150 - 40 to + 125	$^\circ C$
$V_{RGM}$	Maximum peak reverse gate voltage				5	V

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## MSS40 / 50 Series

### ELECTRICAL CHARACTERISTICS (T<sub>j</sub> = 25°C, unless otherwise specified)

Symbol	Test Conditions		Value		Unit		
			MSS40	MSS50			
I <sub>GT</sub>	V <sub>D</sub> = 12 V    R <sub>L</sub> = 33 Ω		MIN.	5	mA		
			MAX.	50			
V <sub>GT</sub>			MAX.	1.3	V		
V <sub>GD</sub>	V <sub>D</sub> = V <sub>DRM</sub> R <sub>L</sub> = 3.3 kΩ	T <sub>j</sub> = 125°C	MIN.	0.2	V		
I <sub>H</sub>	I <sub>T</sub> = 500 mA    Gate open		MAX.	80	mA		
I <sub>L</sub>	I <sub>G</sub> = 1.2 I <sub>GT</sub>		MAX.	120	mA		
dV/dt	V <sub>D</sub> = 67 % V <sub>DRM</sub> Gate open	T <sub>j</sub> = 125°C	MIN.	1000	V/μs		
V <sub>TM</sub>	I <sub>TM</sub> = 80 A    tp = 380 μs	T <sub>j</sub> = 25°C	MAX.	1.7	-	V	
	I <sub>TM</sub> = 100 A    tp = 380 μs			-	1.7		
V <sub>t0</sub>	Threshold voltage		T <sub>j</sub> = 125°C	MAX.	0.85	V	
R <sub>d</sub>	Dynamic resistance		T <sub>j</sub> = 125°C	MAX.	11	7	mΩ
I <sub>DRM</sub> I <sub>RRM</sub>	V <sub>DRM</sub> / V <sub>RRM</sub> RATED		T <sub>j</sub> = 25°C	MAX.	20	μA	
			T <sub>j</sub> = 125°C		10	mA	

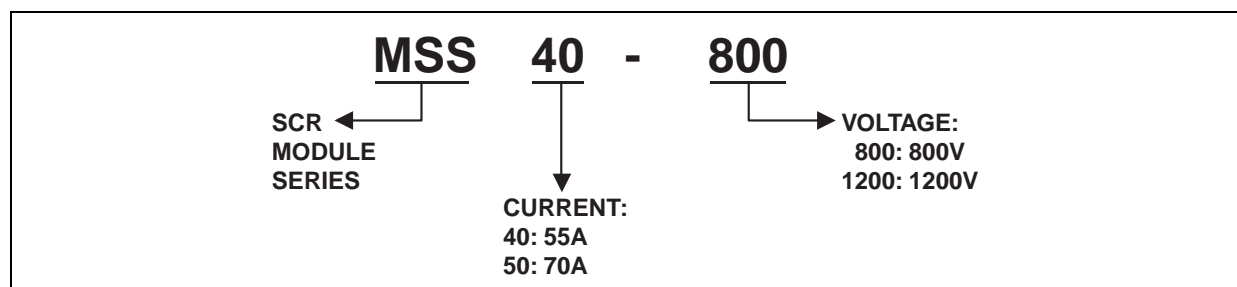
### THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
R <sub>th(j-c)</sub>	Junction to case (AC)	MSS40	0.6	°C/W
		MSS50	0.45	

### PRODUCT SELECTOR

Part Number	Voltage (xxx)		Sensitivity	Package
	800 V	1200 V		
MSS40-xxx	X	X	50 mA	ISOTOP™
MSS50-xxx	X	X	50 mA	ISOTOP™

### ORDERING INFORMATION

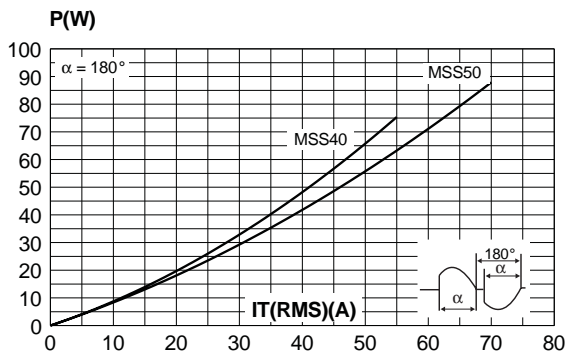


**OTHER INFORMATION**

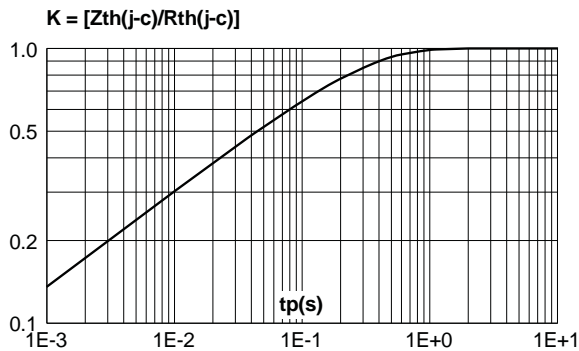
Part Number	Marking	Weight	Base Quantity	Packing mode
MSS40-xxx	MSS40-xxx	27.0 g	10	Tube
MSS50-xxx	MSS50-xxx	27.0 g	10	Tube

Note: xxx = voltage

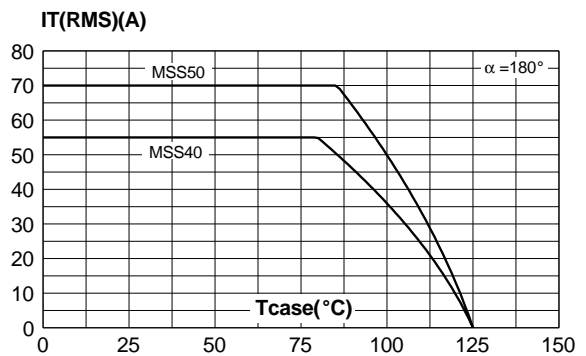
**Fig. 1:** Maximum power dissipation versus RMS on-state current.



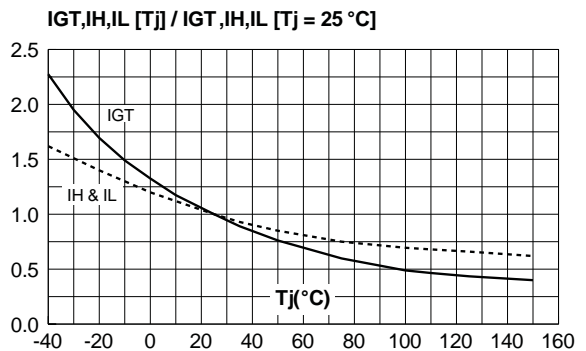
**Fig. 3:** Relative variation of thermal impedance junction to case versus pulse duration.



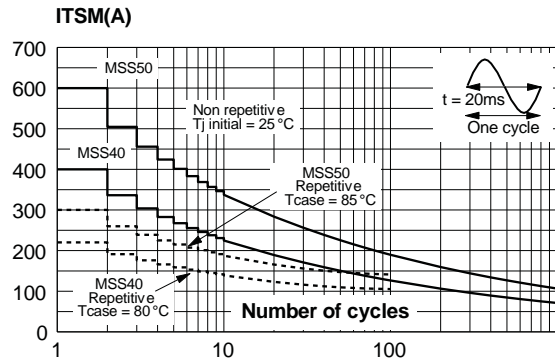
**Fig. 2:** RMS on-state current versus case temperature.



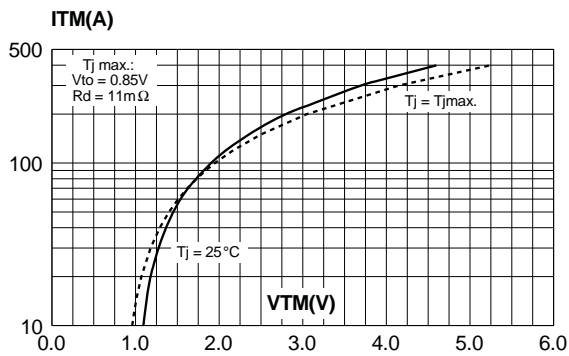
**Fig. 4:** Relative variation of gate trigger current, holding current and latching current versus junction temperature (typical values).



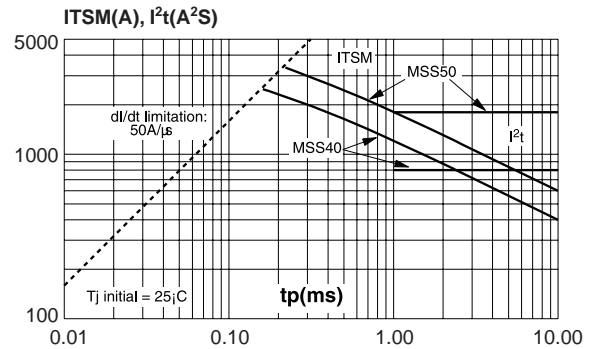
**Fig. 5:** Surge peak on-state current versus number of cycles.



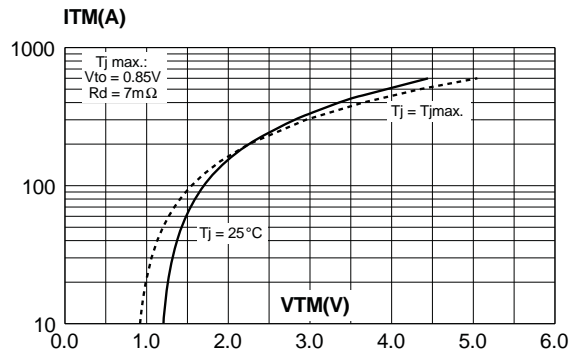
**Fig. 7-1:** On-state characteristics (maximum values) (MSS40).



**Fig. 6:** Non-repetitive surge peak on-state current for a sinusoidal pulse with width  $t_p < 10$  ms, and corresponding value of  $I^2t$ .

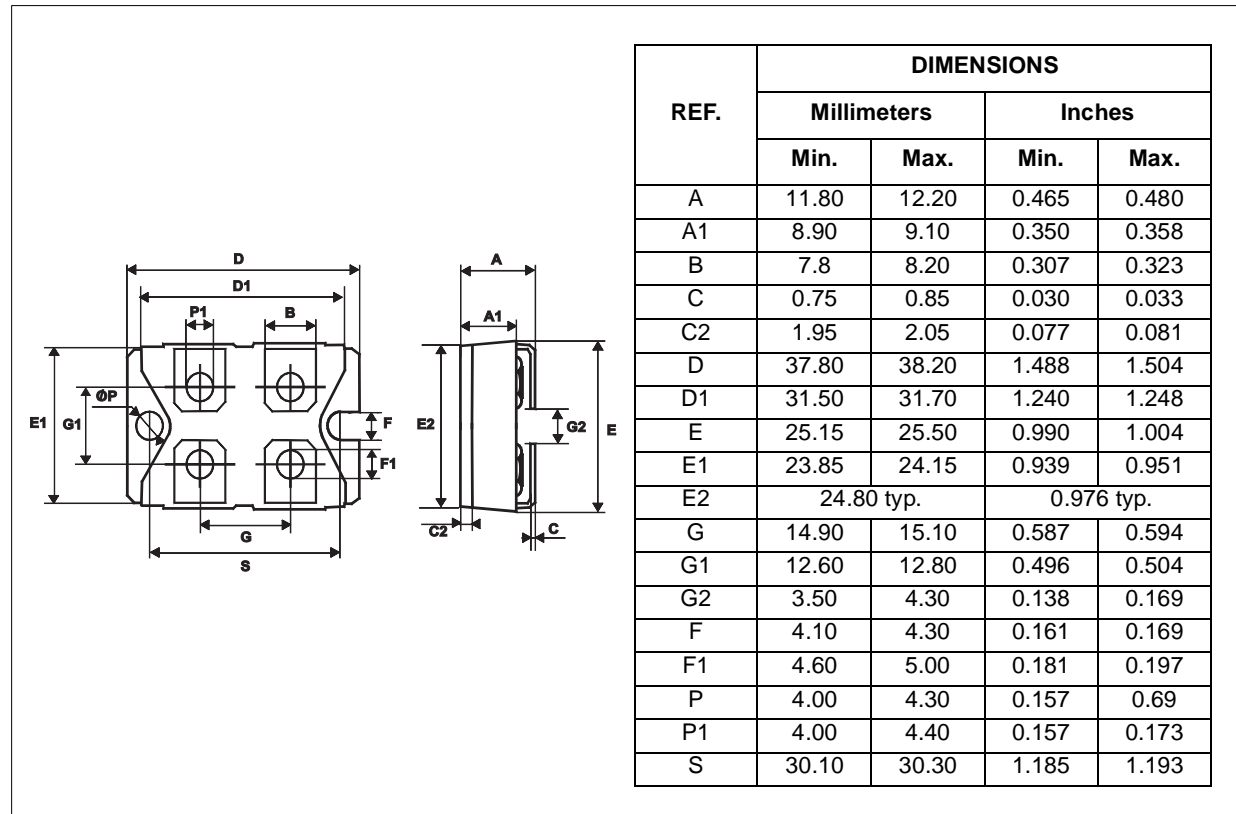


**Fig. 7-2:** On state characteristics (maximum values) (MSS50).



## PACKAGE MECHANICAL DATA

ISOTOP™



- Recommended torque value: 1.3 Nm (max. 1.5 Nm) for the 6 x M4 screws (2 x M4 screws recommended for mounting the package on the heatsink and the 4 provided screws).
- The screws supplied with the package are adapted for mounting on a board (or other types of terminals) with a thickness of 0.6 mm min. and 2.2 mm max.

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