

DIODE / THYRISTOR MODULE

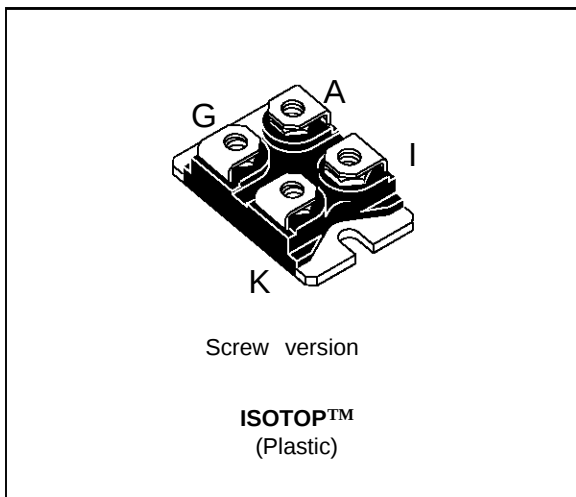
PRELIMINARY DATA

FEATURES

- $V_{DRM} = V_{RRM}$ UP TO 1200 V
- $I_{T(AV)} = 55$ A
- HIGH SURGE CAPABILITY
- INSULATED PACKAGE :
INSULATING VOLTAGE 2500 V(RMS)
(UL recognized : E81734)

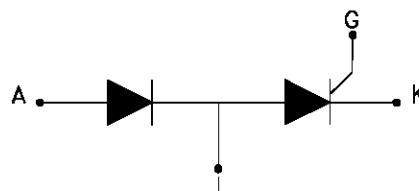
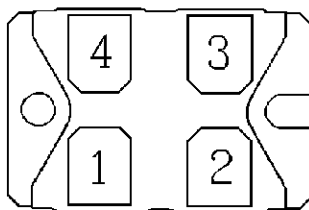
DESCRIPTION

The MDS80 family are constituted of one rectifier diode and general purpose SCR. Suited for power supply up to 400 Hz on resistive or inductive load. The small volume (7cm³) and weight (29g) of the ISOTOP package are well adapted to new generation of medium size module market applications.



PIN CONNECTIONS

- 1 : Thyristor Gate (G)
- 2 : Thyristor Cathode (K)
- 3 : Thyristor Anode/Diode Cathode (I)
- 4 : Diode Anode(A)



ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$	RMS on-state current. Single phase circuit.		85	A
$I_{T(AV)}$	Average on-state current Single phase circuit, 180° conduction angle per device	$T_c = 85^\circ\text{C}$	55	A
I_{TSM}	Non repetitive surge peak on-state current (T_j initial = 25°C)	$t_p = 8.3\text{ms}$	710	A
		$t_p = 10\text{ms}$	680	
I_{2t}	I_{2t} value for fusing	$t_p = 10\text{ms}$	2300	A ² s
di/dt	Critical rate of rise of on-state current Gate supply : $I_G = 800\text{mA}$ – $di_G/dt = 1\text{A}/\mu\text{s}$		100	A/ μs
T_{stg} T_j	Storage and junction temperature range		- 40 + 150 - 40 + 125	$^\circ\text{C}$

Symbol	Parameter	MDS80			Unit
		-800	-1000	-1200	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage $T_j = 125^\circ\text{C}$	800	1000	1200	V

TM : ISOTOP is a trademark of SGS-THOMSON Microelectronics

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
Rth (j-c) DC	Junction to case for DC	0.45	°C/W
Rth (c-h)	Contact (case to heatsink) (4)	0.05	°C/W

(4) With contact grease utilisation

GATE CHARACTERISTICS (maximum values)

 $P_{GM} = 50 \text{ W}$ ($t_p = 20 \text{ }\mu\text{s}$) $P_G (AV) = 1 \text{ W}$ $I_{GM} = 4 \text{ A}$ ($t_p = 20 \text{ }\mu\text{s}$) $V_{RGM} = 5 \text{ V}$

ELECTRICAL CHARACTERISTICS (SCR)

Symbol	Test Conditions			Value	Unit
I_{GT}	$V_D = 12 \text{ V}$ (DC) $R_L = 33 \Omega$	$T_j = 25^\circ\text{C}$	MAX	150	mA
V_{GT}	$V_D = 12 \text{ V}$ (DC) $R_L = 33 \Omega$	$T_j = 25^\circ\text{C}$	MAX	1.5	V
V_{GD}	$V_D = V_{DRM}$ $R_L = 3.3 \text{ k}\Omega$	$T_j = 125^\circ\text{C}$	MIN	0.2	V
tgt	$V_D = V_{DRM}$ $I_G = 500 \text{ mA}$ $di_G/dt = 3 \text{ A}/\mu\text{s}$	$T_j = 25^\circ\text{C}$	TYP	2	μs
I_L	$I_G = 1.2 I_{GT}$	$T_j = 25^\circ\text{C}$	TYP	60	mA
			MAX	120	
I_H	$I_T = 500 \text{ mA}$ gate open	$T_j = 25^\circ\text{C}$	MAX	80	mA
V_{TM}	$I_{TM} = 170 \text{ A}$ $t_p = 380 \mu\text{s}$	$T_j = 25^\circ\text{C}$	MAX	1.75	V
I_{DRM} I_{RRM}	$V_D = V_{DRM}$	$T_j = 25^\circ\text{C}$	MAX	0.05	mA
		$T_j = 125^\circ\text{C}$	MAX	10	
tq	$I_T = 110 \text{ A}$ $V_R = 75 \text{ V}$ $V_D = 67\% V_{DRM}$ $di/dt = 30 \text{ A}/\mu\text{s}$ $dV/dt = 20 \text{ V}/\mu\text{s}$ $t_p = 100 \mu\text{s}$ Gate open	$T_j = 125^\circ\text{C}$	TYP	100	μs
dV/dt *	$V_D = 67\% V_{DRM}$ gate open	$T_j = 125^\circ\text{C}$	MIN	500	V/ μs

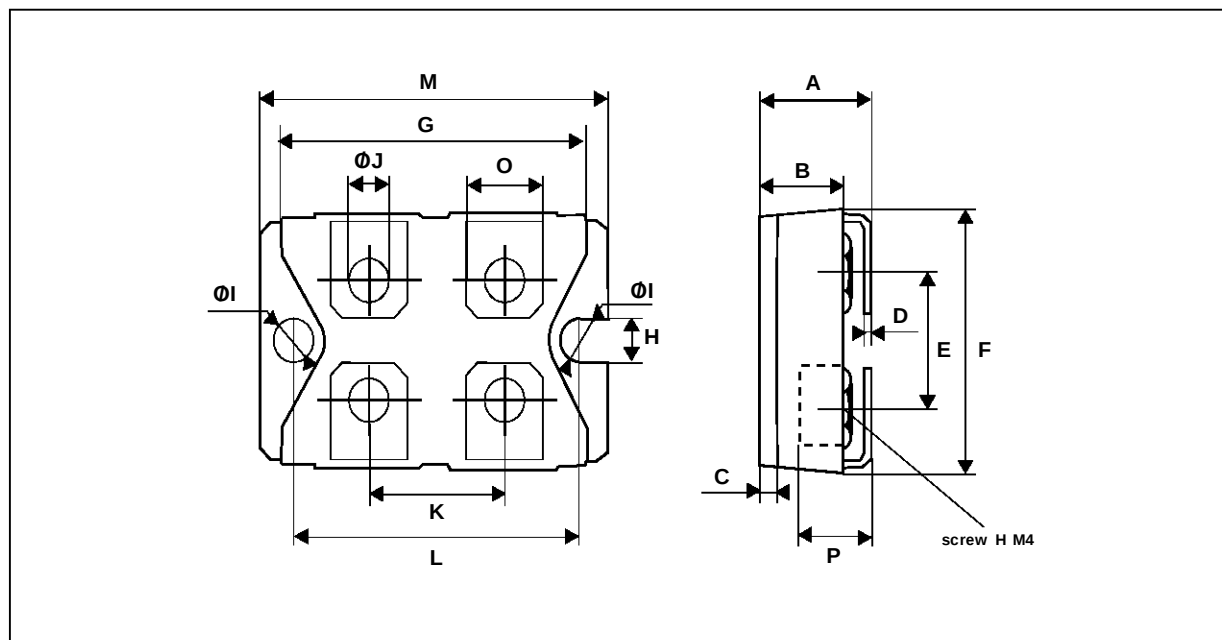
* For higher guaranteed values, please consult us.

ELECTRICAL CHARACTERISTICS (DIODE)

Symbol	Test Conditions		Value	Unit
V_F	$I_F = 170 \text{ A}$	$T_j = 25^\circ\text{C}$	1.75	V
I_R	$V_R = V_{RRM}$	$T_j = 25^\circ\text{C}$	0.05	mA
		$T_j = 125^\circ\text{C}$	10	

PACKAGE MECHANICAL DATA

ISOTOP plastic : SCREW VERSION



REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	11.80	12.20	0.465	0.480
B	8.90	9.10	0.350	0.358
C	1.95	2.05	0.077	0.081
D	0.75	0.85	0.029	0.034
E	12.60	12.80	0.496	0.504
F	25.10	25.50	0.988	1.004
G	31.50	31.70	1.240	1.248
H	4.00		0.157	
I	4.10	4.30	0.161	0.169
J	4.10	4.30	0.161	0.169
K	14.90	15.10	0.586	0.595
L	30.10	30.30	1.185	1.193
M	37.80	38.20	1.488	1.504
O	7.80	8.20	0.307	0.323
P	5.50		0.216	

Cooling method : C

Marking : Type number

Weight : 28 g. (without screws)

Electrical isolation : 2500V(RMS)

Capacitance : < 45 pF

Inductance : < 5 nH

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

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