

New Jersey Semi-Conductor Products, Inc.

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 U.S.A.

MCC255, MCD255
Thyristor Modules
Thyristor/Diode Modules

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V_{RRM} V_{DSM} V	V_{RRM} V_{DRM} V	Type	
1300	1200	MCC 255-12io1	MCD 255-12io1
1500	1400	MCC 255-14io1	MCD 255-14io1
1700	1600	MCC 255-16io1	MCD 255-16io1
1900	1800	MCC 255-18io1	MCD 255-18io1

Features

- International standard package
- Direct Copper Bonded Al_2O_3 -ceramic with copper base plate
- Planar passivated chips
- Isolation voltage 3600 V~
- UL registered, E 72873
- Keyed gate/cathode twin pins

Applications

- Motor control, softstarter
- Power converter
- Heat and temperature control for industrial furnaces and chemical processes
- Lighting control
- Solid state switches

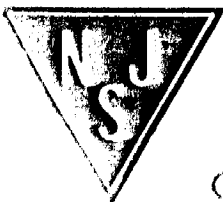
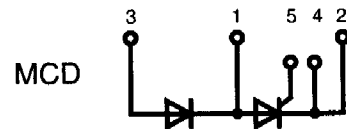
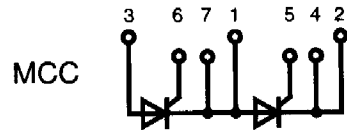
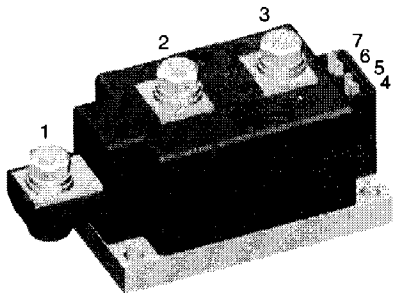
Advantages

- Simple mounting
- Improved temperature and power cycling
- Reduced protection circuits

$$I_{TRMS} = 2x 450 A$$

$$I_{TAVM} = 2x 250 A$$

$$V_{RRM} = 1200-1800 V$$



Quality Semi-Conductors

Symbol	Conditions	Maximum Ratings
I_{TRMS}, I_{FRMS}	$T_{VJ} = T_{VJM}$	450 A
I_{TAVM}, I_{FAVM}	$T_C = 85^\circ\text{C}; 180^\circ \text{ sine}$	250 A
I_{TSM}, I_{FSM}	$T_{VJ} = 45^\circ\text{C}; t = 10 \text{ ms (50 Hz)}$	9000 A
	$V_R = 0; t = 8.3 \text{ ms (60 Hz)}$	9600 A
	$T_{VJ} = T_{VJM}; t = 10 \text{ ms (50 Hz)}$	7800 A
	$V_R = 0; t = 8.3 \text{ ms (60 Hz)}$	8600 A
I^2t	$T_{VJ} = 45^\circ\text{C}; t = 10 \text{ ms (50 Hz)}$	405 000 A ² s
	$V_R = 0; t = 8.3 \text{ ms (60 Hz)}$	382 000 A ² s
	$T_{VJ} = T_{VJM}; t = 10 \text{ ms (50 Hz)}$	304 000 A ² s
	$V_R = 0; t = 8.3 \text{ ms (60 Hz)}$	307 000 A ² s
$(di/dt)_{cr}$	$T_{VJ} = T_{VJM};$ repetitive, $I_T = 860 \text{ A}$ $f = 50 \text{ Hz}; t_p = 200 \mu\text{s};$	100 A/ μs
	$V_D = 2/3 V_{DRM};$ $I_G = 1 \text{ A};$ non repetitive, $I_T = I_{TAVM}$ $di_G/dt = 1 \text{ A}/\mu\text{s}$	500 A/ μs
$(dv/dt)_{cr}$	$T_{VJ} = T_{VJM}; V_D = 2/3 V_{DRM};$ $R_{GK} = \infty;$ method 1 (linear voltage rise)	1000 V/ μs
P_{GM}	$T_{VJ} = T_{VJM}; t_p = 30 \mu\text{s}$	120 W
	$I_T = I_{T(AV)M}; t_p = 500 \mu\text{s}$	60 W
P_{GAV}		20 W
V_{RGM}		10 V
T_{VJ}		-40...+130 °C
T_{VJM}		130 °C
T_{stg}		-40...+125 °C
V_{ISOL}	50/60 Hz, RMS $t = 1 \text{ min}$	3000 V~
	$I_{ISOL} \leq 1 \text{ mA}$ $t = 1 \text{ s}$	3600 V~
M_d	Mounting torque (M6)	4.5 - 7 Nm
	Terminal connection torque (M8)	11 - 13 Nm
Weight	Typical including screws	750 g

Symbol	Conditions	Characteristic Values	
		typ.	max.
I_{RRM}, I_{DRM}	$V_R/V_D = V_{RRM}/V_{DRM}$	$T_{VJ} = T_{VJM}$	40 mA
V_T, V_F	$I_T, I_F = 600 \text{ A}$	$T_{VJ} = 25^\circ\text{C}$	1.36 V
V_{T0}	For power-loss calculations only		0.8 V
r_f		$T_{VJ} = T_{VJM}$	0.68 m Ω
V_{GT}	$V_D = 6 \text{ V}$	$T_{VJ} = 25^\circ\text{C}$	2 V
		$T_{VJ} = -40^\circ\text{C}$	3 V
I_{GT}	$V_D = 6 \text{ V}$	$T_{VJ} = 25^\circ\text{C}$	150 mA
		$T_{VJ} = -40^\circ\text{C}$	220 mA
V_{GD}	$V_D = 2/3 V_{DRM};$	$T_{VJ} = T_{VJM}$	0.25 V
I_{GD}			10 mA
I_L	$t_p = 30 \mu\text{s}; V_D = 6 \text{ V}$	$T_{VJ} = 25^\circ\text{C}$	200 mA
	$I_G = 0.45 \text{ A}; di_G/dt = 0.45 \text{ A}/\mu\text{s}$		
I_H	$V_D = 6 \text{ V}; R_{GK} = \infty;$	$T_{VJ} = 25^\circ\text{C}$	150 mA
t_{gd}	$V_D = 1/2 V_{DRM}$ $I_G = 1 \text{ A}; di_G/dt = 1 \text{ A}/\mu\text{s}$	$T_{VJ} = 25^\circ\text{C}$	2 μs
t_q	$V_D = 2/3 V_{DRM}$ $dv/dt = 50 \text{ V}/\mu\text{s}; -di/dt = 10 \text{ A}/\mu\text{s}$ $I_T = 300 \text{ A}; V_R = 100 \text{ V}; t_p = 200 \mu\text{s}$	$T_{VJ} = T_{VJM}$	200 μs
Q_S	$I_T = 300 \text{ A}; -di/dt = 50 \text{ A}/\mu\text{s}$	$T_{VJ} = T_{VJM}$	760 μC
I_{RM}			275 A
R_{thJC}	per thyristor; DC current		0.139 K/W
	per module		0.07 K/W
R_{thJK}	per thyristor; DC current		0.179 K/W
	per module		0.09 K/W
d_s	Creeping distance on surface		12.7 mm
d_A	Creepage distance in air		9.6 mm
a	Maximum allowable acceleration		50 m/s ²

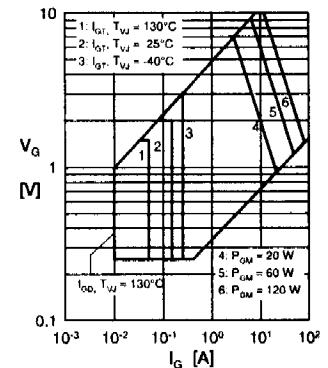


Fig. 3 Surge overcurrent
 $I_{TSM/FSM}$: Crest value, t : duration

