New Jersey Semi-Conductor Products, Inc.

20 STERN AVE.
SPRINGFIELD, NEW JERSEY 07081
U.S.A.

TELEPHONE: (973) 376-2922
(212) 227-6005
FAX: (973) 376-8960

Silicon Controlled Rectifier
Reverse Blocking Triode Thyristor

MCR3835 Series
MCR3935 Series

SCRs
35 AMPERES RMS
50 thru 800 VOLTS

. . . designed for industrial and consumer applications such as power supplies, battery chargers, temperature, motor, light and welder controls.

- Economical for a Wide Range of Uses
- High Surge Current — I_{TSM} = 350 Amps
- Low Forward "On" Voltage — 1.2 V (Typ) @ I_{TM} = 35 Amps
- Practical Level Triggering and Holding Characteristics — 10 mA (Typ) @ T_C = 25°C
- Rugged Construction in Either Pressfit or Stud Package
- Glass Passivated Junctions for Maximum Reliability

(TO-203)
STYLE 1
MCR3835 Series

CASE 175-03
STYLE 1
MCR3935 Series

MAXIMUM RATINGS

Rating		Symbol	Value	Unit
Peak Repetitive Forward and Reverse Blocking Voltage		V_{DRM}		Volts
Note 1	MCR3835-2	V_{RRM}	50	
	-8		600	
	-10		800	
	MCR3935-2		50	
	-3		100	
	-4		200	
	-6		400	
	-8		600	
	-10		800	
Peak Non-Repetitive Reverse Blocking Voltage		V_{RSM}		Volts
(t ≤ 5 ms)	MCR3835-2		35	
	-8		700	
	-10		900	
	MCR3935-2		75	
	-3		150	
	-4		300	
	-6		500	
	-8		700	
	-10		900	
Forward Current RMS		$I_{T(RMS)}$	35	Amps
Peak Surge Current (One Cycle, 60 Hz, T_J = −40 to +125°C)		I_{TSM}	350	Amps
Circuit Fusing (T_J = −40 to +100°C, t = 1 to 8.3 ms)		I^2t	510	A^2s
Peak Gate Power		P_{GFM}	5	Watts
Average Gate Power		$P_{GF(AV)}$	0.5	Watt
Peak Forward Gate Current		I_{GFM}	2	Amps
Peak Gate Voltage — Forward		V_{GFM}	10	Volt
Reverse		V_{GRM}	10	
Operating Junction Temperature Range		T_J	−40 to +125	°C

Note 1. V_{DRM} and V_{RRM} for all types can be applied on a continuous dc basis without incurring damage. Ratings apply for zero or negative gate voltage. Devices shall not have a positive bias applied to the gate concurrently with a negative potential on the anode.

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Storage Temperature Range	T_{stg}	−40 to +150	°C
Stud Torque	—	30	in. lb.

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case MCR3835 MCR3935	$R_{\theta JC}$	 1.2 1.3	°C/W

ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise noted.)

Characteristic	Symbol	Min	Typ	Max	Unit
Peak Forward or Reverse Blocking Current (Rated V_{DRM} or V_{RRM}, gate open) T_J = 25°C T_J = 100°C	I_{DRM}, I_{RRM}	 —	 —	10 5	μA mA
Forward "On" Voltage (I_{TM} = 35 A Peak)	V_{TM}	—	1.2	1.5	Volts
Gate Trigger Current (Continuous dc) (V_D = 7 V, R_L = 100 Ω)	I_{GT}	—	10	40	mA
Gate Trigger Voltage (Continuous dc) (V_D = 7 V, R_L = 100 Ω) (V_D = Rated V_{DRM}, R_L = 100 Ω, T_J = 100°C)	V_{GT} V_{GD}	— 0.2	0.7 —	1.5 —	Volts
Holding Current (V_D = 7 V, gate open)	I_H	—	10	50	mA
Turn-On Time (t_d + t_r) (I_{TM} = 35 Adc, I_{GT} = 40 mAdc)	t_{on}	—	1	—	μs
Turn-Off Time (I_{TM} = 10 A, I_R = 10 A) (I_{TM} = 10 A, I_R = 10 A, T_J = 100°C)	t_q	 —	20 30	 —	μs
Forward Voltage Application Rate (V_D = Rated V_{DRM}, T_J = 100°C)	dv/dt	—	50	—	V/μs

FIGURE 1 – CURRENT DERATING

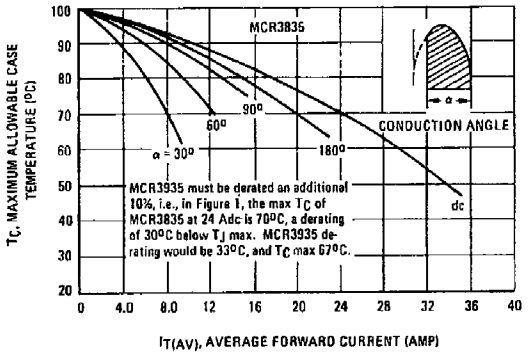

FIGURE 2 – TYPICAL POWER DISSIPATION