MCR3835 Series MCR3935 Series

Silicon Controlled Rectifier
Reverse Blocking Triode Thyristor

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

CASE 174-04
(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 (Note 1) MCR3835-2	V_{DRM} V_{RRM}	50	Volts
-8		600	
-10		800	
MCR3935-2		50	
-3		100	
-4		200	
-6		400	
-8		600	
-10		800	
Peak Non-Repetitive Reverse Blocking Voltage (t ≤ 5 ms) MCR3835-2	V_{RSM}	35	Volts
-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

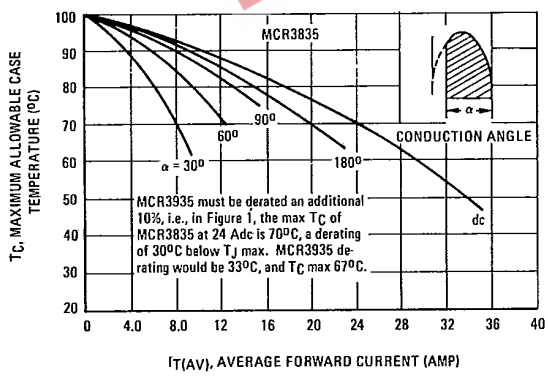


FIGURE 2 – TYPICAL POWER DISSIPATION

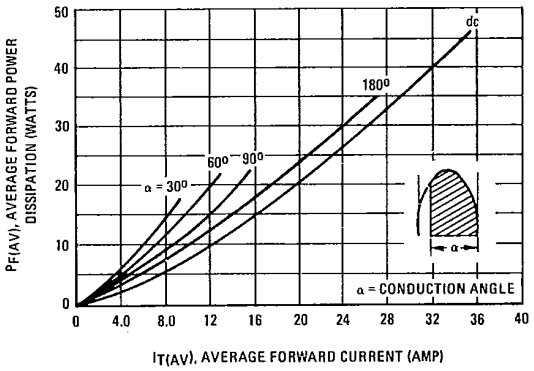


FIGURE 3 – TYPICAL GATE TRIGGER CURRENT

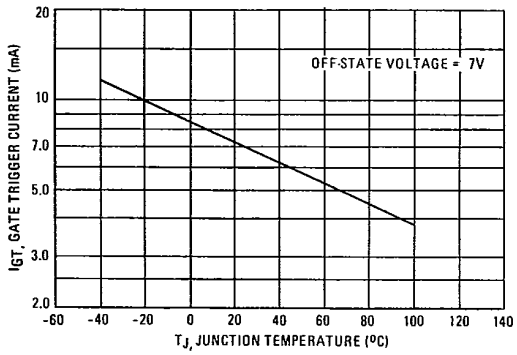
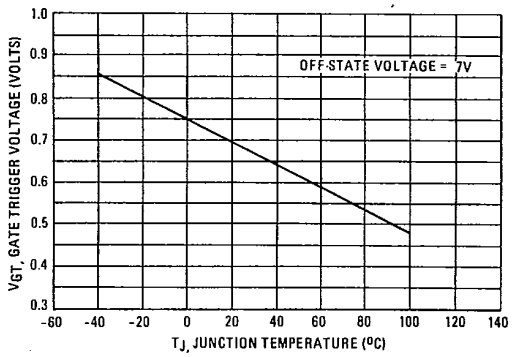


FIGURE 4 – TYPICAL GATE TRIGGER VOLTAGE



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