

Silicon Controlled Rectifier Reverse Blocking Triode Thyristor

... 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) @ $T_C = 25^\circ\text{C}$
- Rugged Construction in Either Pressfit or Stud Package
- Glass Passivated Junctions for Maximum Reliability

MCR3835 Series MCR3935 Series

SCRs
35 AMPERES RMS
50 thru 800 VOLTS

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Peak Repetitive Forward and Reverse Blocking Voltage Note 1 MCR3835-2 -8 -10 MCR3935-2 -3 -4 -6 -8 -10	V_{DRM} V_{RRM}	50 600 800 50 100 200 400 600 800	Volts
Peak Non-Repetitive Reverse Blocking Voltage ($t \leq 5$ ms) MCR3835-2 -8 -10 MCR3935-2 -3 -4 -6 -8 -10	V_{RSM}	35 700 900 75 150 300 500 700 900	Volts
Forward Current RMS	$I_{T(RMS)}$	35	Amps
Peak Surge Current (One Cycle, 60 Hz, $T_J = -40$ to $+125^\circ\text{C}$)	I_{TSM}	350	Amps
Circuit Fusing ($T_J = -40$ to $+100^\circ\text{C}$, $t = 1$ 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 Reverse	V_{GFM} V_{GRM}	10 10	Volt
Operating Junction Temperature Range	T_J	-40 to +125	$^\circ\text{C}$

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.



CASE 174-04
(TO-203)
STYLE 1
MCR3835 Series



CASE 175-03
STYLE 1
MCR3935 Series

MCR3835 Series • MCR3935 Series

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	$R_{\theta JC}$	1.2	°C/W
MCR3935		1.3	

ELECTRICAL CHARACTERISTICS ($T_C = 25^\circ\text{C}$ unless otherwise noted.)

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

FIGURE 1 — CURRENT DERATING

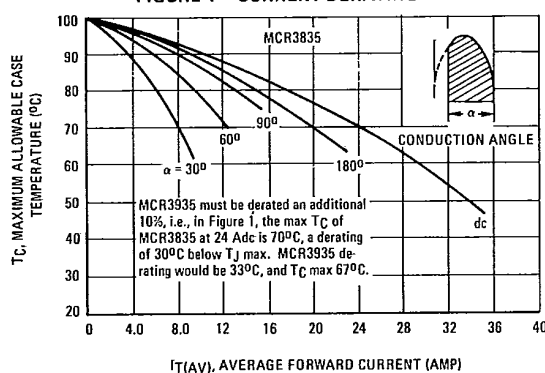
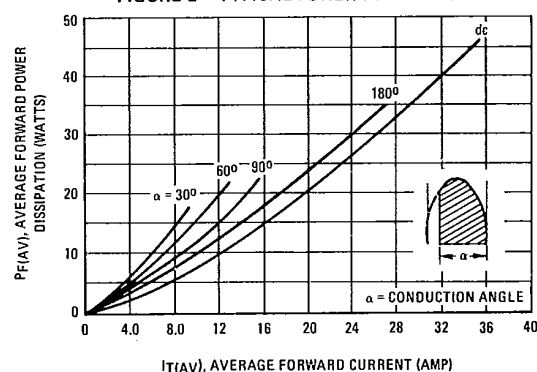


FIGURE 2 — TYPICAL POWER DISSIPATION



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FIGURE 3 – TYPICAL GATE TRIGGER CURRENT

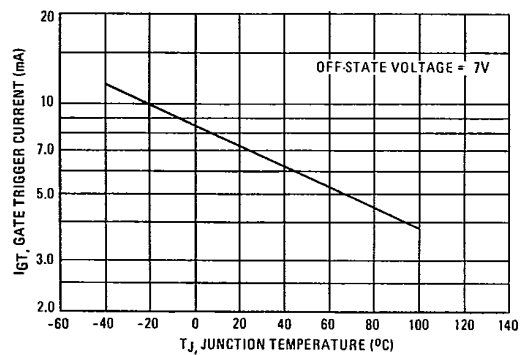


FIGURE 4 – TYPICAL GATE TRIGGER VOLTAGE

