

## 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	$I_T(\text{RMS})$	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	$\text{A}^2\text{s}$
Peak Gate Power	$P_{GFM}$	5	Watts
Average Gate Power	$P_{GF(\text{AV})}$	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

3

MCR3835 Series • MCR3935 Series

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Storage Temperature Range	T <sub>stg</sub>	-40 to +150	°C
Stud Torque	—	30	in. lb.

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case MCR3835	R <sub>θJC</sub>	1.2	°C/W
MCR3935		1.3	

ELECTRICAL CHARACTERISTICS (T<sub>C</sub> = 25°C unless otherwise noted.)

Characteristic	Symbol	Min	Typ	Max	Unit
Peak Forward or Reverse Blocking Current (Rated V <sub>DRM</sub> or V <sub>RRM</sub> , gate open) T <sub>J</sub> = 25°C T <sub>J</sub> = 100°C	I <sub>DRM</sub> , I <sub>RRM</sub>	—	— 1	10 5	μA mA
Forward "On" Voltage (I <sub>TM</sub> = 35 A Peak)	V <sub>TM</sub>	—	1.2	1.5	Volts
Gate Trigger Current (Continuous dc) (V <sub>D</sub> = 7 V, R <sub>L</sub> = 100 Ω)	I <sub>GT</sub>	—	10	40	mA
Gate Trigger Voltage (Continuous dc) (V <sub>D</sub> = 7 V, R <sub>L</sub> = 100 Ω) (V <sub>D</sub> = Rated V <sub>DRM</sub> , R <sub>L</sub> = 100 Ω, T <sub>J</sub> = 100°C)	V <sub>GT</sub> V <sub>GD</sub>	— 0.2	— —	0.7 1.5	Volts
Holding Current (V <sub>D</sub> = 7 V, gate open)	I <sub>H</sub>	—	10	50	mA
Turn-On Time (t <sub>d</sub> + t <sub>r</sub> ) (I <sub>TM</sub> = 35 Adc, I <sub>GT</sub> = 40 mAdc)	t <sub>on</sub>	—	1	—	μs
Turn-Off Time (I <sub>TM</sub> = 10 A, I <sub>R</sub> = 10 A) (I <sub>TM</sub> = 10 A, I <sub>R</sub> = 10 A, T <sub>J</sub> = 100°C)	t <sub>q</sub>	—	20 30	—	μs
Forward Voltage Application Rate (V <sub>D</sub> = Rated V <sub>DRM</sub> , T <sub>J</sub> = 100°C)	dv/dt	—	50	—	V/μs

FIGURE 1 - CURRENT DERATING

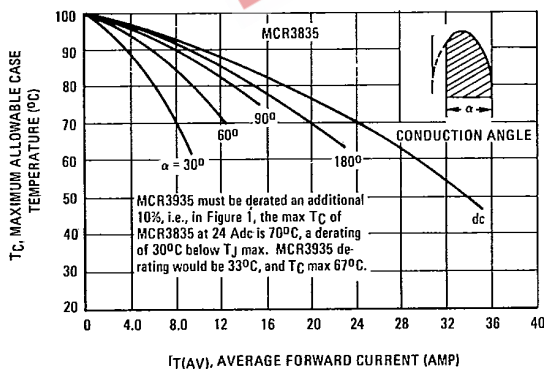


FIGURE 2 - TYPICAL POWER DISSIPATION

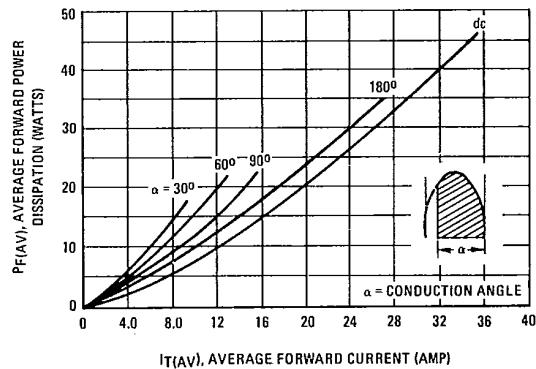


FIGURE 3 – TYPICAL GATE TRIGGER CURRENT

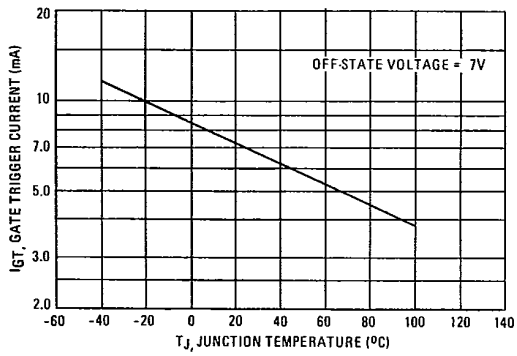
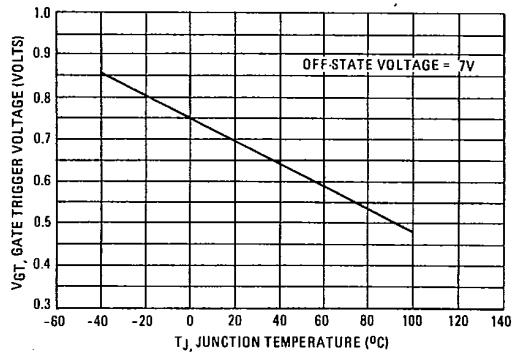


FIGURE 4 – TYPICAL GATE TRIGGER VOLTAGE



3

EEPW 电子产品世界 .com.cn