

T-25-17

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	V _{DRM} V _{RRM}	MCR3835-2	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 ($t \leq 5$ ms)	V _{RSM}	
-8	700			
-10	900			
MCR3935-2	75			
-3	150			
-4	300			
-6	500			
-8	700			
-10	900			
Forward Current RMS	I _{T(RMS)}			35
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 ² s	
Peak Gate Power	P _{GF(M)}	5	Watts	
Average Gate Power	P _{GF(AV)}	0.5	Watt	
Peak Forward Gate Current	I _{GF(M)}	2	Amps	
Peak Gate Voltage — Forward Reverse	V _{GF(M)}	10	Volt	
	V _{GR(M)}	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.



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



CASE 175-03
STYLE 1
MCR3935 Series

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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}	—	—	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 ($V_D = 7 \text{ V}, \text{gate open}$)	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

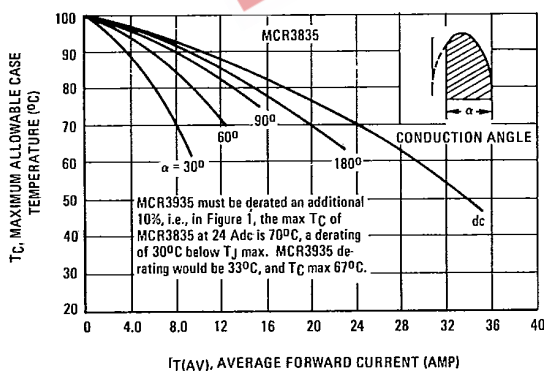
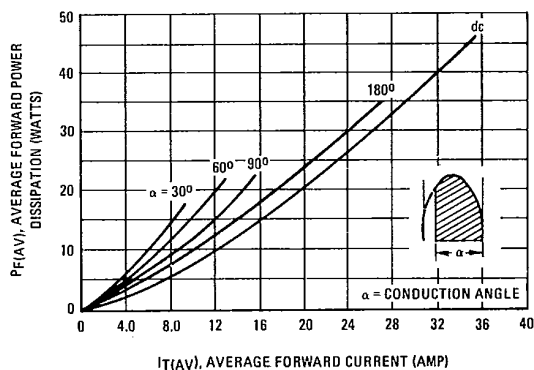


FIGURE 2 - TYPICAL POWER DISSIPATION



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FIGURE 3 – TYPICAL GATE TRIGGER CURRENT

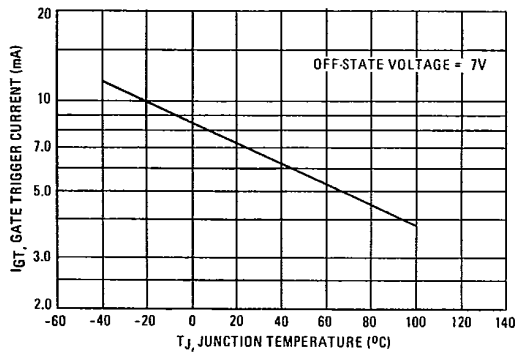
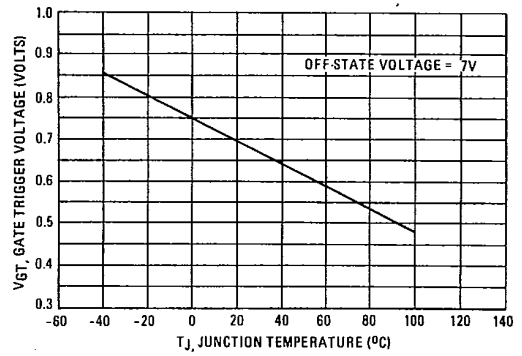


FIGURE 4 – TYPICAL GATE TRIGGER VOLTAGE



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