

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}		Volts
MCR3835-2		50	
-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}		Volts
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 $+125^\circ\text{C}$)	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	V_{GFM}	10	Volt
Reverse	V_{GRM}	10	
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

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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 _{θJC}	1.2	°C/W
MCR3935		1.3	

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

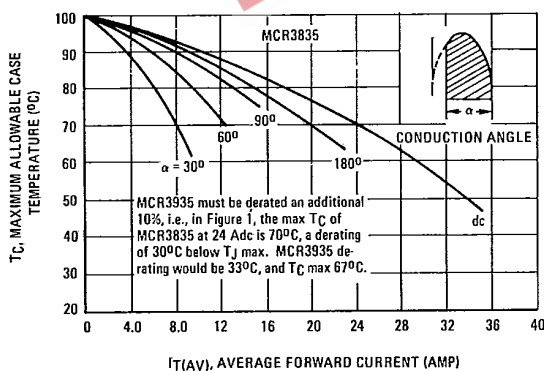
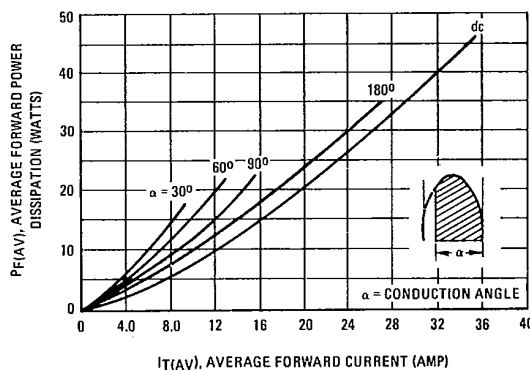


FIGURE 2 - TYPICAL POWER DISSIPATION



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FIGURE 3 – TYPICAL GATE TRIGGER CURRENT

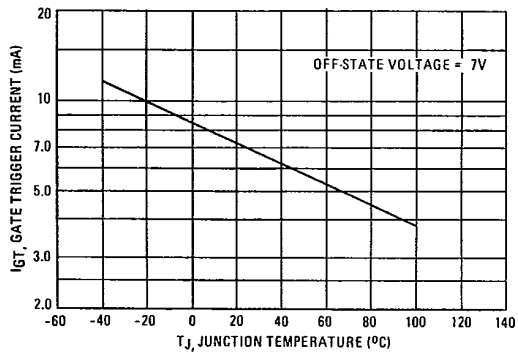
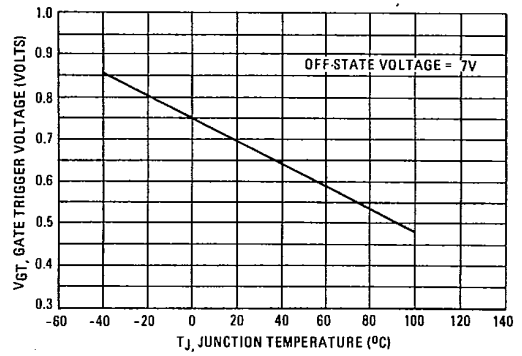


FIGURE 4 – TYPICAL GATE TRIGGER VOLTAGE



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