

T-25-17

Silicon Controlled Rectifiers

Reverse Blocking Triode Thyristors

... 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

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Peak Repetitive Forward and Reverse Blocking Voltage Note 1	V_{DRM} V_{RRM}	50 600 800	Volts
MCR3835-2			
-8		600	
-10		800	
MCR3935-()A2		50	
3		100	
4		200	
6		400	
8		600	
10		800	
Peak Non-Repetitive Reverse Blocking Voltage ($t \leq 5$ ms)	V_{RSM}	35 700 900	Volts
MCR3835-2			
-8		700	
-10		900	
MCR3935-()A2		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 ($t = 8.3$ 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.

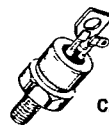
MCR3896-99
(See 2N3870)

MCR3835
Series
MCR3935-
()A
Series

SCRs
35 AMPERES RMS
50 thru 800 VOLTS



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



CASE 263-04
STYLE 1
MCR3935-()A Series

MOTOROLA THYRISTOR DEVICE DATA

3-260

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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 MCR3935	$R_{\theta JC}$	1.2 1.3	°C/W

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	—	V/ μs

FIGURE 1 — CURRENT DERATING

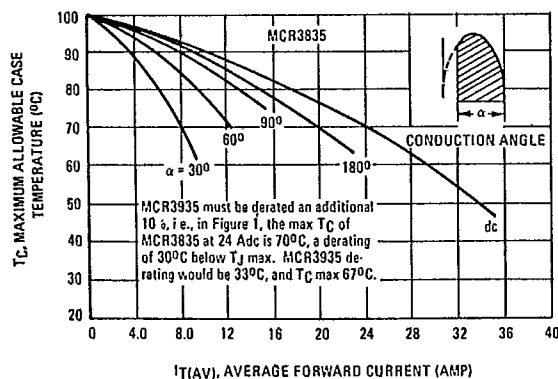
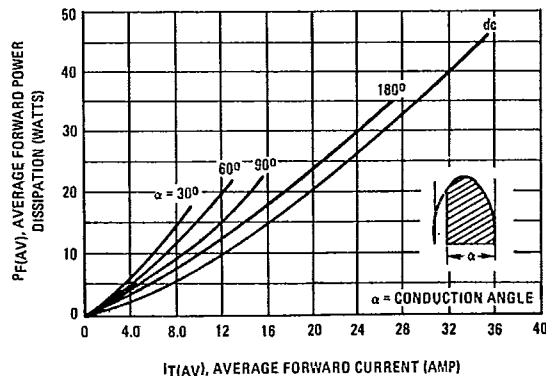


FIGURE 2 — TYPICAL POWER DISSIPATION



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FIGURE 3 – TYPICAL GATE TRIGGER CURRENT

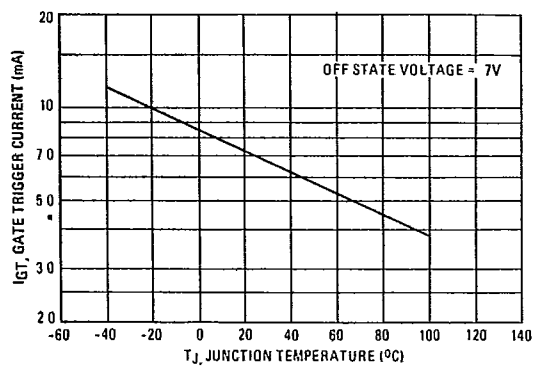


FIGURE 4 – TYPICAL GATE TRIGGER VOLTAGE

