

MCR8SD, MCR8SM, MCR8SN

Preferred Device

Sensitive Gate Silicon Controlled Rectifiers

Reverse Blocking Thyristors

Designed primarily for half-wave ac control applications, such as motor controls, heating controls, and power supplies; or wherever half-wave, silicon gate-controlled devices are needed.

- Sensitive Gate Allows Triggering by Microcontrollers and other Logic Circuits
- Blocking Voltage to 800 Volts
- On-State Current Rating of 8 Amperes RMS at 80°C
- High Surge Current Capability — 80 Amperes
- Rugged, Economical TO220AB Package
- Glass Passivated Junctions for Reliability and Uniformity
- Minimum and Maximum Values of IGT, VGT and IH Specified for Ease of Design
- Immunity to dv/dt — 5 V/μsec Minimum at 110°C
- Device Marking: Logo, Device Type, e.g., MCRSD, Date Code

MAXIMUM RATINGS (T_J = 25°C unless otherwise noted)

Rating	Symbol	Value	Unit
Peak Repetitive Off-State Voltage ⁽¹⁾ (T _J = -40 to 110°C, Sine Wave, 50 to 60 Hz, Gate Open)	V _{DRM} , V _{RRM}		Volts
MCR8SD		400	
MCR8SM		600	
MCR8SN		800	
On-State RMS Current (180° Conduction Angles; T _C = 80°C)	I _{T(RMS)}	8.0	Amps
Peak Non-Repetitive Surge Current (1/2 Cycle, Sine Wave, 60 Hz, T _J = 110°C)	I _{TSM}	80	Amps
Circuit Fusing Consideration (t = 8.33 ms)	I ² t	26.5	A ² sec
Forward Peak Gate Power (Pulse Width ≤ 1.0 μs, T _C = 80°C)	P _{GM}	5.0	Watts
Forward Average Gate Power (t = 8.3 ms, T _C = 80°C)	P _{G(AV)}	0.5	Watt
Forward Peak Gate Current (Pulse Width ≤ 1.0 μs, T _C = 80°C)	I _{GM}	2.0	Amps
Operating Junction Temperature Range	T _J	-40 to 110	°C
Storage Temperature Range	T _{stg}	-40 to 150	°C

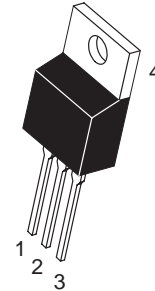
(1) V_{DRM} and V_{RRM} for all types can be applied on a continuous basis. Ratings apply for zero or negative gate voltage; positive gate voltage shall not be applied concurrent with negative potential on the anode. Blocking voltages shall not be tested with a constant current source such that the voltage ratings of the devices are exceeded.



ON Semiconductor

<http://onsemi.com>

SCRs
8 AMPERES RMS
400 thru 800 VOLTS



TO-220AB
CASE 221A
STYLE 3

PIN ASSIGNMENT	
1	Cathode
2	Anode
3	Gate
4	Anode

ORDERING INFORMATION

Device	Package	Shipping
MCR8SD	TO220AB	50 Units/Rail
MCR8SM	TO220AB	50 Units/Rail
MCR8SN	TO220AB	50 Units/Rail

Preferred devices are recommended choices for future use and best overall value.

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Voltage Current Characteristic of SCR

Symbol	Parameter
V_{DRM}	Peak Repetitive Off State Forward Voltage
I_{DRM}	Peak Forward Blocking Current
V_{RRM}	Peak Repetitive Off State Reverse Voltage
I_{RRM}	Peak Reverse Blocking Current
V_{TM}	Peak On State Voltage
I_H	Holding Current

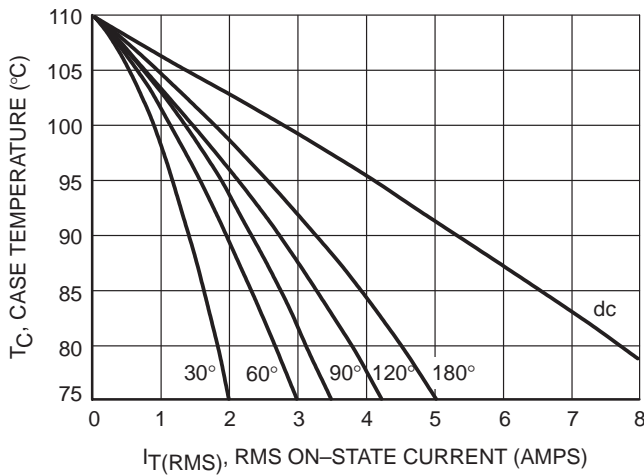
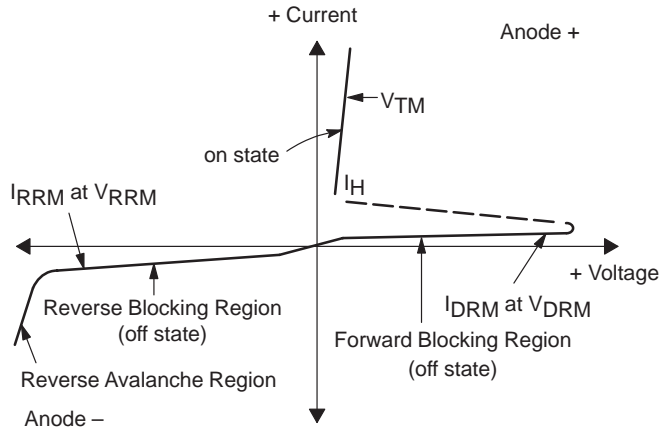


Figure 1. Typical RMS Current Derating

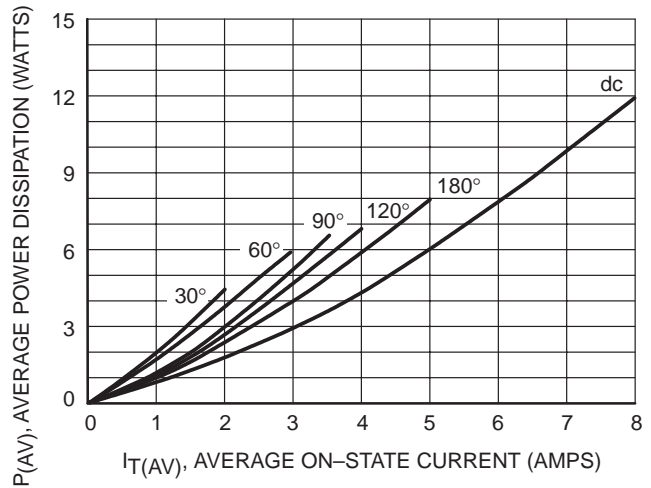


Figure 2. On-State Power Dissipation

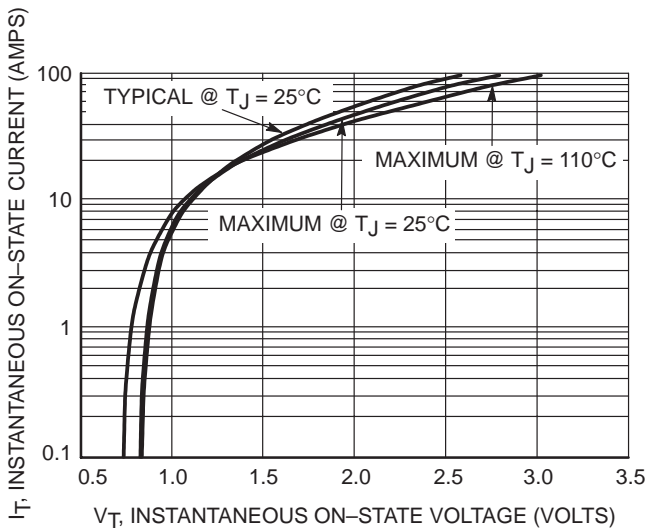


Figure 3. Typical On-State Characteristics

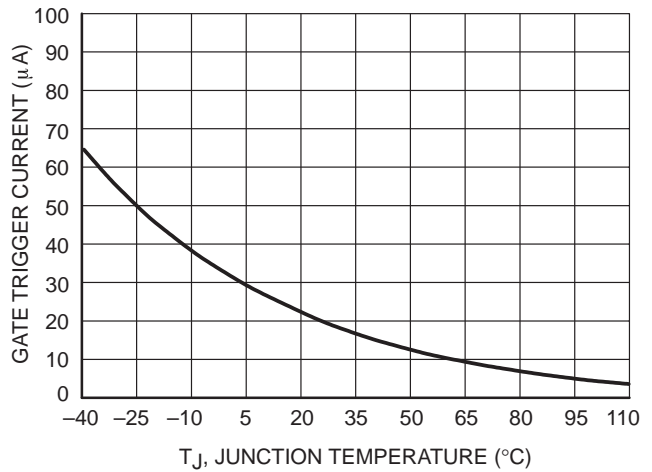


Figure 4. Typical Gate Trigger Current versus Junction Temperature

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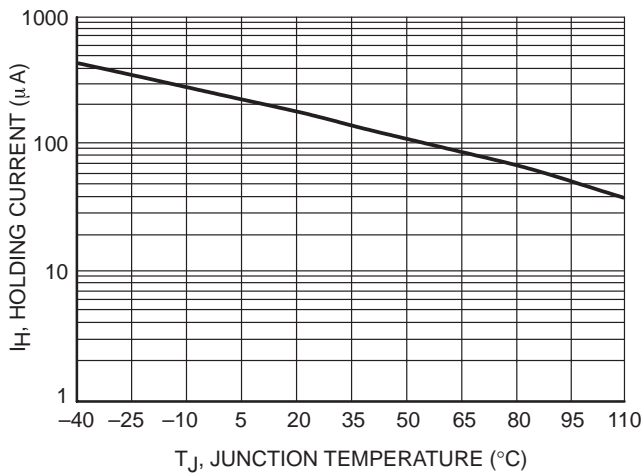


Figure 5. Typical Holding Current versus Junction Temperature

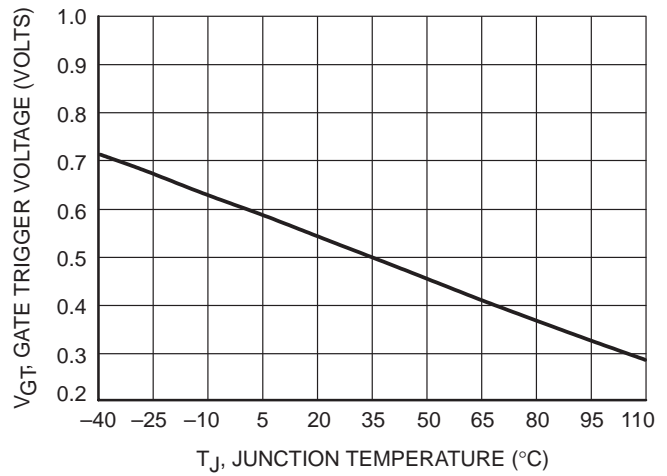


Figure 6. Typical Gate Trigger Voltage versus Junction Temperature

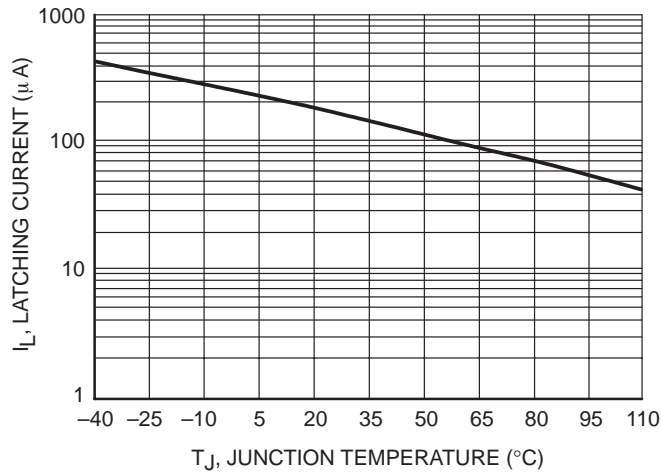
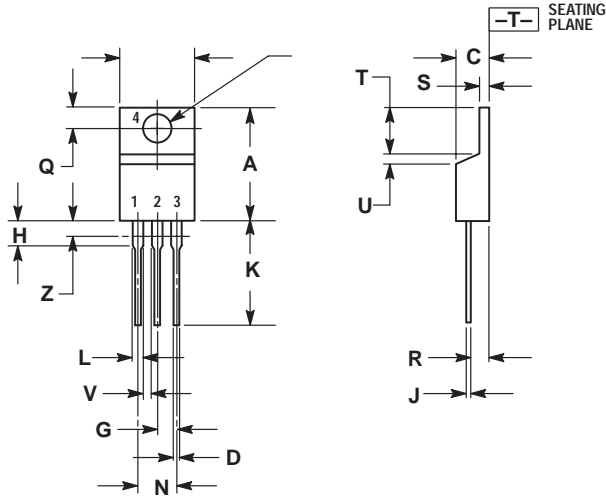


Figure 7. Typical Latching Current versus Junction Temperature

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PACKAGE DIMENSIONS

TO-220AB
CASE 221A-09
ISSUE Z



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 2. CONTROLLING DIMENSION: INCH.
 3. DIMENSION Z DEFINES A ZONE WHERE ALL BODY AND LEAD IRREGULARITIES ARE ALLOWED.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.570	0.620	14.48	15.75
B	0.380	0.405	9.66	10.28
C	0.160	0.190	4.07	4.82
D	0.025	0.035	0.64	0.88
F	0.142	0.147	3.61	3.73
G	0.095	0.105	2.42	2.66
H	0.110	0.155	2.80	3.93
J	0.018	0.025	0.46	0.64
K	0.500	0.562	12.70	14.27
L	0.045	0.060	1.15	1.52
N	0.190	0.210	4.83	5.33
Q	0.100	0.120	2.54	3.04
R	0.080	0.110	2.04	2.79
S	0.045	0.055	1.15	1.39
T	0.235	0.255	5.97	6.47
U	0.000	0.050	0.00	1.27
V	0.045	---	1.15	---
Z	---	0.080	---	2.04

- STYLE 3:
PIN 1. CATHODE
2. ANODE
3. GATE
4. ANODE

Notes

Notes

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