

MCR8DSM, MCR8DSN

Preferred Device

Sensitive Gate Silicon Controlled Rectifiers

Reverse Blocking Thyristors

Designed for high volume, low cost, industrial and consumer applications such as motor control; process control; temperature, light and speed control.

- Small Size
- Passivated Die for Reliability and Uniformity
- Low Level Triggering and Holding Characteristics
- Available in Two Package Styles
Surface Mount Lead Form — Case 369A
Miniature Plastic Package — Straight Leads — Case 369
- Device Marking: Logo, Device Type, e.g., CR8DSM, 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) MCR8DSM MCR8DSN	V _{DRM} , V _{RRM}	600 800	Volts
On-State RMS Current (180° Conduction Angles; T _C = 90°C)	I _{T(RMS)}	8.0	Amps
Average On-State Current (180° Conduction Angles; T _C = 90°C)	I _{T(AV)}	5.1	Amps
Peak Non-Repetitive Surge Current (1/2 Cycle, Sine Wave, 60 Hz, T _J = 110°C)	I _{TSM}	90	Amps
Circuit Fusing Consideration (t = 8.3 msec)	I ² t	34	A ² sec
Forward Peak Gate Power (Pulse Width ≤ 10 μsec, T _C = 90°C)	P _{GM}	5.0	Watts
Forward Average Gate Power (t = 8.3 msec, T _C = 90°C)	P _{G(AV)}	0.5	Watt
Forward Peak Gate Current (Pulse Width ≤ 10 μsec, T _C = 90°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

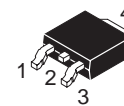
(1) V_{DRM} and V_{RRM} for all types can be applied on a continuous basis. Ratings apply for negative gate voltage; positive gate voltage shall not be applied concurrent with negative potential on the anode. Blocking voltages shall not be tested with a constant current source such that the voltage ratings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



ON Semiconductor

<http://onsemi.com>

SCRs
8 AMPERES RMS
600 thru 800 VOLTS



D-PAK
CASE 369A
STYLE 4

PIN ASSIGNMENT

Pin	Assignment
1	Cathode
2	Anode
3	Gate
4	Anode

ORDERING INFORMATION

Device	Package	Shipping
MCR8DSMT4	DPAK 369A	16mm Tape and Reel (2.5K/Reel)
MCR8DSNT4	DPAK 369A	16mm Tape and Reel (2.5K/Reel)

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

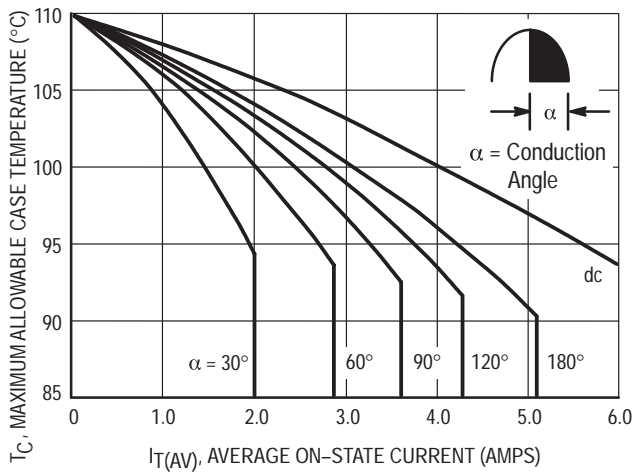
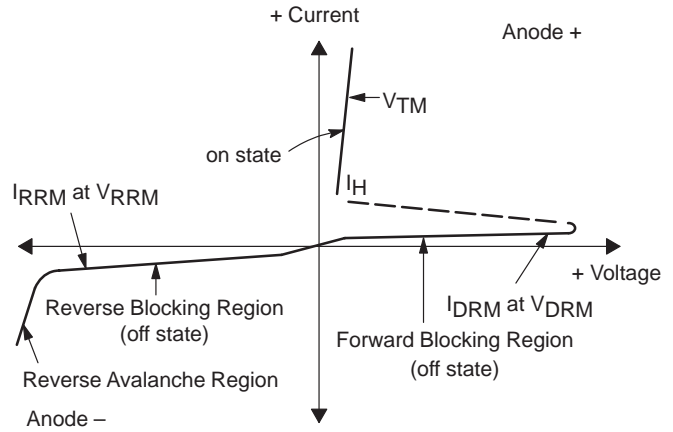


Figure 1. Average Current Derating

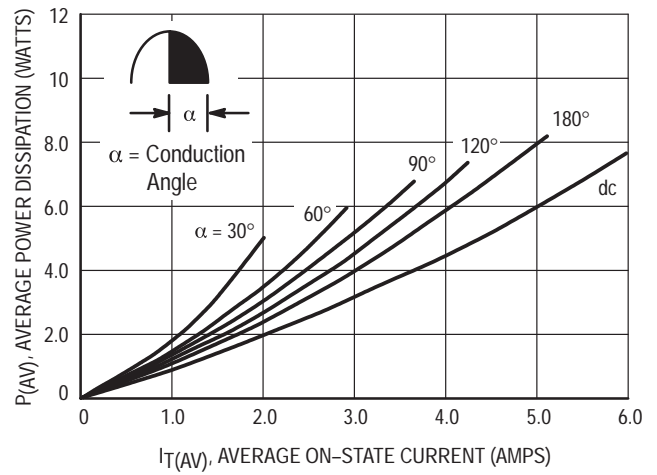


Figure 2. On-State Power Dissipation

MCR8DSM, MCR8DSN

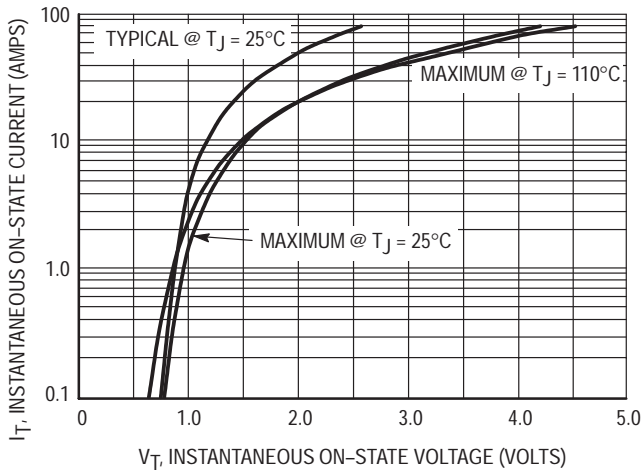


Figure 3. On-State Characteristics

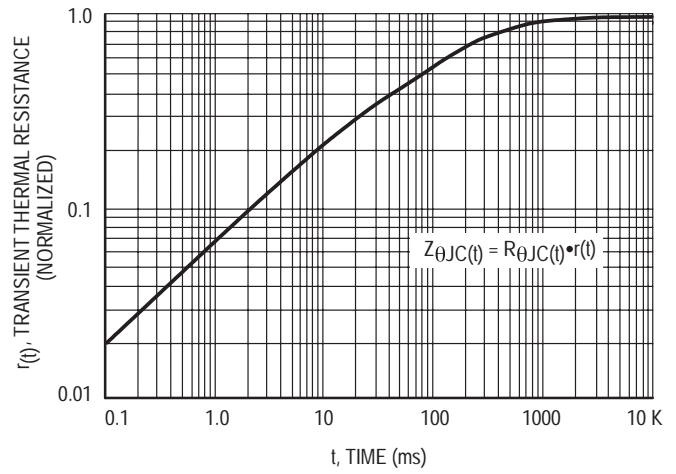


Figure 4. Transient Thermal Response

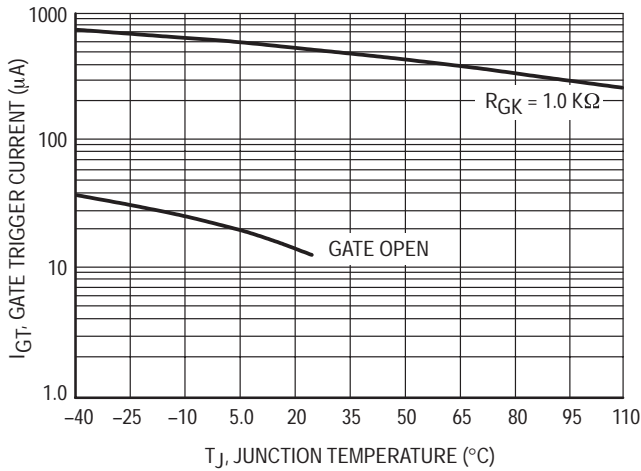


Figure 5. Typical Gate Trigger Current versus Junction Temperature

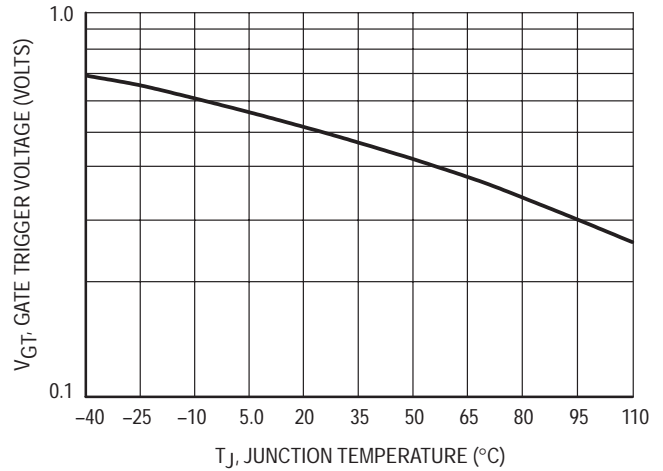


Figure 6. Typical Gate Trigger Voltage versus Junction Temperature

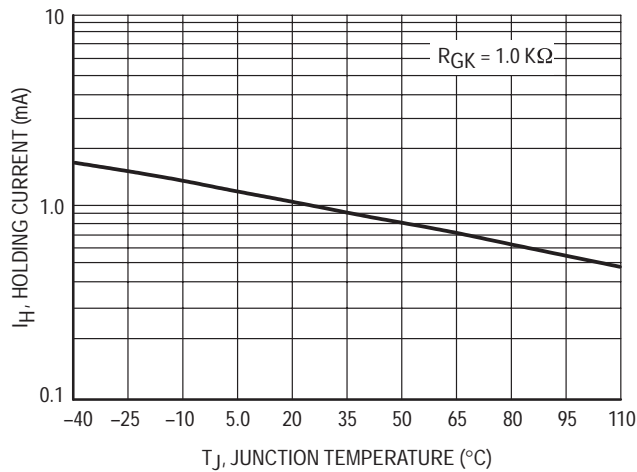


Figure 7. Typical Holding Current versus Junction Temperature

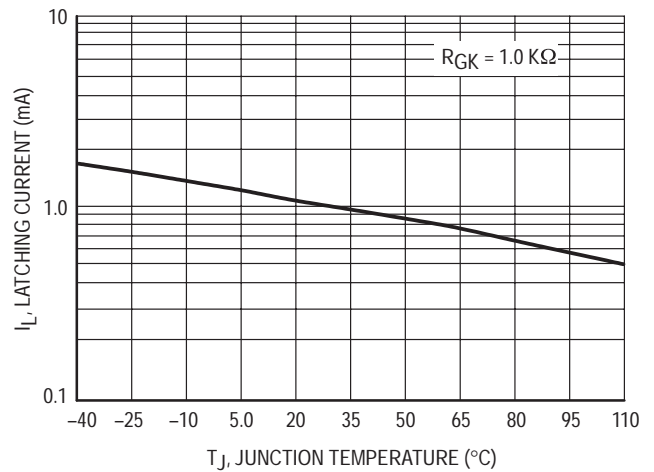


Figure 8. Typical Latching Current versus Junction Temperature

MCR8DSM, MCR8DSN

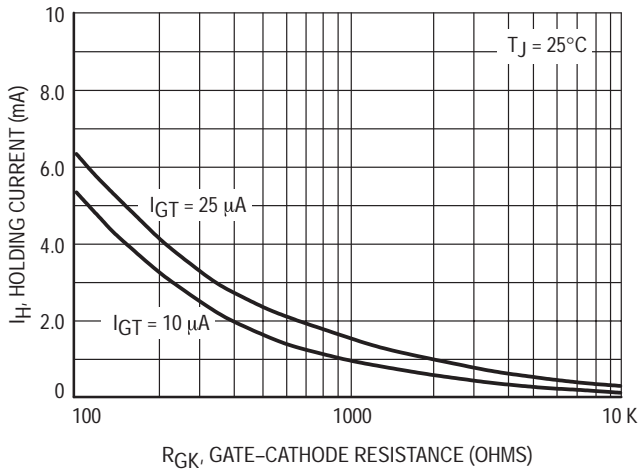


Figure 9. Holding Current versus Gate-Cathode Resistance

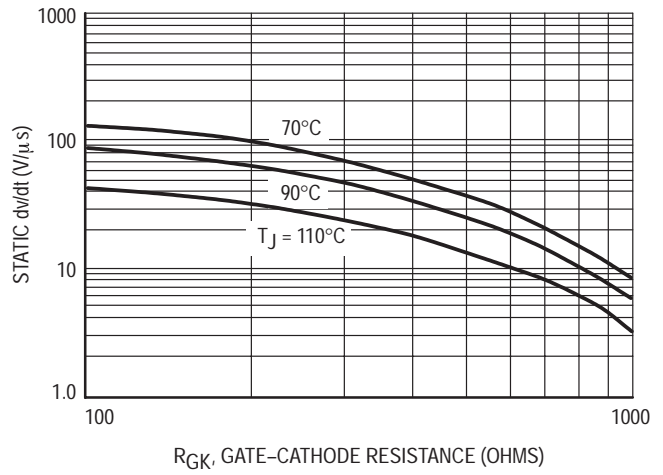


Figure 10. Exponential Static dv/dt versus Gate-Cathode Resistance and Junction Temperature

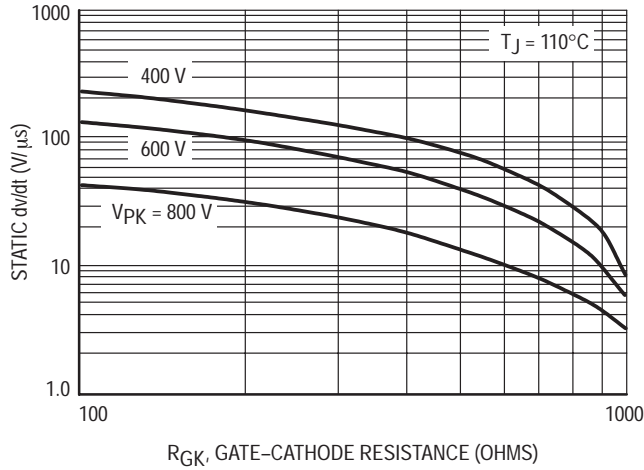


Figure 11. Exponential Static dv/dt versus Gate-Cathode Resistance and Peak Voltage

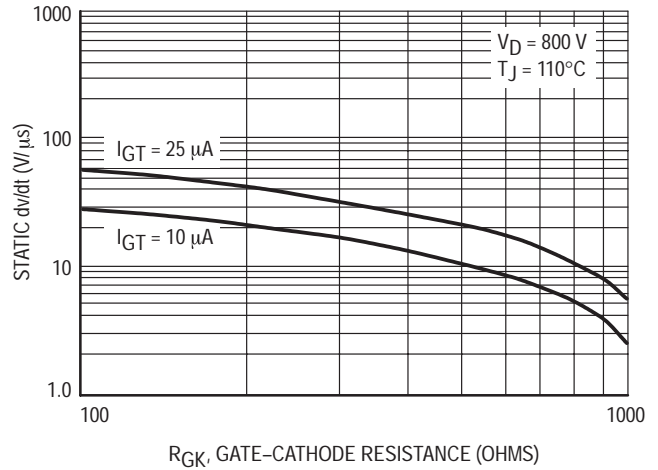


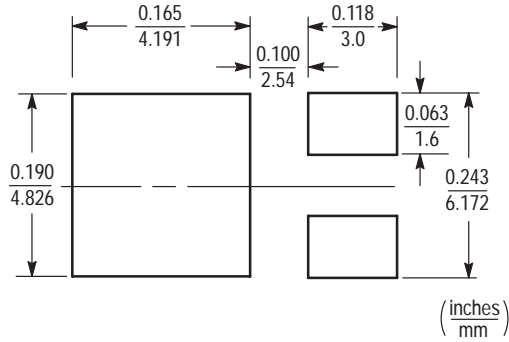
Figure 12. Exponential Static dv/dt versus Gate-Cathode Resistance and Gate Trigger Current Sensitivity

MCR8DSM, MCR8DSN

MINIMUM RECOMMENDED FOOTPRINT FOR SURFACE MOUNTED APPLICATIONS

Surface mount board layout is a critical portion of the total design. The footprint for the semiconductor packages must be the correct size to insure proper solder connection

interface between the board and the package. With the correct pad geometry, the packages will self align when subjected to a solder reflow process.

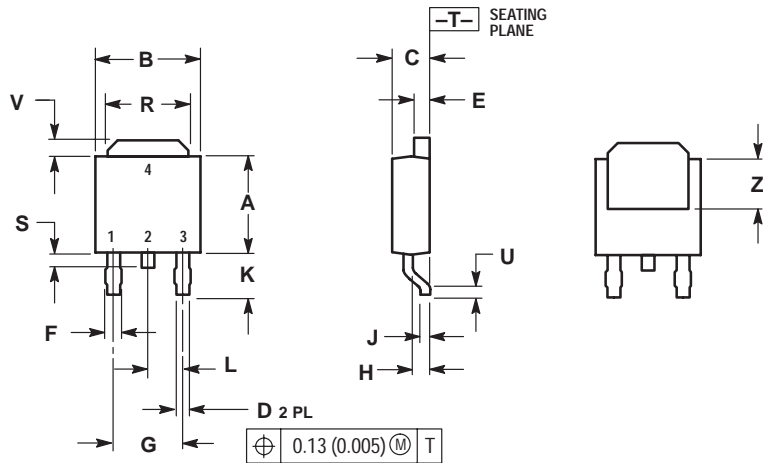


DPAK

MCR8DSM, MCR8DSN

PACKAGE DIMENSIONS

D-PAK CASE 369A-13 ISSUE Z



NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.235	0.250	5.97	6.35
B	0.250	0.265	6.35	6.73
C	0.086	0.094	2.19	2.38
D	0.027	0.035	0.69	0.88
E	0.033	0.040	0.84	1.01
F	0.037	0.047	0.94	1.19
G	0.180 BSC		4.58 BSC	
H	0.034	0.040	0.87	1.01
J	0.018	0.023	0.46	0.58
K	0.102	0.114	2.60	2.89
L	0.090 BSC		2.29 BSC	
R	0.175	0.215	4.45	5.46
S	0.020	0.050	0.51	1.27
U	0.020	---	0.51	---
V	0.030	0.050	0.77	1.27
Z	0.138	---	3.51	---

STYLE 4:

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

MCR8DSM, MCR8DSN

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