

MCR218-2, MCR218-4, MCR218-6

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, solid-state devices are needed.

Features

- Glass-Passivated Junctions
- Blocking Voltage to 400 Volts
- TO-220 Construction – Low Thermal Resistance, High Heat Dissipation and Durability

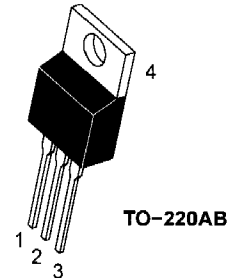
SCRs

**8 AMPERES RMS
50 thru 400 VOLTS**



MAXIMUM RATINGS ($T_J = 25^\circ\text{C}$ unless otherwise noted)

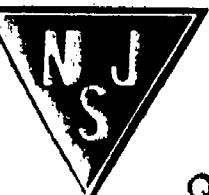
Rating	Symbol	Value	Unit
Peak Repetitive Off-State Voltage (Note 1) ($T_J = -40$ to 125°C , Gate Open)	V_{DRM} , V_{RRM}	50 200 400	V
On-State RMS Current (180° Conduction Angles; $T_C = 70^\circ\text{C}$)	$I_{\text{T(RMS)}}$	8.0	A
Peak Non-repetitive Surge Current (1/2 Cycle, Sine Wave 60 Hz, $T_J = 125^\circ\text{C}$)	I_{TSM}	100	A
Circuit Fusing Considerations ($t = 8.3$ ms)	I^2t	26	A^2s
Forward Peak Gate Power (Pulse Width ≤ 1.0 μs , $T_C = 70^\circ\text{C}$)	P_{GM}	5.0	W
Forward Average Gate Power ($t = 8.3$ ms, $T_C = 70^\circ\text{C}$)	$P_{\text{G(AV)}}$	0.5	W
Forward Peak Gate Current (Pulse Width ≤ 1.0 μs , $T_C = 70^\circ\text{C}$)	I_{GM}	2.0	A
Operating Junction Temperature Range	T_J	-40 to +125	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-40 to +150	$^\circ\text{C}$



Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

1. V_{DRM} and V_{RRM} for all types can be applied on a continuous basis. Ratings apply for zero or negative gate voltage; however, 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.

NJ Semi-Conductors reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by NJ Semi-Conductors is believed to be both accurate and reliable at the time of going to press. However, NJ Semi-Conductors assumes no responsibility for any errors or omissions discovered in its use. NJ Semi-Conductors encourages customers to verify that datasheets are current before placing orders.



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Thermal Characteristics

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	2.0	$^{\circ}\text{C/W}$
Maximum Lead Temperature for Soldering Purposes 1/8" from Case for 10 Seconds	T_L	260	$^{\circ}\text{C}$

Electrical Characteristics ($T_J = 25^{\circ}\text{C}$ unless otherwise noted.)

Characteristic	Symbol	Min	Typ	Max	Unit
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OFF CHARACTERISTICS

Peak Repetitive Forward or Reverse Blocking Current ($V_{AK} = \text{Rated } V_{DRM} \text{ or } V_{RRM}$; Gate Open)	I_{DRM}, I_{RRM}	-	-	10	μA
$T_J = 125^{\circ}\text{C}$		-	-	2.0	mA

ON CHARACTERISTICS

Peak Forward On-State Voltage (Note 2) ($I_{TM} = 16 \text{ A Peak}$)	V_{TM}	-	1.5	1.8	V
Gate Trigger Current (Continuous dc) ($V_D = 12 \text{ V}, R_L = 100 \text{ Ohms}$)	I_{GT}	-	10	25	mA
Gate Trigger Voltage (Continuous dc) ($V_D = 12 \text{ V}, R_L = 100 \text{ Ohms}$)	V_{GT}	-	-	1.5	V
Gate Non-Trigger Voltage (Rated 12 V, $R_L = 100 \text{ Ohms}$, $T_J = 125^{\circ}\text{C}$)	V_{GD}	0.2	-	-	V
Holding Current ($V_D = 12 \text{ Vdc}$, Initiating Current = 200 mA, Gate Open)	I_H	-	16	30	mA

DYNAMIC CHARACTERISTICS

Critical Rate-of-Rise of Off-State Voltage ($V_D = \text{Rated } V_{DRM}$, Exponential Waveform, Gate Open, $T_J = 125^{\circ}\text{C}$)	dv/dt	-	100	-	$\text{V}/\mu\text{s}$
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2. Pulse Test: Pulse Width = 1.0 ms, Duty Cycle $\leq 2\%$.

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

