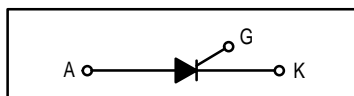


Silicon Controlled Rectifiers Reverse Blocking Thyristors

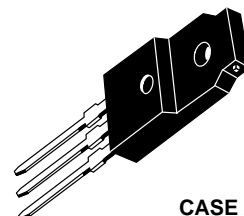
... designed primarily for half-wave ac control applications, such as motor controls, heating controls and power supply crowbar circuits.

- Glass Passivated Junctions with Center Gate Fire for Greater Parameter Uniformity and Stability
- Small, Rugged, Thermowatt Constructed for Low Thermal Resistance, High Heat Dissipation and Durability
- Blocking Voltage to 800 Volts
- 80 A Surge Current Capability
- Insulated Package Simplifies Mounting



MCR218FP Series

ISOLATED SCRs
8 AMPERES RMS
400 thru 800
VOLTS



**CASE 221C-02
STYLE 2**

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

Rating	Symbol	Value	Unit
Peak Repetitive Forward and Reverse Blocking Voltage ⁽¹⁾ ($T_J = -40$ to $+125^\circ\text{C}$, Gate Open)	V_{DRM} V_{RRM}	400 600 800	Volts
On-State RMS Current ($T_C = +70^\circ\text{C}$) Full Cycle Sine Wave 50 to 60 Hz ⁽²⁾	$I_T(\text{RMS})$	8	Amps
Peak Nonrepetitive Surge Current (One Full Cycle, 60 Hz, $T_C = +70^\circ\text{C}$) Preceded and followed by rated current	I_{TSM}	80	Amps
Circuit Fusing ($t = 8.3$ ms)	I^2t	26	A^2s
Peak Gate Power ($T_C = +70^\circ\text{C}$, Pulse Width = 10 μs)	P_{GM}	5	Watts
Average Gate Power ($T_C = +70^\circ\text{C}$, $t = 8.3$ ms)	$P_{G(AV)}$	0.5	Watt
Peak Gate Current ($T_C = +70^\circ\text{C}$, Pulse Width = 10 μs)	I_{GM}	2	Amps
RMS Isolation Voltage ($T_A = 25^\circ\text{C}$, Relative Humidity $\leq 20\%$)	$V_{(ISO)}$	1500	Volts
Operating Junction Temperature	T_J	-40 to $+125$	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-40 to $+125$	$^\circ\text{C}$

1. V_{DRM} and V_{RRM} for all types can be applied on a continuous basis. Ratings apply for zero or negative gate voltage; 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.
2. The case temperature reference point for all T_C measurements is a point on the center lead of the package as close as possible to the plastic body.

MCR218FP Series

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	2	$^{\circ}\text{C/W}$
Thermal Resistance, Case to Sink	$R_{\theta CS}$	2.2 (typ)	$^{\circ}\text{C/W}$
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	60	$^{\circ}\text{C/W}$

ELECTRICAL CHARACTERISTICS ($T_C = 25^{\circ}\text{C}$ unless otherwise noted.)

Characteristic	Symbol	Min	Typ	Max	Unit
Peak Forward Blocking Current ($V_D = \text{Rated } V_{DRM}$, Gate Open) $T_J = 25^{\circ}\text{C}$ $T_J = 125^{\circ}\text{C}$	I_{DRM}	— —	— —	10 2	μA mA
Peak Reverse Blocking Current ($V_R = \text{Rated } V_{RRM}$, $T_J = 125^{\circ}\text{C}$)	I_{RRM}	—	—	2	mA
Forward "On" Voltage ⁽¹⁾ ($I_{TM} = 16 \text{ A Peak}$)	V_{TM}	—	1	1.8	Volts
Gate Trigger Current (Continuous dc) (Anode Voltage = 12 Vdc, $R_L = 100 \text{ Ohms}$)	I_{GT}	—	10	25	mA
Gate Trigger Voltage (Continuous dc) (Anode Voltage = 12 Vdc, $R_L = 100 \text{ Ohms}$)	V_{GT}	—	—	1.5	Volts
Gate Non-Trigger Voltage (Anode Voltage = Rated V_{DRM} , $R_L = 100 \text{ Ohms}$, $T_J = 125^{\circ}\text{C}$)	V_{GD}	0.2	—	—	Volts
Holding Current (Anode Voltage = 12 Vdc)	I_H	—	16	30	mA
Turn-On Time ($I_{TM} = 8 \text{ A}$, $I_{GT} = 40 \text{ mAdc}$)	t_{gt}	—	1.5	—	μs
Turn-Off Time ($V_D = \text{Rated } V_{DRM}$, $I_{TM} = 8 \text{ A}$, $I_R = 8 \text{ A}$) $T_J = 25^{\circ}\text{C}$ $T_J = 125^{\circ}\text{C}$	t_q	— —	15 35	— —	μs
Critical Rate-of-Rise of Off-State Voltage (Gate Open, $V_D = \text{Rated } V_{DRM}$, Exponential Waveform)	dv/dt	—	100	—	$\text{V}/\mu\text{s}$

1. Pulse Test: Pulse Width = 1 ms, Duty Cycle $\leq 2\%$.

TYPICAL CHARACTERISTICS

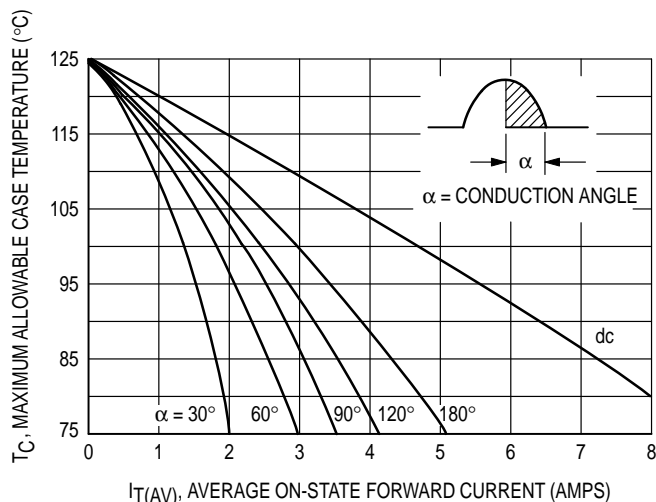


Figure 1. Current Derating

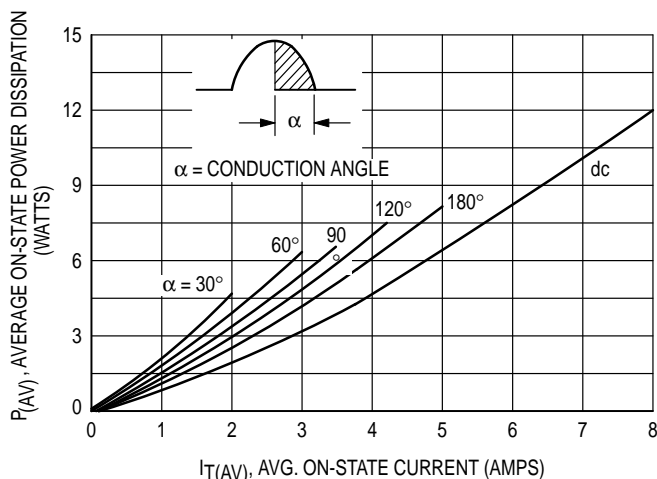


Figure 2. On-State Power Dissipation

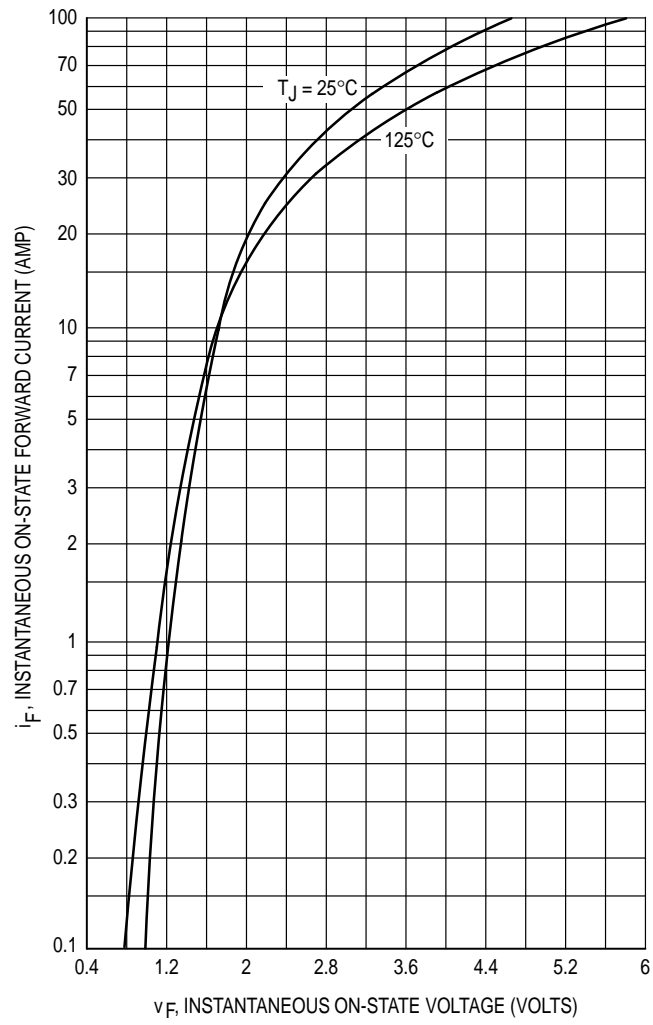


Figure 3. Maximum On-State Characteristics

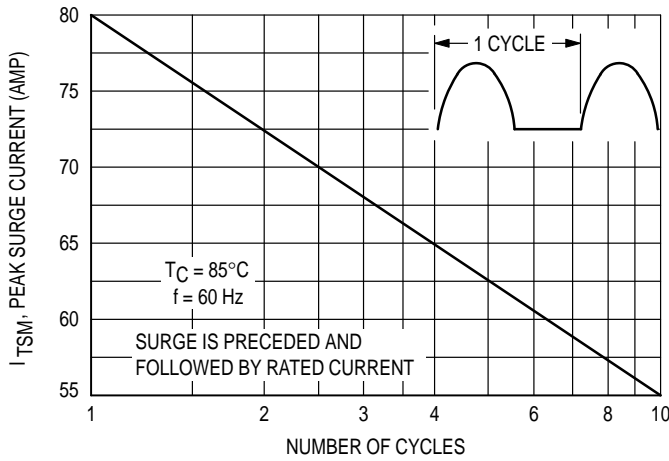


Figure 4. Maximum Non-Repetitive Surge Current

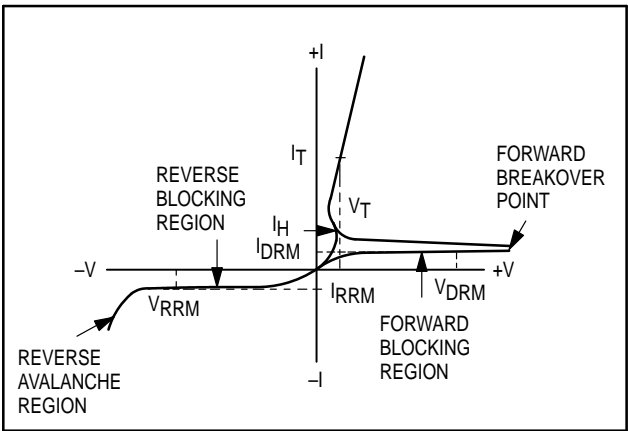


Figure 5. Characteristics and Symbols

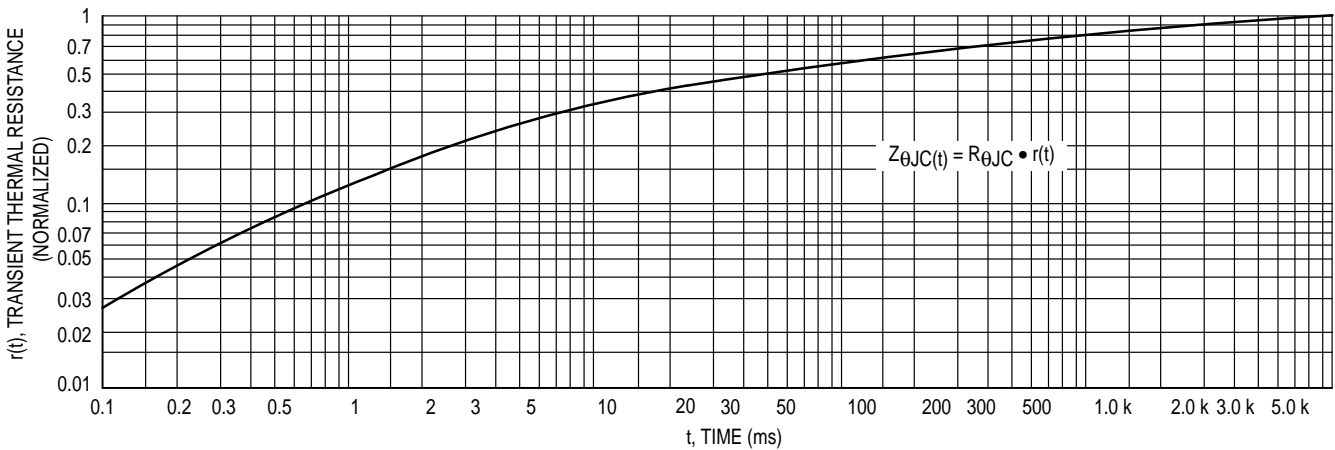


Figure 6. Thermal Response

MCR218FP Series

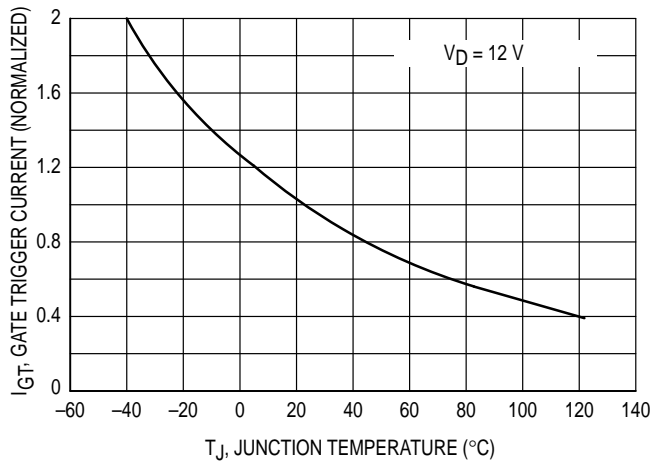


Figure 7. Gate Trigger Current versus Temperature

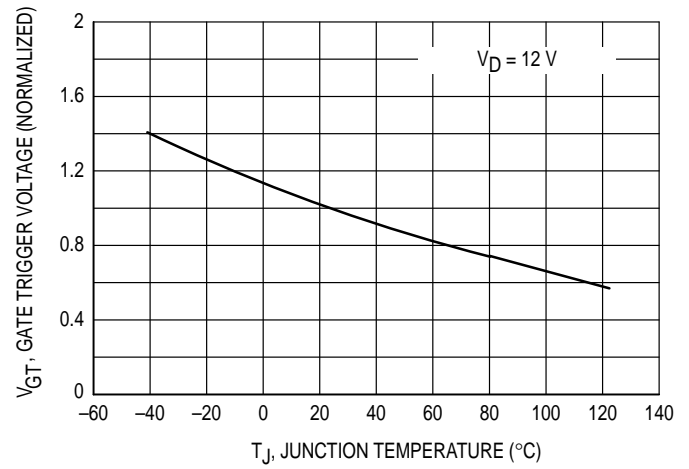


Figure 8. Gate Trigger Voltage versus Temperature

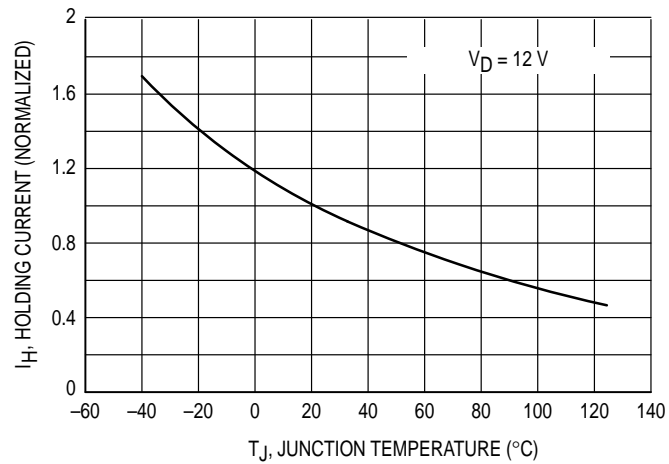
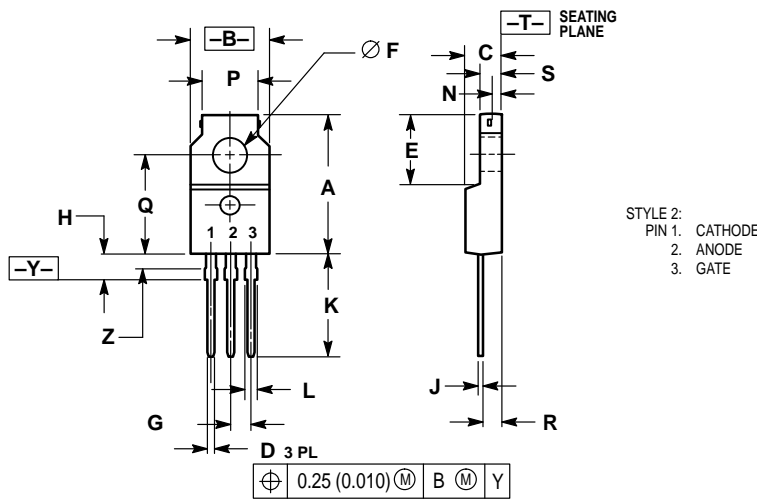


Figure 9. Holding Current versus Temperature


PACKAGE DIMENSIONS



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 2. CONTROLLING DIMENSION: INCH.
 3. LEAD DIMENSIONS UNCONTROLLED WITHIN DIMENSION Z.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.680	0.700	17.28	17.78
B	0.388	0.408	9.86	10.36
C	0.175	0.195	4.45	4.95
D	0.025	0.040	0.64	1.01
E	0.340	0.355	8.64	9.01
F	0.140	0.150	3.56	3.81
G	0.100 BSC		2.54 BSC	
H	0.110	0.155	2.80	3.93
J	0.018	0.028	0.46	0.71
K	0.500	0.550	12.70	13.97
L	0.045	0.070	1.15	1.77
N	0.049	—	1.25	—
P	0.270	0.290	6.86	7.36
Q	0.480	0.500	12.20	12.70
R	0.090	0.120	2.29	3.04
S	0.105	0.115	2.67	2.92
Z	0.070	0.090	1.78	2.28

CASE 221C-02
ISSUE B

Motorola reserves the right to make changes without further notice to any products herein. Motorola makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does Motorola assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation consequential or incidental damages. "Typical" parameters which may be provided in Motorola data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. Motorola does not convey any license under its patent rights nor the rights of others. Motorola products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the Motorola product could create a situation where personal injury or death may occur. Should Buyer purchase or use Motorola products for any such unintended or unauthorized application, Buyer shall indemnify and hold Motorola and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that Motorola was negligent regarding the design or manufacture of the part. Motorola and  are registered trademarks of Motorola, Inc. Motorola, Inc. is an Equal Opportunity/Affirmative Action Employer.

Mfax is a trademark of Motorola, Inc.

How to reach us:

USA/EUROPE/Locations Not Listed: Motorola Literature Distribution;
P.O. Box 5405, Denver, Colorado 80217. 1-303-675-2140 or 1-800-441-2447

JAPAN: Motorola Japan Ltd.; SPD, Strategic Planning Office, 141,
4-32-1 Nishi-Gotanda, Shinagawa-ku, Tokyo, Japan. 81-3-5487-8488

Customer Focus Center: 1-800-521-6274

Mfax™: RMFAX0@email.sps.mot.com – TOUCHTONE 1-602-244-6609
Motorola Fax Back System – US & Canada ONLY 1-800-774-1848
– <http://sps.motorola.com/mfax/>

ASIA/PACIFIC: Motorola Semiconductors H.K. Ltd.; Silicon Harbour Centre,
2, Dai King Street, Tai Po Industrial Estate, Tai Po, N.T., Hong Kong.
852-26629298

HOME PAGE: <http://motorola.com/sps/>



MOTOROLA

