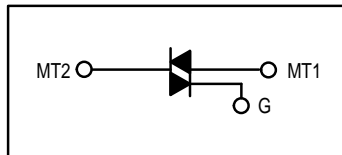


## Triacs

### Silicon Bidirectional Thyristors

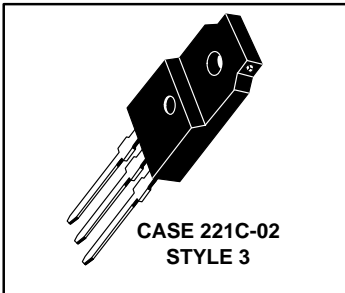
... designed primarily for full-wave ac control applications, such as light dimmers, motor controls, heating controls and power supplies.

- Blocking Voltage to 800 Volts
- Glass Passivated Junctions for Greater Parameter Uniformity and Stability
- Isolated TO-220 Type Package for Ease of Mounting
- Gate Triggering in Three Modes (MAC218FP Series) or Four Modes (MAC218AFP Series)



**MAC218FP**  
**Series**  
**MAC218AFP**  
**Series**

**ISOLATED TRIACs**  
**THYRISTORS**  
**8 AMPERES RMS**  
**200 thru 800 VOLTS**



#### MAXIMUM RATINGS (T<sub>J</sub> = 25°C unless otherwise noted.)

Rating	Symbol	Value	Unit
Peak Repetitive Off-State Voltage <sup>(1)</sup> (T <sub>J</sub> = -40 to +125°C) (1/2 Sine Wave 50 to 60 Hz, Gate Open)	V <sub>DRM</sub>	200 400 600 800	Volts
On-State RMS Current (T <sub>C</sub> = +80°C) Full Cycle Sine Wave 50 to 60 Hz <sup>(2)</sup>	I <sub>T(RMS)</sub>	8	Amps
Peak Non-repetitive Surge Current (One Full Cycle, 60 Hz, preceded and followed by rated current, T <sub>C</sub> = 80°C)	I <sub>TSM</sub>	100	Amps
Circuit Fusing (t = 8.3 ms)	I <sup>2</sup> t	40	A <sup>2</sup> s
Peak Gate Power (T <sub>C</sub> = +80°C, Pulse Width = 2 μs)	P <sub>GM</sub>	16	Watts
Average Gate Power (T <sub>C</sub> = +80°C, t = 8.3 ms)	P <sub>G(AV)</sub>	0.35	Watt
Peak Gate Current (Pulse Width = 1 μs)	I <sub>GM</sub>	4	Amps
RMS Isolation Voltage (T <sub>A</sub> = 25°C, Relative Humidity ≤ 20%)	V <sub>(ISO)</sub>	1500	Volts
Operating Junction Temperature	T <sub>J</sub>	-40 to +125	°C
Storage Temperature Range	T <sub>stg</sub>	-40 to +150	°C

#### THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	R <sub>θJC</sub>	2.2	°C/W
Thermal Resistance, Case to Sink	R <sub>θCS</sub>	2.2 (typ)	°C/W
Thermal Resistance, Junction to Ambient	R <sub>θJA</sub>	60	°C/W

1. V<sub>DRM</sub> for all types can be applied on a continuous basis. 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<sub>C</sub> measurements is a point on the center lead of the package as close as possible to the plastic body.

## MAC218FP Series MAC218AFP Series

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

Characteristic	Symbol	Min	Typ	Max	Unit
Peak Off-State Current (Either Direction) ( $V_D = \text{Rated } V_{DRM}$ @ $T_J = 125^\circ\text{C}$ , Gate Open)	$I_{DRM}$	—	—	2	mA
Peak On-State Voltage (Either Direction) ( $I_{TM} = 11.3 \text{ A Peak}$ ; Pulse Width = 1 to 2 ms, Duty Cycle < 2%)	$V_{TM}$	—	1.7	2	Volts
Gate Trigger Current (Continuous dc) ( $V_D = 12 \text{ Vdc}$ , $R_L = 12 \Omega$ ) Trigger Mode MT2(+), G(+); MT2(+), G(-); MT2(-), G(-); MT2(-), G(+) "A" SUFFIX ONLY	$I_{GT}$	— — — —	— — — —	50 50 50 75	mA
Gate Trigger Voltage (Continuous dc) (Main Terminal Voltage = 12 Vdc, $R_L = 100 \text{ Ohms}$ ) MT2(+), G(+) MT2(+), G(-) MT2(-), G(-) MT2(-), G(+) "A" SUFFIX ONLY (Main Terminal Voltage = Rated $V_{DRM}$ , $R_L = 10 \text{ k}\Omega$ , $T_J = +125^\circ\text{C}$ ) MT2(+), G(+); MT2(-), G(-); MT2(+), G(-) MT2(-), G(+) "A" SUFFIX ONLY	$V_{GT}$	— — — — 0.2 0.2	0.9 0.9 1.1 1.4 — —	2 2 2 2.5 — —	Volts
Holding Current (Either Direction) ( $V_D = 24 \text{ Vdc}$ , Gate Open, Initiating Current = 200 mA)	$I_H$	—	—	50	mA
Critical Rate of Rise of Commutating Off-State Voltage ( $V_D = \text{Rated } V_{DRM}$ , $I_{TM} = 11.3 \text{ A}$ , Commutating $di/dt = 4.1 \text{ A/ms}$ , Gate Unenergized, $T_C = 80^\circ\text{C}$ )	$dv/dt(c)$	—	5	—	$\text{V}/\mu\text{s}$
Critical Rate of Rise of Off-State Voltage ( $V_D = \text{Rated } V_{DRM}$ , Exponential Voltage Rise, Gate Open, $T_J = 125^\circ\text{C}$ )	$dv/dt$	—	100	—	$\text{V}/\mu\text{s}$

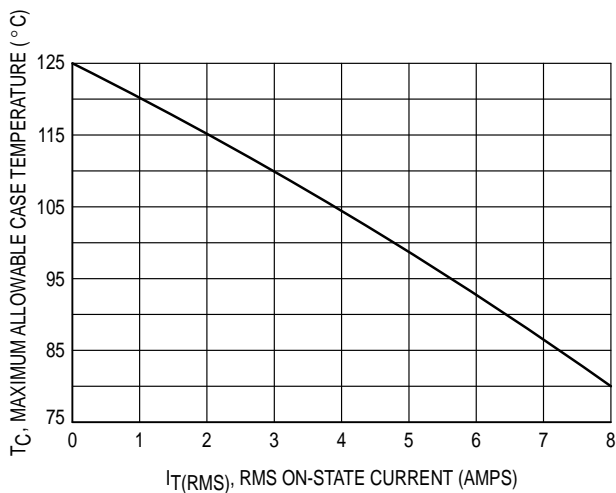


Figure 1. Current Derating

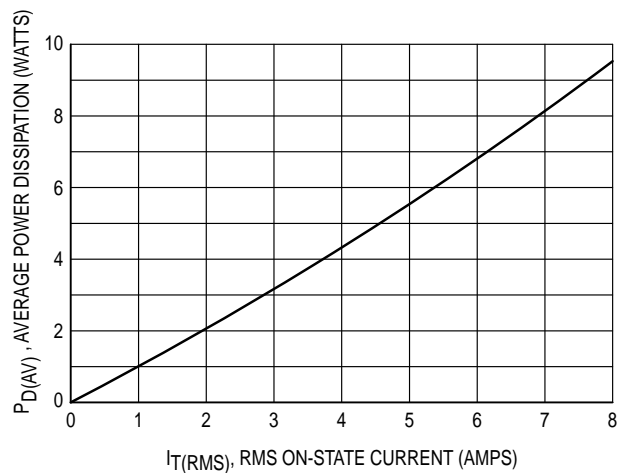


Figure 2. Power Dissipation

TYPICAL CHARACTERISTICS

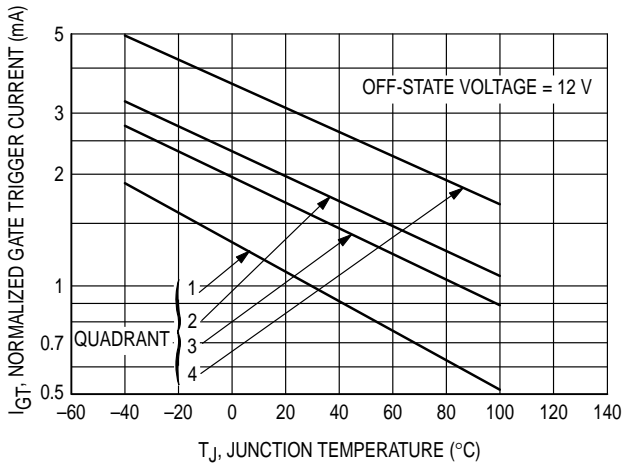


Figure 3. Normalized Gate Trigger Current

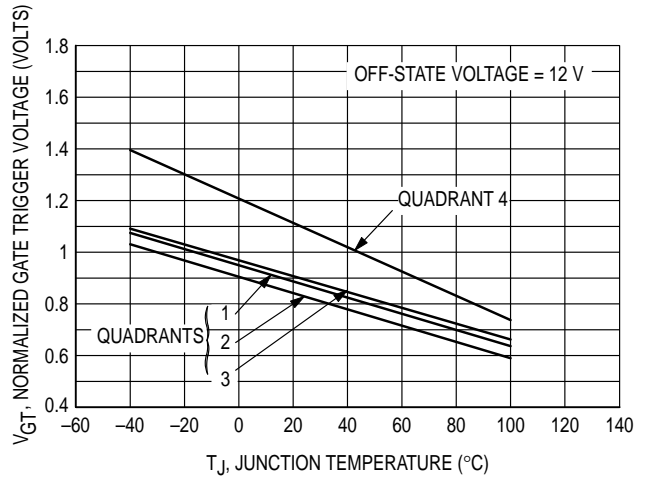


Figure 4. Normalized Gate Trigger Voltage

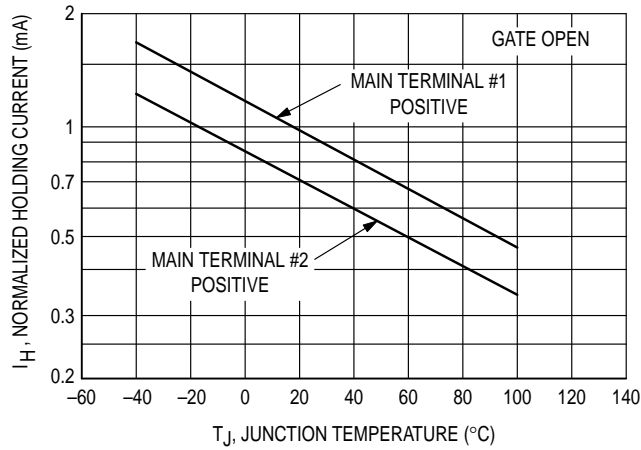
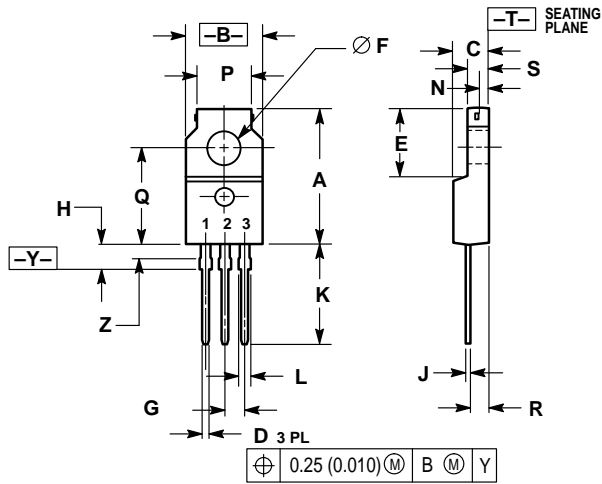


Figure 5. Normalized Holding Current

**MAC218FP Series MAC218AFP Series**

**PACKAGE DIMENSIONS**



STYLE 3:  
PIN 1. MT 1  
2. MT 2  
3. GATE

- 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**

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MAC218FP/D

