

### FEATURES

- Available as "HR" (high reliability) screened per MIL-PRF-19500, JANTX level. Add "HR" suffix to base part number.
- Available as non-RoHS (Sn/Pb plating), standard, and as RoHS by adding "-PBF" suffix.

### MAXIMUM RATINGS

Rating	Symbol	Value	Unit
<b>Peak repetitive off-state voltage<sup>(1)</sup></b> (T <sub>J</sub> = -40 to +125°C, ½ sine wave 50 to 60 Hz, gate open) MAC212-4, MAC212A-4 MAC212-6, MAC212A-6 MAC212-8, MAC212A-8 MAC212-10, MAC212A-10	V <sub>DRM</sub>	200 400 600 800	Volts
<b>RMS on-state current</b> (full sine wave, 50 to 60Hz, T <sub>C</sub> = 85°C)	I <sub>T(RMS)</sub>	12	Amps
<b>Peak non-repetitive surge current</b> (1 cycle, 60 Hz, T <sub>C</sub> = 85°C, preceded and followed by rated current)	I <sub>TSM</sub>	100	Amps
<b>Circuit fusing considerations</b> (t = 8.3ms)	I <sup>2</sup> t	40	A <sup>2</sup> s
<b>Peak gate power</b> (T <sub>C</sub> = 85°C, pulse width = 10µs)	P <sub>GM</sub>	20	Watts
<b>Average gate power</b> (T <sub>C</sub> = 85°C, t = 8.3ms)	P <sub>G(AV)</sub>	0.35	Watts
<b>Peak gate current</b> (T <sub>C</sub> = 85°C, pulse width = 10µs)	I <sub>GM</sub>	2.0	Amps
<b>Operating junction temperature range</b>	T <sub>J</sub>	-40 to +125	°C
<b>Storage temperature range</b>	T <sub>stg</sub>	-40 to +150	°C

Note 1: V<sub>DRM</sub> for all types can be applied on a continuous basis. Blocking voltage shall not be tested with a constant current source such that the voltage ratings of the devices are exceeded.

### THERMAL CHARACTERISTICS

Characteristic	Symbol	Maximum	Unit
Thermal resistance, junction to case	R <sub>θJC</sub>	2.1	°C/W

### ELECTRICAL CHARACTERISTICS (T<sub>C</sub> = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Typ.	Max	Unit
<b>Peak blocking current</b> (either direction) (V <sub>D</sub> = Rated V <sub>DRM</sub> @ T <sub>J</sub> = 25°C) (V <sub>D</sub> = Rated V <sub>DRM</sub> @ T <sub>J</sub> = 125°C)	I <sub>DRM</sub>	-	-	10 2	µA mA
<b>Peak on-state voltage</b> (either direction) (I <sub>TM</sub> = 17A peak, pulse width = 1 to 2 ms, duty cycle ≤ 2%)	V <sub>TM</sub>	-	1.3	1.75	Volts
<b>Gate trigger current</b> (continuous dc) (main terminal voltage = 12V, R <sub>L</sub> = 100Ω) MT2(+),G(+) MT2(+),G(-) MT2(-),G(-) MT2(-),G(+) "A" suffix only	I <sub>GT</sub>	-	12 12 20 35	50 50 50 75	mA

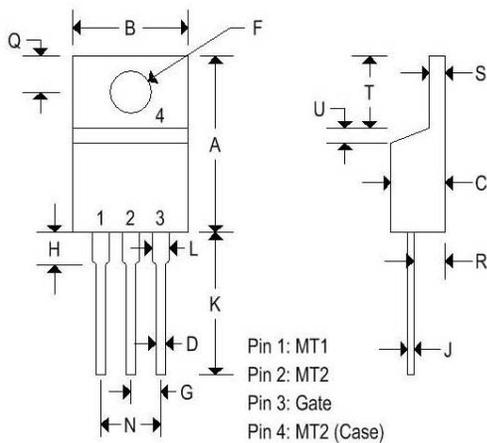
# MAC212(A) SERIES

## SILICON BIDIRECTIONAL THYRISTORS

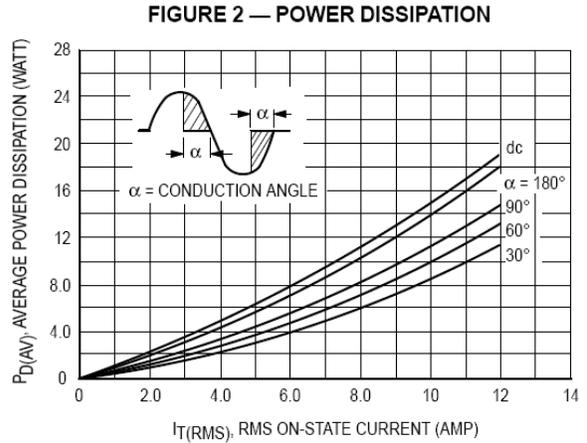
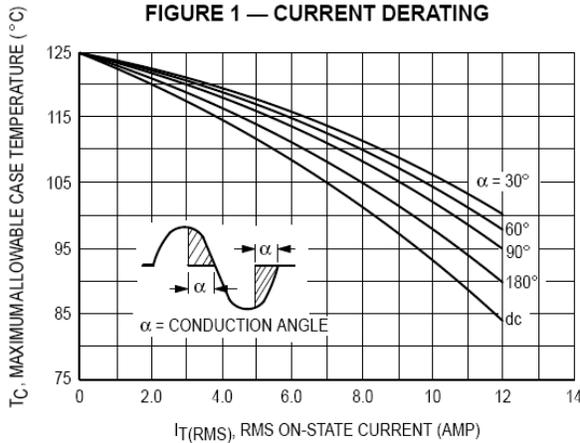
<b>Gate trigger voltage</b> (continuous dc) (main terminal voltage = 12V, $R_L = 100\Omega$ ) MT2(+),G(+) MT2(+),G(-) MT2(-),G(-) MT2(-),G(+) "A" suffix only (main terminal voltage= Rated $V_{DRM}$ , $R_L = 10k\Omega$ , $T_J = 125^\circ\text{C}$ ) MT2(+), G(+); MT2(-), G(-); MT2(+), G(-) MT2(-), G(+) "A" suffix only	$V_{GT}$	- - - -	0.9 0.9 1.1 1.4	2 2 2 2.5	Volts
<b>Holding current</b> (either direction) (main terminal voltage= 12V, gate open, initiating current = 500mA)	$I_H$	-	6	50	mA
<b>Turn on time</b> ( $V_D = \text{Rated } V_{DRM}$ , $I_{TM} = 17A$ , $I_{GT} = 120\text{mA}$ , rise time = $0.1\mu\text{s}$ , pulse width = $2\mu\text{s}$ )	$t_{gt}$	-	1.5	-	$\mu\text{s}$
<b>Critical rate of rise of commutation voltage</b> ( $V_D = \text{Rated } V_{DRM}$ , $I_{TM} = 17A$ , commutating $di/dt = 6.1A/\text{ms}$ , gate unenergized, $T_C = 85^\circ\text{C}$ )	$dv/dt(c)$	-	5	-	$V/\mu\text{s}$
<b>Critical rate of rise of off-state voltage</b> ( $V_D = \text{Rated } V_{DRM}$ , exponential voltage rise, gate open, $T_C = 85^\circ\text{C}$ )	$dv/dt$	-	100	-	$V/\mu\text{s}$

### MECHANICAL CHARACTERISTICS

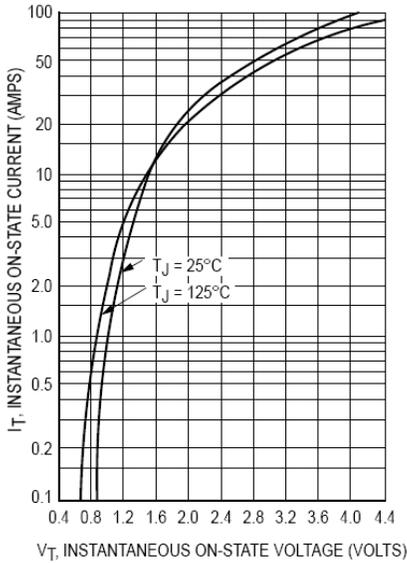
Case	TO-220AB
Marking	Alpha-numeric
Pin out	See below



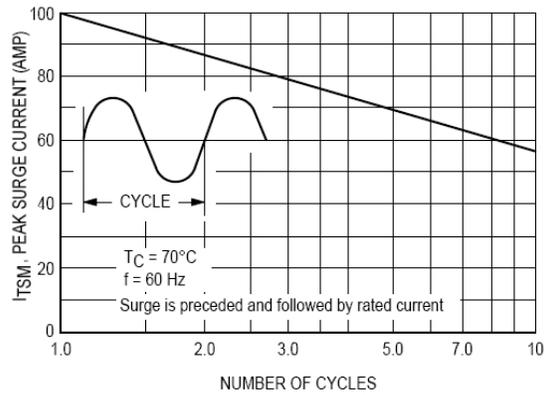
	TO-220AB			
	Inches		Millimeters	
	Min	Max	Min	Max
A	0.575	0.620	14.600	15.750
B	0.380	0.405	9.650	10.290
C	0.160	0.190	4.060	4.820
D	0.025	0.035	0.640	0.890
F	0.142	0.147	3.610	3.730
G	0.095	0.105	2.410	2.670
H	0.110	0.155	2.790	3.930
J	0.014	0.022	0.360	0.560
K	0.500	0.562	12.700	14.270
L	0.045	0.055	1.140	1.390
N	0.190	0.210	4.830	5.330
Q	0.100	0.120	2.540	3.040
R	0.080	0.110	2.040	2.790
S	0.045	0.055	1.140	1.390
T	0.235	0.255	5.970	6.480
U	-	0.050	-	1.270
V	0.045	-	1.140	-
Z	-	0.080	-	2.030



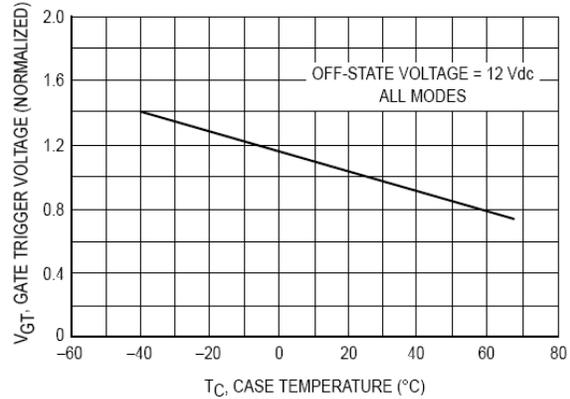
**FIGURE 3 — MAXIMUM ON-STATE CHARACTERISTICS**



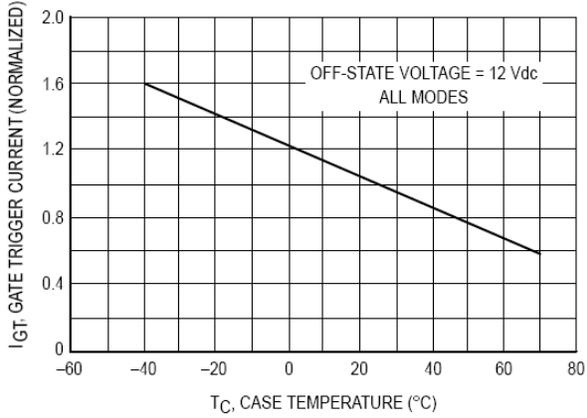
**FIGURE 4 — MAXIMUM NON-REPETITIVE SURGE CURRENT**



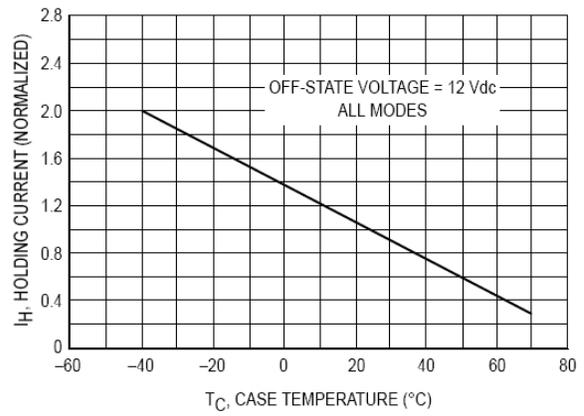
**FIGURE 5 — TYPICAL GATE TRIGGER VOLTAGE**



**FIGURE 6 — TYPICAL GATE TRIGGER CURRENT**



**FIGURE 7 — TYPICAL HOLDING CURRENT**



**FIGURE 8 — THERMAL RESPONSE**

