

Triacs

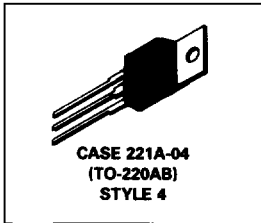
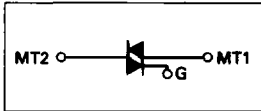
Silicon Bidirectional Thyristors

... 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
- TO-220 Construction Low Thermal Resistance, High Heat Dissipation and Durability
- Gate Triggering Guaranteed in Three Modes (MAC218 Series) or Four Modes (MAC218A Series)

**MAC218
Series
MAC218A
Series**

**TRIACS
8 AMPERES RMS
200 thru 800 VOLTS**



MAXIMUM RATINGS (T_J = 25°C unless otherwise noted.)

Rating	Symbol	Value	Unit
Peak Repetitive Off-State Voltage, Note 1 (Gate Open, T _J = 25 to 125°C) <i>MAC218-4, MAC218A4</i> <i>MAC218-6, MAC218A6</i> <i>MAC218-8, MAC218A8</i> <i>MAC218-10, MAC218A10</i>	V _{DRM}	200 400 600 800	Volts
On-State Current RMS (Conduction Angle = 360°, T _C = +80°C)	I _{T(RMS)}	8	Amps
Peak Non-Repetitive Surge Current (One Full Cycle, 60 Hz, T _C = 80°C, preceded and followed by rated current)	I _{TSM}	100	Amps
Fusing Current (t = 8.3 ms)	i ² t	40	A ² s
Peak Gate Power (T _C = +80°C, Pulse Width = 2 μs)	P _{GM}	16	Watts
Average Gate Power (T _C = +80°C, t = 8.3 ms)	P _{G(AV)}	0.35	Watt
Peak Gate Trigger Current (Pulse Width = 1 μs)	I _{GTM}	4	Amps
Operating Junction Temperature Range	T _J	-40 to +125	°C
Storage Temperature Range	T _{stg}	-40 to +150	°C

Note 1. V_{DRM} 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.

Devices listed in bold, italic are Motorola preferred devices.

MAC218 Series • MAC218A Series

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	2.2	$^{\circ}C/W$

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

Characteristic	Symbol	Min	Typ	Max	Unit
Peak Blocking Current ($V_D = \text{Rated } V_{DRM}$, gate open) $T_J = 25^{\circ}C$ $T_J = 125^{\circ}C$	I_{DRM}	— —	— —	10 2	μA mA
Peak On-State Voltage (Either Direction) ($I_{TM} = 11.3$ A Peak; Pulse Width = 1 to 2 ms, Duty Cycle < 2%)	V_{TM}	—	1.7	2	Volts
Gate Trigger Current (Continuous dc) ($V_D = 12$ Vdc, $R_L = 12\Omega$) Trigger Mode MT2(+), Gate(+); MT2(+), Gate(-); MT2(-), Gate(-) MT2(-), Gate(+) "A" SUFFIX ONLY	I_{GT}	— —	— —	50 75	mA
Gate Trigger Voltage (Continuous dc) (Main Terminal Voltage = 12 Vdc, $R_L = 100$ Ohms) MT2(+), G(+) MT2(+), G(-) MT2(-), G(-) MT2(-), G(+) "A" SUFFIX ONLY (Main Terminal Voltage = Rated V_{DRM} , $R_L = 10$ k Ω , $T_J = +125^{\circ}C$) 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) ($V_D = 24$ Vdc, Gate Open, Initiating Current = 200 mA)	I_H	—	—	50	mA
Critical Rate of Rise of Commutating Off-State Voltage ($V_D = \text{Rated } V_{DRM}$, $I_{TM} = 11.3$ A, Commutating di/dt = 4.1 A/ms, Gate Unenergized, $T_C = 80^{\circ}C$)	dv/dt(c)	—	5	—	V/ μs
Critical Rate of Rise of Off-State Voltage ($V_D = \text{Rated } V_{DRM}$, Exponential Voltage Rise, Gate Open, $T_J = 125^{\circ}C$)	dv/dt	—	100	—	V/ μs

3

FIGURE 1 — CURRENT DERATING

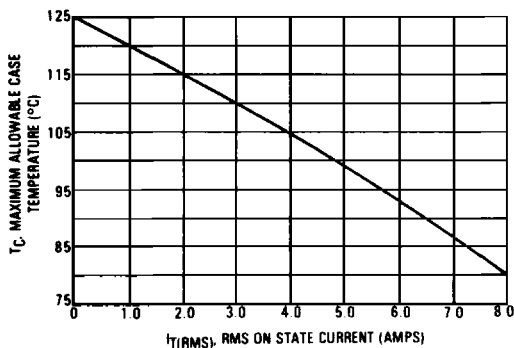
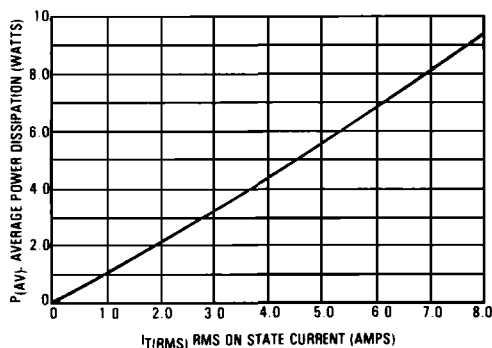


FIGURE 2 — POWER DISSIPATION



MAC218 Series • MAC218A Series

FIGURE 3 — NORMALIZED GATE TRIGGER CURRENT

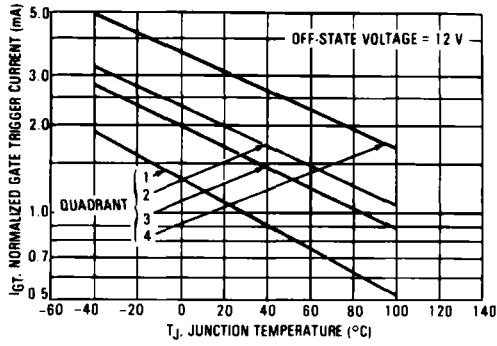


FIGURE 4 — NORMALIZED GATE TRIGGER VOLTAGE

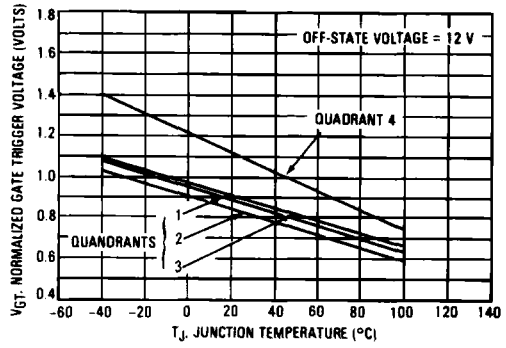
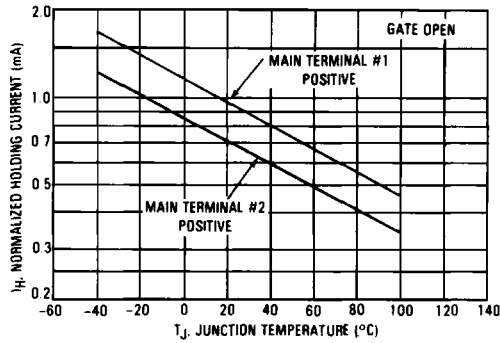


FIGURE 5 — NORMALIZED HOLDING CURRENT



3