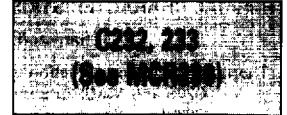
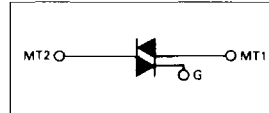


Triacs

Silicon Bidirectional Triode Thyristors

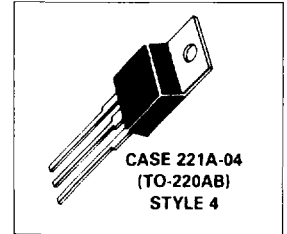
... designed primarily for full-wave ac control applications, such as solid-state relays, motor controls, heating controls and power supplies; or wherever full-wave silicon gate controlled solid-state devices are needed. Triac type thyristors switch from a blocking to a conducting state for either polarity of applied anode voltage with positive or negative gate triggering.

- Blocking Voltage to 800 Volts
- All Diffused and Glass Passivated Junctions for Greater Parameter Uniformity and Stability
- Small, Rugged, Thermowatt Construction for Low Thermal Resistance, High Heat Dissipation and Durability
- Gate Triggering Guaranteed in Three Modes (MAC15 Series) or Four Modes (MAC15A Series)



MAC15 Series MAC15A Series

TRIACs
15 AMPERES RMS
200 thru 800 VOLTS



3

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Peak Repetitive Off-State Voltage ($T_J = -40$ to 125°C)	V_{DRM}	200 400 600 800	Volts
Peak Gate Voltage	V_{GM}	10	Volts
On-State Current RMS Full Cycle Sine Wave 50 to 60 Hz ($T_C = +90^\circ\text{C}$)	$I_T(\text{RMS})$	15	Amps
Circuit Fusing ($t = 8.3$ ms)	I^2t	93	A^2s
Peak Surge Current (One Full Cycle, 60 Hz, $T_C = +80^\circ\text{C}$) Preceded and followed by rated current)	I_{TSM}	150	Amps
Peak Gate Power ($T_C = +80^\circ\text{C}$, Pulse Width = $2 \mu\text{s}$)	P_{GM}	20	Watts
Average Gate Power ($T_C = +80^\circ\text{C}$, $t = 8.3$ ms)	$P_{G(AV)}$	0.5	Watt
Peak Gate Current	I_{GM}	2	Amps
Operating Junction Temperature Range	T_J	-40 to +125	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	40 to +150	$^\circ\text{C}$

THERMAL CHARACTERISTICS

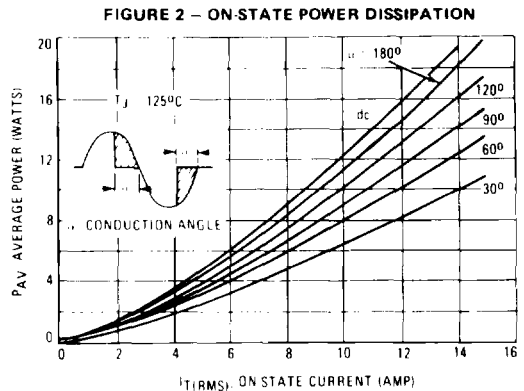
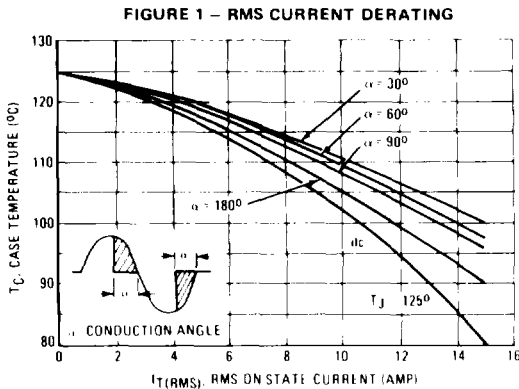
Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	2	$^\circ\text{C/W}$

MAC15 Series • MAC15A Series

ELECTRICAL CHARACTERISTICS ($T_C = 25^\circ\text{C}$, and either polarity of MT2 to MT1 Voltage, unless otherwise noted.)

Characteristic	Symbol	Min	Typ	Max	Unit
Peak Forward or Reverse Blocking Current (Rated V_{DRM} or V_{RRM} , gate open) $T_J = 25^\circ\text{C}$ $T_J = 125^\circ\text{C}$	I_{DRM} , I_{RRM}	—	—	10 2	μA mA
Peak On-State Voltage ($I_{TM} = 21\text{ A Peak}$; Pulse Width = 1 to 2 ms, Duty Cycle = 2%)	V_{TM}	—	1.3	1.6	Volts
Gate Trigger Current (Continuous dc) ($V_D = 12\text{ Vdc}$, $R_L = 100\text{ Ohms}$) MT2(+), G(-) MT2(+), G(+) MT2(-), G(-) MT2(-), G(+) "A" SUFFIX ONLY	I_{GT}	—	—	50 50 50 75	mA
Gate Trigger Voltage (Continuous dc) ($V_D = 12\text{ Vdc}$, $R_L = 100\text{ Ohms}$) MT2(+), G(+) MT2(+), G(-) MT2(-), G(-) MT2(-), G(+) "A" SUFFIX ONLY ($V_D = \text{Rated } V_{DRM}$, $R_L = 10\text{ k Ohms}$, $T_J = 110^\circ\text{C}$) 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
Holding Current (Either Direction) ($V_D = 12\text{ Vdc}$, Gate Open) ($I_T = 200\text{ mA}$)	I_H	—	6	40	mA
Turn-On Time ($V_D = \text{Rated } V_{DRM}$, $I_{TM} = 17\text{ A}$) ($I_{GT} = 120\text{ mA}$, Rise Time = $0.1\ \mu\text{s}$, Pulse Width = $2\ \mu\text{s}$)	t_{gt}	—	1.5	—	μs
Critical Rate of Rise of Commutation Voltage ($V_D = \text{Rated } V_{DRM}$, $I_{TM} = 21\text{ A}$, Commutating di/dt = 8 A/ms , Gate Unenergized, $T_C = 80^\circ\text{C}$)	$dv/dt(c)$	—	5	—	$\text{V}/\mu\text{s}$

3



MAC15 Series • MAC15A Series

FIGURE 3 - TYPICAL GATE TRIGGER VOLTAGE

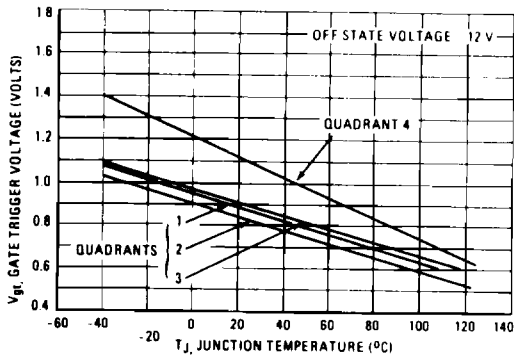


FIGURE 4 - TYPICAL GATE TRIGGER CURRENT

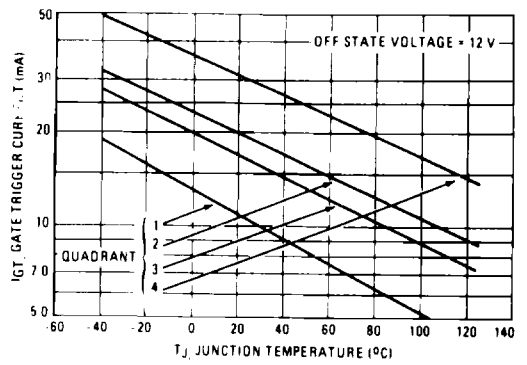


FIGURE 5 - ON-STATE CHARACTERISTICS

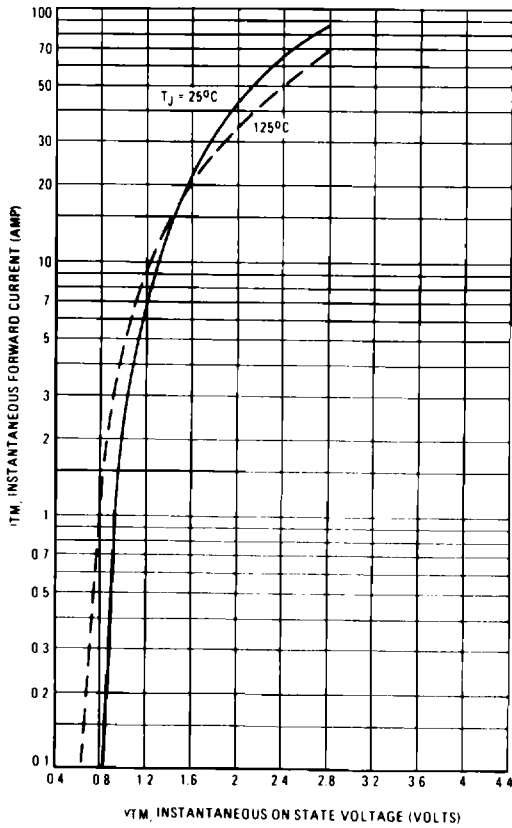


FIGURE 6 - TYPICAL HOLDING CURRENT

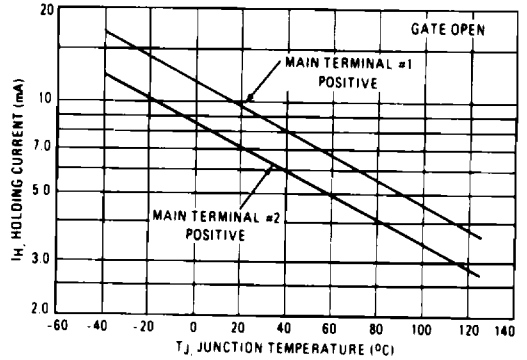
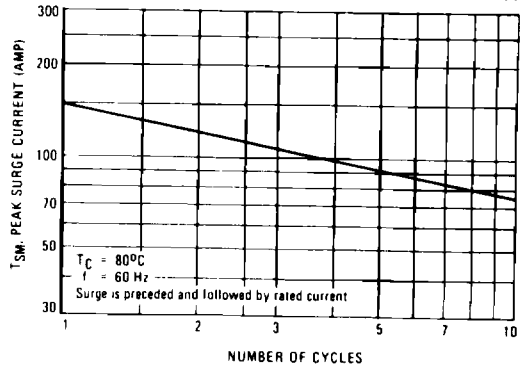


FIGURE 7 - MAXIMUM NON-REPETITIVE SURGE CURRENT



3

MAC15 Series • MAC15A Series

FIGURE 8 - THERMAL RESPONSE

