

Triacs

Silicon Bidirectional Thyristors

... designed for full-wave ac control applications primarily in industrial environments needing noise immunity.

- Guaranteed High Noise Immunity
 $dv/dt(s) \sim 500 \text{ V } \mu\text{s Min. at } T_C = 25 \text{ C}$
- High Blocking Voltage — V_{DRM} to 800 V
- Photo Glass Passivated Junction for Improved Power Cycling Capability and Reliability

MAC16 Series

TRIACS
15 AMPERES RMS
200 thru 800 VOLTS



MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Peak Repetitive Off-State Voltage, Note 1 ($T_J = 40 \text{ to } 125 \text{ C}$)	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 ($T_C = 90 \text{ C}$)	$I_{T(RMS)}$	15	Amps
Circuit Fusing ($t = 8.3 \text{ ms}$)	I^2t	93	A^2s
Peak Surge Current (One Full Cycle, 60 Hz, $T_C = 80 \text{ C}$) Preceded and followed by rated current	I_{TSM}	150	Amps
Peak Gate Power ($T_C = 80 \text{ C}$, Pulse Width = $2.0 \mu\text{s}$)	P_{GM}	20	Watts
Average Gate Power ($T_C = 80 \text{ C}$, $t = 8.3 \text{ ms}$)	$P_{G(AV)}$	0.5	Watt
Peak Gate Current	I_{GM}	2.0	Amps
Operating Junction Temperature Range	T_J	40 to 125	C
Storage Temperature Range	T_{stg}	40 to 150	C

THERMAL CHARACTERISTICS

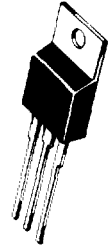
Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	2.0	C/W

ELECTRICAL CHARACTERISTICS ($T_C = 25 \text{ C}$, 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)	I_{DRM}, I_{RRM}	—	—	10	μA
		—	—	2.0	mA
Peak On-State Voltage ($I_{TM} = 21 \text{ A Peak}$, Pulse Width = 2.0 ms , Duty Cycle = 2%)	V_{TM}	—	1.3	1.6	Volts
Gate Trigger Current (Continuous dc) ($V_D = 12 \text{ Vdc}$, $R_L = 100 \text{ Ohms}$)	I_{GT}	—	—	—	mA
MT2(+), Gate(-)		—	—	100	
MT2(+), Gate(+)		—	—	100	
MT2(-), Gate(-)		—	—	100	

Note 1: Ratings apply for open gate conditions. Thyristor devices shall not be tested with a constant current source for blocking capability such that the voltage applied exceeds the rated blocking voltage.

(continued)



CASE 221A-04
(TO-220AB)
STYLE 4

MAC16 Series

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

Characteristic	Symbol	Min	Typ	Max	Unit
Gate Trigger Voltage (Continuous dc) ($V_D = 12\text{ Vdc}$, $R_L = 100\text{ Ohms}$) MT2(+), G(-) MT2(+), G(+) MT2(-), G(-) ($V_D = \text{Rated } V_{DRM}$, $R_L = 10\text{ k Ohms}$, $T_J = 110\text{ C}$) MT2(-), G(+); MT2(+), G(-); MT2(-), G(+)	V _{GT}	—	0.9	2.0	Volts
Holding Current (Either Direction) ($V_D = 12\text{ Vdc}$, Gate Open) ($I_T = 200\text{ mA}$)	I _H	—	—	100	mA
Critical Rate of Rise of Off-State Voltage ($V_D = \text{Rated } V_{DRM}$, Exponential Voltage Rise, Gate Open) $T_J = 25\text{ C}$ $T_J = 125\text{ C}$	dv/dt(s)	500 200	— —	— —	V/μs

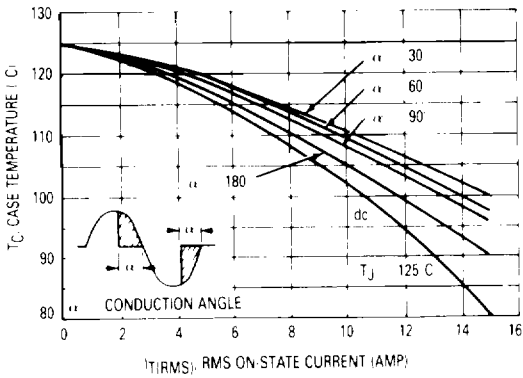


Figure 1. RMS Current Derating

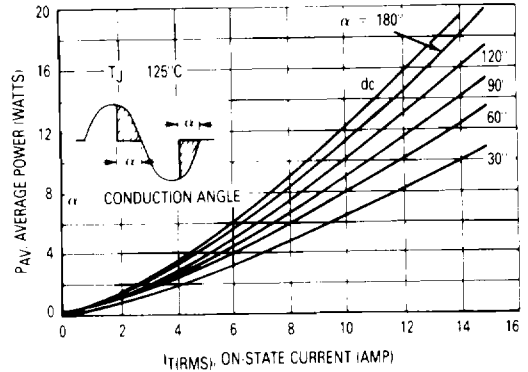


Figure 2. On-State Power Dissipation

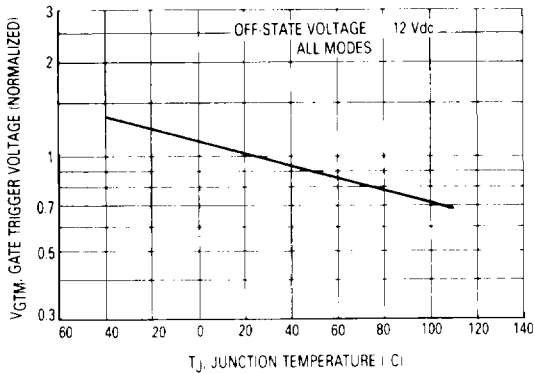


Figure 3. Typical Gate Trigger Voltage

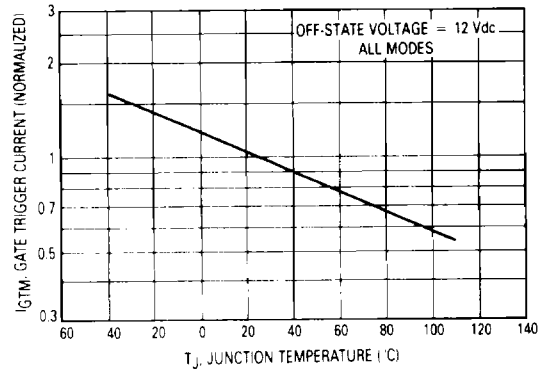


Figure 4. Typical Gate Trigger Current

MAC16 Series

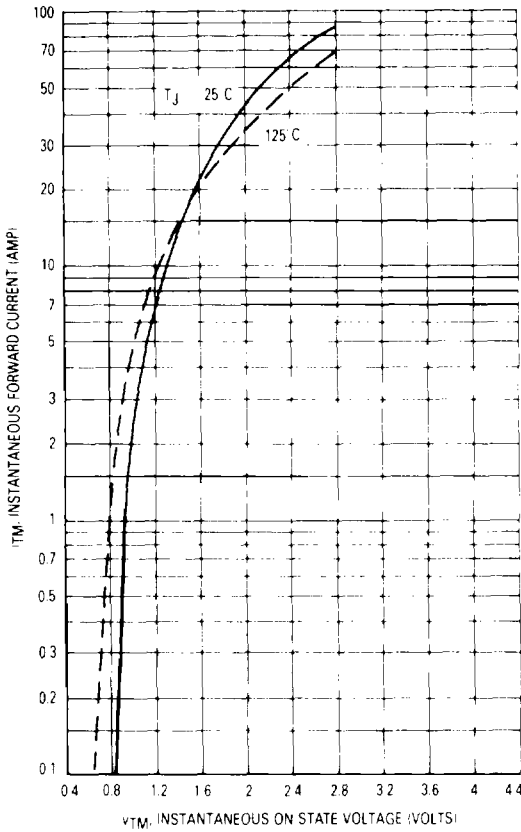


Figure 5. On-State Characteristics

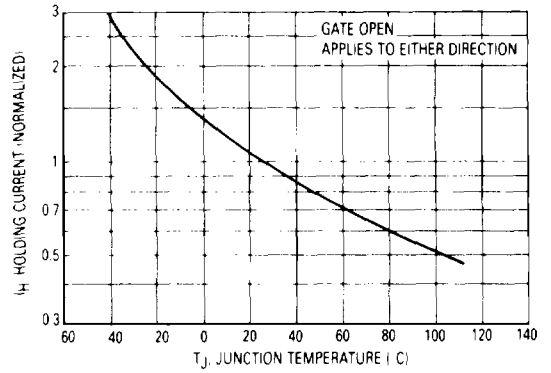


Figure 6. Typical Holding Current

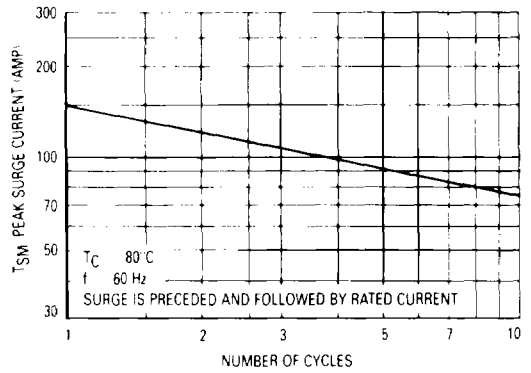


Figure 7. Maximum Non-Repetitive Surge Current

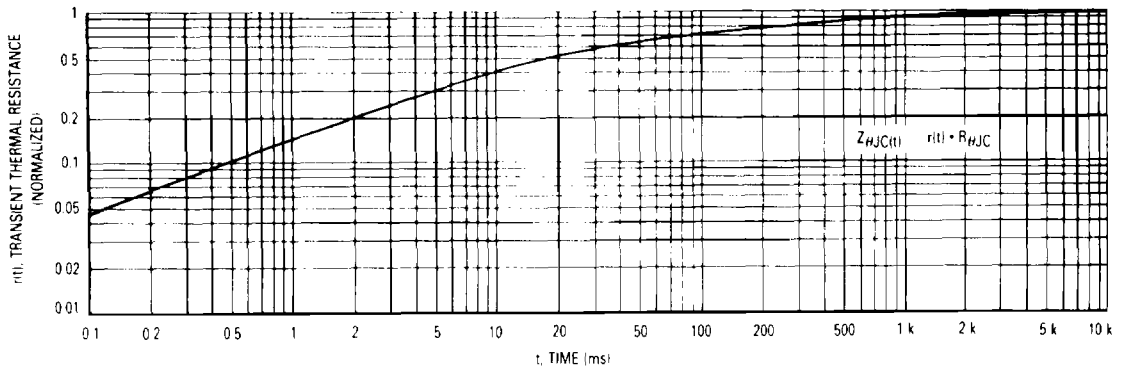


Figure 8. Thermal Response

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