

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) — 500 V/μs Min @ T_C = 25°C
- High Blocking Voltage — V_{DRM} to 800 V
- Photo Glass Passivated Junction for Improved Power Cycling Capability and Reliability

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

Rating	Symbol	Value	Unit	
Peak Repetitive Off-State Voltage, Note 1 (T _J = -40 to 125°C, Gate Open)	MAC16-4 MAC16-6 MAC16-8 MAC16-10	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°C)	I _{T(RMS)}	15	Amps	
Circuit Fusing (t = 8.3 ms)	I ² t	93	A ² s	
Peak Surge Current (One Full Cycle, 60 Hz, T _C = +80°C) Preceded and followed by rated current	I _{TSM}	150	Amps	
Peak Gate Power (T _C = +80°C, Pulse Width = 2.0 μs)	P _{GM}	20	Watts	
Average Gate Power (T _C = +80°C, t = 8.3 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 _{θJC}	2.0	°C/W

ELECTRICAL CHARACTERISTICS (T_C = 25°C, and either polarity of MT2 to MT1 Voltage, unless otherwise noted.)

Characteristic	Symbol	Min	Typ	Max	Unit
Peak Blocking Current (V _D = Rated V _{DRM} , Gate Open) T _J = 25°C T _J = 125°C	I _{DRM}	—	—	10 2.0	μA mA
Peak On-State Voltage (I _{TM} = 21 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 Vdc, R _L = 100 Ohms) MT2(+), Gate(+) MT2(+), Gate(-) MT2(-), Gate(-)	I _{GT}	—	—	100 100 100	mA

(continued)

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.

MAC16 Series

TRIACs
15 AMPERES RMS
200 thru 800 VOLTS



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

MAC16 Series

ELECTRICAL CHARACTERISTICS — continued ($T_C = 25^\circ\text{C}$, 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(-) ($V_D = \text{Rated } V_{DRM}$, $R_L = 10\text{ k Ohms}$, $T_J = +110^\circ\text{C}$) MT2(+), G(+); MT2(-), G(-); MT2(+), G(-)	VGT	—	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) $T_J = 25^\circ\text{C}$ $T_J = 125^\circ\text{C}$	dv/dt(s)	500 200	— —	— —	$V/\mu\text{s}$

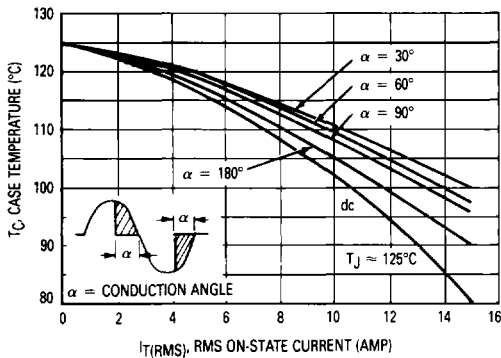


Figure 1. RMS Current Derating

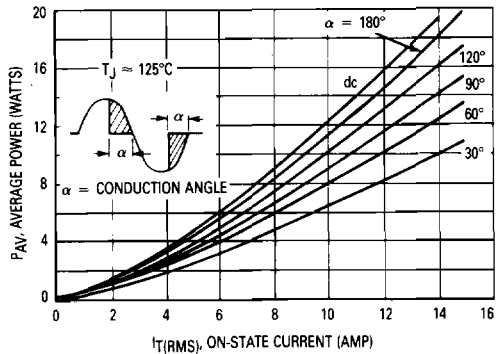


Figure 2. On-State Power Dissipation

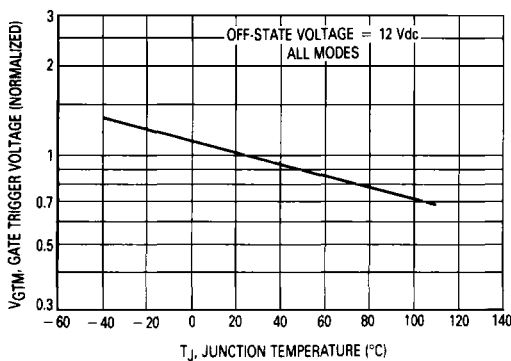


Figure 3. Typical Gate Trigger Voltage

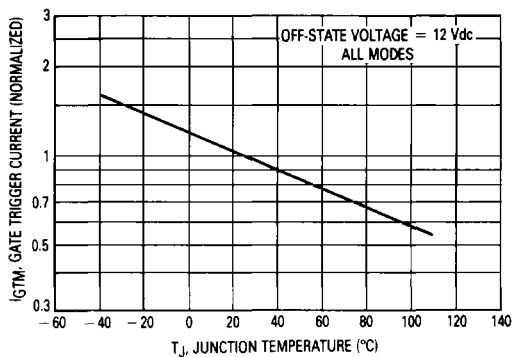


Figure 4. Typical Gate Trigger Current

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MAC16 Series

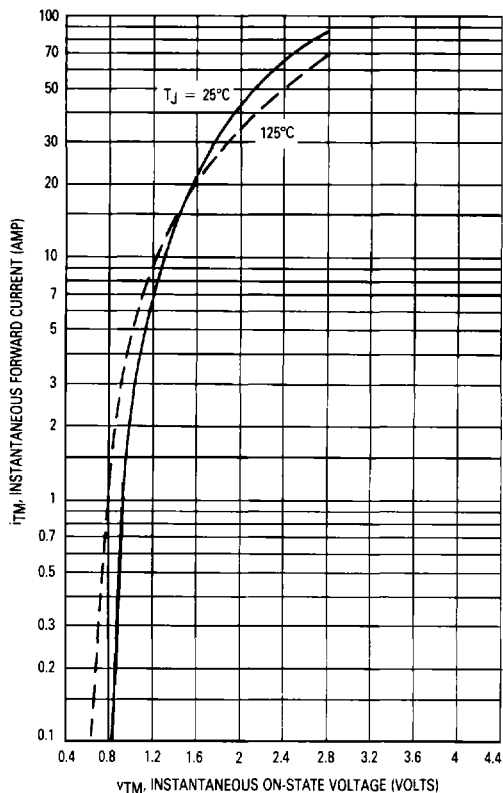


Figure 5. On-State Characteristics

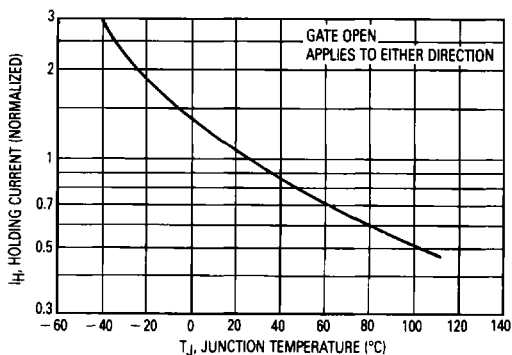


Figure 6. Typical Holding Current

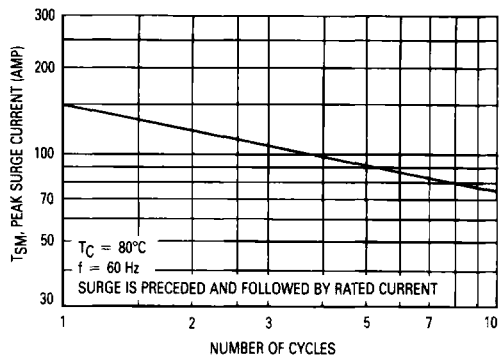


Figure 7. Maximum Non-Repetitive Surge Current

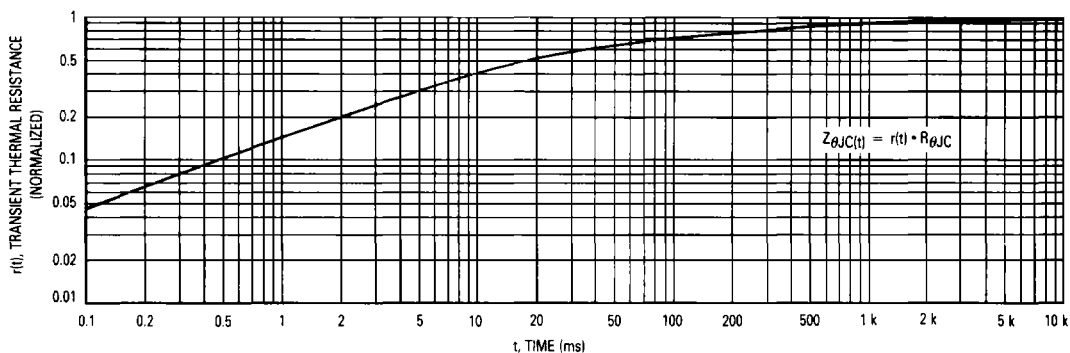


Figure 8. Thermal Response