

Triacs

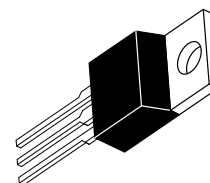
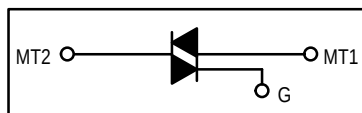
Silicon Bidirectional Thyristors

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

- Guaranteed High Commutation Voltage
dv/dt — 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

MAC321 Series

TRIACs
20 AMPERES RMS
200 thru 800 VOLTS



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

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

Rating	Symbol	Value	Unit
Peak Repetitive Off-State Voltage ⁽¹⁾ (T _J = -40 to +125°C, 1/2 Sine Wave 50 to 60 Hz, Open Gate)	V _{DRM}	200 400 600 800	Volts
Peak Gate Voltage	V _{GM}	10	Volts
On-State Current RMS (T _C = +75°C, Full Cycle Sine Wave 50 to 60 Hz)	I _{T(RMS)}	20	Amp
Peak Surge Current (One Full Cycle, 60 Hz, T _C = +75°C preceded and followed by Rated Current)	I _{TSM}	150	Amp
Circuit Fusing Considerations (t = 8.3 ms)	I ² t	93	A ² s
Peak Gate Power (T _C = +75°C, Pulse Width = 2.0 μs)	P _{GM}	20	Watts
Average Gate Power (T _C = +75°C, t = 8.3 ms)	P _{G(AV)}	0.5	Watt
Peak Gate Current	I _{GM}	2.0	Amp
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}	1.8	°C/W

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.

MAC321 Series

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

Characteristic	Symbol	Min	Typ	Max	Unit
Peak Blocking Current ($V_D = \text{Rated } V_{DRM}$, Gate Open) $T_J = 25^\circ\text{C}$ $T_J = +125^\circ\text{C}$	I_{DRM}	— —	— —	10 2.0	μA mA
Peak On-State Voltage (Either Direction) ($I_{TM} = 28 \text{ A Peak}$; Pulse Width $\leq 2.0 \text{ ms}$, Duty Cycle $\leq 2.0\%$)	V_{TM}	—	1.4	1.7	Volts
Gate Trigger Current (Continuous dc) (Main Terminal Voltage = 12 Vdc, $R_L = 100 \text{ Ohms}$) MT2(+), G(+) MT2(+), G(–) MT2(–), G(–)	I_{GT}	— — —	— — —	100 100 100	mA
Gate Trigger Voltage (Continuous dc) (Main Terminal Voltage = 12 Vdc, $R_L = 100 \text{ Ohms}$) MT2(+), G(+) MT2(+), G(–) MT2(–), G(–) (Main Terminal Voltage = Rated V_{DRM} , $R_L = 10 \text{ k}\Omega$, $T_J = +125^\circ\text{C}$) MT2(+), G(+); MT2(–), G(–); MT2(+), G(–)	V_{GT}	— — — 0.2	— — — —	2.0 2.0 2.0 —	Volts
Holding Current (Either Direction) (Main Terminal Voltage = 12 Vdc, Gate Open, Initiating Current = 200 mA)	I_H	—	—	100	mA
Turn-On Time ($V_D = \text{Rated } V_{DRM}$, $I_{TM} = 28 \text{ A}$, $I_{GT} = 120 \text{ mA}$, Rise Time = 0.1 μs , Pulse Width = 2.0 μs)	t_{gt}	—	1.5	—	μs
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	— —	— —	$\text{V}/\mu\text{s}$

TYPICAL CHARACTERISTICS

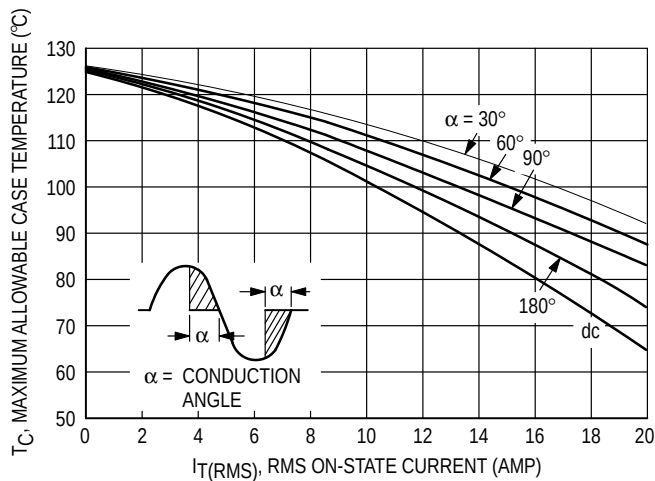


Figure 1. RMS Current Derating

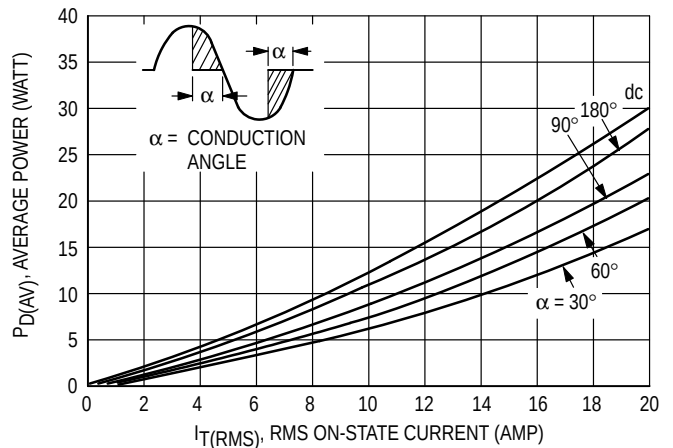


Figure 2. On-State Power Dissipation

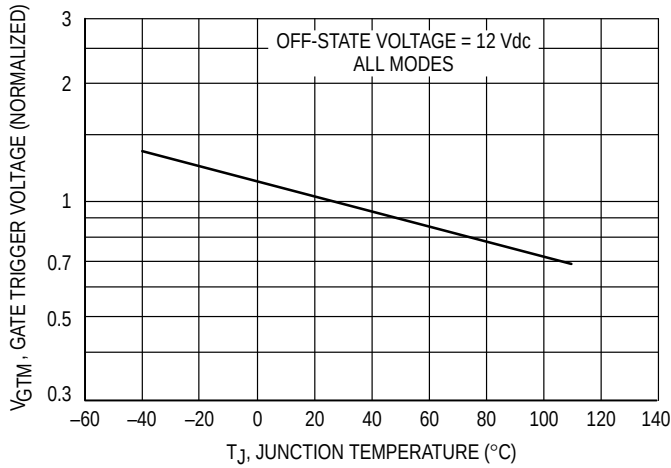


Figure 3. Typical Gate Trigger Voltage

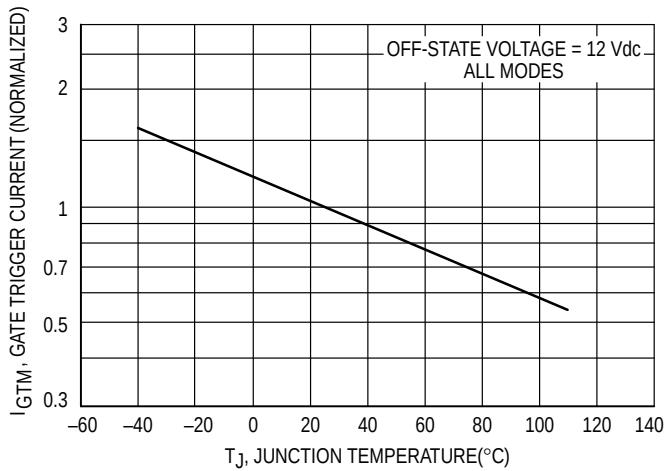


Figure 4. Typical Gate Trigger Current

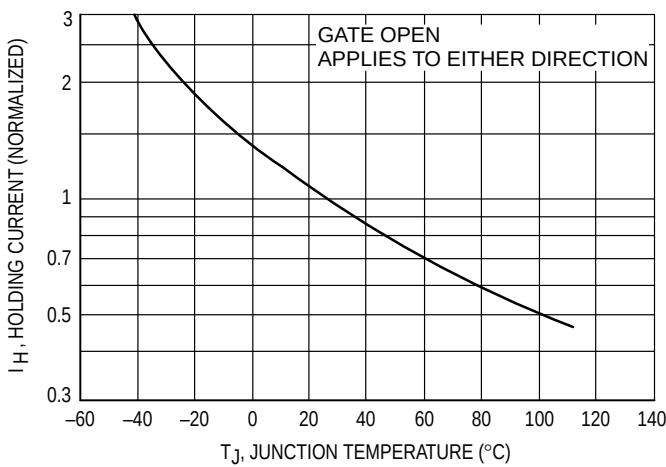


Figure 6. Typical Holding Current

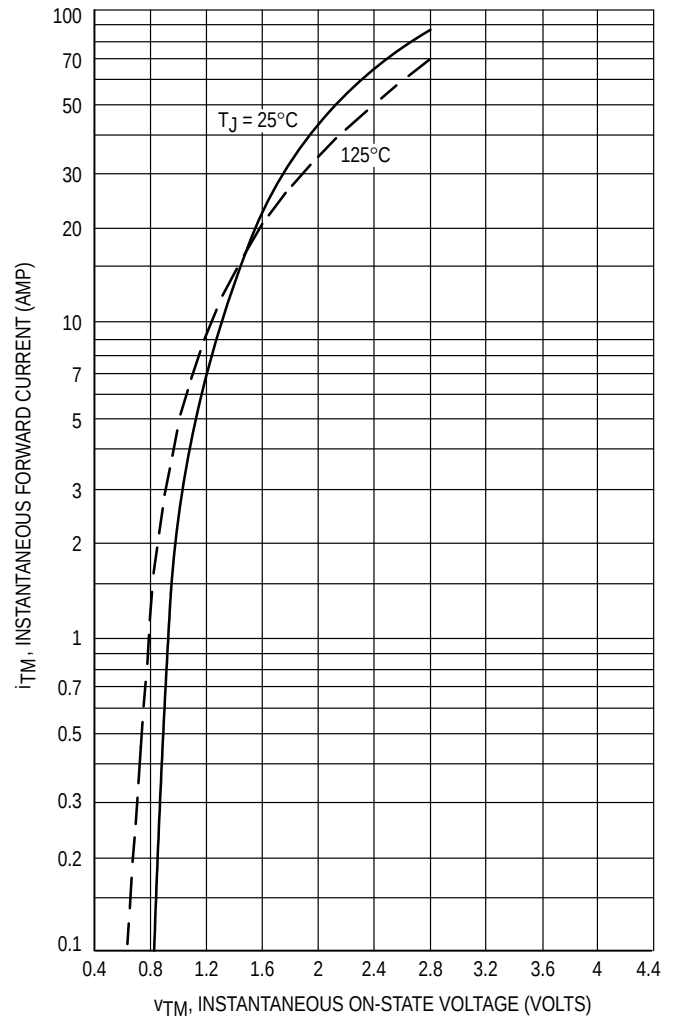


Figure 5. Maximum On-State Characteristics

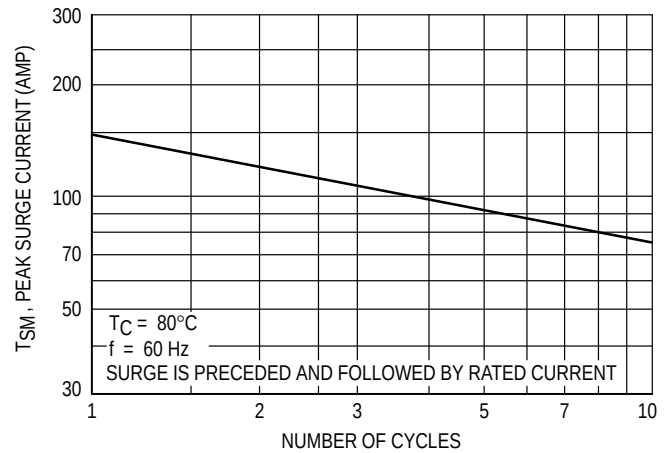


Figure 7. Maximum On-Repetitive Surge Current

MAC321 Series

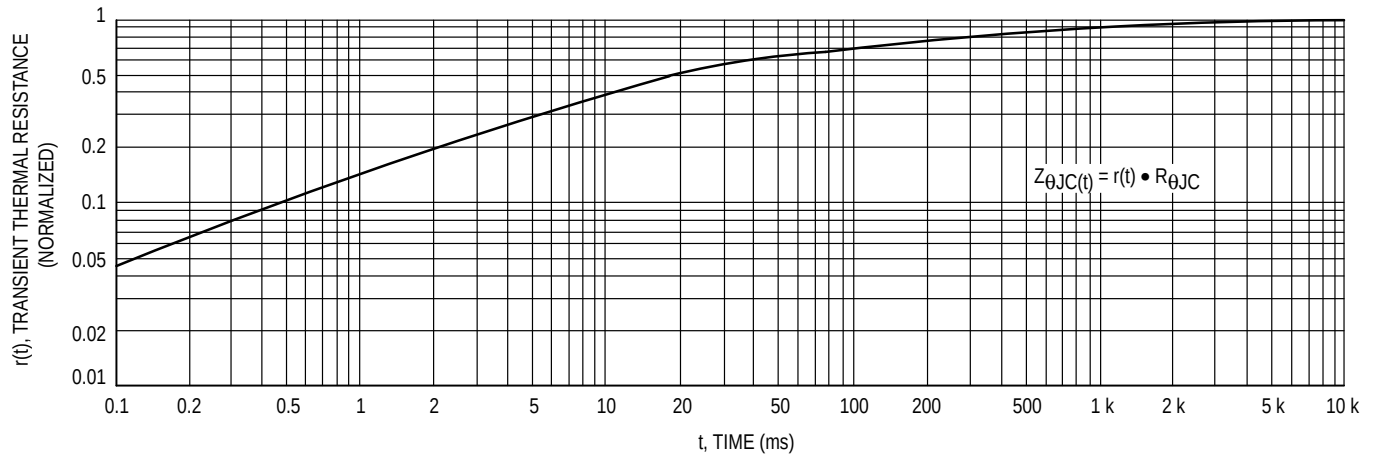
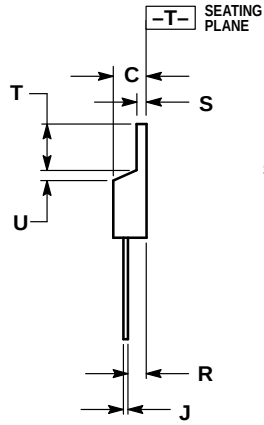
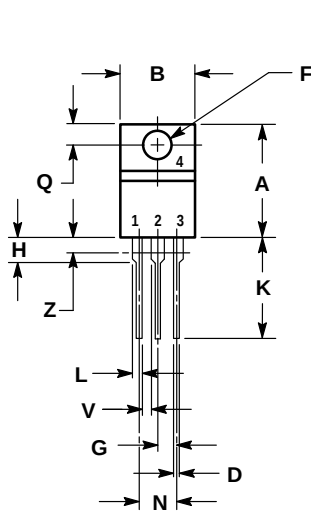


Figure 8. Thermal Response

PACKAGE DIMENSIONS



STYLE 4:
PIN 1: MAIN TERMINAL 1
2: MAIN TERMINAL 2
3: GATE
4: MAIN TERMINAL 2

- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 2. CONTROLLING DIMENSION: INCH.
 3. DIMENSION Z DEFINES A ZONE WHERE ALL BODY AND LEAD IRREGULARITIES ARE ALLOWED.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.570	0.620	14.48	15.75
B	0.380	0.405	9.66	10.28
C	0.160	0.190	4.07	4.82
D	0.025	0.035	0.64	0.88
F	0.142	0.147	3.61	3.73
G	0.095	0.105	2.42	2.66
H	0.110	0.155	2.80	3.93
J	0.014	0.022	0.36	0.55
K	0.500	0.562	12.70	14.27
L	0.045	0.055	1.15	1.39
N	0.190	0.210	4.83	5.33
Q	0.100	0.120	2.54	3.04
R	0.080	0.110	2.04	2.79
S	0.045	0.055	1.15	1.39
T	0.235	0.255	5.97	6.47
U	0.000	0.050	0.00	1.27
V	0.045	—	1.15	—
Z	—	0.080	—	2.04

CASE 221A-04
(TO-220AB)

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