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With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

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MAC08BT1, MAC08MT1

Preferred Device

Sensitive Gate Triacs

Silicon Bidirectional Thyristors

Designed for use in solid state relays, MPU interface, TTL logic and other light industrial or consumer applications. Supplied in surface mount package for use in automated manufacturing.

Features

- Sensitive Gate Trigger Current in Four Trigger Modes
- Blocking Voltage to 600 Volts
- Glass Passivated Surface for Reliability and Uniformity
- Surface Mount Package
- Pb-Free Packages are Available

MAXIMUM RATINGS ($T_J = 25^\circ\text{C}$ unless otherwise noted)

Rating	Symbol	Value	Unit
Peak Repetitive Off-State Voltage (Note 1) (Sine Wave, 50 to 60 Hz, Gate Open, $T_J = 25$ to 110°C) MAC08BT1 MAC08MT1	V_{DRM} , V_{RRM}	200 600	V
On-State Current RMS ($T_C = 80^\circ\text{C}$) (Full Sine Wave 50 to 60 Hz)	$I_{T(RMS)}$	0.8	A
Peak Non-repetitive Surge Current (One Full Cycle Sine Wave, 60 Hz, $T_C = 25^\circ\text{C}$)	I_{TSM}	8.0	A
Circuit Fusing Considerations (Pulse Width = 8.3 ms)	I^2t	0.4	A^2s
Peak Gate Power ($T_C = 80^\circ\text{C}$, Pulse Width $\leq 1.0 \mu\text{s}$)	P_{GM}	5.0	W
Average Gate Power ($T_C = 80^\circ\text{C}$, $t = 8.3$ ms)	$P_{G(AV)}$	0.1	W
Operating Junction Temperature Range	T_J	-40 to +110	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-40 to +150	$^\circ\text{C}$

Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

1. V_{DRM} and V_{RRM} 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.

THERMAL CHARACTERISTICS

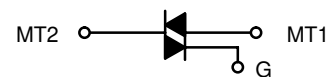
Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction-to-Ambient PCB Mounted per Figure 1	$R_{\theta JA}$	156	$^\circ\text{C/W}$
Thermal Resistance, Junction-to-Tab Measured on MT2 Tab Adjacent to Epoxy	$R_{\theta JT}$	25	$^\circ\text{C/W}$
Maximum Device Temperature for Soldering Purposes for 10 Secs Maximum	T_L	260	$^\circ\text{C}$



Expertise Applied | Answers Delivered

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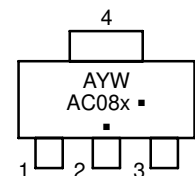
TRIAC
0.8 AMPERE RMS
200 thru 600 VOLTS



MARKING DIAGRAM



SOT-223
CASE 318E
STYLE 11



A = Assembly Location
Y = Year
W = Work Week
AC08X = Device Code
x = B or M
▪ = Pb-Free Package
(Note: Microdot may be in either location)

PIN ASSIGNMENT

1	Main Terminal 1
2	Main Terminal 2
3	Gate
4	Main Terminal 2

ORDERING INFORMATION

Device	Package	Shipping
MAC08BT1	SOT-223	1000 Tape & Reel
MAC08BT1G	SOT-223 (Pb-Free)	1000 Tape & Reel
MAC08MT1	SOT-223	1000 Tape & Reel
MAC08MT1G	SOT-223 (Pb-Free)	1000 Tape & Reel

Preferred devices are recommended choices for future use and best overall value.

MAC08BT1, MAC08MT1

ELECTRICAL CHARACTERISTICS ($T_C = 25^\circ\text{C}$ unless otherwise noted; Electricals apply in both directions.)

Characteristic	Symbol	Min	Typ	Max	Unit
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OFF CHARACTERISTICS

Peak Repetitive Blocking Current ($V_D = \text{Rated } V_{DRM}, V_{RRM}; \text{ Gate Open}$)	$T_J = 25^\circ\text{C}$ $T_J = 110^\circ\text{C}$	I_{DRM} I_{RRM}	- -	- -	10 200	μA μA
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ON CHARACTERISTICS

Peak On-State Voltage (Note 2) ($I_T = \pm 1.1 \text{ A Peak}$)	V_{TM}	-	-	1.9	V
Gate Trigger Current (Continuous dc) All Quadrants ($V_D = 12 \text{ Vdc}, R_L = 100 \Omega$)	I_{GT}	-	-	10	mA
Holding Current (Continuous dc) ($V_D = 12 \text{ Vdc}, \text{ Gate Open}, \text{ Initiating Current} = \pm 20 \text{ mA}$)	I_H	-	-	5.0	mA
Gate Trigger Voltage (Continuous dc) All Quadrants ($V_D = 12 \text{ Vdc}, R_L = 100 \Omega$)	V_{GT}	-	-	2.0	V

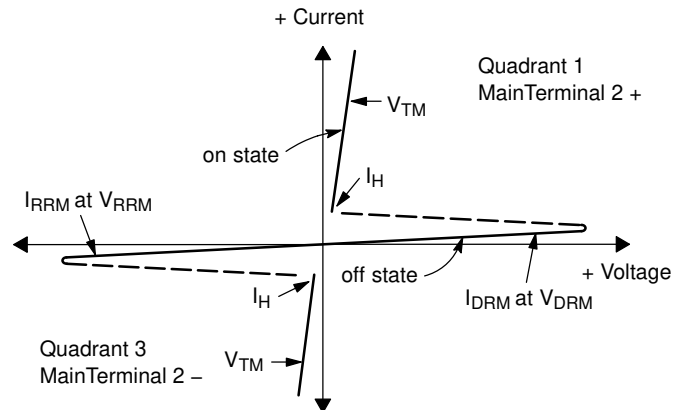
DYNAMIC CHARACTERISTICS

Critical Rate of Rise of Commutation Voltage ($f = 250 \text{ Hz}, I_{TM} = 1.0 \text{ A}, \text{ Commutating } di/dt = 1.5 \text{ A/mS}$ On-State Current Duration = 2.0 mS, $V_{DRM} = 200 \text{ V}$, Gate Unenergized, $T_C = 110^\circ\text{C}$, Gate Source Resistance = 150 Ω , See Figure 10)	$(dv/dt)_c$	1.5	-	-	V/ μs
Critical Rate-of-Rise of Off State Voltage ($V_{pk} = \text{Rated } V_{DRM}, T_C = 110^\circ\text{C}, \text{ Gate Open}, \text{ Exponential Method}$)	dv/dt	10	-	-	V/ μs

2. Pulse Test: Pulse Width $\leq 300 \mu\text{sec}$, Duty Cycle $\leq 2\%$.

Voltage Current Characteristic of Triacs (Bidirectional Device)

Symbol	Parameter
V_{DRM}	Peak Repetitive Forward Off State Voltage
I_{DRM}	Peak Forward Blocking Current
V_{RRM}	Peak Repetitive Reverse Off State Voltage
I_{RRM}	Peak Reverse Blocking Current
V_{TM}	Maximum On State Voltage
I_H	Holding Current



MAC08BT1, MAC08MT1

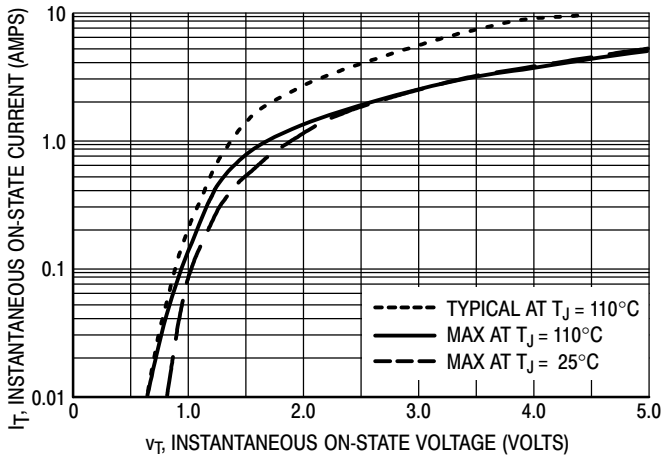


Figure 2. On-State Characteristics

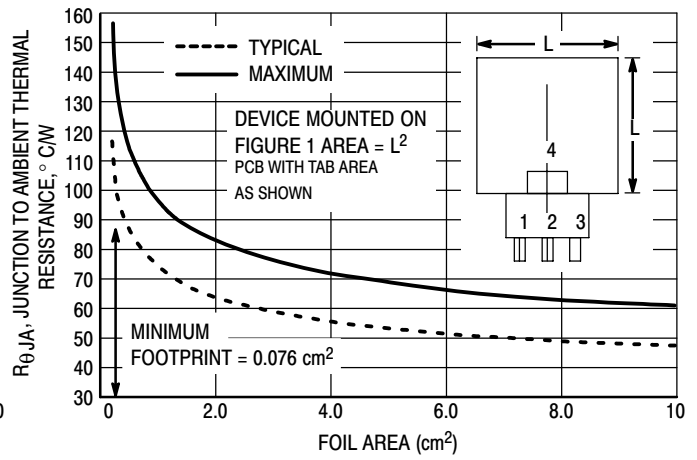


Figure 3. Junction to Ambient Thermal Resistance versus Copper Tab Area

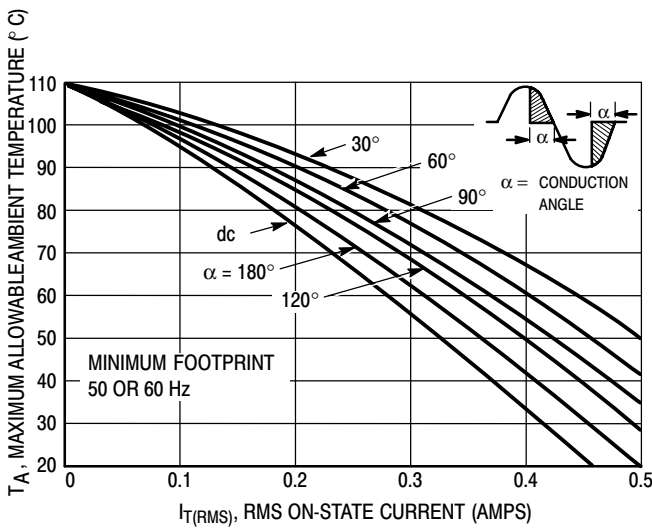


Figure 4. Current Derating, Minimum Pad Size Reference: Ambient Temperature

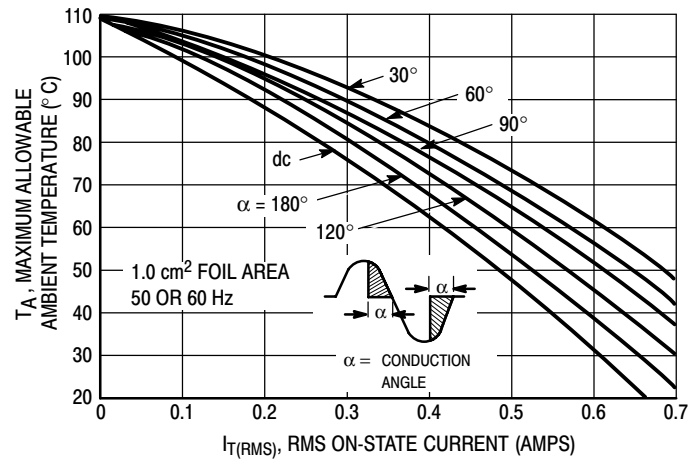


Figure 5. Current Derating, 1.0 cm Square Pad Reference: Ambient Temperature

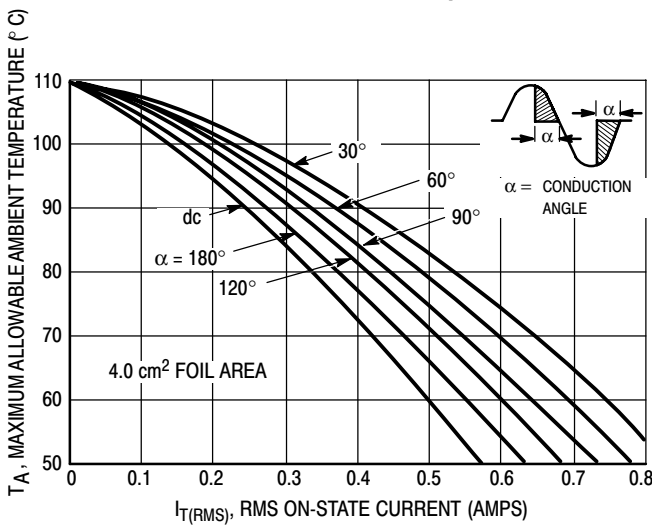


Figure 6. Current Derating, 2.0 cm Square Pad Reference: Ambient Temperature

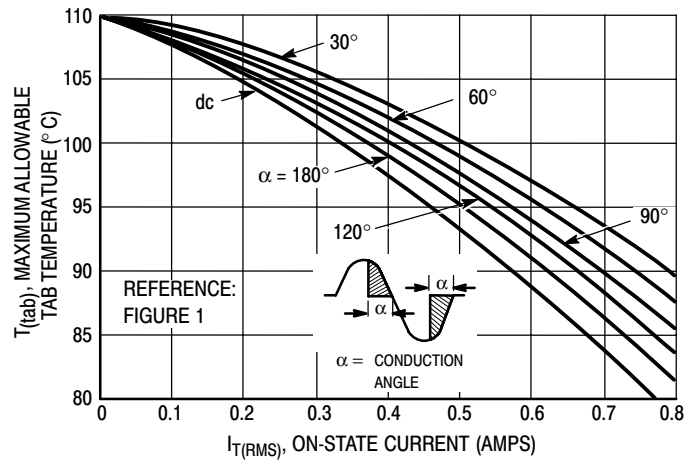


Figure 7. Current Derating Reference: MT2 Tab

MAC08BT1, MAC08MT1

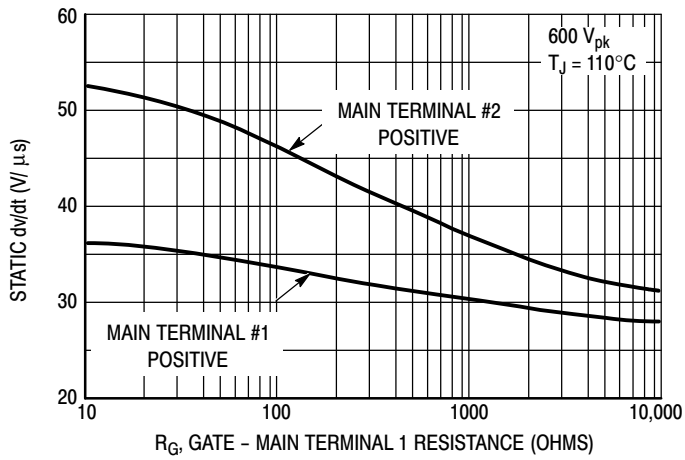


Figure 13. Exponential Static dv/dt versus Gate - Main Terminal 1 Resistance

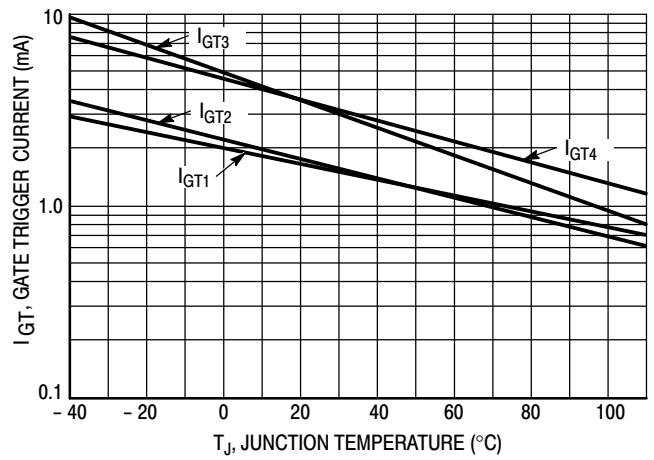


Figure 14. Typical Gate Trigger Current Variation

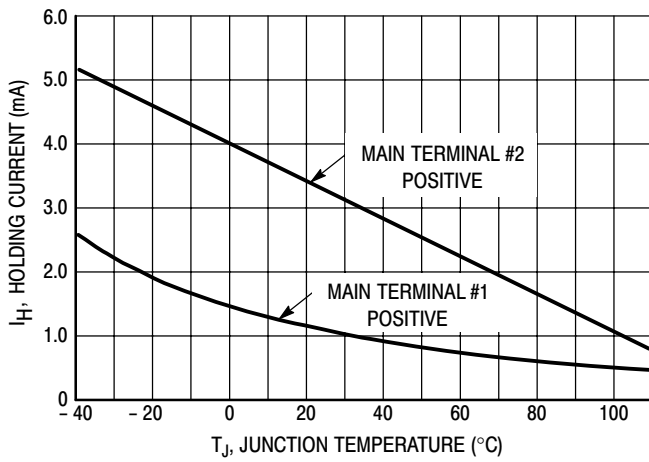


Figure 15. Typical Holding Current Variation

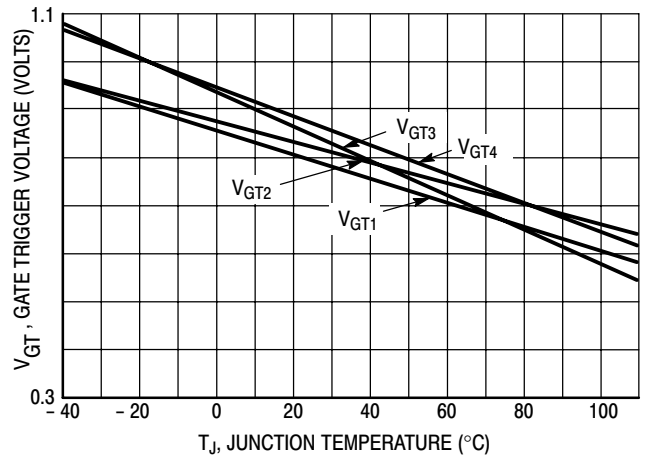
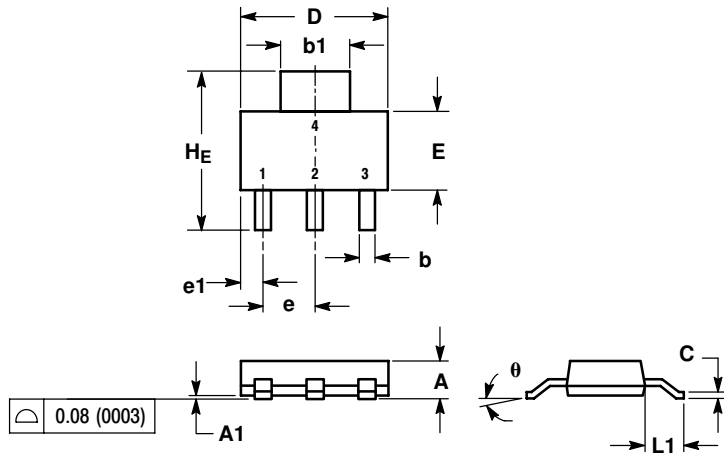


Figure 16. Gate Trigger Voltage Variation

MAC08BT1, MAC08MT1

PACKAGE DIMENSIONS

SOT-223 (TO-261)
CASE 318E-04
ISSUE L

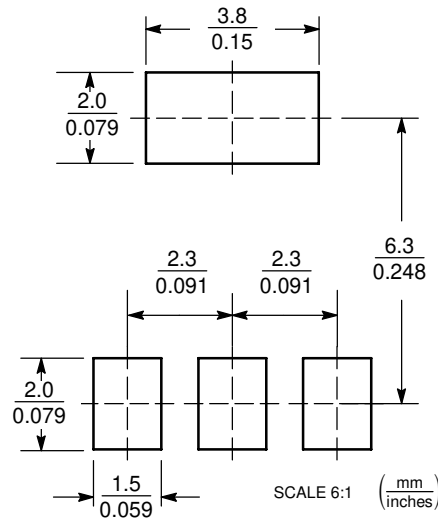


- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.

DIM	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	1.50	1.63	1.75	0.060	0.064	0.068
A1	0.02	0.06	0.10	0.001	0.002	0.004
b	0.60	0.75	0.89	0.024	0.030	0.035
b1	2.90	3.06	3.20	0.115	0.121	0.126
c	0.24	0.29	0.35	0.009	0.012	0.014
D	6.30	6.50	6.70	0.249	0.256	0.263
E	3.30	3.50	3.70	0.130	0.138	0.145
e	2.20	2.30	2.40	0.087	0.091	0.094
e1	0.85	0.94	1.05	0.033	0.037	0.041
H	1.50	1.75	2.00	0.060	0.069	0.078
H _E	6.70	7.00	7.30	0.264	0.276	0.287
θ	0°	-	10°	0°	-	10°

- STYLE 11:
PIN 1. MT 1
2. MT 2
3. GATE
4. MT 2

SOLDERING FOOTPRINT



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