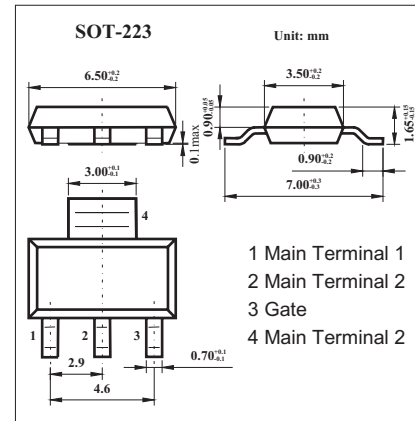
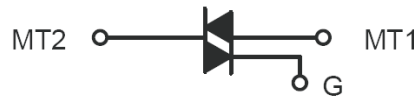


Sensitive Gate Triacs

MAC08BT1,MAC08MT1

■ Features

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



■ Absolute Maximum Ratings $T_a = 25^\circ\text{C}$

Parameter	Symbol	Rating	Unit
Peak Repetitive Forward and Reverse Blocking Voltage* MAC08BT1	V_{DRM}	200	V
MAC08MT1	V_{RRM}	600	V
Forward Current RMS	$I_{T(RMS)}$	0.8	A
Peak Forward Surge Current, $T_a = 25^\circ\text{C}$	I_{TSM}	8.0	A
Circuit Fusing Considerations ($t = 8.3 \text{ ms}$)	I^2t	0.4	A^2s
Peak Gate Power — Forward, $T_a = 25^\circ\text{C}$	P_{GM}	5.0	W
Average Gate Power — Forward, $T_a = 25^\circ\text{C}$	$P_{GF(AV)}$	0.1	W
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	156	$^\circ\text{C/W}$
Lead Solder Temperature (<1/16" from case, 10 s max)		230	$^\circ\text{C}$
Operating Junction Temperature Range @ Rated V_{RRM} and V_{DRM}	T_J	-40 to +110	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-40 to +150	$^\circ\text{C}$

* $T_J = 25$ to 125°C , $R_{GK} = 1 \text{ k}\Omega$

■ Electrical Characteristics ($T_a = 25^\circ\text{C}$, $R_{GK} = 1 \text{ k}\Omega$ unless otherwise noted.)

Parameter	Symbol	Testconditions	Min	Max	Unit
Peak Forward or Reverse $T_c = 25^\circ\text{C}$	I_{DRM} , I_{RRM}	$V_{AK} = \text{Rated } V_{DRM} \text{ or } V_{RRM}$		10	μA
Blocking Current $T_c = 110^\circ\text{C}$				200	μA
Forward "On" Voltage*1	V_{TM}	$I_{TM} = \pm 1.1 \text{ A Peak @ } T_a = 25^\circ\text{C}$		1.9	V
Gate Trigger Current (Continuous dc)*2 $T_c = 25^\circ\text{C}$	I_{GT}	$V_D = 12 \text{ V}, R_L = 100 \text{ Ohms}$		10	mA
Gate Trigger Voltage (Continuous dc)	V_{GT}	$V_D = 12 \text{ V}, R_L = 100 \text{ Ohms}$		2.0	V
Holding Current	I_H	$V_D = 12 \text{ V}, \text{Gate Open, initiating current} = \pm 20 \text{ mA}$		5	mA
Critical Rate of Rise of Commutation Voltage *	$(dv/dt)_c$		1.5		$\text{V}/\mu\text{s}$
Critical Rate of Rise of Off State Voltage	dv/dt	$V_{pk} = \text{Rated } V_{DRM}, T_c = 110^\circ\text{C}, \text{Gate Open, Exponential Method}$	10		$\text{V}/\mu\text{s}$

* $f = 250 \text{ Hz}$, $I_{TM} = 1.0 \text{ A}$, 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 = 150Ω , See Figure 10)

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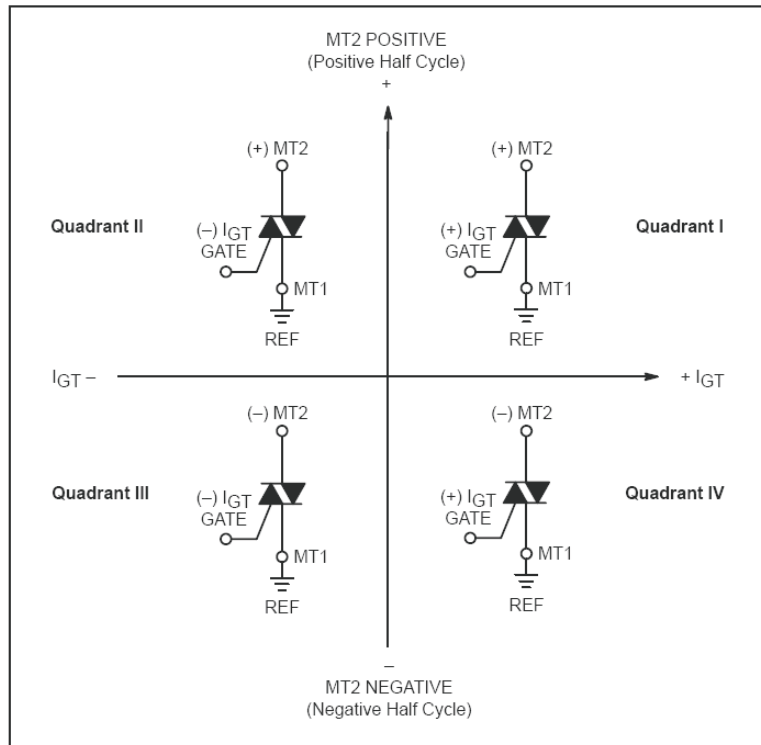


Figure 1. Quadrant Definitions for a Triac

■ Typical Characteristics

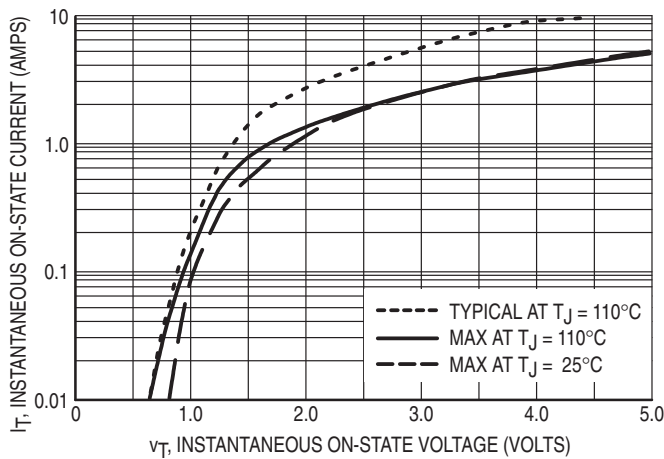


Figure 2. On-State Characteristics

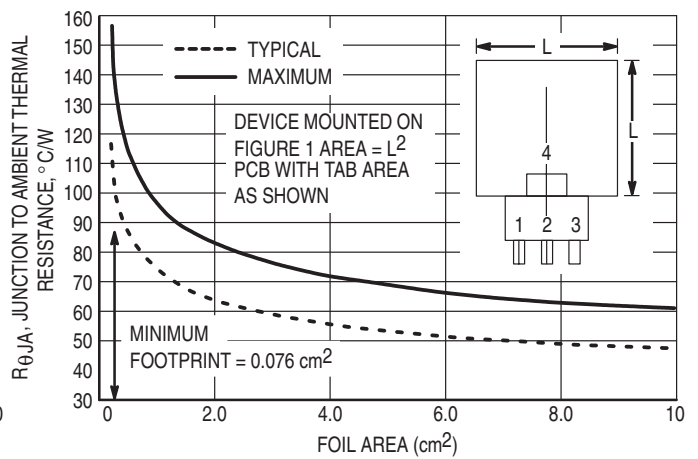


Figure 3. Junction to Ambient Thermal Resistance versus Copper Tab Area

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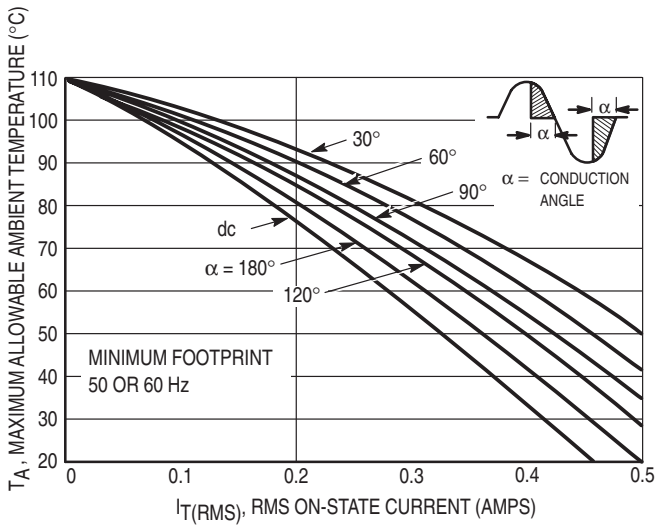


Figure 4. Current Derating, Minimum Pad Size
Reference: Ambient Temperature

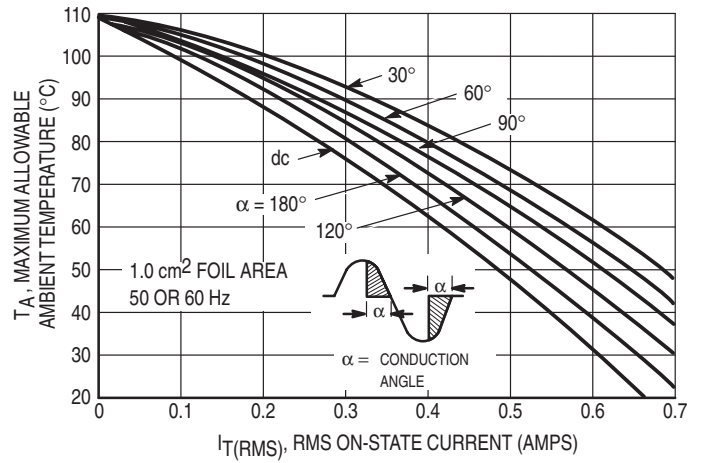


Figure 5. Current Derating, 1.0 cm Square Pad
Reference: Ambient Temperature

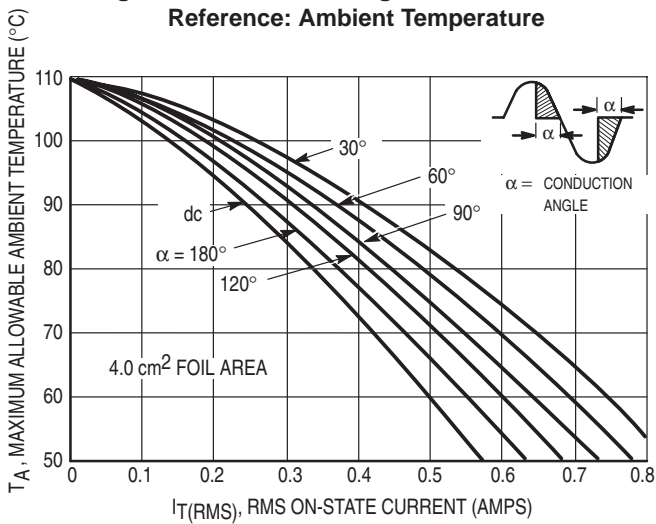


Figure 6. Current Derating, 2.0 cm Square Pad
Reference: Ambient Temperature

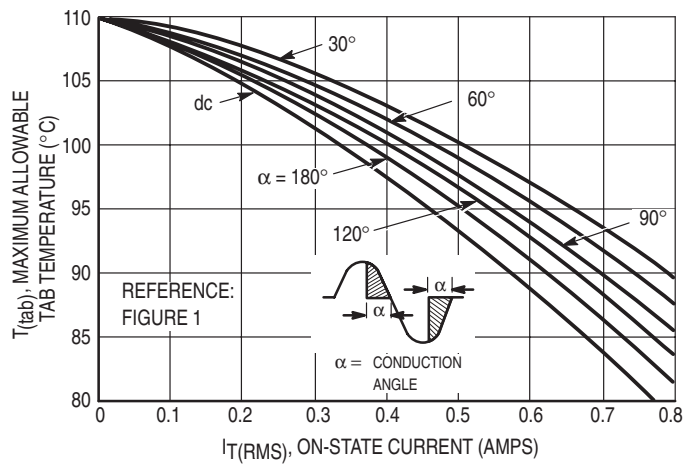


Figure 7. Current Derating
Reference: MT2 Tab

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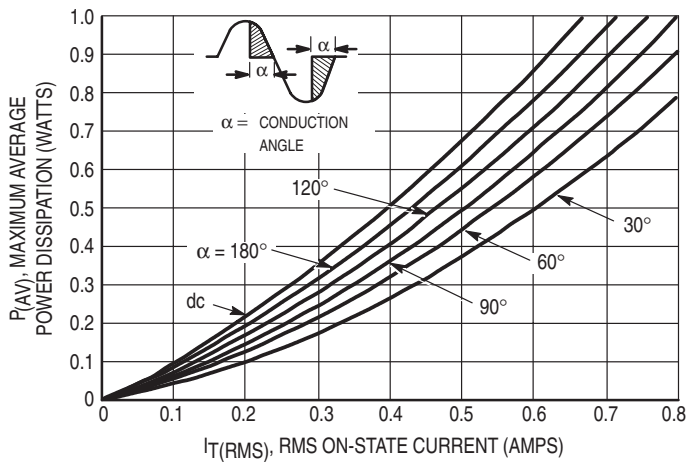


Figure 8. Power Dissipation

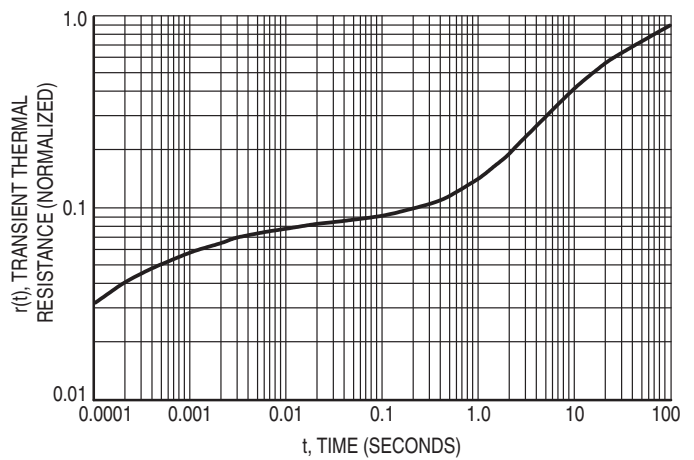
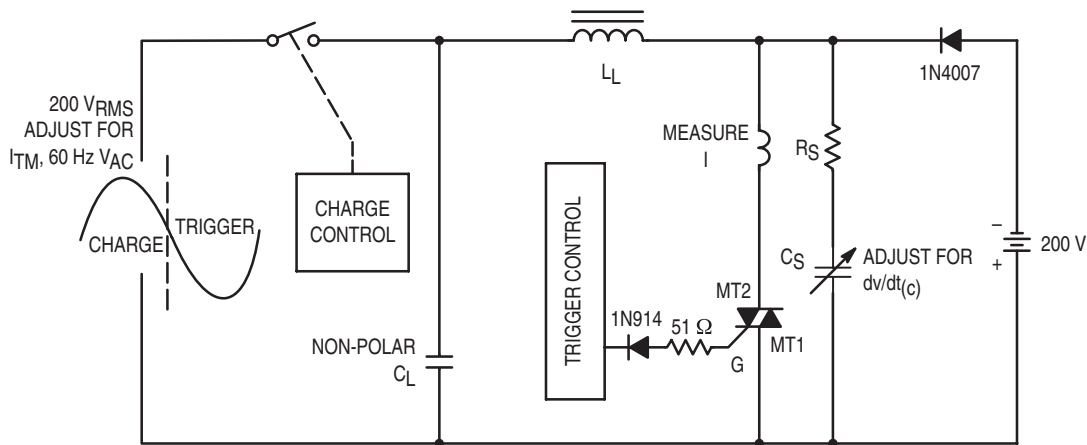


Figure 9. Thermal Response, Device Mounted on Figure 1 Printed Circuit Board



Note: Component values are for verification of rated $(dv/dt)_c$. See AN1048 for additional information.

Figure 10. Simplified Test Circuit to Measure the Critical Rate of Rise of Commutating Voltage $(dv/dt)_c$

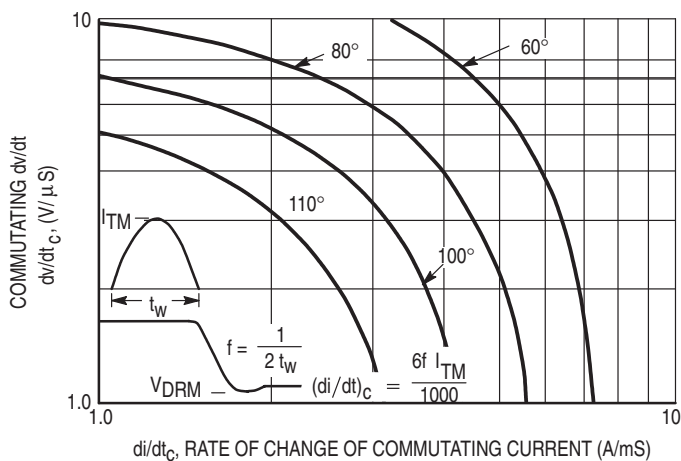


Figure 11. Typical Commutating dv/dt versus Current Crossing Rate and Junction Temperature

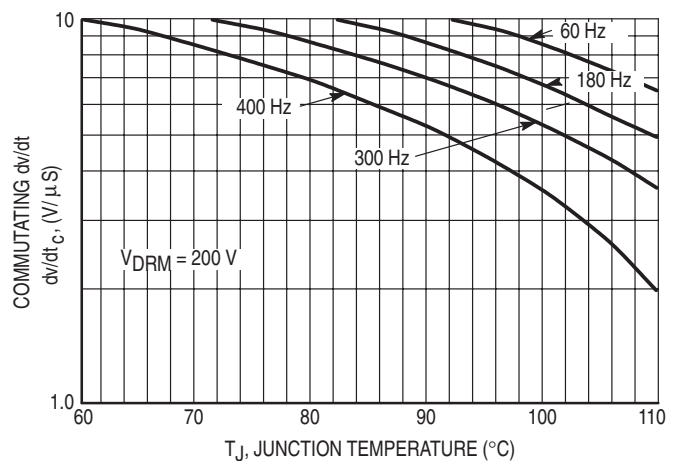


Figure 12. Typical Commutating dv/dt versus Junction Temperature at 0.8 Amps RMS

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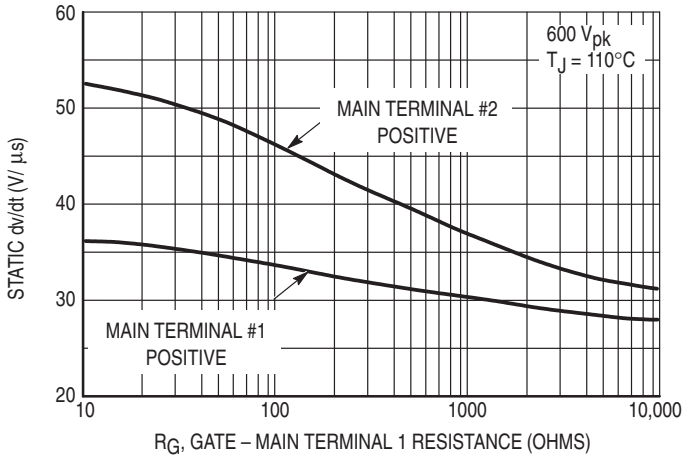


Figure 13. Exponential Static dv/dt versus Gate - Main Terminal 1 Resistance

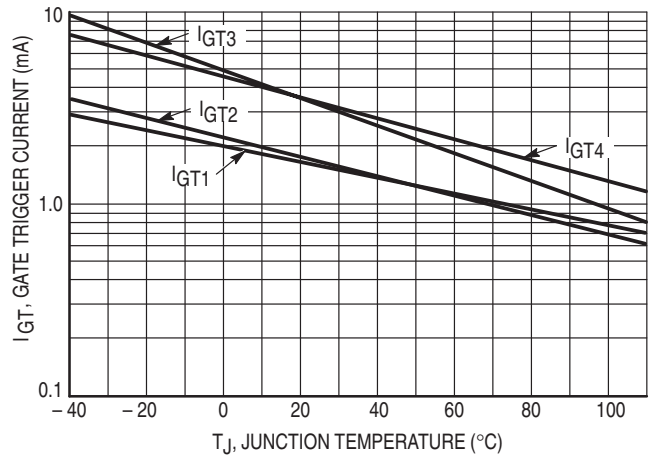


Figure 14. Typical Gate Trigger Current Variation

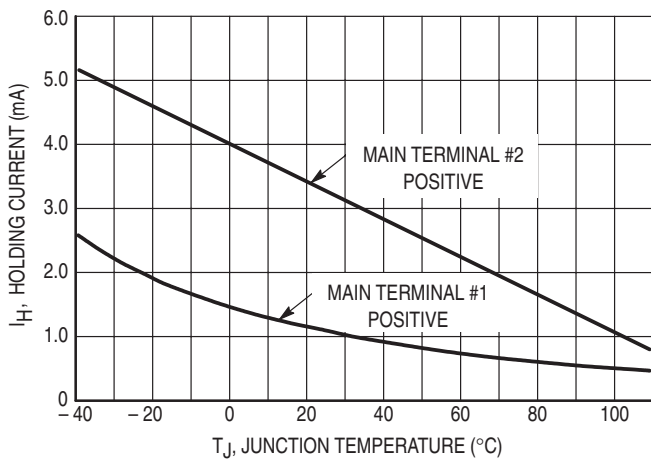


Figure 15. Typical Holding Current Variation

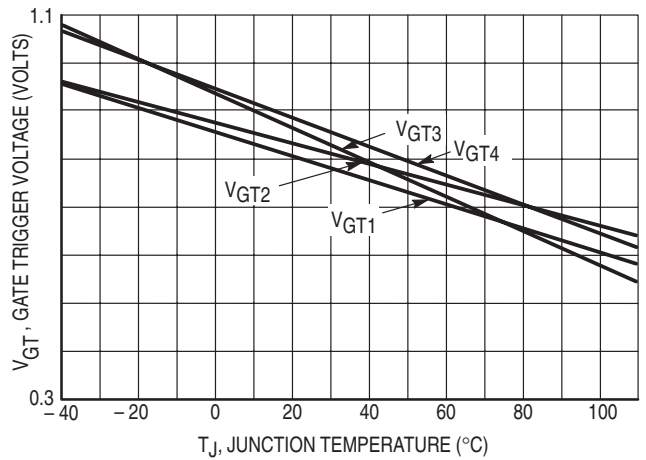


Figure 16. Gate Trigger Voltage Variation