

T-25-15

**MAC250**  
**MAC250( )3**  
**SC251**

**Triacs**  
**Bidirectional Triode Thyristors**

... designed primarily for industrial and military applications for the control of ac loads in applications such as light dimmers, power supplies, heating controls, motor controls, welding equipment and power switching systems; or wherever full-wave, silicon gate controlled solid-state devices are needed.

- All Diffused and Glass Passivated Junctions for Greater Stability
- Pressfit, Stud and Isolated Stud Packages
- Gate Triggering Guaranteed In All 3 Quadrants

**TRIACs**  
**15 AMPERES RMS**  
**200 thru 800 VOLTS**



**MAXIMUM RATINGS**

Rating	Symbol	Value	Unit
Repetitive Peak Off-State Voltage SC251B, MAC250B, MAC250B3 SC251D, MAC250D, MAC250D3 SC251M, MAC250M, MAC250M3 SC251N, MAC250N	VDRM	200 400 600 800	Volts
RMS On-State Current	I <sub>T(RMS)</sub>	15	Amps
Peak Non-Repetitive Surge Current (One Full Cycle, 60 Hz)	I <sub>TSM</sub>	100	Amps
Circuit Fusing Considerations t = 1 ms t = 8.3 ms	I <sup>2</sup> t	20 41.5	A <sup>2</sup> s
Peak Gate Power	PGM	10	Watts
Average Gate Power	PG(AV)	0.5	Watt
Peak Gate Power (Pulse Width = 10 μs)	IGM	2	Amps
Operating Junction Temperature Range	T <sub>J</sub>	-40 to +115	°C
Storage Temperature Range	T <sub>stg</sub>	-40 to +125	°C
Stud Torque	—	30	in. lb.

**THERMAL CHARACTERISTICS**

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case MAC250, SC251 MAC250( )3	R <sub>θJC</sub>	2 2.3	°C/W



**CASE 174-04**  
**(TO-203AA)**  
**STYLE 3**  
**SC251**  
**PRESS FIT**



**CASE 263-04**  
**STYLE 1**  
**MAC250**  
**STUD**



**CASE 311-02**  
**STYLE 2**  
**MAC250( )3**  
**ISOLATED STUD**

3

T-25-15

**ELECTRICAL CHARACTERISTICS** ( $T_C = +25^\circ\text{C}$  unless otherwise noted. Values apply for either polarity of Main Terminal 2  
 Characteristics referenced to Main Terminal 1.)

Characteristic	Symbol	Min	Typ	Max	Unit
Peak Forward or Reverse Blocking Current (Rated $V_{DRM}$ or $V_{RRM}$ , gate open) $T_C = 25^\circ\text{C}$ $T_C = +115^\circ\text{C}$	$I_{DRM}$ , $I_{RRM}$	—	—	10 0.5	$\mu\text{A}$ mA
Peak On-State Voltage ( $I_{TM} = 21\text{ A}$ , Pulse Width = 1 ms, Duty Cycle $\leq 2\%$ )	$V_{TM}$	—	—	1.65	Volts
Critical Rate of Rise of Off-State Voltage (Rated $V_{DRM}$ , Gate Open-Circuited, Exponential Waveform) $T_C = +115^\circ\text{C}$	$dv/dt$	100	—	—	$\text{V}/\mu\text{s}$
Critical Rate-of-Rise of Commutating Off-State Voltage, Note 1 ( $I_{T(RMS)}$ = Rated RMS On-State Current, $V_D = V_{DRM}$ ) (Gate Open-Circuited, Commutating $di/dt = 8\text{ A/ms}$ ) MAC250, SC251 $T_C = +84^\circ\text{C}$ MAC250( J3 $T_C = +78^\circ\text{C}$	$dv/dt(c)$	4 4	— —	— —	$\text{V}/\mu\text{s}$
DC Gate Trigger Current (Continuous dc) ( $V_D = 12\text{ Vdc}$ ) MT2(+), G(+); MT2(-), G(-); $R_L = 100\text{ Ohms}$ MT2(+), G(-); $R_L = 50\text{ Ohms}$	$I_{GT}$	— —	— —	50 50	mAdc
DC Gate Trigger Current (Continuous dc) ( $V_D = 12\text{ Vdc}$ , $T_C = -40^\circ\text{C}$ ) MT2(+), G(+); MT2(-), G(-); $R_L = 50\text{ Ohms}$ MT2(+), G(-); $R_L = 25\text{ Ohms}$	$I_{GT}$	— —	— —	80 80	mAdc
DC Gate Trigger Voltage (Continuous dc) ( $V_D = 12\text{ Vdc}$ ) MT2(+), G(+); MT2(-), G(-); $R_L = 100\text{ Ohms}$ MT2(+), G(-); $R_L = 50\text{ Ohms}$	$V_{GT}$	— —	— —	2.5 2.5	Vdc
DC Gate Trigger Voltage (Continuous dc) ( $V_D = 12\text{ Vdc}$ , $T_C = -40^\circ\text{C}$ ) MT2(+), G(+); MT2(-), G(-); $R_L = 50\text{ Ohms}$ MT2(+), G(-); $R_L = 25\text{ Ohms}$	$V_{GT}$	— —	— —	3.5 3.5	Vdc
DC Gate Non-Trigger Voltage ( $V_D = \text{Rated } V_{DRM}$ , $R_L = 1\text{K Ohms}$ , $T_C = 115^\circ\text{C}$ ) All Trigger Modes	$V_{GD}$	0.20	—	—	Vdc
Holding Current ( $V_D = 24\text{ Vdc}$ , Peak Initiating Current = 0.5 A, Pulse Width = 0.1 to 10 ms, Gate Trigger) (Source = 7 V, 20 Ohms) $T_C = +25^\circ\text{C}$ $T_C = -40^\circ\text{C}$	$I_H$	— —	— —	50 100	mAdc
Latching Current ( $V_D = 24\text{ Vdc}$ , Gate Trigger Source = 15 V, 100 Ohms, Pulse Width = 50 $\mu\text{s}$ , 5 $\mu\text{s}$ Maximum Rise and Fall Times) MT2(+), G(+); MT2(-), G(-); MT2(+), G(-) $T_C = 25^\circ\text{C}$ MT2(+), G(+); MT2(-), G(-); MT2(+), G(-) $T_C = -40^\circ\text{C}$	$I_L$	— —	— —	100 200	mAdc

3

FIGURE 1 - CURRENT DERATING

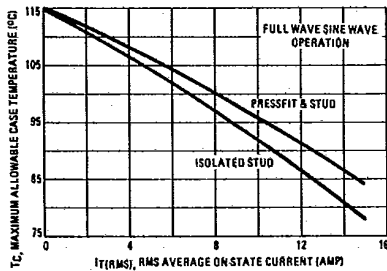
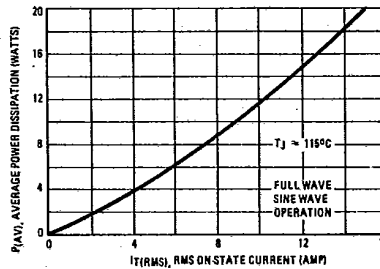


FIGURE 2 - MAXIMUM ON-STATE POWER DISSIPATION



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