

Triacs

Silicon Bidirectional Triode Thyristors

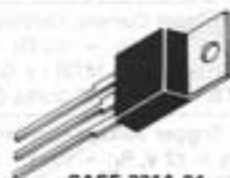
... designed primarily for industrial and consumer applications for full wave control of ac loads such as appliance controls, heater controls, motor controls, and other power switching applications.

- Sensitive Gate Triggering in 3 Modes for AC Triggering on Sinking Current Sources (MAC228 Series)
- Four Mode Triggering for Drive Circuits that Source Current (MAC228A Series)
- All Diffused and Glass-Passivated Junctions for Parameter Uniformity and Stability
- Small, Rugged, Thermowatt Construction for Low Thermal resistance and High Heat Dissipation
- Center Gate Geometry for Uniform Current Spreading

**MAC228
Series*
MAC228A
Series***

*Motorola preferred devices

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



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

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Peak Repetitive Off-State Voltage, Note 1 ($T_J = -40$ to 110°C) 1/2 Sine Wave 50 to 60 Hz, Gate Open	V_{DRM}		Volts
MAC228-4, MAC228A4		200	
MAC228-6, MAC228A6		400	
MAC228-8, MAC228A8		600	
MAC228-10, MAC228A10		800	
On-State RMS Current ($T_C = 80^\circ\text{C}$) Full Cycle Sine Wave 50 to 60 Hz	$I_T(\text{RMS})$	8	Amps
Peak Non-Repetitive Surge Current (One Full Cycle 60 Hz, $T_J = 110^\circ\text{C}$)	I_{TSM}	80	Amps
Circuit Fusing ($t = 8.3$ ms)	i^2t	26	A^2s
Peak Gate Current ($t < 2 \mu\text{s}$)	I_{GM}	± 2	Amps
Peak Gate Voltage ($t < 2 \mu\text{s}$)	V_{GM}	± 10	Volts
Peak Gate Power ($t < 2 \mu\text{s}$)	P_{GM}	20	Watts

Note 1. Ratings apply for open gate conditions. Devices shall not be tested with a constant current source for blocking voltage such that the voltage applied exceeds the rated blocking voltage. (continued)

MAC228 Series • MAC228A Series

MAXIMUM RATINGS — continued

Rating	Symbol	Value	Unit
Average Gate Power ($T_C = 80^\circ\text{C}$, $t < 8.3$ ms)	$P_{G(AV)}$	0.5	Watts
Operating Junction Temperature Range	T_J	-40 to 110	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-40 to 150	$^\circ\text{C}$
Mounting Torque		8	in. lb.

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	2.2	$^\circ\text{C/W}$
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	60	$^\circ\text{C/W}$

ELECTRICAL CHARACTERISTICS ($T_C = 25^\circ\text{C}$ and either polarity of MT2 to MT1 voltage unless otherwise noted.)

Characteristic	Symbol	Min	Typ	Max	Unit
Peak Forward or Reverse Blocking Current (Rated V_{DRM} or V_{RRM}) $T_J = 25^\circ\text{C}$ $T_J = 110^\circ\text{C}$	I_{DRM} , I_{RRM}	—	—	10 2	μA mA
Peak On-State Voltage ($I_{TM} = 11$ A Peak, Pulse Width < 2 ms, Duty Cycle $< 2\%$)	V_{TM}	—	—	1.8	Volts
Gate Trigger Current (Continuous dc) ($V_D = 12$ V, $R_L = 100 \Omega$) MT2(+), G(+); MT2(+), G(-); MT2(-), G(-) MT2(-), G(+)"A" Suffix Only	I_{GT}	—	—	5 10	mA
Gate Trigger Voltage (Continuous dc) ($V_D = 12$ V, $R_L = 100 \Omega$) MT2(+), G(+); MT2(+), G(-); MT2(-), G(-) MT2(-), G(+)"A" Suffix Only ($V_D = \text{Rated } V_{DRM}$, $T_C = 110^\circ\text{C}$, $R_L = 10$ k) MT2(+), G(+); MT2(+), G(-); MT2(-), G(-) MT2(-), G(+)"A" Suffix Only	V_{GT}	— —	— —	2 2.5	Volts
Holding Current ($V_D = 12$ Vdc, $I_{TM} = 200$ mA, Gate Open)	I_H	—	—	15	mA
Gate-Controlled Turn-On Time ($V_D = \text{Rated } V_{DRM}$, $I_{TM} = 16$ A Peak, $I_G = 30$ mA)	t_{gt}	—	1.5	—	μs
Critical Rate of Rise of Off-State Voltage ($V_D = \text{Rated } V_{DRM}$, Exponential Waveform, $T_C = 110^\circ\text{C}$)	dv/dt	—	25	—	$\text{V}/\mu\text{s}$
Critical Rate of Rise of Commutation Voltage ($V_D = \text{Rated } V_{DRM}$, $I_{TM} = 11.3$ A, Commutating $di/dt = 4.1$ A/ms, Gate Unenergized, $T_C = 80^\circ\text{C}$)	$dv/dt(c)$	—	5	—	$\text{V}/\mu\text{s}$

FIGURE 1 — RMS CURRENT DERATING

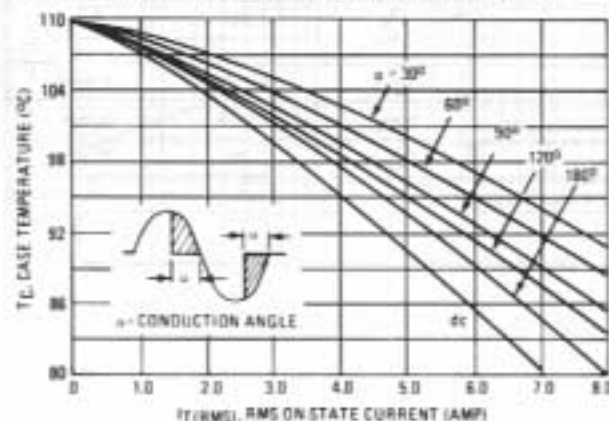


FIGURE 2 — ON-STATE POWER DISSIPATION

