MAC218

Triacs
Silicon Bidirectional Thyristors

Triacs are designed primarily for full-wave ac control applications, such as light dimmers, motor controls, heating controls and power supplies.

- Blocking Voltage to 800 Volts
- Glass Passivated Junctions for Greater Parameter Uniformity and Stability
- TO-220 Construction Low Thermal Resistance, High Heat Dissipation and Durability
- Gate Triggering Guaranteed in Three Modes (MAC218 Series) or Four Modes (MAC218A Series)

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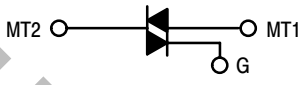
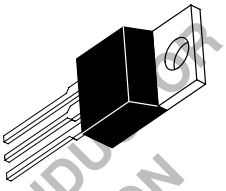




CASE 221A-04
(TO-220AB)
STYLE 4

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

Rating	Symbol	Value	Unit
Peak Repetitive Off-State Voltage(1) (Gate Open, T_J = 25 to 125°C) MAC218-4, MAC218A4 MAC218-6, MAC218A6 MAC218-8, MAC218A8 MAC218-10, MAC218A10	V_{DRM}	 200 400 600 800	Volts
On-State Current RMS (Conduction Angle = 360°, T_C = +80°C)	$I_{T(RMS)}$	8	Amps
Peak Non-repetitive Surge Current (One Full Cycle, 60 Hz, T_C = 80°C, preceded and followed by rated current)	I_{TSM}	100	Amps
Fusing Current (t = 8.3 ms)	I^2t	40	A^2s
Peak Gate Power (T_C = +80°C, Pulse Width = 2 μs)	P_{GM}	16	Watts
Average Gate Power (T_C = +80°C, t = 8.3 ms)	$P_{G(AV)}$	0.35	Watt
Peak Gate Trigger Current (Pulse Width = 1 μs)	I_{GTM}	4	Amps
Operating Junction Temperature Range	T_J	−40 to +125	°C
Storage Temperature Range	T_{stg}	−40 to +150	°C

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.

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	2.2	°C/W

ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise noted.)

Characteristic	Symbol	Min	Typ	Max	Unit
Peak Blocking Current (V_D = Rated V_{DRM}, gate open) T_J = 25°C T_J = 125°C	I_{DRM}	— —	— —	10 2	μA mA
Peak On-State Voltage (Either Direction) (I_{TM} = 11.3 A Peak; Pulse Width = 1 to 2 ms, Duty Cycle < 2%)	V_{TM}	—	1.7	2	Volts
Gate Trigger Current (Continuous dc) (V_D = 12 Vdc, R_L = 12Ω) Trigger Mode MT2(+), Gate(+); MT2(+), Gate(−); MT2(−), Gate(−) MT2(−), Gate(+) "A" SUFFIX ONLY	I_{GT}	 — —	 — —	 50 75	mA
Gate Trigger Voltage (Continuous dc) (Main Terminal Voltage = 12 Vdc, R_L = 100 Ohms) MT2(+), G(+) MT2(+), G(−) MT2(−), G(−) MT2(−), G(+) "A" SUFFIX ONLY (Main Terminal Voltage = Rated V_{DRM}, R_L = 10 kΩ, T_J = +125°C) MT2(+), G(+); MT2(−), G(−); MT2(+), G(−) MT2(−), G(+) "A" SUFFIX ONLY	V_{GT}	 — — — — 0.2 0.2	 0.9 0.9 1.1 1.4 — —	 2 2 2 2.5 — —	Volts
Holding Current (Either Direction) (V_D = 24 Vdc, Gate Open, Initiating Current = 200 mA)	I_H	—	—	50	mA
Critical Rate of Rise of Commutating Off-State Voltage (V_D = Rated V_{DRM}, I_{TM} = 11.3 A, Commutating di/dt = 4.1 A/ms, Gate Unenergized, T_C = 80°C)	dv/dt(c)	—	5	—	V/μs
Critical Rate of Rise of Off-State Voltage (V_D = Rated V_{DRM}, Exponential Voltage Rise, Gate Open, T_J = 125°C)	dv/dt	—	100	—	V/μs

FIGURE 1 — CURRENT DERATING

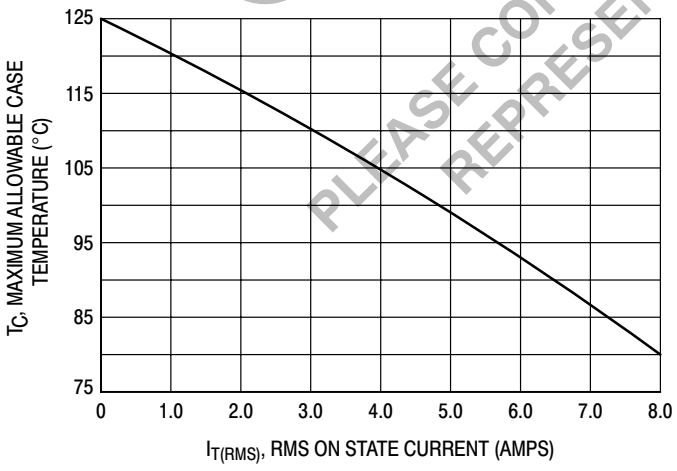


FIGURE 2 — POWER DISSIPATION

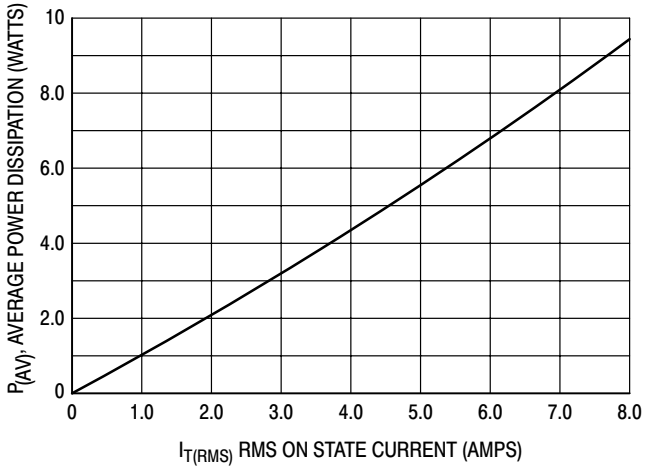


FIGURE 3 — NORMALIZED GATE TRIGGER CURRENT

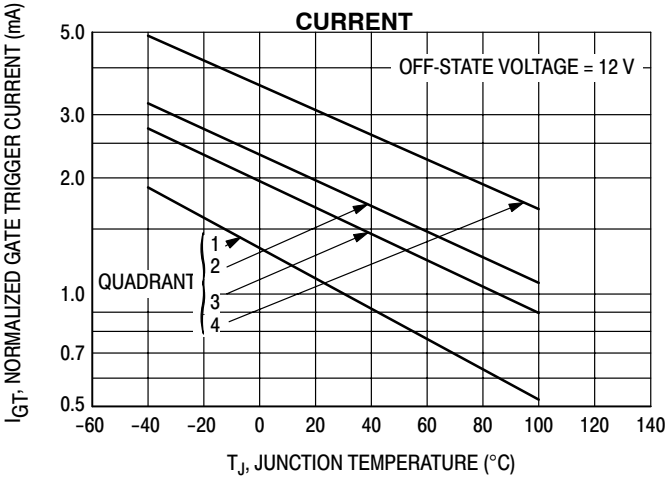


FIGURE 4 — NORMALIZED GATE TRIGGER VOLTAGE

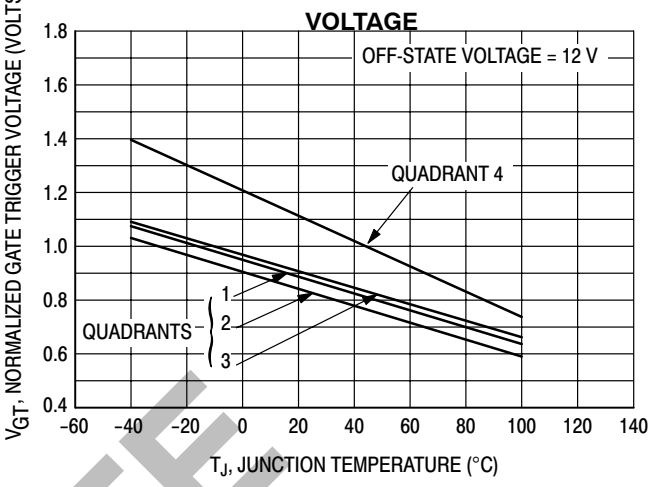
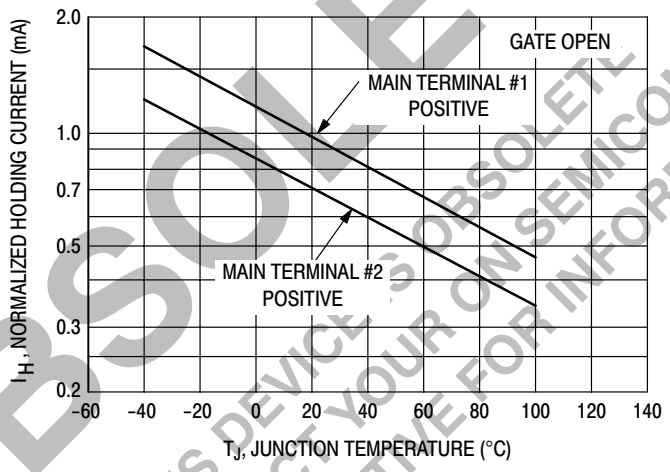
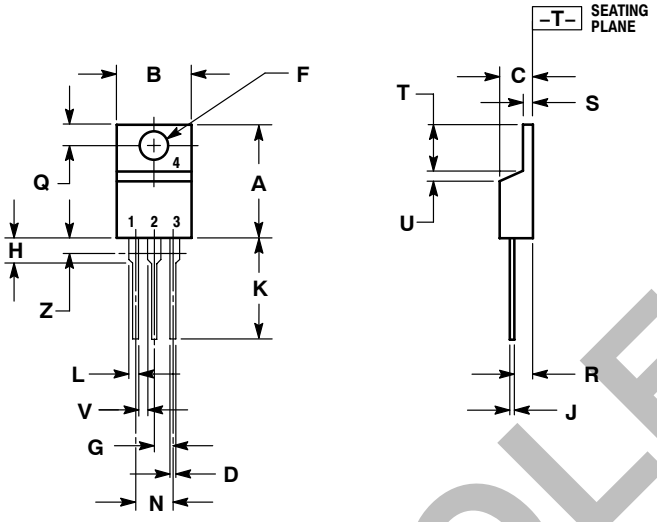


FIGURE 5 — NORMALIZED HOLDING CURRENT



PACKAGE DIMENSIONS

CASE 221A-04
(TO−220AB)



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.

	INCHES		MILLIMETERS	
DIM	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

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