

FEATURES

- Available as "HR" (high reliability) screened per MIL-PRF-19500, JANTX level. Add "HR" suffix to base part number.
- Available as non-RoHS (Sn/Pb plating), standard, and as RoHS by adding "-PBF" suffix.

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Peak repetitive off-state voltage⁽¹⁾ (T _J = -40 to +110°C, ½ sine wave, 50 to 60 Hz, gate open) MAC228-2, MAC228A-2 MAC228-3, MAC228A-3 MAC228-4, MAC228A-4 MAC228-5, MAC228A-5 MAC228-6, MAC228A-6 MAC228-7, MAC228A-7 MAC228-8, MAC228A-8 MAC228-9, MAC228A-9 MAC228-10, MAC228A-10	V _{DRM}	50 100 200 300 400 500 600 700 800	Volts
RMS on-state current (T _C = 80°C, full cycle sine wave 50 to 60Hz)	I _{T(RMS)}	8	Amps
Peak non-repetitive surge current (1 cycle, 60 Hz, T _J = 110°C)	I _{TSM}	80	Amps
Circuit fusing considerations (t = 8.3ms)	I ² t	26	A ² s
Peak gate current (t ≤ 2μs)	I _{GM}	±2.0	Amps
Peak gate voltage (t ≤ 2μs)	V _{GM}	±10	Volts
Peak gate power (t ≤ 2μs)	P _{GM}	20	Watts
Average gate power (T _C = 80°C, t = 8.3ms)	P _{G(AV)}	0.5	Watts
Operating junction temperature range	T _J	-40 to +110	°C
Storage temperature range	T _{stg}	-40 to +150	°C
Mounting torque		8.0	In. lb.

Note 1: V_{DRM} or V_{RRM} for all types can be applied on a continuous basis. Blocking voltage shall not be tested with a constant current source such that the voltage ratings of the devices are exceeded.

THERMAL CHARACTERISTICS

Characteristic	Symbol	Maximum	Unit
Thermal resistance, junction to case	R _{θJC}	2.2	°C/W
Thermal resistance, junction to ambient	R _{θJA}	60	°C/W

ELECTRICAL CHARACTERISTICS (T_C = 25°C and either polarity of MT2 to MT1 voltage unless otherwise noted)

Characteristic	Symbol	Min	Typ.	Max	Unit
Peak blocking current (V _D = Rated V _{DRM} @ T _J = 25°C) (V _D = Rated V _{DRM} @ T _J = 110°C)	I _{DRM}	-	-	10 2	μA mA
Peak on-state voltage (I _{TM} = 11A peak, pulse width ≤ 2 ms, duty cycle ≤ 2%)	V _{TM}	-	-	1.8	Volts
Gate trigger current (continuous dc) (V _D = 12V, R _L = 12Ω) (MT2(+),G(+); (MT2(+),G(-); (MT2(-),G(-) (MT2(-),G(+)) "A" suffix only	I _{GT}	-	-	5.0 10	mA

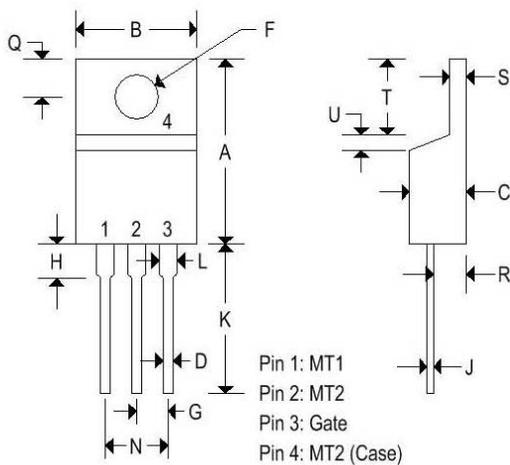
MAC228(A) SERIES

SILICON BIDIRECTIONAL THYRISTORS

Gate trigger voltage (continuous dc) $(V_D = 12V, R_L = 100\Omega)$ MT2(+),G(+); MT2(+),G(-); MT2(-),G(-) MT2(-),G(+)"A" suffix only $(V_D = \text{Rated } V_{DRM}, R_L = 10k\Omega, T_C = 110^\circ C)$ MT2(+),G(+); MT2(+),G(-); MT2(-),G(-) MT2(-),G(+)"A" suffix only	V_{GT}	-	-	2.0	Volts
		-	-	2.5	
		0.2	-	-	
		0.2	-	-	
Holding current $(V_D = 12V, \text{gate open}, I_{TM} = 200mA)$	I_H	-	-	15	mA
Gate controlled turn on time $(V_D = \text{Rated } V_{DRM}, I_{TM} = 16A \text{ peak}, I_G = 30mA)$	t_{gt}	-	1.5	-	μs
Critical rate of rise of off-state voltage $(V_D = \text{Rated } V_{DRM}, \text{exponential waveform}, T_C = 110^\circ C)$	dv/dt	-	25	-	$V/\mu s$
Critical rate of rise of commutation voltage $(V_D = \text{Rated } V_{DRM}, I_{TM} = 11.3A, \text{commutating } di/dt = 4.1A/ms, \text{gate unenergized}, T_C = 80^\circ C)$	$dv/dt(c)$	-	5	-	$V/\mu s$

MECHANICAL CHARACTERISTICS

Case	TO-220AB
Marking	Alpha-numeric
Pin out	See below



	TO-220AB			
	Inches		Millimeters	
	Min	Max	Min	Max
A	0.575	0.620	14.600	15.750
B	0.390	0.405	9.650	10.290
C	0.160	0.190	4.060	4.820
D	0.025	0.035	0.640	0.890
F	0.142	0.147	3.610	3.730
G	0.095	0.105	2.410	2.670
H	0.110	0.155	2.790	3.930
J	0.014	0.022	0.360	0.560
K	0.500	0.562	12.700	14.270
L	0.045	0.055	1.140	1.390
N	0.190	0.210	4.830	5.330
Q	0.100	0.120	2.540	3.040
R	0.080	0.110	2.040	2.790
S	0.045	0.055	1.140	1.390
T	0.235	0.255	5.970	6.480
U	-	0.050	-	1.270
V	0.045	-	1.140	-
Z	-	0.080	-	2.030

FIGURE 1 – RMS CURRENT DERATING

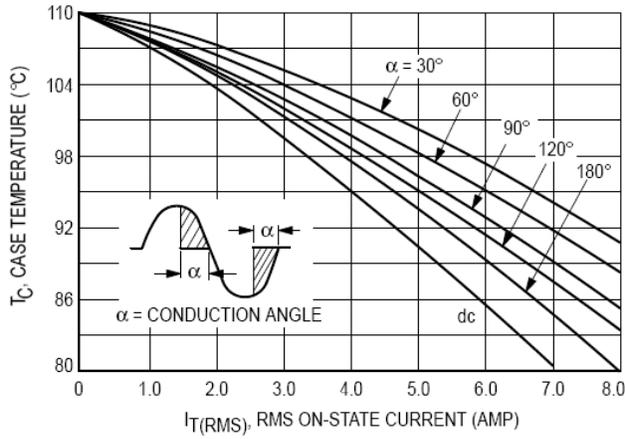


FIGURE 2 – ON-STATE POWER DISSIPATION

