

Advance Information

TRIACS

Silicon Bidirectional Thyristors

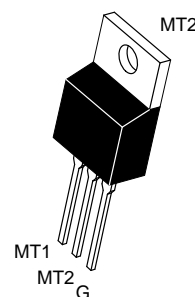
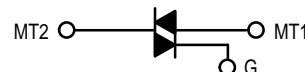
Designed primarily for full wave ac control applications, such as motor controls, heating controls or dimmers; or where ever full-wave, silicon gate-controlled devices are needed.

- High Commutating di/dt and High Immunity to dv/dt @ 125°C
- Minimizes Snubber Networks for Protection
- Blocking Voltage to 800 Volts
- On-State Current Rating of 16 Amperes RMS
- High Surge Current Capability — 150 Amperes
- Industry Standard TO-220AB Package for Ease of Design
- Glass Passivated Junctions for Reliability and Uniformity

MAC16C Series

Motorola preferred devices

TRIACS
16 AMPERES RMS
400 thru 800
VOLTS



CASE 221A-09
(TO-220AB)
Style 4

MAXIMUM RATINGS ($T_J = 25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Peak Repetitive Off-State Voltage (1)	V_{DRM}		Volts
Peak Repetitive Reverse Voltage ($T_J = -40$ to 125°C)	V_{RRM}	400 600 800	
On-State RMS Current (All Conduction Angles; $T_C = 80^\circ\text{C}$)	$I_{\text{T(RMS)}}$	16	A
Peak Non-Repetitive Surge Current (One Full Cycle, 60 Hz, $T_J = 125^\circ\text{C}$)	I_{TSM}	150	A
Circuit Fusing Consideration ($t = 8.33$ ms)	I^2t	93	A^2sec
Peak Gate Power (Pulse Width ≤ 1.0 μs , $T_C = 80^\circ\text{C}$)	P_{GM}	20	Watts
Average Gate Power ($t = 8.3$ ms, $T_C = 80^\circ\text{C}$)	$P_{\text{G(AV)}}$	0.5	Watts
Operating Junction Temperature Range	T_J	-40 to $+125$	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-40 to $+150$	$^\circ\text{C}$

THERMAL CHARACTERISTICS

Thermal Resistance — Junction to Case — Junction to Ambient	$R_{\theta\text{JC}}$ $R_{\theta\text{JA}}$	2.2 62.5	$^\circ\text{C/W}$
Maximum Lead Temperature for Soldering Purposes 1/8" from Case for 5 Seconds	T_L	260	$^\circ\text{C}$

(1) V_{DRM} and V_{RRM} 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.

Preferred devices are Motorola recommended choices for future use and best overall value.



MAC16C Series

ELECTRICAL CHARACTERISTICS ($T_J = 25^\circ\text{C}$ unless otherwise noted)

Symbol	Characteristic	Min	Typ	Max	Unit
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OFF CHARACTERISTICS

I_{DRM}	Peak Repetitive Blocking Current ($V_D = \text{Rated } V_{\text{DRM}}$, Gate Open)	$T_J = 25^\circ\text{C}$	—	—	0.01	mA
		$T_J = 125^\circ\text{C}$	—	—	2.0	

ON CHARACTERISTICS

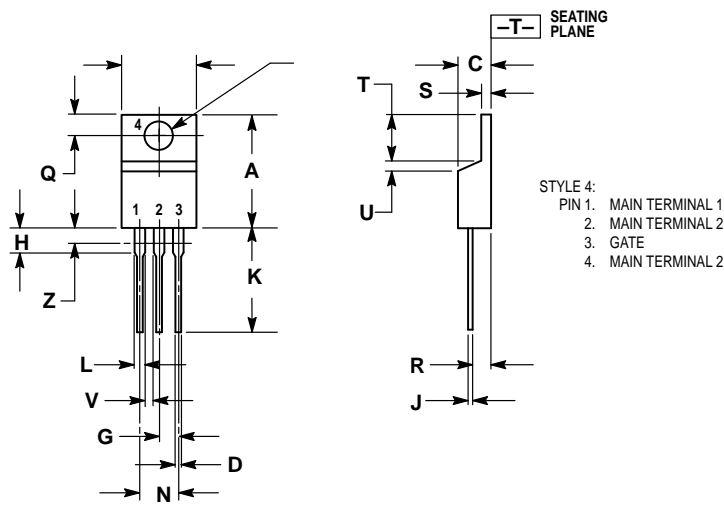
V_{TM}	Peak On-State Voltage ¹ ($I_{\text{TM}} = \pm 21 \text{ A Peak}$)	—	—	1.6	V
I_{GT}	Continuous Gate Trigger Current ($V_D = 12 \text{ V}$, $R_L = 100 \Omega$)	8.0	—	35	mA
	MT2(+), G(+)	8.0	—	35	
	MT2(+), G(–)	8.0	—	35	
I_{H}	Holding Current ($V_D = 12 \text{ V}$, Gate Open, Initiating Current = $\pm 150 \text{ mA}$)	—	—	40	mA
I_{L}	Latching Current ($V_D = 12 \text{ V}$, $I_{\text{G}} = 50 \text{ mA}$)	—	—	60	mA
	MT2(+), G(+)	—	—	60	
	MT2(+), G(–)	—	—	60	
V_{GT}	Continuous Gate Trigger Voltage ($V_D = 12 \text{ V}$, $R_L = 100 \Omega$)	0.5	—	1.5	V
	MT2(+), G(+)	0.5	—	1.5	
	MT2(+), G(–)	0.5	—	1.5	

DYNAMIC CHARACTERISTICS

$(di/dt)_C$	Rate of Change of Commutating Current ¹ ($V_D = 400 \text{ V}$, $I_{\text{TM}} = 6.0 \text{ A}$, Commutating $dv/dt = 20 \text{ V}/\mu\text{s}$, Gate Open, $T_J = 125^\circ\text{C}$, $f = 250 \text{ Hz}$, $C_L = 10 \mu\text{F}$, $L_L = 40 \text{ mH}$, with Snubber)	15	—	—	A/ms
dv/dt	Critical Rate of Rise of Off-State Voltage ($V_D = \text{Rated } V_{\text{DRM}}$, Exponential Waveform, Gate Open, $T_J = 125^\circ\text{C}$)	600	—	—	V/ μs
di/dt	Repetitive Critical Rate of Rise of On-State Voltage	—	—	20	A/ μs

1. Pulse Test: Pulse Width $\leq 2.0 \text{ ms}$, Duty Cycle $\leq 2\%$.


PACKAGE DIMENSIONS



- 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.

DIM	INCHES		MILLIMETERS	
	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	0.018	0.025	0.46	0.64
K	0.500	0.562	12.70	14.27
L	0.045	0.060	1.15	1.52
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

CASE 221A-09
TO-220AB

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