

Advance Information

TRIACS

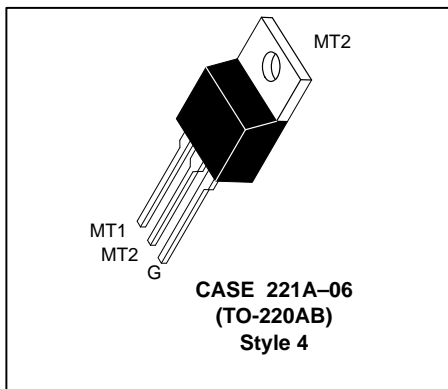
Silicon Bidirectional Thyristors

Designed for high performance full-wave ac control applications where high noise immunity and commutating di/dt are required.

- Blocking Voltage to 800 Volts
- On-State Current Rating of 12 Amperes RMS at 70°C
- Uniform Gate Trigger currents in Three Modes
- High Immunity to dv/dt — 250 V/μs minimum at 125°C
- High Commutating di/dt — 6.5 A/ms minimum at 125°C
- Industry Standard TO-220 AB Package
- High Surge Current Capability — 120 Amperes

**MAC12
SERIES***
*Motorola preferred devices

**TRIACS
12 AMPERES RMS
400 thru 800
VOLTS**



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

Parameter	Symbol	Value	Unit
Peak Repetitive Off-State Voltage (1) ($T_J = -40$ to 125°C , Sine Wave, 50 to 60 Hz, Gate Open)	V_{DRM}	400 600 800	Volts
On-State RMS Current (Full Cycle Sine Wave, 60 Hz, $T_C = 70^\circ\text{C}$)	$I_{T(RMS)}$	12	A
Peak Non-repetitive Surge Current (One Full Cycle, 60 Hz, $T_J = 125^\circ\text{C}$)	I_{TSM}	100	A
Circuit Fusing Consideration ($t = 8.3$ ms)	i^2t	41	A^2sec
Peak Gate Power (Pulse Width ≤ 1.0 μs, $T_C = 80^\circ\text{C}$)	P_{GM}	16	Watts
Average Gate Power ($t = 8.3$ ms, $T_C = 80^\circ\text{C}$)	$P_{G(AV)}$	0.35	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	$R_{\theta JC}$ $R_{\theta JA}$	2.2 62.5	$^\circ\text{C/W}$
Maximum Lead Temperature for Soldering Purposes 1/8" from Case for 10 Seconds	T_L	260	$^\circ\text{C}$

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

Characteristic	Symbol	Min	Typ	Max	Unit
----------------	--------	-----	-----	-----	------

OFF CHARACTERISTICS

Peak Repetitive Blocking Current ($V_D = \text{Rated } V_{DRM}$, Gate Open)	I_{DRM}	—	—	0.01 2.0	mA
--	-----------	---	---	-------------	----

(1) V_{DRM} and V_{RRM} for all types can be applied on a continuous basis. Ratings apply for zero or negative gate voltage; positive gate voltage shall not be applied concurrent with negative potential on the anode. Blocking voltages shall not be tested with a constant current source such that the voltage ratings of the devices are exceeded.

This document contains information on a new product. Specifications and information herein are subject to change without notice.

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

REV 1

MAC12 SERIES

ELECTRICAL CHARACTERISTICS (T_J = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
ON CHARACTERISTICS					
Peak On-State Voltage* (I _{TM} = ±17 A)	V _{TM}	—	—	1.85	Volts
Continuous Gate Trigger Current (V _D = 12 V, R _L = 100 Ω)	I _{GT}	5.0	13	35	mA
MT2(+), G(+)		5.0	16	35	
MT2(+), G(-) MT2(-), G(-)		5.0	18	35	
Hold Current (V _D = 12 V, Gate Open, Initiating Current = ±150 mA)	I _H	—	20	40	mA
Latch Current (V _D = 24 V, I _G = 35 mA)	I _L	—	20	50	mA
MT2(+), G(+); MT2(-), G(-) MT2(+), G(-)		—	30	80	
Gate Trigger Voltage (V _D = 12 V, R _L = 100 Ω)	V _{GT}	0.5	0.69	1.5	Volts
MT2(+), G(+)		0.5	0.77	1.5	
MT2(+), G(-) MT2(-), G(-)		0.5	0.72	1.5	
DYNAMIC CHARACTERISTICS					
Rate of Change of Commutating Current* (V _D = 400 V, I _{TM} = 4.4 A, Commutating dv/dt = 18 V/μs, Gate Open, T _J = 125°C, f = 250 Hz, No Snubber)	(dv/dt) _c	6.5	—	—	A/ms
Critical Rate of Rise of Off-State Voltage (V _D = Rated V _{DRM} , Exponential Waveform, Gate Open, T _J = 125°C)	dv/dt	250	—	—	V/μs

*Indicates Pulse Test: Pulse Width ≤ 2.0 ms, Duty Cycle ≤ 2%.