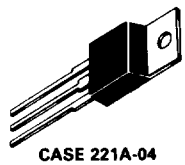
Triacs
Silicon Bidirectional Thyristors

MAC213 Series

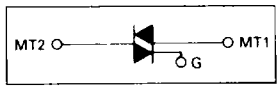
. . . designed for full-wave ac control applications primarily in industrial environments needing noise immunity.

- Guaranteed High Commutation Voltage
  dv/dt — 500 V/μs Min @ T_C = 25°C
- High Blocking Voltage — V_{DRM} to 800 V
- Photo Glass Passivated Junction for Improved Power Cycling Capability and Reliability

TRIACs
12 AMPERES RMS
200 thru 800 VOLTS



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



MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Repetitive Peak Off-State Voltage, Note 1 (T_J = -40 to +125°C) MAC213-4	V_{DRM}	200	Volts
-6		400	
-8		600	
-10		800	
Peak Gate Voltage	V_{GM}	10	Volts
On-State Current RMS (T_C = +85°C) Full Cycle Sine Wave 50 to 60 Hz	$I_{T(RMS)}$	12	Amp
Peak Non-Repetitive Surge Current (One Full Cycle, 60 Hz, T_C = +85°C) preceded and followed by Rated Current	I_{TSM}	100	Amp
Circuit Fusing Considerations (T_C = +85°C, t = 1.0 to 8.3 ms)	I^2t	41	A^2s
Peak Gate Power (T_C = +85°C, Pulse Width = 10 μs)	P_{GM}	20	Watts
Average Gate Power (T_C = +85°C, t = 8.3 ms)	$P_{G(AV)}$	0.35	Watt
Peak Gate Current (T_C = +85°C, Pulse Width = 10 μs)	I_{GM}	2.0	Amp
Operating Junction Temperature Range	T_J	-40 to +125	°C
Storage Temperature Range	T_{stg}	-40 to +150	°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	2.1	°C/W

Note 1. Ratings apply for open gate conditions. Thyristor devices shall not be tested with a constant current source for blocking capability such that the voltage applied exceeds the rated blocking voltage.

ELECTRICAL CHARACTERISTICS (T_C + 25 C unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
Peak Blocking Current (Either Direction) Rated V_{DRM}, Gate Open	I_{DRM}				
T_J 25 C		—	—	10	μA
T_J + 125 C		—	—	2.0	mA
Peak On-State Voltage (Either Direction)	V_{TM}	—	1.3	1.75	Volts
I_{TM} 17 A Peak; Pulse Width · 2.0 ms, Duty Cycle · 2.0%					
Gate Trigger Current (Continuous dc)	I_{GT}				mA
Main Terminal Voltage 12 Vdc, R_L 100 Ohms					
MT2(+), G(+)		—	—	100	
MT2(+), G( )		—	—	100	
MT2( ), G( )		—	—	100	
Gate Trigger Voltage (Continuous dc)	V_{GT}				Volts
Main Terminal Voltage 12 Vdc, R_L 100 Ohms					
MT2(+), G(-)		—	—	2.0	
MT2(+), G( )		—	—	2.0	
MT2(-), G( )		—	—	2.0	
Main Terminal Voltage Rated V_{DRM}, R_L 10 kΩ, T_J + 125 C					
MT2(+), G(-); MT2( ), G( ); MT2(+), G( )		0.2	—	—	
Holding Current (Either Direction)	I_H	—	—	100	mA
Main Terminal Voltage 12 Vdc, Gate Open,					
Initiating Current 200 mA, T_C + 25 C					
Turn-On Time	t_{gt}	—	1.5	—	μs
Rated V_{DRM}, I_{TM} 17 A, I_{GT} 120 mA,					
Rise Time 0.1 μs, Pulse Width 2.0 μs					
Critical Rate of Rise of Off-State Voltage	dv dt(s)				V μs
V_D Rated V_{DRM}, Exponential Voltage Rise, Gate Open					
T_J 25 C		500	—	—	
T_J + 125 C		200	—	—	

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TYPICAL CHARACTERISTICS

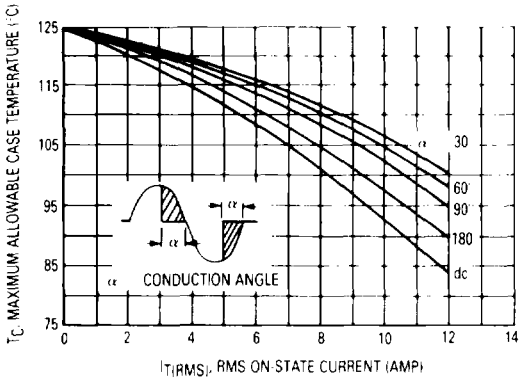

Figure 1. Current Derating

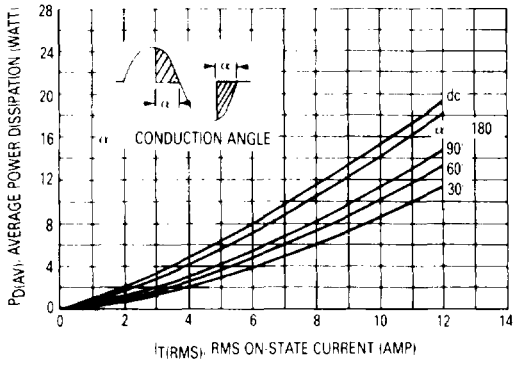

Figure 2. Power Dissipation

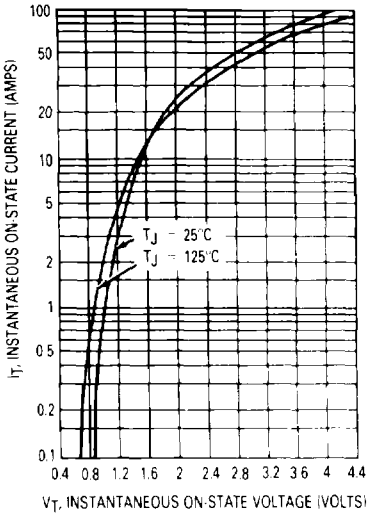

Figure 3. Maximum On-State Characteristics

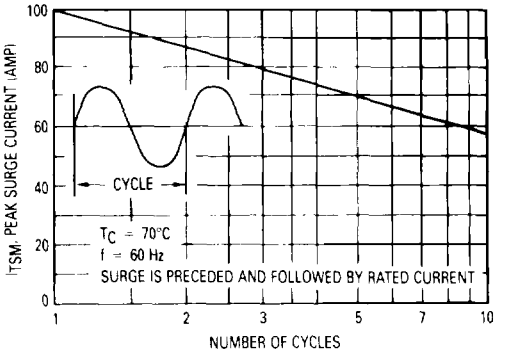

Figure 4. Maximum Non-Repetitive Surge Current

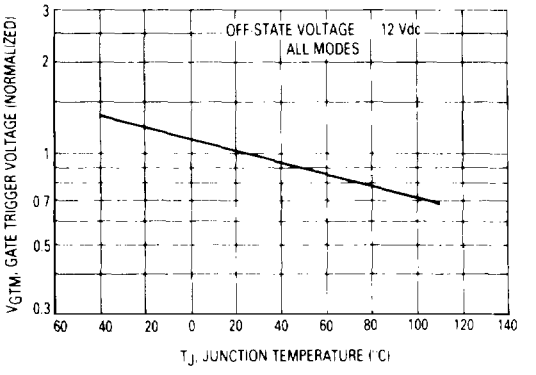

Figure 5. Typical Gate Trigger Voltage

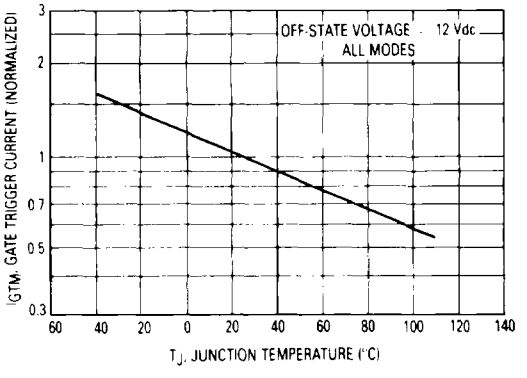

Figure 6. Typical Gate Trigger Current

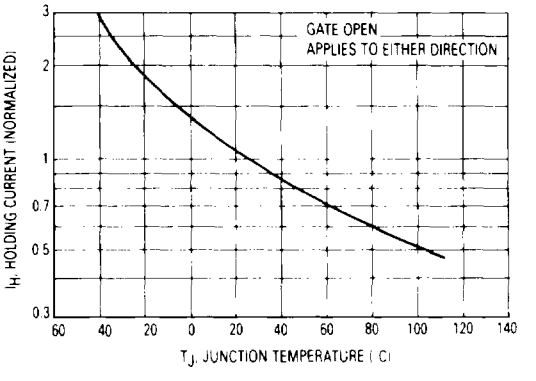

Figure 7. Typical Holding Current

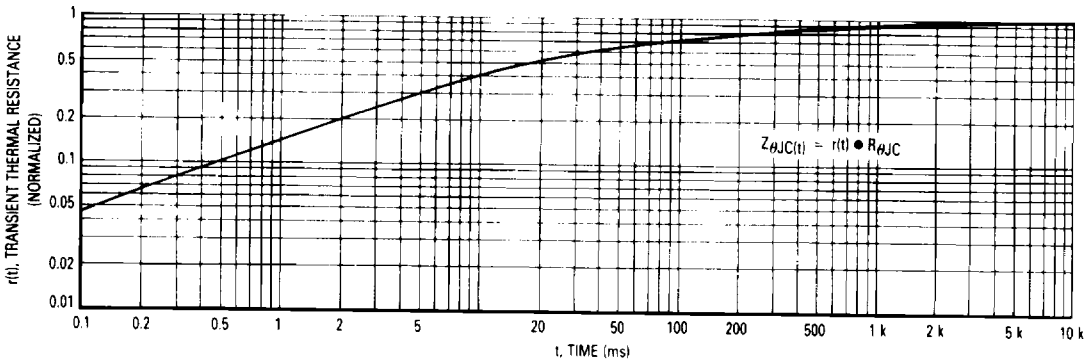

Figure 8. Thermal Response