

### 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
<b>Peak repetitive off-state voltage</b> <sup>(1)</sup> ( $T_J = 110^\circ\text{C}$ ) MAC6068C MAC6069C MAC6070C MAC6071C MAC6073C MAC6074C MAC6075C	$V_{\text{DRM}}$	25 50 100 200 400 500 600	Volts
<b>RMS on-state current</b> ( $T_C = 85^\circ\text{C}$ )	$I_{\text{T(RMS)}}$	4.0	Amps
<b>Peak non-repetitive surge current</b> (1 cycle, 60 Hz, $T_J = -40$ to $+110^\circ\text{C}$ )	$I_{\text{TSM}}$	30	Amps
<b>Circuit fusing considerations</b> ( $T_J = -40$ to $+110^\circ\text{C}$ , $t = 1.0$ to $8.3\text{ms}$ )	$I^2t$	3.6	$\text{A}^2\text{s}$
<b>Peak gate power</b>	$P_{\text{GM}}$	10	Watts
<b>Average gate power</b>	$P_{\text{G(AV)}}$	0.5	Watts
<b>Operating junction temperature range</b>	$T_J$	-40 to +110	$^\circ\text{C}$
<b>Storage temperature range</b>	$T_{\text{stg}}$	-40 to +150	$^\circ\text{C}$
<b>Mounting torque</b> (6-32 screw) <sup>(2)</sup>		8.0	In. lb.

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.

Note 2: Torque rating applies with use of torque washer. Mounting torque in excess of 6 in. lb. does not appreciably lower case to sink thermal resistance. Main terminal 2 and heatsink contact pad are common.

- Soldering temperatures shall not exceed  $200^\circ\text{C}$  for 10 seconds.

### THERMAL CHARACTERISTICS

Characteristic	Symbol	Maximum	Unit
<b>Thermal resistance, junction to case</b>	$R_{\theta\text{JC}}$	3.5	$^\circ\text{C}/\text{W}$
<b>Thermal resistance, junction to ambient</b>	$R_{\theta\text{JA}}$	60	$^\circ\text{C}/\text{W}$

### ELECTRICAL CHARACTERISTICS ( $T_C = 25^\circ\text{C}$ and either polarity of MT2 to MT1 voltage, unless otherwise noted)

Characteristic	Symbol	Min	Typ.	Max	Unit
<b>Peak blocking current</b> (either direction) (Rated $V_{\text{DRM}}$ @ $T_J = 125^\circ\text{C}$ , gate open)	$I_{\text{DRM}}$	-	-	2.0	mA
<b>Peak on-state voltage</b> (either direction) ( $I_{\text{TM}} = 6.0\text{A}$ peak)	$V_{\text{TM}}$	-	-	2.0	Volts
<b>Gate trigger voltage</b> ( $V_D = 12\text{V}$ , $R_L = 100\Omega$ , $T_J = -40^\circ\text{C}$ ) MT2(+),G(+); MT2(-),G(-), all types MT2(+),G(-); MT2(-),G(+), all types ( $V_D = \text{Rated } V_{\text{DRM}}$ , $R_L = 10\text{k}\Omega$ , $T_J = 110^\circ\text{C}$ ) MT2(+),G(+); MT2(-),G(-), all types MT2(+),G(-); MT2(-),G(+), all types	$V_{\text{GT}}$	- - 0.2 0.2	1.4 1.4 - -	2.5 2.5 - -	Volts

# MAC6068C-MAC6075C

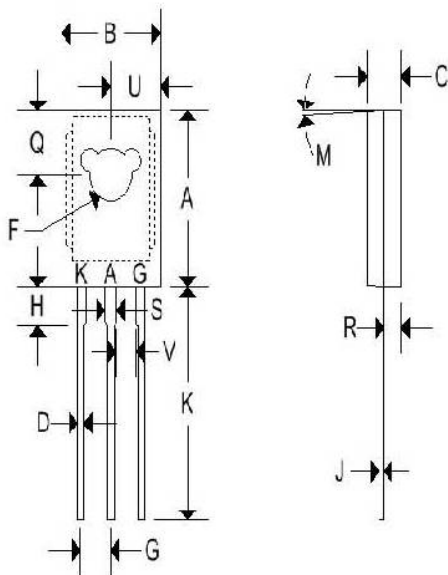
## SILICON BIDIRECTIONAL THYRISTORS

<b>Holding current</b> (either direction) $(V_D = 12V, \text{gate open}, T_J = -40^\circ\text{C}, \text{initiating current} = 1A)$ MAC6068C-MAC6075C $T_J = 25^\circ\text{C}$ MAC6068C-MAC6075C	$I_H$	-	-	30	mA
		-	-	15	

Characteristic	Symbol	Quadrant			
		I mA	II mA	III mA	IV mA
<b>Peak gate trigger current</b> $(\text{Main terminal voltage} = 12V, R_L = 100\Omega, T_J = 25^\circ\text{C})$ $(\text{Main terminal voltage} = 12V, R_L = 100\Omega, T_J = -40^\circ\text{C})$	$I_{GTM}$	10	10	10	20
		20	20	20	40

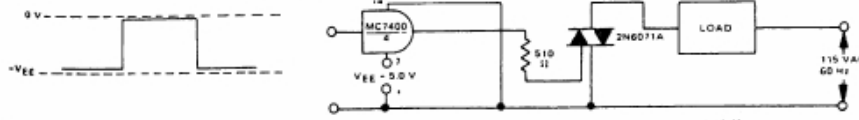
### MECHANICAL CHARACTERISTICS

Case	TO-126
Marking	Alpha-numeric
Pin out:	See below

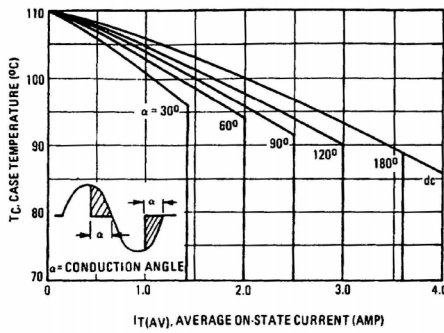


	TO-126			
	Inches		Millimeters	
	Min	Max	Min	Max
A	0.425	0.435	10.80	11.050
B	0.295	0.305	7.490	7.750
C	0.095	0.105	2.410	2.670
D	0.020	0.026	0.510	0.660
F	0.115	0.125	2.920	3.180
G	0.091	0.097	2.310	2.460
H	0.050	0.095	1.270	2.410
J	0.015	0.025	0.380	0.640
K	0.595	0.655	15.110	16.640
M	3° TYP		3° TYP	
Q	0.148	0.158	3.760	4.010
R	0.045	0.055	1.140	1.400
S	0.025	0.035	0.640	0.890
U	0.145	0.155	3.680	3.940
V	0.040	-	1.020	-

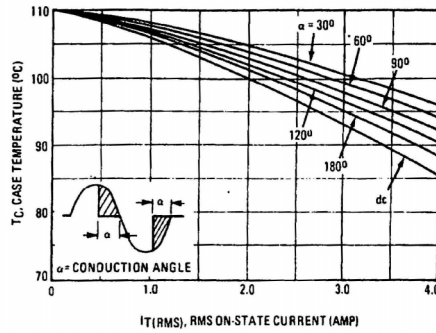
**SAMPLE APPLICATION:**  
TTL-SENSITIVE GATE 4 AMPERE TRIAC  
TRIGGERS IN MODES II AND III



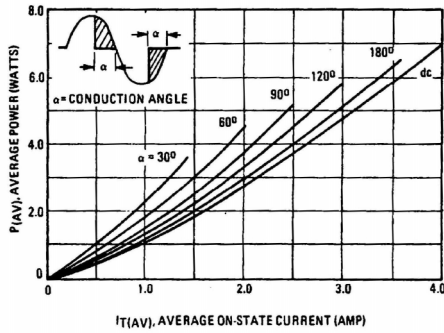
**FIGURE 1 - AVERAGE CURRENT DERATING**



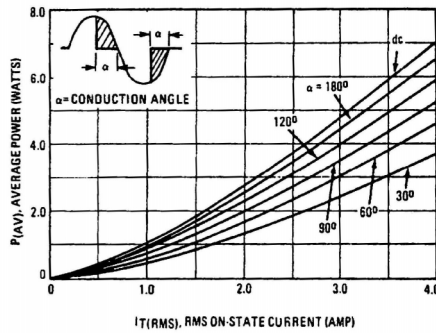
**FIGURE 2 - RMS CURRENT DERATING**



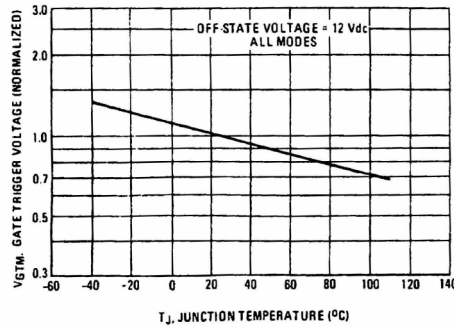
**FIGURE 3 - POWER DISSIPATION**



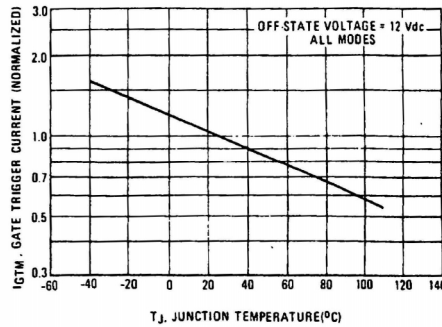
**FIGURE 4 - RMS POWER DISSIPATION**



**FIGURE 5 - TYPICAL GATE-TRIGGER VOLTAGE**



**FIGURE 6 - TYPICAL GATE-TRIGGER CURRENT**



# MAC6068C-MAC6075C

## SILICON BIDIRECTIONAL THYRISTORS

FIGURE 7 – MAXIMUM ON-STATE CHARACTERISTICS

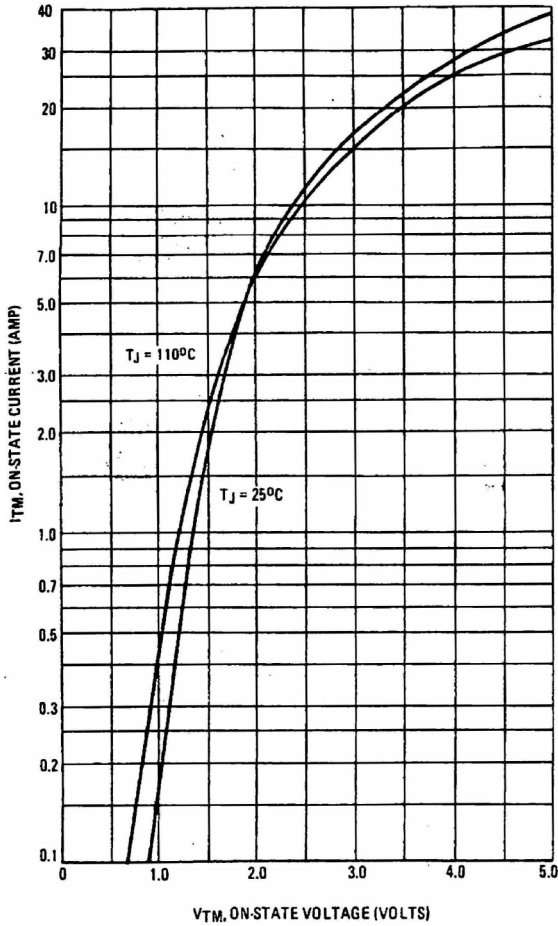


FIGURE 8 – TYPICAL HOLDING CURRENT

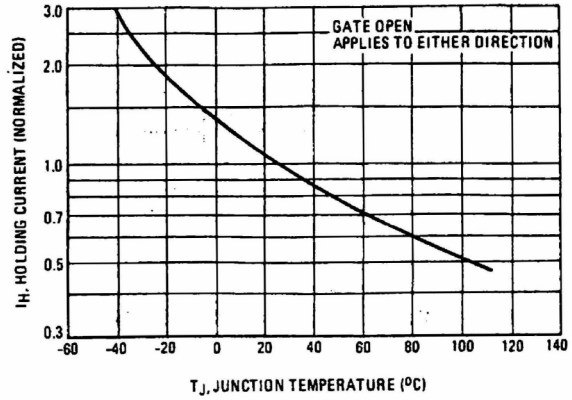


FIGURE 9 – MAXIMUM ALLOWABLE SURGE CURRENT

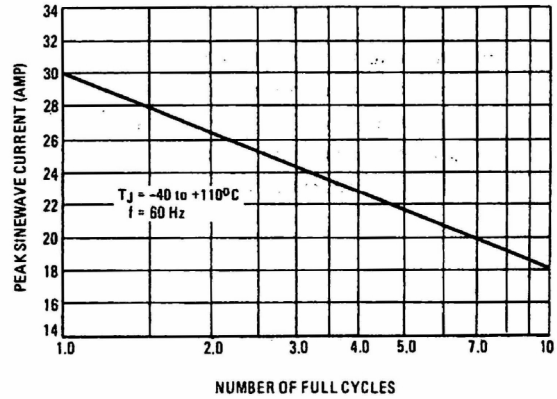


FIGURE 10 – THERMAL RESPONSE

