

DIGITRON SEMICONDUCTORS

MAC6068C-MAC6075C

SILICON BIDIRECTIONAL THYRISTORS

Available Non-RoHS (standard) or RoHS compliant (add PBF suffix).

Available as "HR" (high reliability) screened per MIL-PRF-19500, JANTX level. Add "HR" suffix to base part number.

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Peak repetitive off-state voltage ⁽¹⁾ (T _J = 110°C) MAC6068C MAC6069C MAC6070C MAC6071C MAC6073C MAC6074C MAC6075C	V _{DRM}	25 50 100 200 400 500 600	Volts
RMS on-state current (T _C = 85°C)	I _{T(RMS)}	4.0	Amps
Peak non-repetitive surge current (1 cycle, 60 Hz, T _J = -40 to +110°C)	I _{TSM}	30	Amps
Circuit fusing considerations (T _J = -40 to +110°C, t = 1.0 to 8.3ms)	I ² t	3.6	A ² s
Peak gate power	P _{GM}	10	Watts
Average gate power	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 (6-32 screw) ⁽²⁾		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°C for 10 seconds.

THERMAL CHARACTERISTICS

Characteristic	Symbol	Maximum	Unit
Thermal resistance, junction to case	R _{θJC}	3.5	°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 (either direction) (Rated V _{DRM} @ T _J = 125°C, gate open)	I _{DRM}	-	-	2.0	mA
Peak on-state voltage (either direction) (I _{TM} = 6.0A peak)	V _{TM}	-	-	2.0	Volts
Gate trigger voltage (V _D = 12V, R _L = 100Ω, T _J = -40°C) MT2(+),G(+); MT2(-),G(-), all types MT2(+),G(-); MT2(-),G(+), all types (V _D = Rated V _{DRM} , R _L = 10kΩ, T _J = 110°C) MT2(+),G(+); MT2(-),G(-), all types MT2(+),G(-); MT2(-),G(+), all types	V _{GT}	- - 0.2 0.2	1.4 1.4 - -	2.5 2.5 - -	Volts
Holding current (either direction) (V _D = 12V, gate open, T _J = -40°C, initiating current = 1A) MAC6068C-MAC6075C T _J = 25°C MAC6068C-MAC6075C	I _H	- -	- -	30 15	mA

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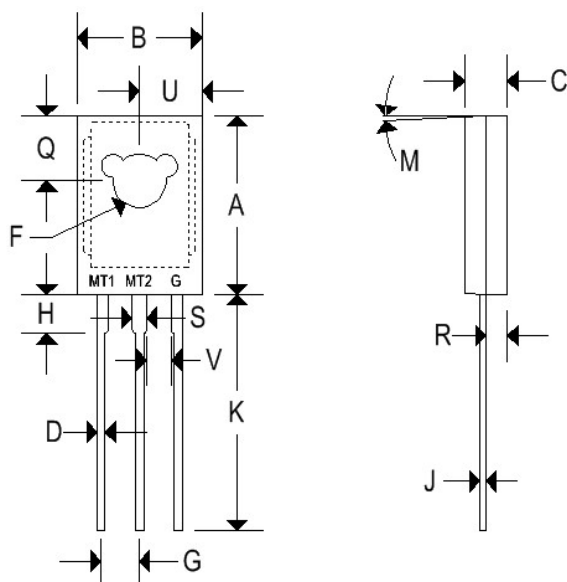
MAC6068C-MAC6075C SILICON BIDIRECTIONAL THYRISTORS

Characteristic	Symbol	Min	Typ.	Max	Unit
Turn on time (either direction) ($I_{TM} = 14A$ peak, $I_{GT} = 100mA$)	t_{on}	-	1.5	-	μs
Blocking voltage application rate at commutation @ V_{DRM} ($T_J = 85^\circ C$, gate open)	dv/dt	-	5.0	-	$V/\mu s$

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

MECHANICAL CHARACTERISTIC

Case	TO-126
Marking	Body painted, 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	-

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

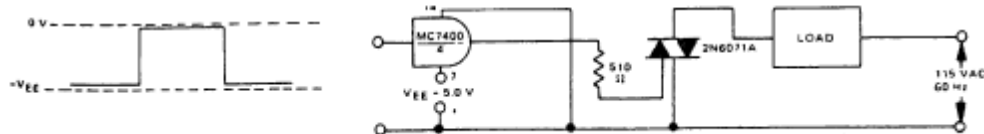


FIGURE 1 - AVERAGE CURRENT DERATING

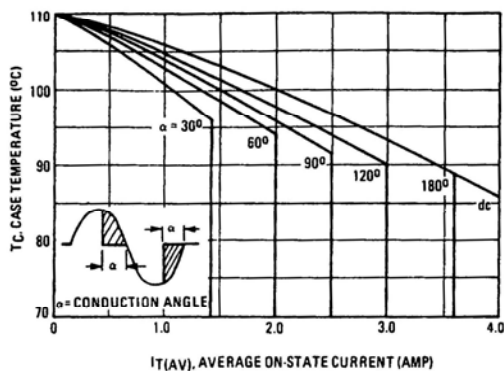


FIGURE 2 - RMS CURRENT DERATING

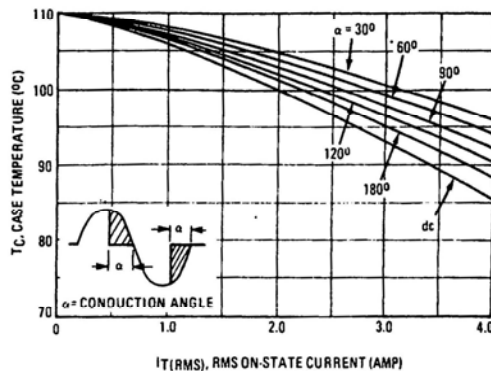


FIGURE 3 - POWER DISSIPATION

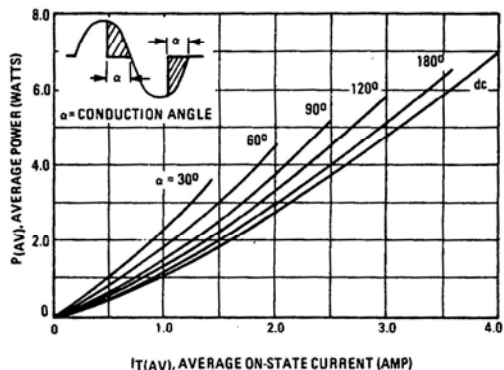


FIGURE 4 - POWER DISSIPATION

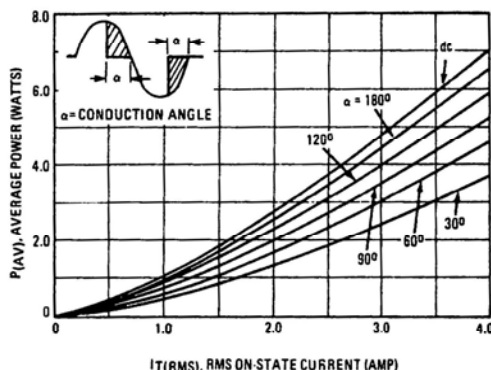


FIGURE 5 - TYPICAL GATE TRIGGER VOLTAGE

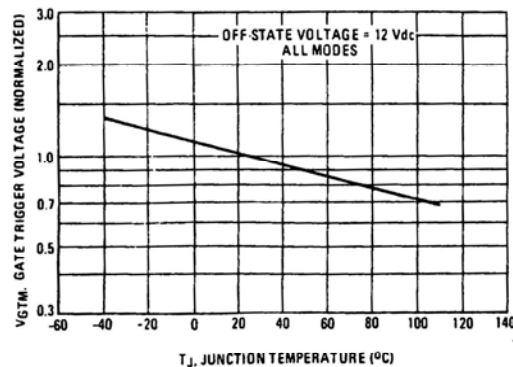
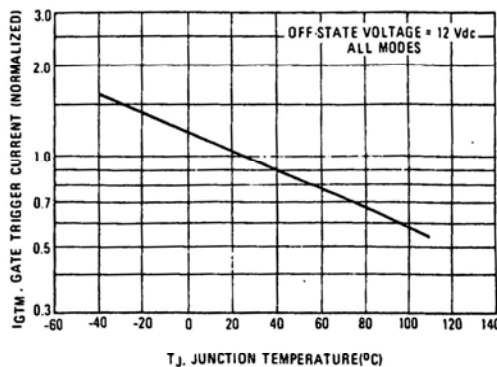


FIGURE 6 - TYPICAL GATE TRIGGER CURRENT



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FIGURE 7 – MAXIMUM ON-STATE CHARACTERISTICS

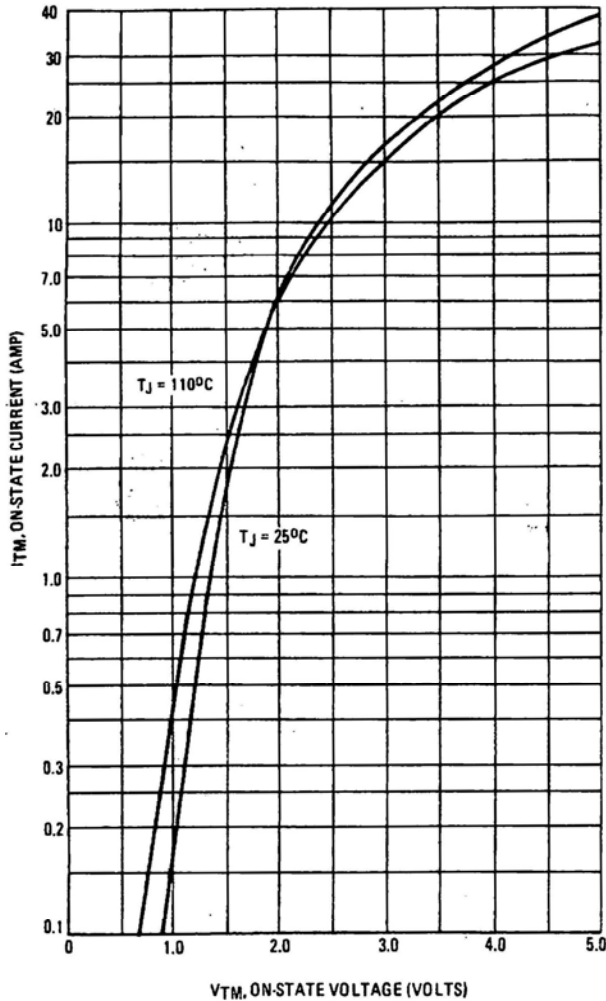


FIGURE 8 – TYPICAL HOLDING CURRENT

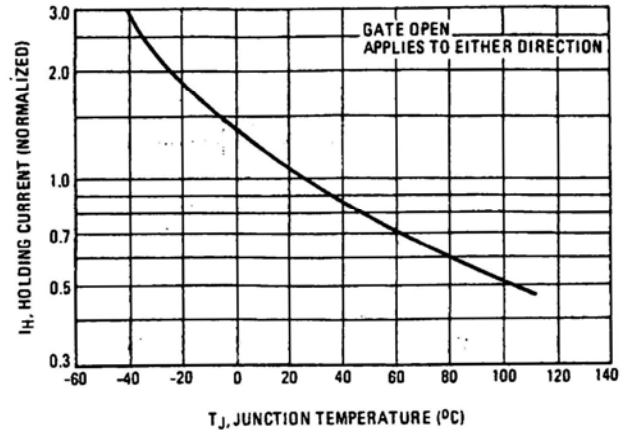


FIGURE 9 – MAXIMUM ALLOWABLE SURGE CURRENT

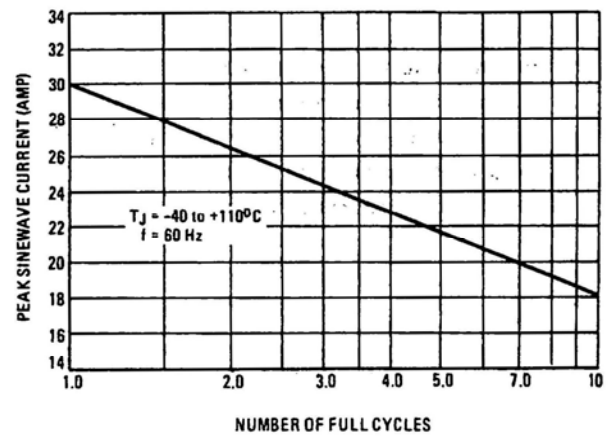


FIGURE 10 – THERMAL RESPONSE

