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	V_{DRM}	25	Volts
MAC6069C		50	
MAC6070C		100	
MAC6071C		200	
MAC6073C		400	
MAC6074C		500	
MAC6075C		600	
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^2t	3.6	A^2s
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	$R_{\Theta JC}$	3.5	°C/W
Thermal resistance, junction to ambient	$R_{\Theta JA}$	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	V_{GT}	-	1.4	2.5	Volts
MT2(+),G(-); MT2(-),G(+), all types		-	1.4	2.5	
(V_D = Rated V_{DRM}, R_L = 10kΩ, T_J = 110°C)					
MT2(+),G(+); MT2(-),G(-), all types		0.2	-	-	
MT2(+),G(-); MT2(-),G(+), all types		0.2	-	-	
Holding current (either direction) (V_D = 12V, gate open, T_J = -40°C, initiating current = 1A)					
MAC6068C-MAC6075C	I_H	-	-	30	mA
T_J = 25°C					
MAC6068C-MAC6075C		-	-	15	

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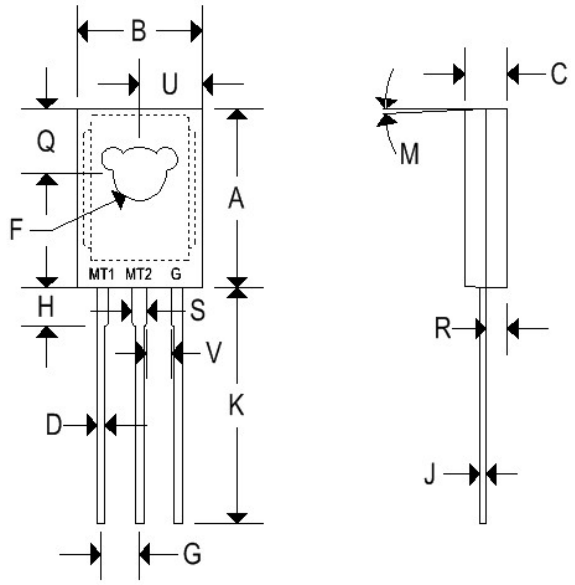
Characteristic	Symbol	Min	Typ.	Max	Unit
Turn on time (either direction) (I_{TM} = 14A peak, I_{GT} = 100mA)	t_{on}	-	1.5	-	µs
Blocking voltage application rate at commutation @ V_{DRM} (T_J = 85°C, gate open)	dv/dt	-	5.0	-	V/µs

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

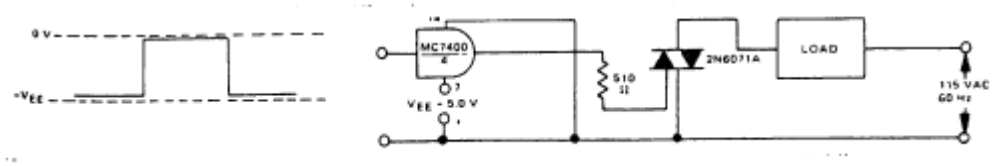

FIGURE 1 - AVERAGE CURRENT DERATING

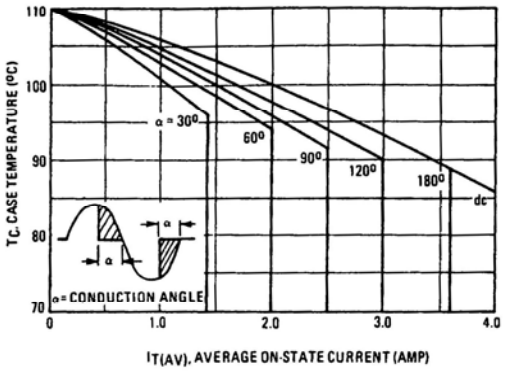

FIGURE 2 - RMS CURRENT DERATING

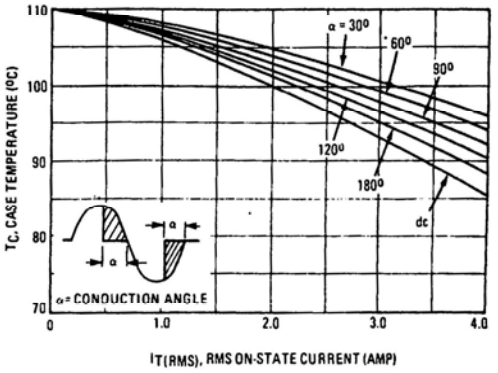

FIGURE 3 – POWER DISSIPATION

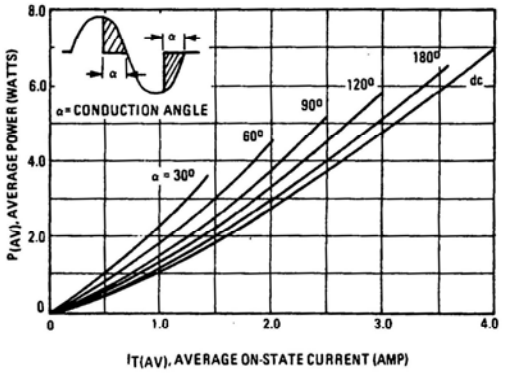

FIGURE 4 – POWER DISSIPATION

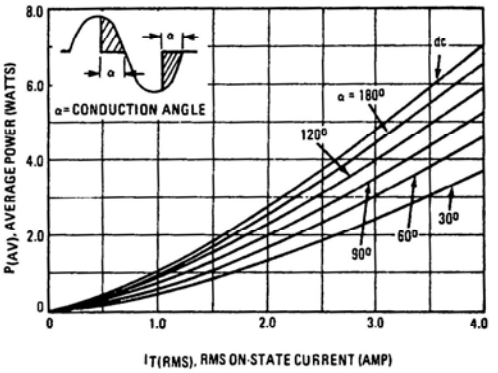

FIGURE 5 – TYPICAL GATE-TRIGGER VOLTAGE

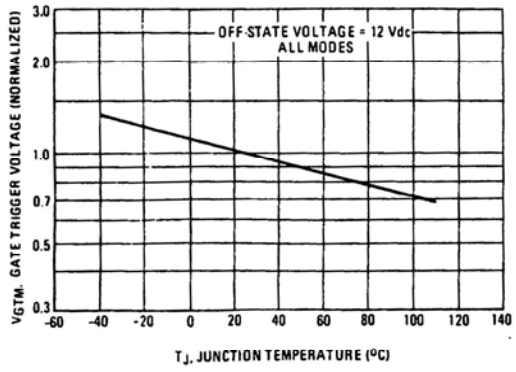

FIGURE 6 – TYPICAL GATE-TRIGGER CURRENT

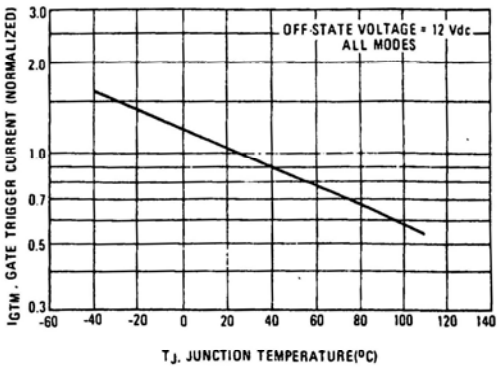

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FIGURE 7 – MAXIMUM ON-STATE CHARACTERISTICS

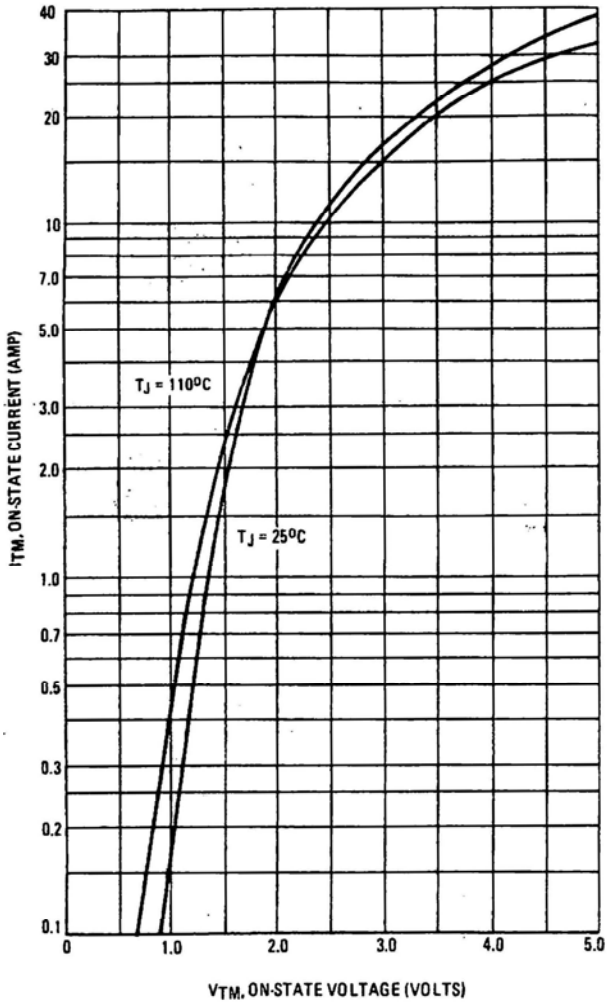


FIGURE 8 – TYPICAL HOLDING CURRENT

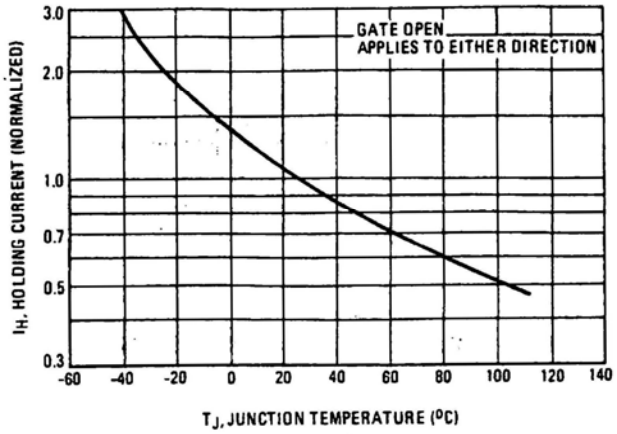


FIGURE 9 – MAXIMUM ALLOWABLE SURGE CURRENT

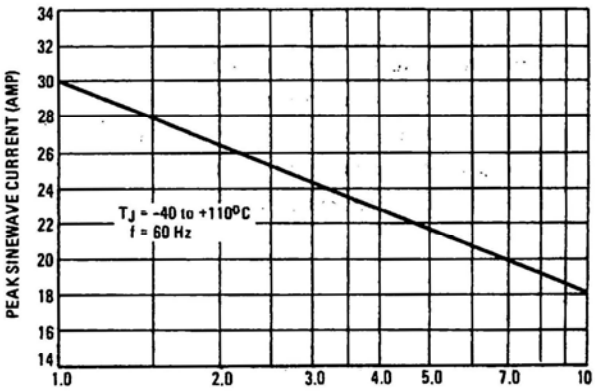
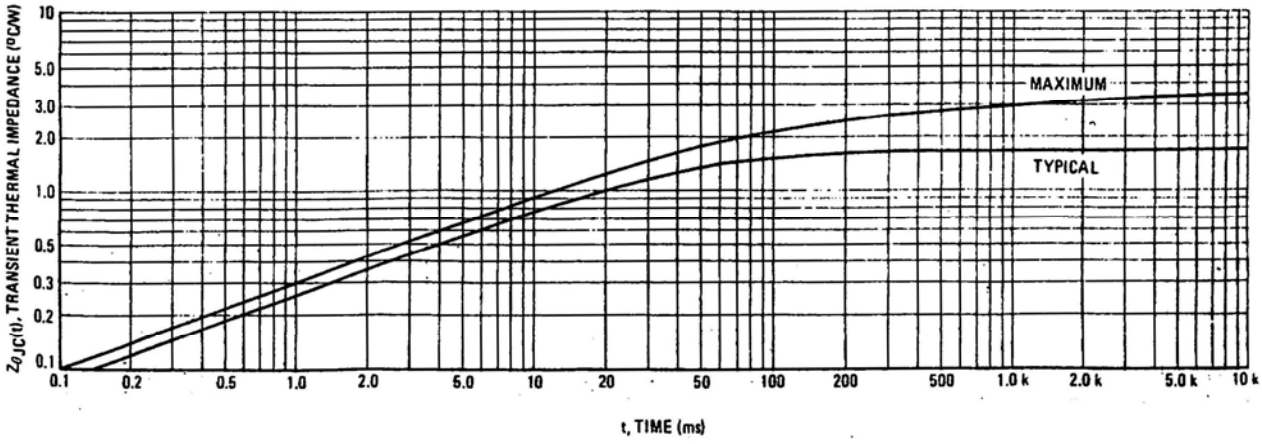


FIGURE 10 – THERMAL RESPONSE



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