

## Sensitive Gate Triacs

### Silicon Bidirectional Thyristors

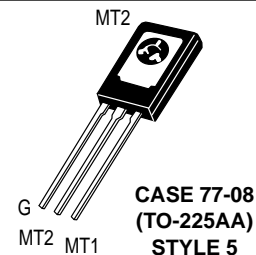
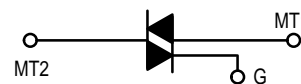
... designed primarily for full-wave ac control applications, such as light dimmers, motor controls, heating controls and power supplies; or wherever full-wave silicon gate controlled solid-state devices are needed. Triac type thyristors switch from a blocking to a conducting state for either polarity of applied anode voltage with positive or negative gate triggering.

- Sensitive Gate Triggering Uniquely Compatible for Direct Coupling to TTL, HTL, CMOS and Operational Amplifier Integrated Circuit Logic Functions
- Gate Triggering 4 Mode — 2N6071A,B, 2N6073A,B, 2N6075A,B
- Blocking Voltages to 600 Volts
- All Diffused and Glass Passivated Junctions for Greater Parameter Uniformity and Stability
- Small, Rugged, Thermopad Construction for Low Thermal Resistance, High Heat Dissipation and Durability

**2N6071A,B\***  
**2N6073A,B\***  
**2N6075A,B\***

\*Motorola preferred devices

**TRIACs**  
**4 AMPERES RMS**  
**200 thru 600 VOLTS**



#### MAXIMUM RATINGS (T<sub>J</sub> = 25°C unless otherwise noted.)

Rating	Symbol	Value	Unit
*Peak Repetitive Off-State Voltage <sup>(1)</sup> (Gate Open, T <sub>J</sub> = 25 to 110°C)	V <sub>DRM</sub>	200 400 600	Volts
*On-State Current RMS (T <sub>C</sub> = 85°C)	I <sub>T(RMS)</sub>	4	Amps
*Peak Surge Current (One Full cycle, 60 Hz, T <sub>J</sub> = -40 to +110°C)	I <sub>TSM</sub>	30	Amps
Circuit Fusing Considerations (t = 8.3 ms)	I <sup>2</sup> t	3.7	A <sup>2</sup> s
*Peak Gate Power	P <sub>GM</sub>	10	Watts
*Average Gate Power	P <sub>G(AV)</sub>	0.5	Watt
*Peak Gate Voltage	V <sub>GM</sub>	5	Volts

\*Indicates JEDEC Registered Data.

1. V<sub>DRM</sub> for all types can be applied on a continuous basis. Blocking voltages shall not be tested with a constant current source such that the voltage ratings of the devices are exceeded.

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

REV 1

## 2N6071A,B 2N6073A,B 2N6075A,B

### MAXIMUM RATINGS

Rating	Symbol	Value	Unit
*Operating Junction Temperature Range	$T_J$	-40 to +110	°C
*Storage Temperature Range	$T_{stg}$	-40 to +150	°C
Mounting Torque (6-32 Screw)(1)	—	8	in. lb.

\*Indicates JEDEC Registered Data.

- Torque rating applies with use of compression washer (B52200F006). 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.  
For soldering purposes (either terminal connection or device mounting), soldering temperatures shall not exceed +200°C, for 10 seconds. Consult factory for lead bending options.

### THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
*Thermal Resistance, Junction to Case	$R_{\theta JC}$	3.5	°C/W
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	75	°C/W

\*Indicates JEDEC Registered Data.

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

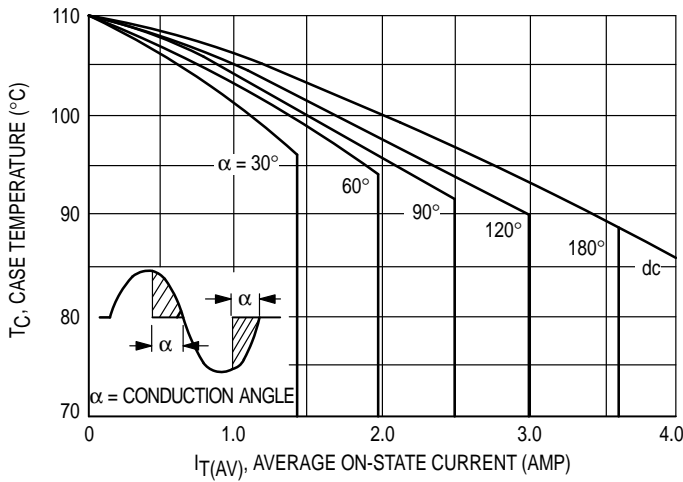
Characteristic	Symbol	Min	Typ	Max	Unit
*Peak Blocking Current ( $V_D = \text{Rated } V_{DRM}$ , gate open, $T_J = 25^\circ\text{C}$ ) ( $T_J = 110^\circ\text{C}$ )	$I_{DRM}$	— —	— —	10 2	$\mu\text{A}$ mA
*On-State Voltage (Either Direction) ( $I_{TM} = 6 \text{ A Peak}$ )	$V_{TM}$	—	—	2	Volts
*Peak Gate Trigger Voltage (Continuous dc) (Main Terminal Voltage = 12 Vdc, $R_L = 100 \text{ Ohms}$ , $T_J = -40^\circ\text{C}$ ) MT2(+), G(+); MT2(-), G(-) All Types MT2(+), G(-); MT2(-), G(+) (Main Terminal Voltage = Rated $V_{DRM}$ , $R_L = 10 \text{ k ohms}$ , $T_J = 110^\circ\text{C}$ ) MT2(+), G(+); MT2(-), G(-) All Types MT2(+), G(-); MT2(-), G(+)	$V_{GT}$	— — 0.2 0.2	— 1.4 1.4 —	— 2.5 2.5 —	Volts
*Holding Current (Either Direction) (Main Terminal Voltage = 12 Vdc, Gate Open, $T_J = -40^\circ\text{C}$ ) (Initiating Current = 1 Adc) 2N6071A,B, 2N6073A,B, 2N6075A,B ( $T_J = 25^\circ\text{C}$ ) 2N6071A,B, 2N6073A,B, 2N6075A,B	$I_H$	— —	— —	30 15	mA
Turn-On Time (Either Direction) ( $I_{TM} = 14 \text{ Adc}$ , $I_{GT} = 100 \text{ mAdc}$ )	$t_{on}$	—	1.5	—	$\mu\text{s}$
Blocking Voltage Application Rate at Commutation @ $V_{DRM}$ , $T_J = 85^\circ\text{C}$ , Gate Open, $I_{TM} = 5.7 \text{ A}$ , Commutating $di/dt = 2.0 \text{ A/ms}$	$dv/dt(c)$	—	5	—	V/ $\mu\text{s}$

\*Indicates JEDEC Registered Data.

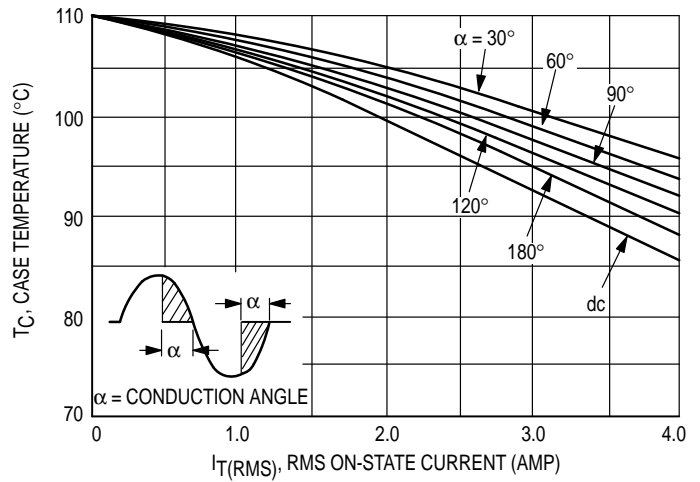


**2N6071A,B 2N6073A,B 2N6075A,B**

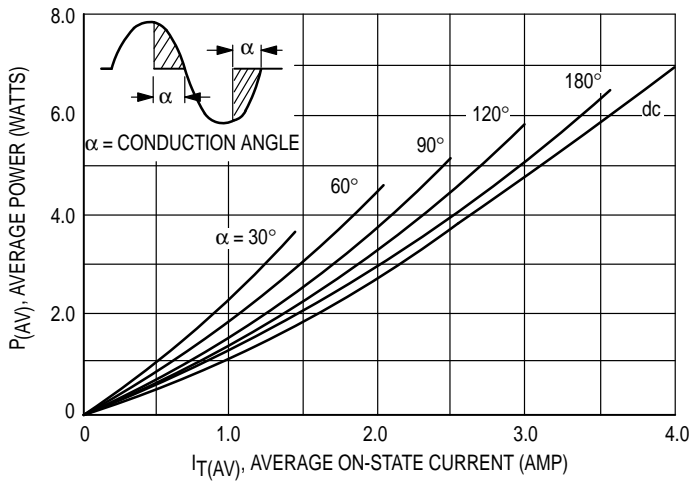
**FIGURE 1 – AVERAGE CURRENT DERATING**



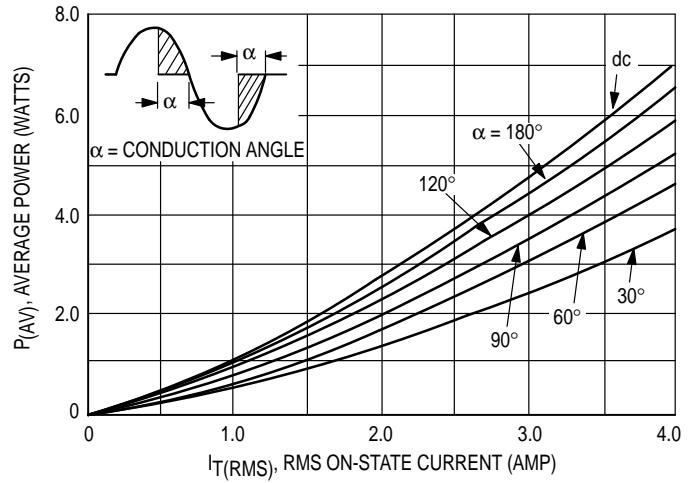
**FIGURE 2 – RMS CURRENT DERATING**



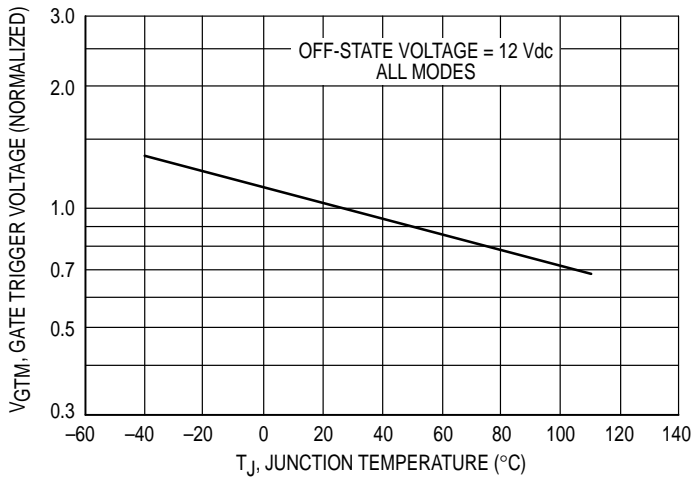
**FIGURE 3 – POWER DISSIPATION**



**FIGURE 4 – POWER DISSIPATION**



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



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

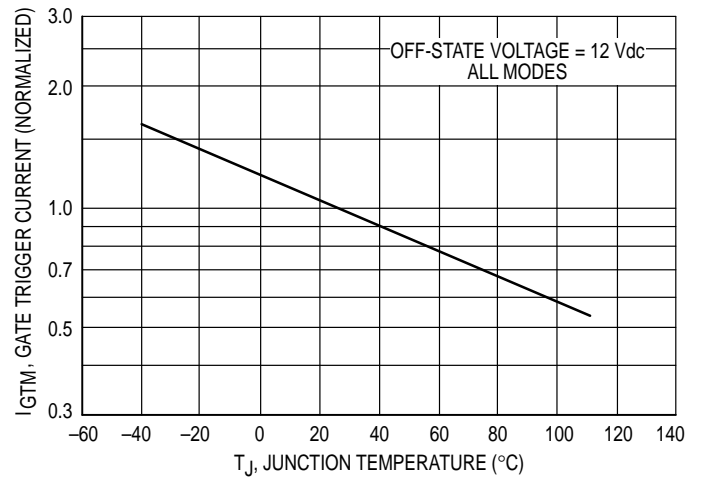


FIGURE 7 – MAXIMUM ON-STATE CHARACTERISTICS

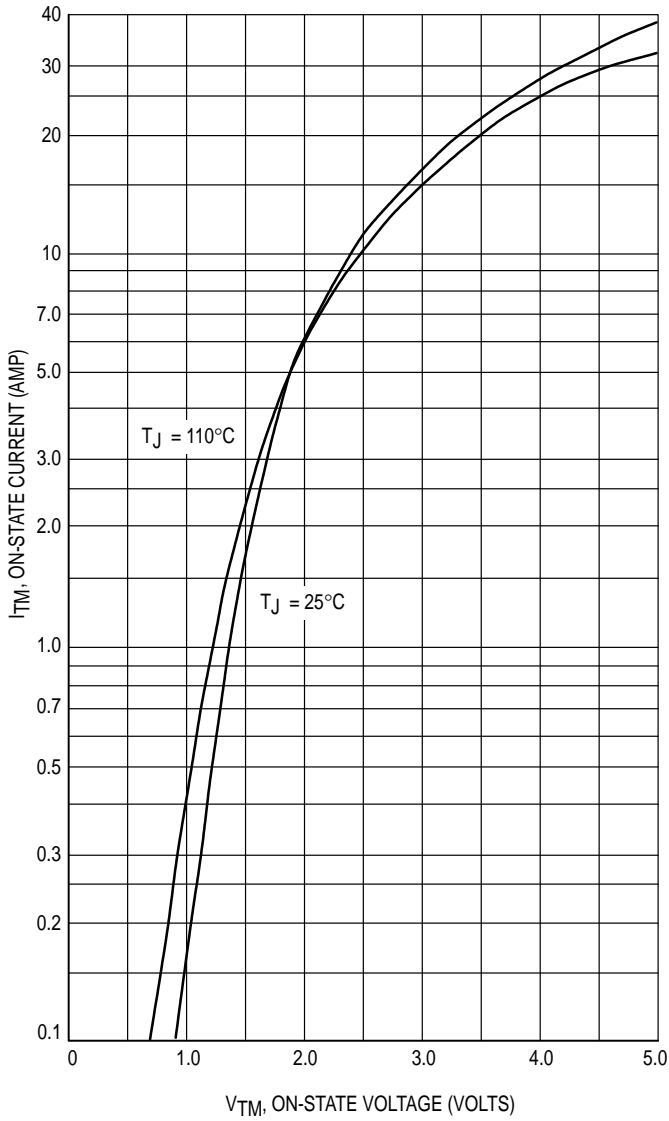


FIGURE 8 – TYPICAL HOLDING CURRENT

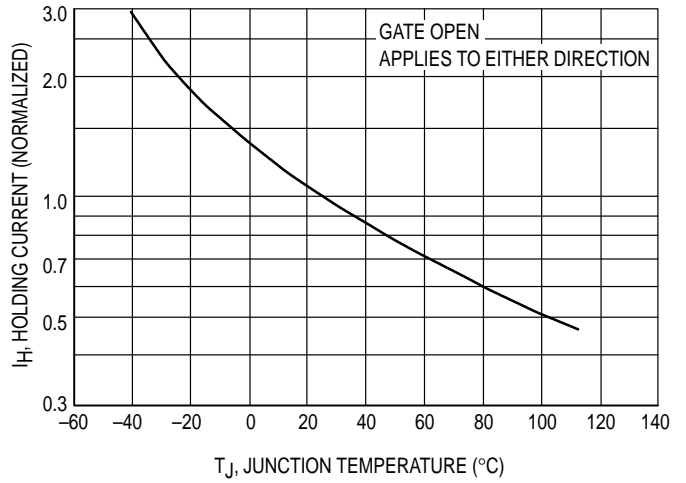


FIGURE 9 – MAXIMUM ALLOWABLE SURGE CURRENT

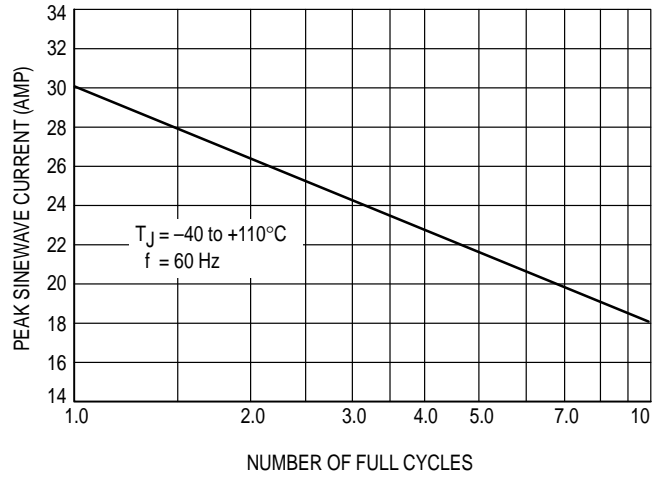
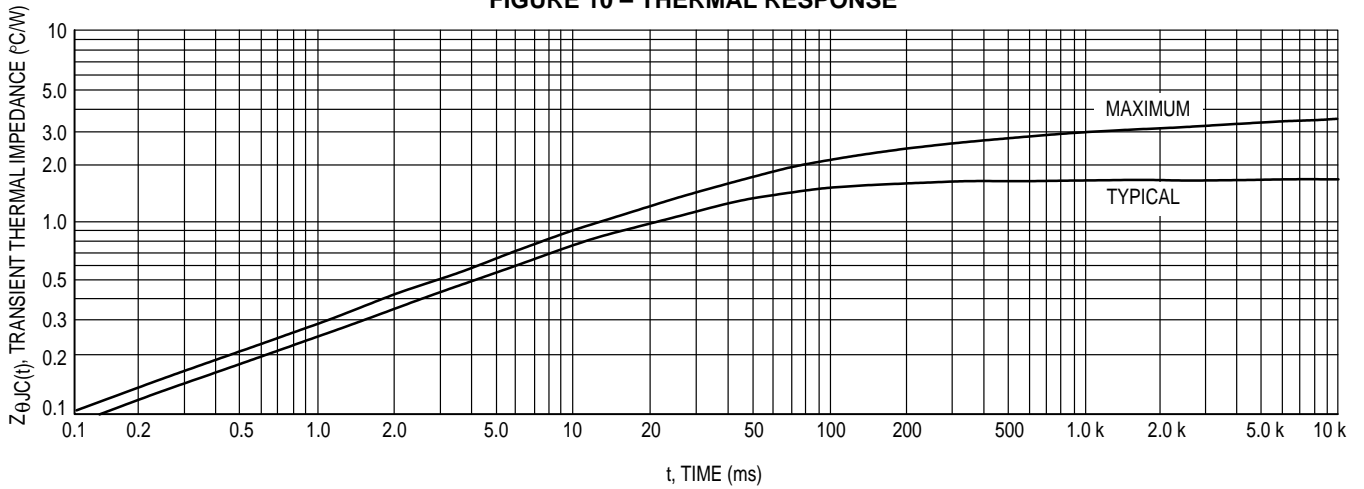
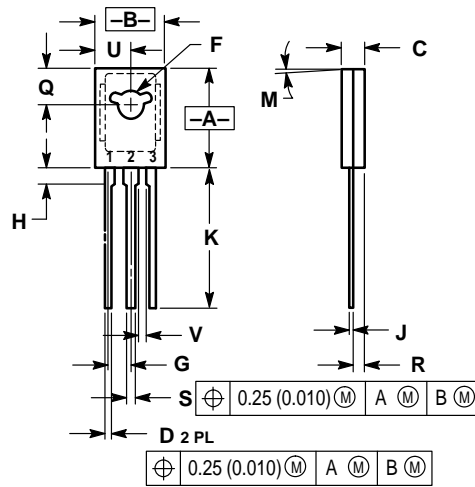


FIGURE 10 – THERMAL RESPONSE



PACKAGE DIMENSIONS



NOTES:  
 1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.  
 2. CONTROLLING DIMENSION: INCH.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.425	0.435	10.80	11.04
B	0.295	0.305	7.50	7.74
C	0.095	0.105	2.42	2.66
D	0.020	0.026	0.51	0.66
F	0.115	0.130	2.93	3.30
G	0.094 BSC		2.39 BSC	
H	0.050	0.095	1.27	2.41
J	0.015	0.025	0.39	0.63
K	0.575	0.655	14.61	16.63
M	5° TYP		5° TYP	
Q	0.148	0.158	3.76	4.01
R	0.045	0.065	1.15	1.65
S	0.025	0.035	0.64	0.88
U	0.145	0.155	3.69	3.93
V	0.040	—	1.02	—

STYLE 5:  
 PIN 1. MT 1  
 2. MT 2  
 3. GATE

CASE 77-09  
 (TO-225AA)  
 ISSUE W

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