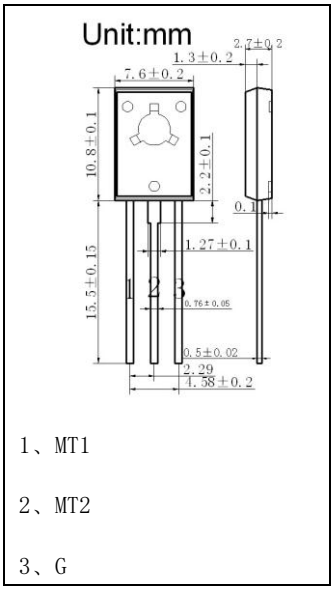
SHENZHEN LONG JING MICRO-ELECTRONICS CO., LTD.

TO-126 Plastic-Encapsulate Thyristors

2N6075



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
- 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

ELECTRICAL CHARACTERISTICS (Ta=25℃ unless otherwise specified

Rating	Symbol	Value	Unit
*Peak Repetitive Off-State Voltage(1) (Gate Open, T_J = 25 to 110°C) 2N6075A,B	V_{DRM}	600	Volts
*On-State Current RMS (T_C = 85°C)	$I_{T(RMS)}$	4	Amps
*Peak Surge Current (One Full cycle, 60 Hz, T_J = –40 to +110°C)	I_{TSM}	30	Amps
Circuit Fusing Considerations (t = 8.3 ms)	I^2t	3.7	A^2s
*Peak Gate Power	P_{GM}	10	Watts
*Average Gate Power	$P_{G(AV)}$	0.5	Watt
*Peak Gate Voltage	V_{GM}	5	Volts

*Indicates JEDEC Registered Data.

1. V_{DRM} 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

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.

1. 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°C unless otherwise noted; Electricals apply in both directions)

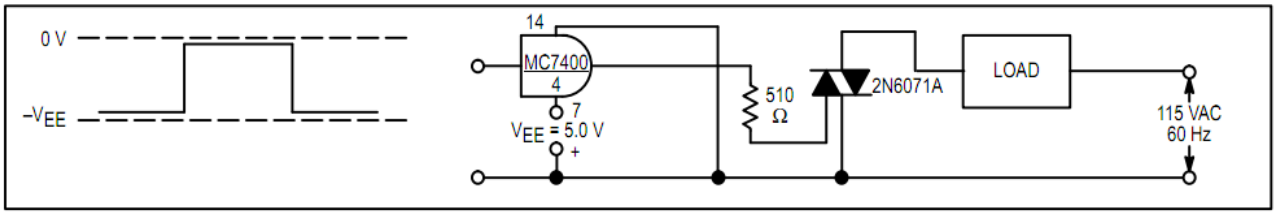
Characteristic		Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
*Peak Repetitive Blocking Current (V_D = Rated V_{DRM}, V_{RRM}; Gate Open)	T_J = 25°C	I_{DRM}, I_{RRM}	–	–	10	μA
	T_J = 110°C		–	–	2	mA
ON CHARACTERISTICS						
*Peak On-State Voltage (Note 3) (I_{TM} = ±6.0 A Peak)		V_{TM}	–	–	2	V
*Gate Trigger Voltage (Continuous DC), All Quadrants (Main Terminal Voltage = 12 Vdc, R_L = 100 Ω, T_J = −40°C)		V_{GT}	–	1.4	2.5	V
Gate Non−Trigger Voltage, All Quadrants (Main Terminal Voltage = 12 Vdc, R_L = 100 Ω, T_J = 110°C)		V_{GD}	0.2	–	–	V
*Holding Current (Main Terminal Voltage = 12 Vdc, Gate Open, Initiating Current = ±1 Adc)	T_J = −40°C	I_H	–	–	30	mA
	T_J = 25°C		–	–	15	
Turn-On Time (I_{TM} = 14 Adc, I_{GT} = 100 mAdc)		t_{gt}	–	1.5	–	μs
			QUADRANT (Maximum Value)			
Gate Trigger Current (Continuous DC) (Main Terminal Voltage = 12 Vdc, R_L = 100 Ω)	**Type**	**I_{GT} @ T_J**	**I mA**	**II mA**	**III mA**	**IV mA**
	2N6075A	+25°C	5	5	5	10
		−40°C	20	20	20	30
	2N6075B	+25°C	3	3	3	5
		−40°C	15	15	15	20

DYNAMIC CHARACTERISTICS

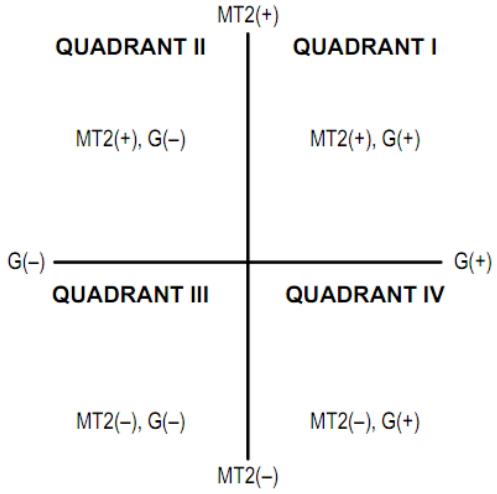
Critical Rate of Rise of Commutation Voltage @ V_{DRM}, T_J = 85°C, Gate Open, I_{TM} = 5.7 A, Exponential Waveform, Commutating di/dt = 2.0 A/ms	dv/dt(c)	–	5	–	V/μs

3. Pulse Test: Pulse Width ≤ 2.0 ms, Duty Cycle ≤ 2%.
*Indicates JEDEC Registered Data.

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



QUADRANT DEFINITIONS



Trigger devices are recommended for gating on Triacs. They provide:

1. Consistent predictable turn-on points.
2. Simplified circuitry.
3. Fast turn-on time for cooler, more efficient and reliable operation.

FIGURE 1 – AVERAGE CURRENT DERATING

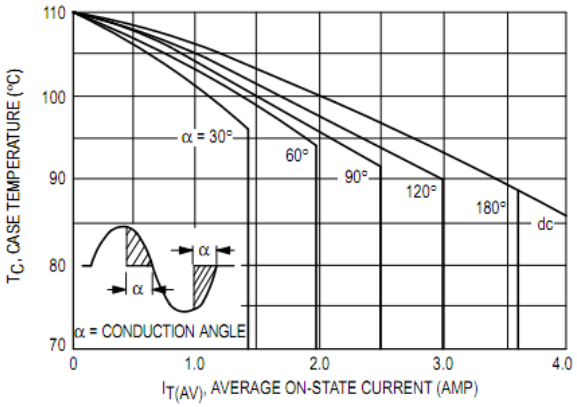


FIGURE 2 – RMS CURRENT DERATING

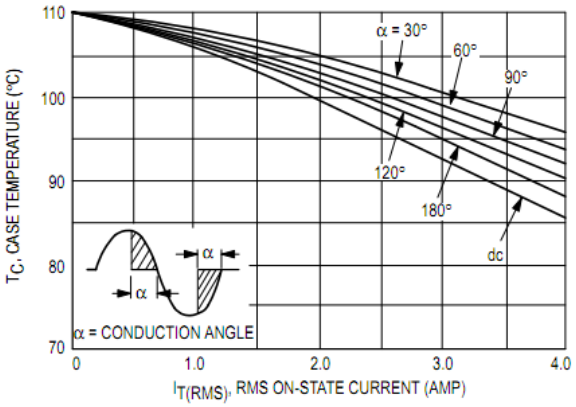


FIGURE 3 – POWER DISSIPATION

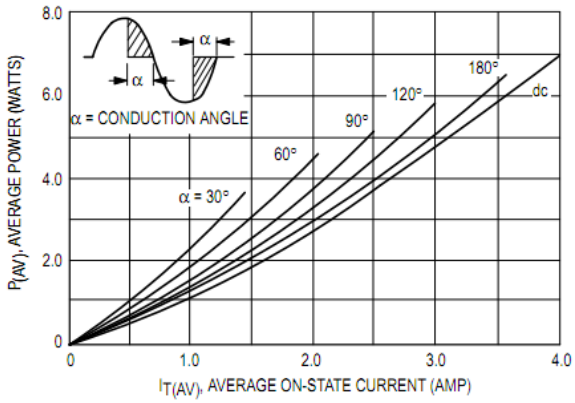


FIGURE 4 – POWER DISSIPATION

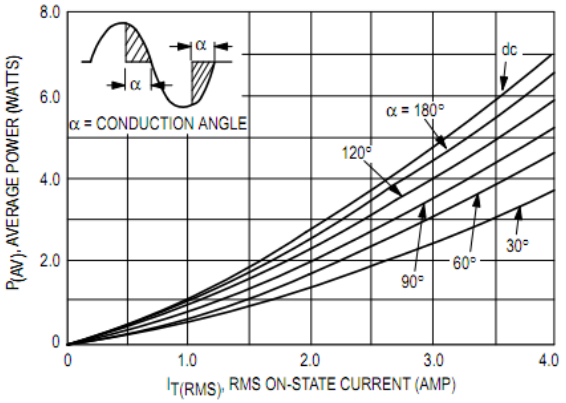


FIGURE 5 – TYPICAL GATE-TRIGGER VOLTAGE

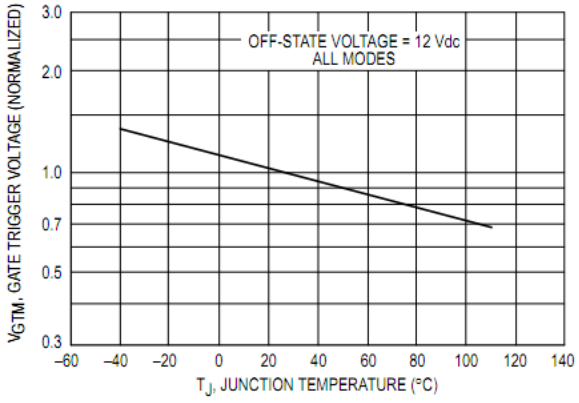


FIGURE 6 – TYPICAL GATE-TRIGGER CURRENT

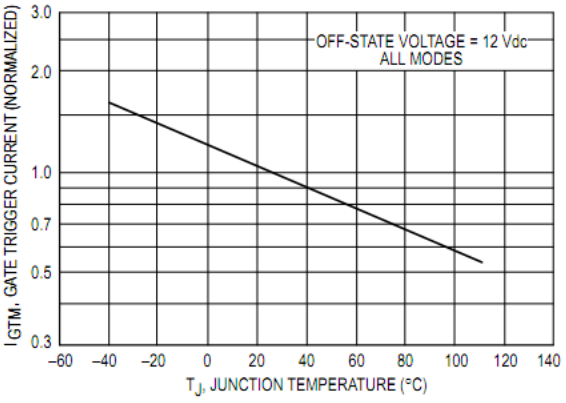


FIGURE 7 – MAXIMUM ON-STATE CHARACTERISTICS

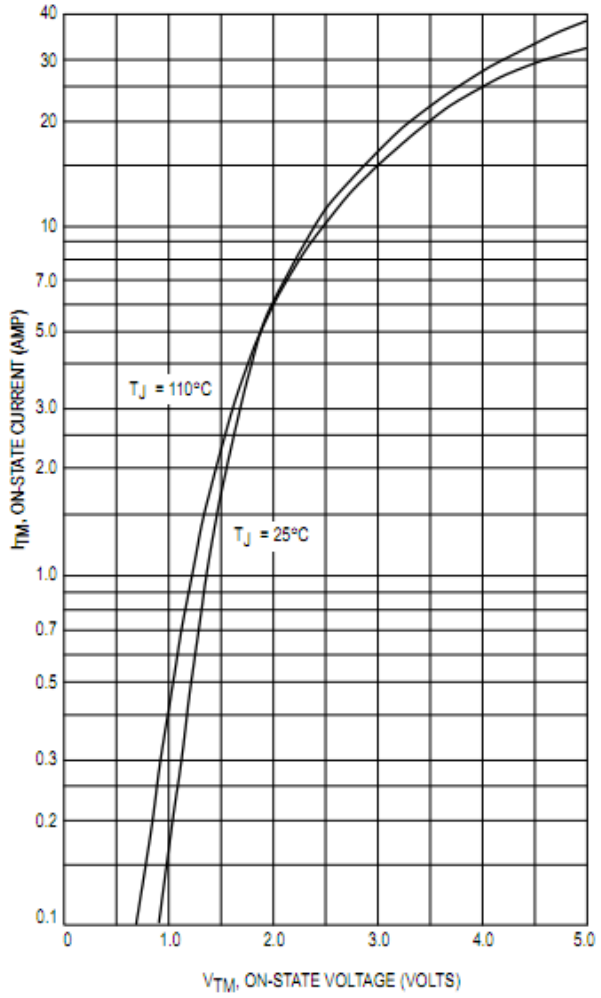


FIGURE 8 – TYPICAL HOLDING CURRENT

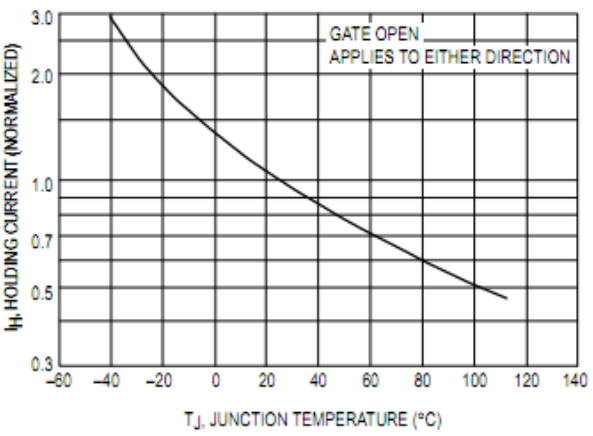


FIGURE 9 – MAXIMUM ALLOWABLE SURGE CURRENT

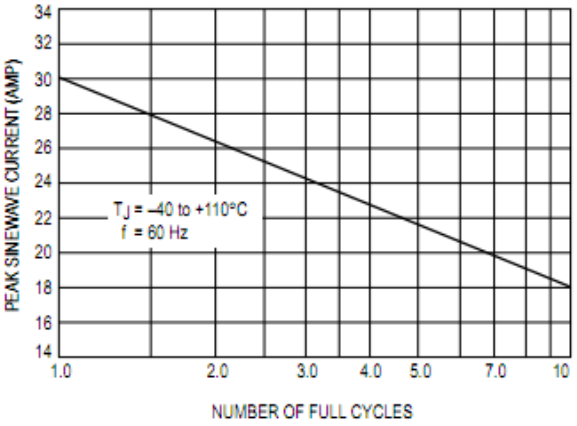


FIGURE 10 – THERMAL RESPONSE