

**Triacs**  
**Silicon Bidirectional Thyristors**

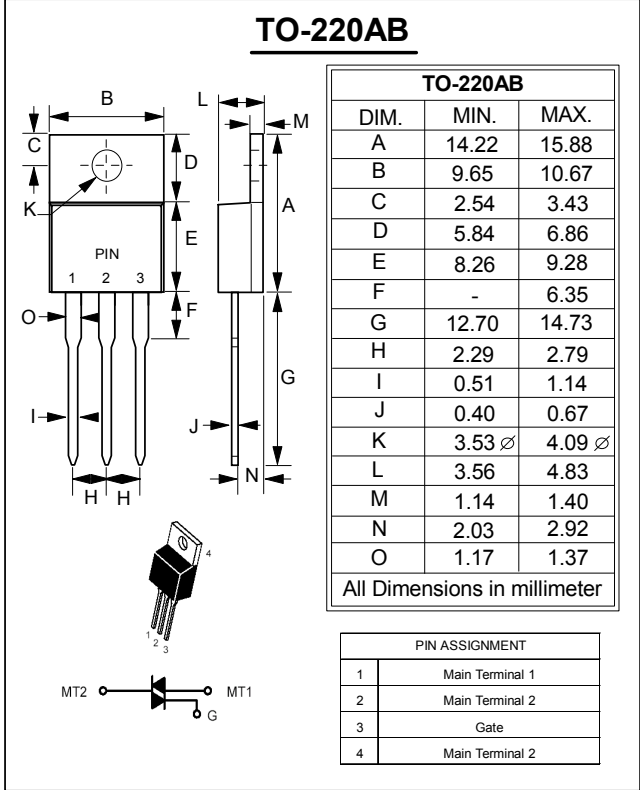
**TRIACS**  
**12 AMPERES RMS**  
**600 VOLTS**

**FEATURES**

- Blocking Voltage to 600 Volts
- On-state Current Rating of 12 Amperes RMS at 90°C
- Uniform Gate Trigger Currents in Three Quadrants
- High Immunity to dv/dt — 600 V/us Min. at 125°C
- Minimizes Snubber Networks for Protection
- High Commutating di/dt - 15 A/ms minimum at 125°C
- Pb Free Package

**MECHANICAL DATA**

- Case: Molded plastic
- Weight: 0.07 ounces, 2.0 grams



**MAXIMUM RATINGS** (Tj= 25°C unless otherwise noticed)

Rating	Symbol	Value	Unit
Peak Repetitive Off-State Voltage (1) (Tj= -40 to 125°C, Sine Wave, 50 to 60 Hz; Gate Open)	V <sub>DRM</sub> , V <sub>RRM</sub>	600	Volts
On-State RMS Current (T <sub>c</sub> = +90°C) Full Cycle Sine Wave 50 to 60 Hz	I <sub>T(RMS)</sub>	12	Amp
Peak Non-Repetitive Surge Current (One Full Cycle Sine Wave, 60 Hz, Tj= +25°C)	I <sub>TSM</sub>	100	Amps
Circuit Fusing Consideration (t = 8.3 ms)	$\int I^2 t$	41	A <sup>2</sup> s
Peak Gate Power (T <sub>c</sub> = +80°C, T <sub>p</sub> ≤ 1.0 us)	P <sub>GM</sub>	16	Watt
Average Gate Power (T <sub>c</sub> = +80°C, t=8.3 ms)	P <sub>G(AV)</sub>	0.35	Watt
Operating Junction Temperature Range	T <sub>J</sub>	-40 to +125	°C
Storage Temperature Range	T <sub>stg</sub>	-40 to +150	°C

Notice: (1) V<sub>DRM</sub> and V<sub>RRM</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.

**THERMAL CHARACTERISTICS**

Characteristic	Symbol	Value	Unit
Thermal Resistance - Junction to Case - Junction to Ambient	R <sub>thJC</sub> R <sub>thJA</sub>	2.2 62.5	°C/W
Maximum Lead Temperature for Soldering Purposes 1/8" from Case for 10 Seconds	TL	260	°C

**ELECTRICAL CHARACTERISTICS** (T<sub>J</sub>=25°C unless otherwise noted, Electrical apply in both directions)

Characteristics	Symbol	Min	Typ	Max	Unit
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**OFF CHARACTERISTICS**

Peak Repetitive Forward or Reverse Blocking Current (V <sub>D</sub> =Rated V <sub>DRM</sub> , V <sub>RRM</sub> ; Gate Open)	T <sub>J</sub> =25°C	IDRM	----	----	10	uA
	T <sub>J</sub> =125°C	IRRM	----	----	2.0	mA

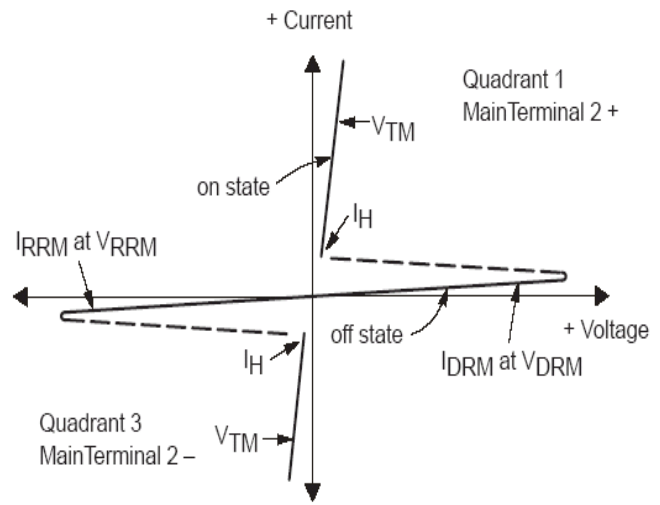
**ON CHARACTERISTICS**

Peak On-State Voltage (I <sub>TM</sub> = 17A Peak @T <sub>p</sub> ≤ 2.0 ms, Duty Cycle ≤ 2%)	V <sub>TM</sub>	----	----	1.85	Volts
Gate Trigger Current (V <sub>D</sub> = 12V; R <sub>L</sub> = 100 Ohms)	I <sub>GT1</sub>	10	----	50	mA
	I <sub>GT2</sub>	10	----	50	
	I <sub>GT3</sub>	10	----	50	
Gate Trigger Voltage (V <sub>D</sub> = 12 V ; R <sub>L</sub> =100 Ohms)	V <sub>GT1</sub>	0.5	----	1.5	Volts
	V <sub>GT2</sub>	0.5	----	1.5	
	V <sub>GT3</sub>	0.5	----	1.5	
Holding Current (V <sub>D</sub> = 12 V, Initiating Current = ± 150 mA, Gate Open)	I <sub>H</sub>	----	----	60	mA
Latching Current (V <sub>D</sub> = 24 V, I <sub>G</sub> = 50 mA)	I <sub>L1</sub>	----	----	60	mA
	I <sub>L2</sub>	----	----	80	
	I <sub>L3</sub>	----	----	60	

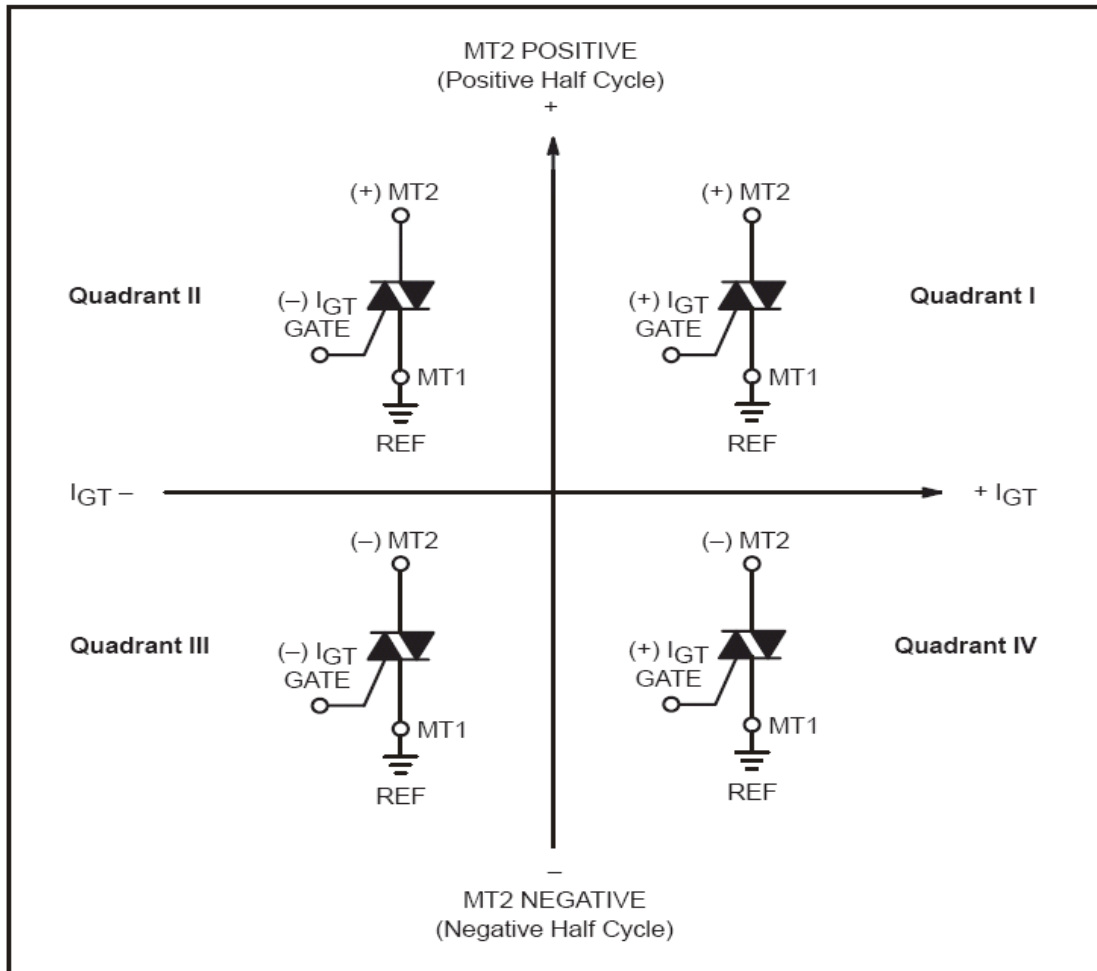
**DYNAMIC CHARACTERISTICS**

Critical Rate of Change of Commutation Current (V <sub>D</sub> =400V , I <sub>TM</sub> = 4.4 A, Commutating dv/dt = 18 V/ms, Gate Open, T <sub>J</sub> = 125°C, f = 250 Hz, C <sub>L</sub> =10uF, L <sub>L</sub> =40mH, with Snubber)	di/dt(c)	15	----	----	A/ms
Critical Rate of Rise of Off-State Voltage (V <sub>D</sub> = Rated V <sub>DRM</sub> , Exponential Waveform, Gate Open, T <sub>J</sub> = 125°C)	dv/dt	600	----	----	V/us
Repetitive Critical Rate of Rise of On-State Current IPK = 50 A; PW = 40 usec; diG/dt = 200 mA/usec; f = 60 Hz	di/dt	----	----	10	A/us

Symbol	Parameter
$V_{DRM}$	Peak Repetitive Forward Off State Voltage
$I_{DRM}$	Peak Forward Blocking Current
$V_{RRM}$	Peak Repetitive Reverse Off State Voltage
$I_{RRM}$	Peak Reverse Blocking Current
$V_{TM}$	Maximum On State Voltage
$I_H$	Holding Current



### Quadrant Definitions



All polarities are referenced to MT1

Whith in -phase signal (using standard AC lines) quadrants I and III are used

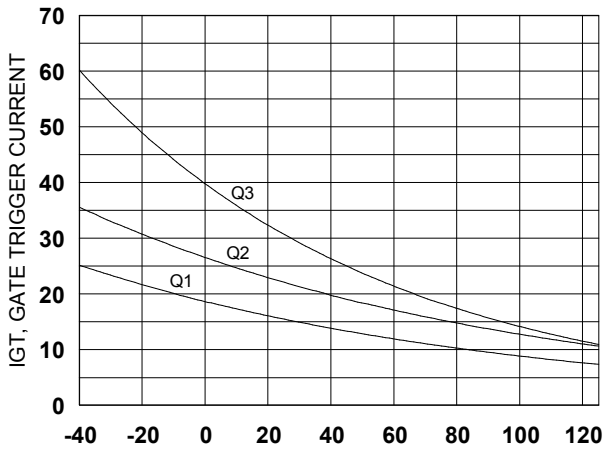


Figure 1. Typical IGT versus T<sub>J</sub>

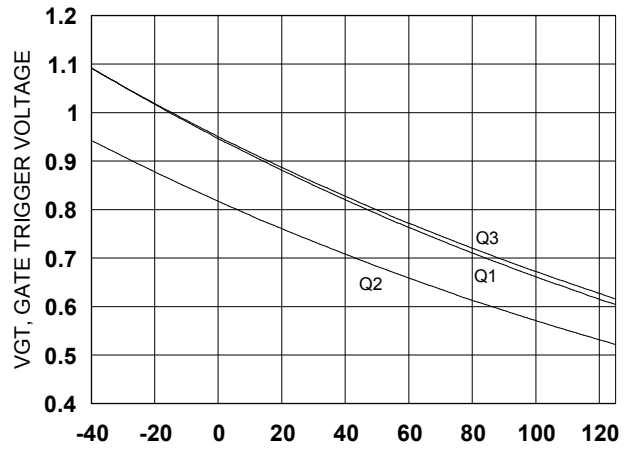


Figure 2. Typical VGT versus T<sub>J</sub>

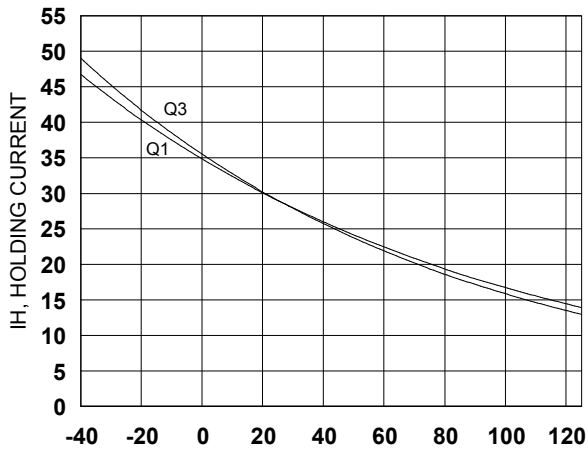


Figure 3. Typical I<sub>H</sub> versus T<sub>J</sub>

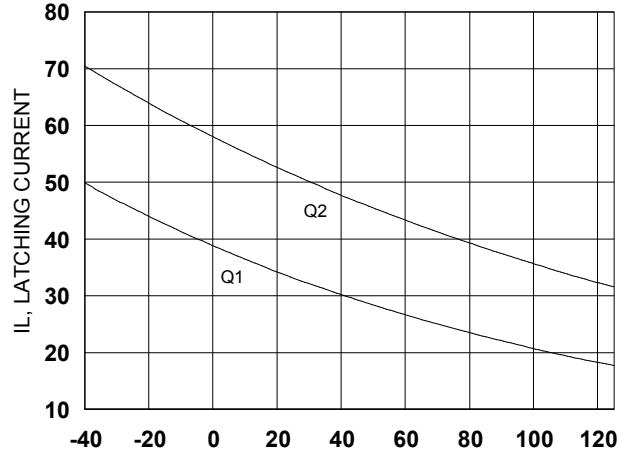


Figure 4. Typical I<sub>L</sub> versus T<sub>J</sub>

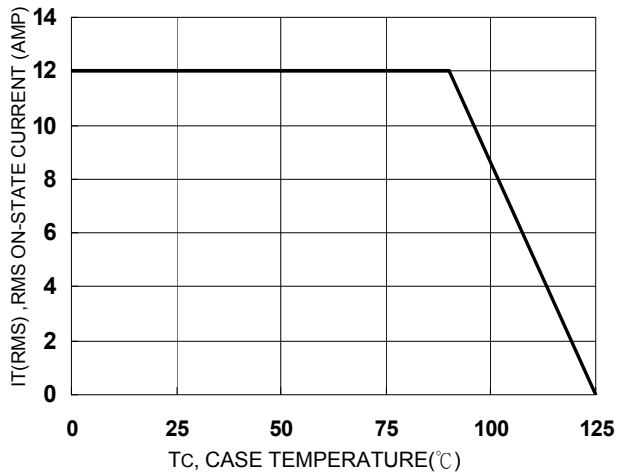


Figure 5. On-State Current Derating Curve

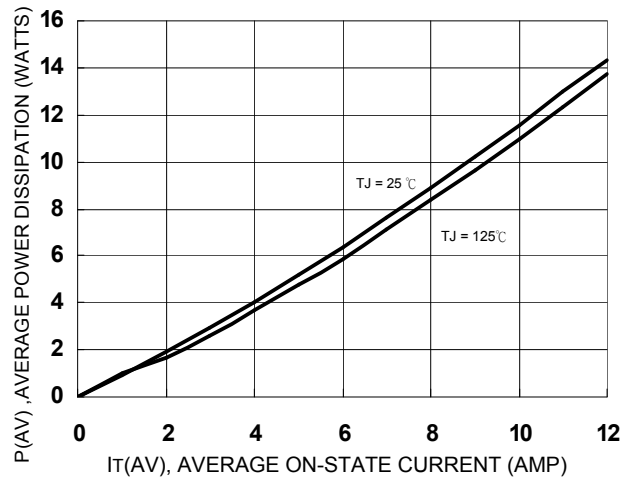


Figure 6. Power Dissipation versus I<sub>T</sub>

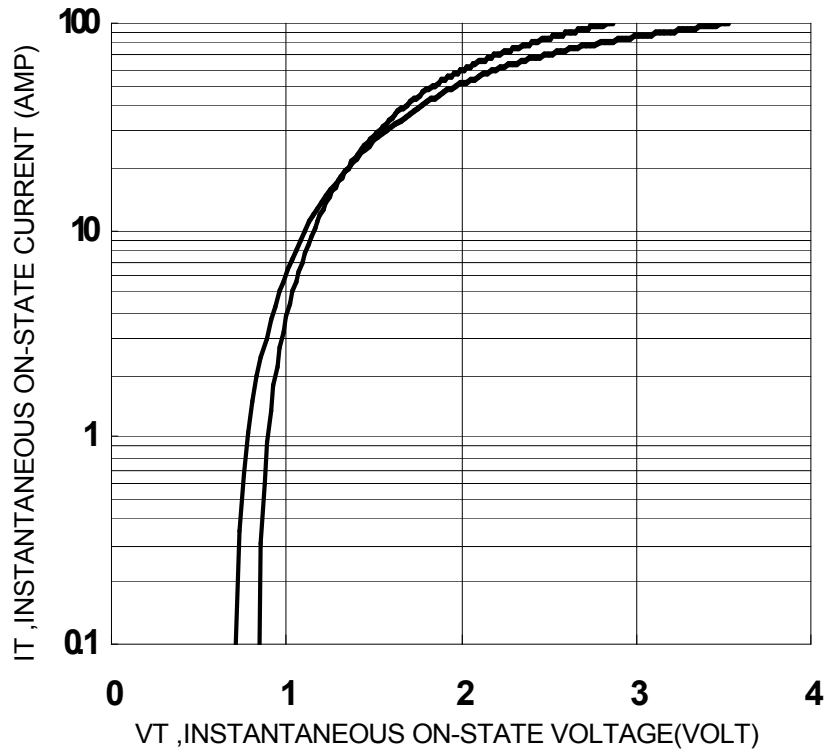


Figure 7. On-State Characteristics

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