

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

**TRIACS**  
**16 AMPERES RMS**  
**600 VOLTS**

**FEATURES**

- Blocking Voltage to 600 Volts
- On-State Current Rating of 16 Amperes RMS at 80°C
- Uniform gate Trigger Currents in Three Quadrants
- High Immunity to dv/dt -- 500V/us minimum at 125°C
- Minimizes Snubber Networks for Protection
- Industry Standard TO-220AB Package
- High Commutating di/dt -- 9.0 A/ms minimum at 125°C

**MECHANICAL DATA**

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

**TO-220AB**

TO-220AB		
DIM.	MIN.	MAX.
A	14.22	15.88
B	9.65	10.67
C	2.54	3.43
D	5.84	6.86
E	8.26	9.28
F	-	6.35
G	12.70	14.73
H	2.29	2.79
I	0.51	1.14
J	0.40	0.67
K	3.53∅	4.09∅
L	3.56	4.83
M	1.14	1.40
N	2.03	2.92
O	1.17	1.37

All Dimensions in millimeter

PIN ASSIGNMENT	
1	Main Terminal 1
2	Main Terminal 2
3	Gate
4	Main Terminal 2

**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>RPM</sub>	600	Volts
On-State RMS Current (Tc = +80°C) Full Cycle Sine Wave 50 to 60 Hz	I <sub>T(RMS)</sub>	16	Amps
Peak Non-Repetitive Surge Current (One Full Cycle Sine Wave, 60 Hz, Tj= +125°C)	I <sub>TSM</sub>	150	Amps
Circuit Fusing Consideration (t = 8.3 ms)	I <sup>2</sup> t	93	A <sup>2</sup> s
Peak Gate Power (Tc = +80°C, Tp ≤ 1.0 us)	P <sub>GM</sub>	20	Watts
Average Gate Power (Tc = +80°C, t=8.3 ms)	P <sub>G(AV)</sub>	0.5	Watts
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>RPM</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.

REV. 3, Oct-2010, KTXC29

**THERMAL CHARACTERISTICS**

Characteristic	Symbol	Value	Unit
Thermal Resistance - Junction to Case - Junction to Ambient	R <sub>thJC</sub> R <sub>thJA</sub>	2.0 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	I <sub>RRM</sub>	---	---	2.0	mA

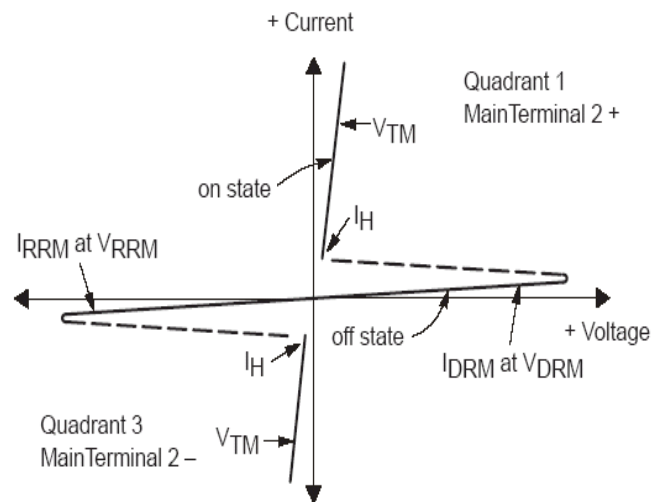
**ON CHARACTERISTICS**

Peak On-State Voltage (I <sub>TM</sub> =± 21 A Peak @T <sub>p</sub> ≤ 2.0 ms, Duty Cycle ≤ 2%)	V <sub>TM</sub>	---	1.2	1.6	Volts
Gate Trigger Current (V <sub>D</sub> = 12Vdc; 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 Vdc; 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>	---	---	50	mA
Latching Current (V <sub>D</sub> = 24 V, I <sub>G</sub> = 50 mA)	I <sub>L</sub>	---	---	50	mA
		---	---	80	
		---	---	50	

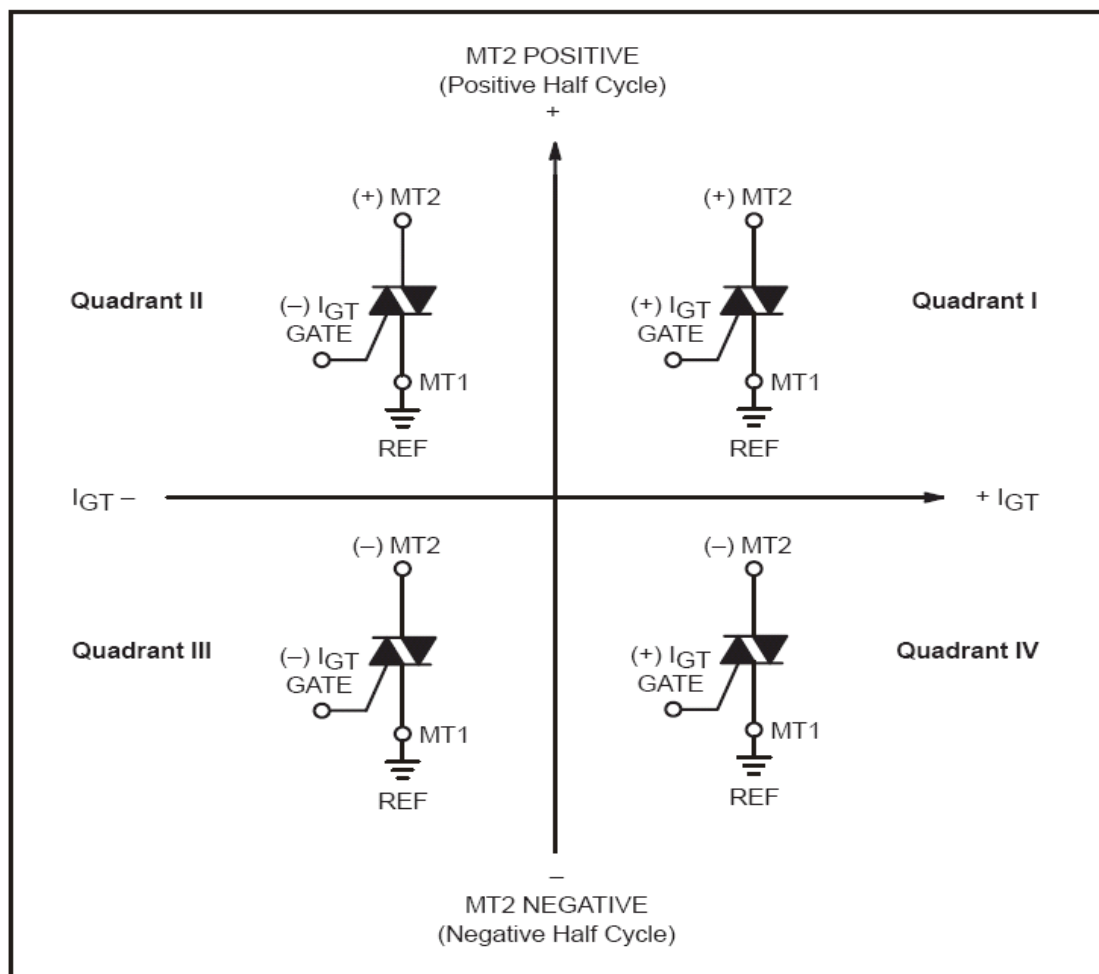
**DYNAMIC CHARACTERISTICS**

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	500	---	---	V/us
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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

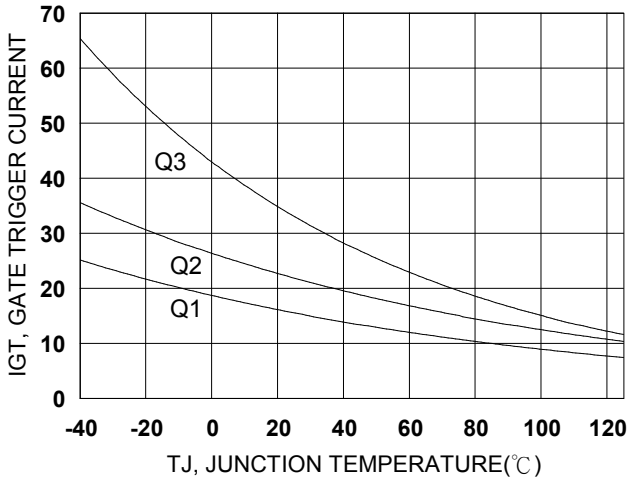


Figure 1. Typical IGT versus TJ

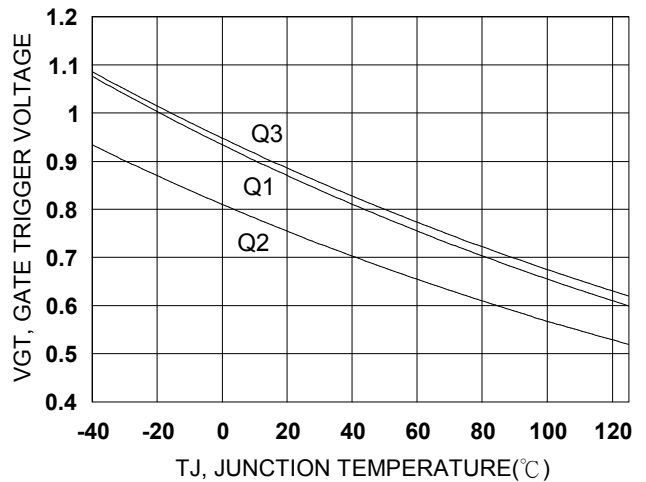


Figure 2. Typical VGT versus TJ

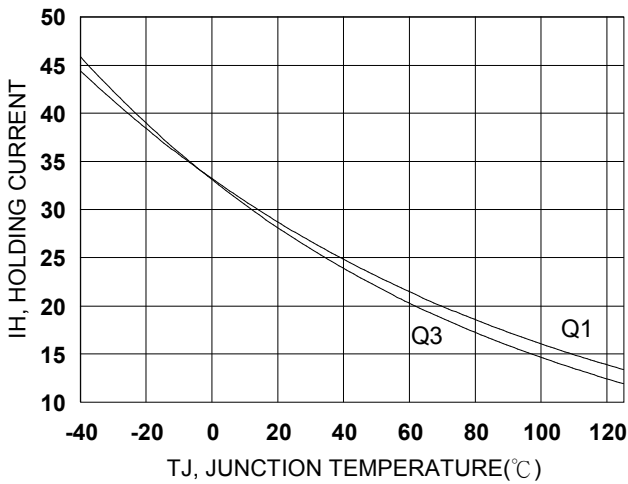


Figure 3. Typical IH versus TJ

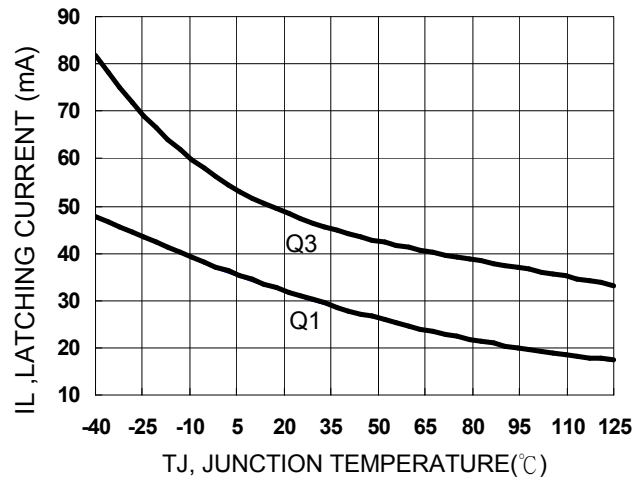


Figure 4. Typical IL versus TJ

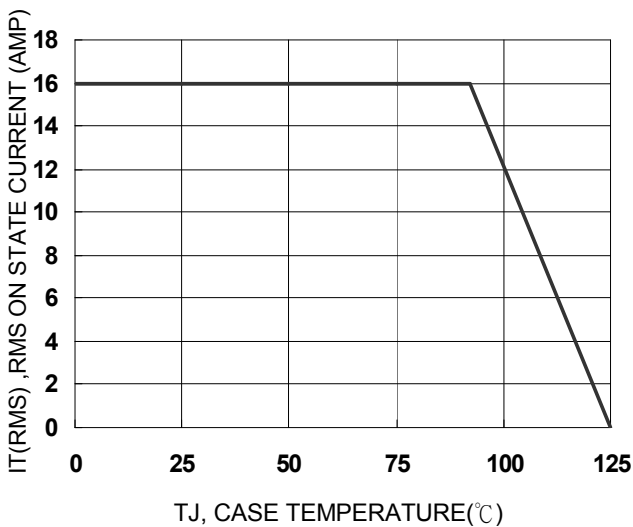


Figure 5. On-state Current Derating Curve

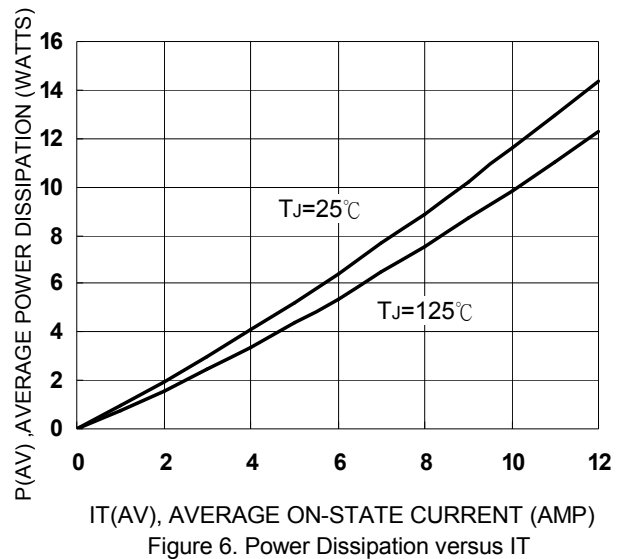


Figure 6. Power Dissipation versus IT

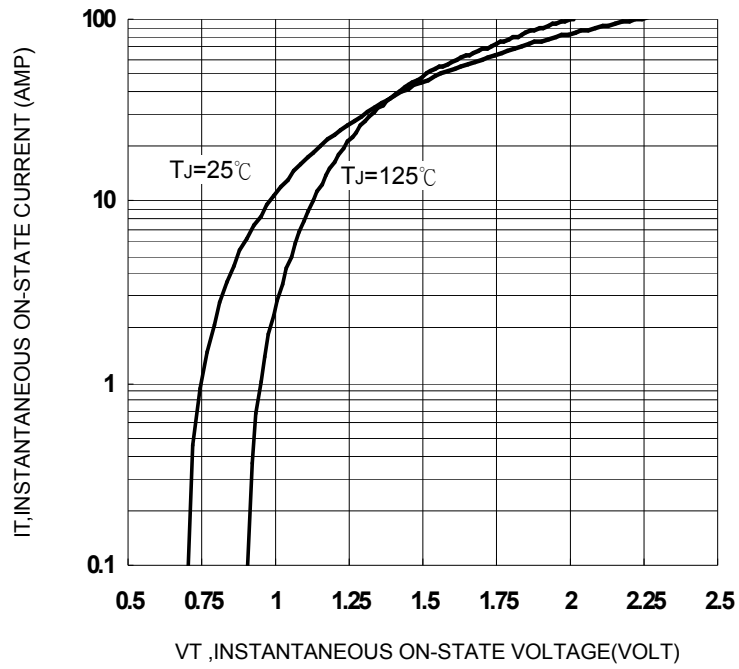


Figure 7. On-State Characteristics

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