

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

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

**FEATURES**

- Blocking Voltage to 600 Volts
- All Diffused and Glass Passivated Junctions for Greater Parameter Uniformity and Stability
- Small, Rugged, Thermowatt Construction for Low Thermal Resistance, High Heat Dissipation and Durability
- Gate Triggering Guaranteed in Four Modes
- Pb-Free

**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 $\varnothing$	4.09 $\varnothing$
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** (T<sub>J</sub>= 25°C unless otherwise noticed)

Rating	Symbol	Value	Unit
Peak Repetitive Off- State Voltage (1) (T <sub>J</sub> = -40 to 125°C, Sine Wave, 50 to 60 Hz; Gate Open)	V <sub>DRM</sub> , V <sub>R</sub> RM	600	Volts
On-State RMS Current (T <sub>C</sub> = +80°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, T <sub>J</sub> = +25°C)	I <sub>TSM</sub>	100	Amps
Circuit Fusing Consideration (t = 8.3 ms)	$I^2t$	40	A <sup>2</sup> s
Peak Gate Power (T <sub>C</sub> = +80°C, t <= 2 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
Peak Gate Current (T <sub>C</sub> = +80°C, t <=2 us)	I <sub>GM</sub>	4	Amp
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>R</sub>RM 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, KTXC30

**THERMAL CHARACTERISTICS**

Characteristic	Symbol	Value	Unit
Thermal Resistance - Junction to Case	R <sub>thJC</sub>	2.2	°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	I <sub>DRM</sub>	----	----	10	µA
	T <sub>J</sub> =100°C	I <sub>RRM</sub>	----	----	2.0	mA

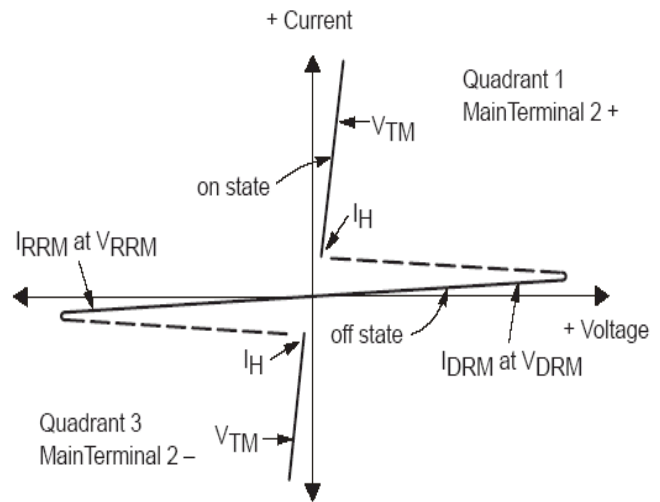
**ON CHARACTERISTICS**

Peak On-State Voltage (I <sub>TM</sub> =± 17A Peak @T <sub>p</sub> ≤2.0 ms, Duty Cycle ≤ 2%)	V <sub>TM</sub>	----	1.7	2.0	Volts
Gate Trigger Current (V <sub>D</sub> = 12Vdc; R <sub>L</sub> = 100 Ohms)	I <sub>GT1</sub>	----	10	25	mA
	I <sub>GT2</sub>	----	20	60	
	I <sub>GT3</sub>	----	15	25	
	I <sub>GT4</sub>	----	30	60	
Gate Trigger Voltage (V <sub>D</sub> = 12 Vdc; R <sub>L</sub> =100 Ohms)	V <sub>GT1</sub>	----	1.25	2.5	Volts
	V <sub>GT2</sub>	----	1.25	2.5	
	V <sub>GT3</sub>	----	1.25	2.5	
	V <sub>GT4</sub>	----	1.25	2.5	
Holding Current (V <sub>D</sub> = 12 V, Initiating Current = ± 200 mA, Gate Open)	I <sub>H</sub>	----	15	30	mA
Gate Non - Trigger Voltage (V <sub>D</sub> =12 V, R <sub>L</sub> =100 Ohms, T <sub>C</sub> =100°C)	V <sub>GD</sub>	0.2	----	----	Volts
Gate-Controlled Turn-On Time (V <sub>D</sub> = Rated V <sub>DRM</sub> , I <sub>TM</sub> = 10 A, I <sub>GT</sub> =80 mA, Rise Time=0.1 us)	t <sub>gt</sub>	----	1.6	----	us

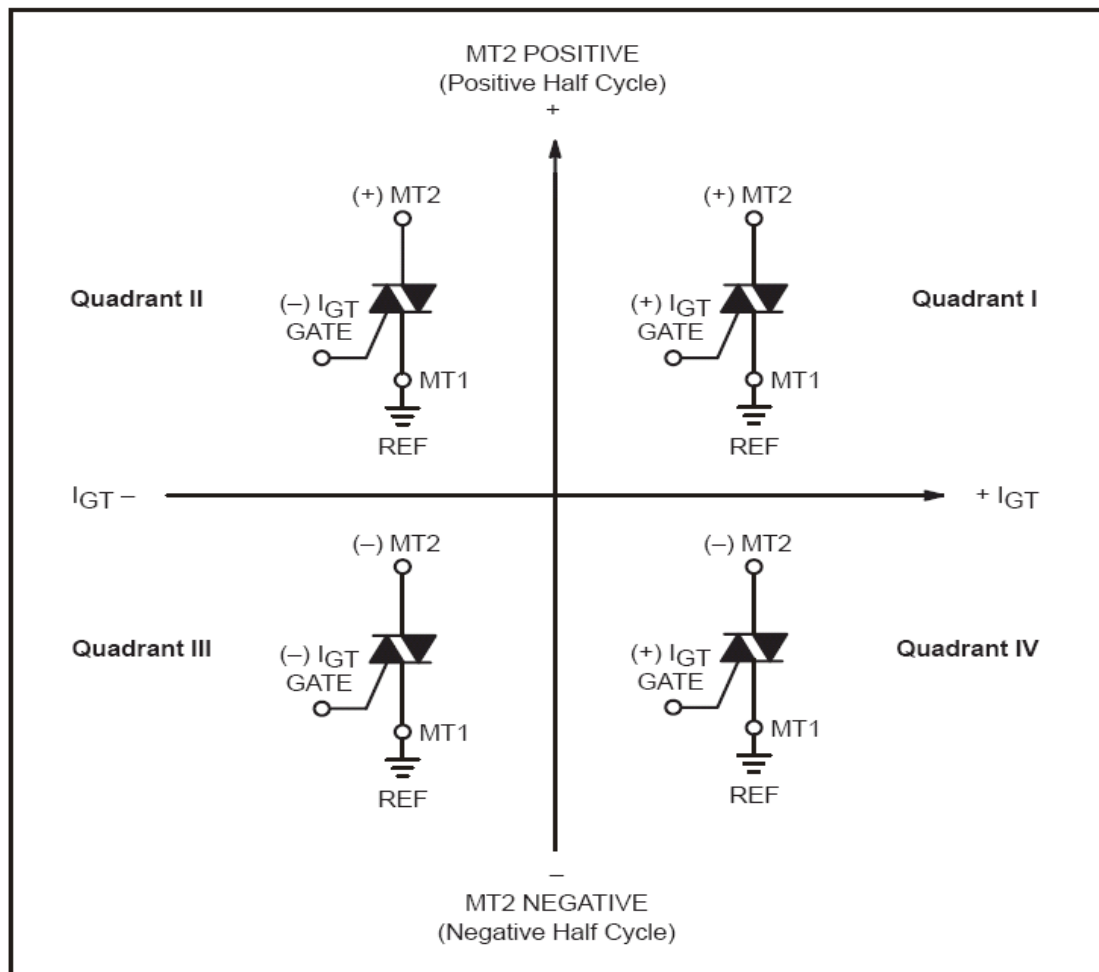
**DYNAMIC CHARACTERISTICS**

Critical Rate of Rise of Off-State Voltage (V <sub>D</sub> =Rated V <sub>DRM</sub> , Exponential Voltage Rise, Gate Open T <sub>C</sub> =100°C)	dv/dt	60	---	----	V/us
Critical Rate of Rise of Commutation Voltage (V <sub>D</sub> = Rated V <sub>DRM</sub> , I <sub>TM</sub> = 8 A, Commutating di/dt = 4.1 A/ms, Gate Unenergized, T <sub>C</sub> = 80°C)	dv/dt(c)	----	10	----	V/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

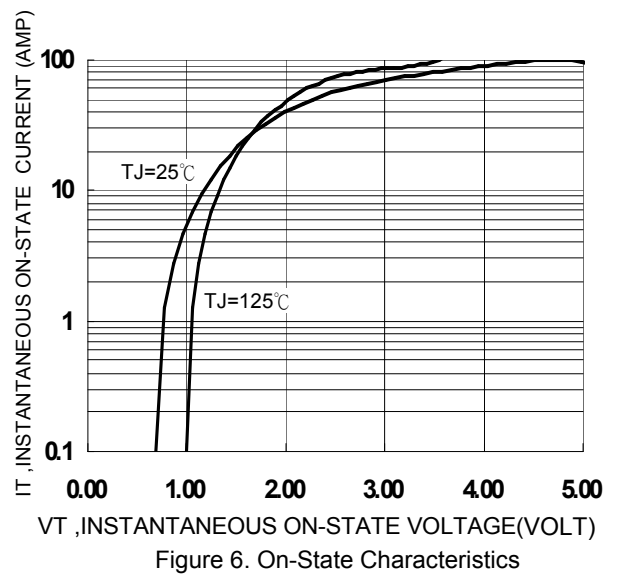
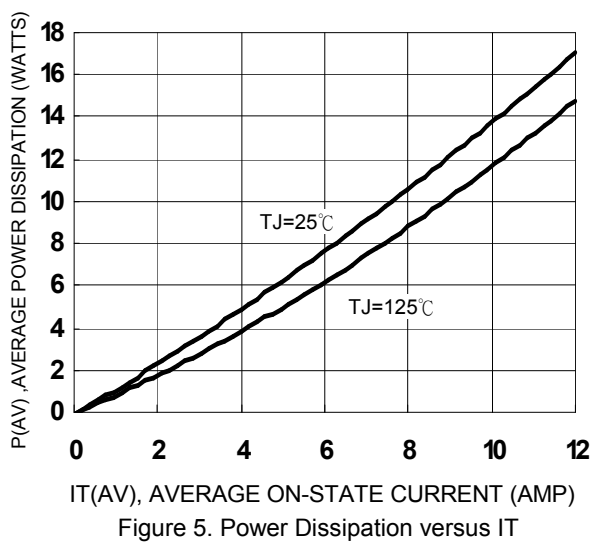
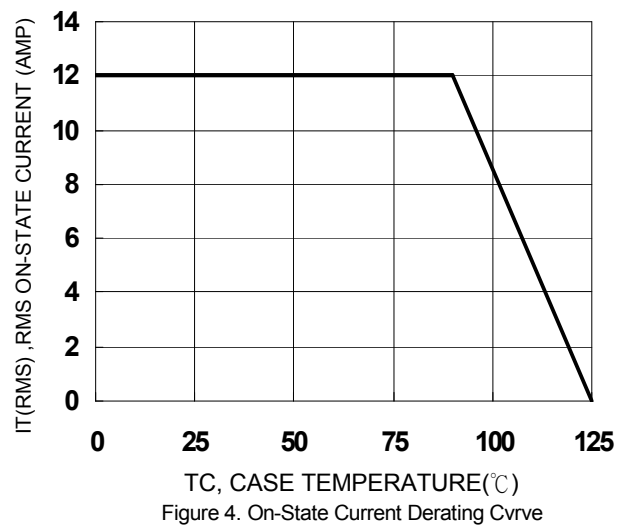
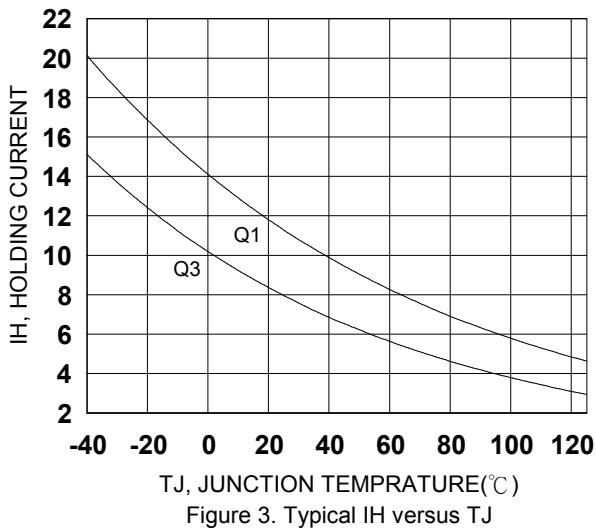
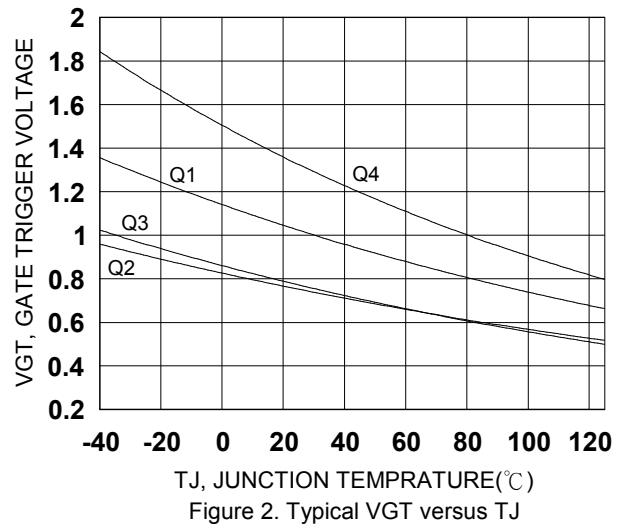
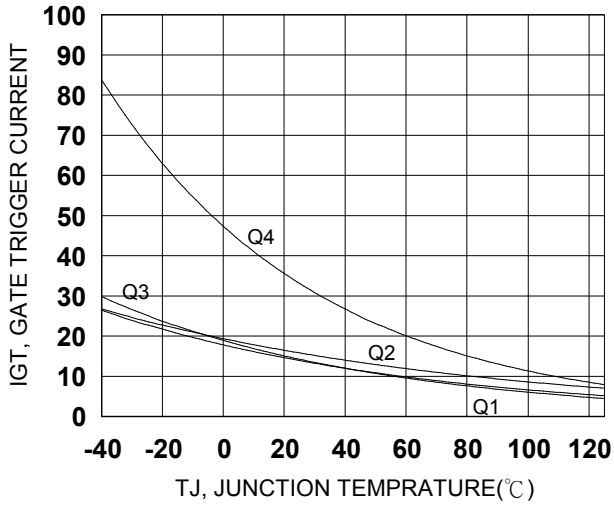


### Quadrant Definitions



All polarities are referenced to MT1

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



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