

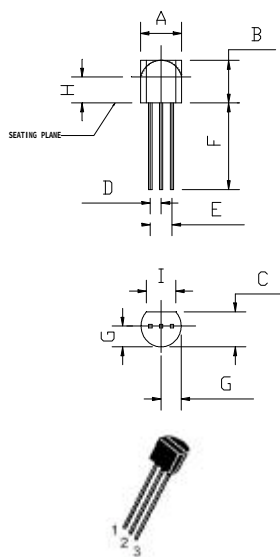
**Sensitive Gate Triacs
Silicon Bidirectional Thyristors**

TRIACs
1.0 AMPERES RMS
400 thru 600 VOLTS

FEATURES

- One-Piece, Injection-Molded Package
- Blocking Voltage to 600 Volts
- Sensitive Gate Triggering in Four Trigger Modes (Quadrants) for all possible Combinations of Trigger Sources, and especially for Circuits that Source Gate Drives
- All Diffused and Glassivated Junctions for Maximum Uniformity of Parameters and Reliability
- Improved Noise Immunity (dv/dt Minimum of 20 V/msec at 110°C)
- Commutating di/dt of 1.6 Amps/msec at 110°C
- High Surge Current of 12 Amps
- Pb-Free Package

TO-92 (TO-226AA)



TO-92		
DIM.	MIN.	MAX.
A	4.45	4.70
B	4.32	5.33
C	3.18	4.19
D	1.15	1.39
E	2.42	2.66
F	12.7	-----
G	2.04	2.66
H	2.93	-----
I	3.43	-----
All Dimensions in millimeter		

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

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

Rating	Symbol	Value	Unit
Peak Repetitive Off- State Voltage (Tj= -40 to 110°C, Sine Wave, 50 to 60 Hz; Gate Open)			
T1M5F400A T1M5F600A	VDRM, VRRM	400 600	Volts
On-State RMS Current Full Cycle Sine Wave 50 to 60 Hz (Tc = 50°C)	IT(RMS)	1.0	Amp
Peak Non-Repetitive Surge Current Full Cycle Sine Wave 60 Hz (Tj =25°C)	ITSM	12.0	Amps
Circuit Fusing Consideration (t = 8.3 ms)	I ² t	0.60	A ² s
Peak Gate Power (t ≤ 2.0us ,Tc = 80°C)	PGM	5.0	Watt
Average Gate Power (Tc = 80°C, t ≤ 8.3 ms)	PG(AV)	0.1	Watt
Peak Gate Current (t ≤ 2.0us ,Tc = 80°C)	IGM	1.0	Amp
Peak Gate Voltage (t ≤ 2.0us ,Tc = 80°C)	VGM	5.0	Volts
Operating Junction Temperature Range	TJ	-40 to +110	°C
Storage Temperature Range	Tstg	-40 to +150	°C

Notice: (1) VDRM and VRRM 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. 2, Jun-2005, KTXD11

THERMAL CHARACTERISTICS

Characteristic	Symbol	Value	Unit
Thermal Resistance - Junction to Lead - Junction to Case - Junction to Ambient	R _{thJL} R _{thJC} R _{thJA}	60 75 150	°C/W
Maximum Lead Temperature for Soldering Purposes 1/8" from Case for 10 Seconds	T _L	260	°C

ELECTRICAL CHARACTERISTICS (T_c=25°C unless otherwise noted)

Characteristics	Symbol	Min	Typ	Max	Unit
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OFF CHARACTERISTICS

Peak Reptitive Forward or Reverse Blocking Current (V _D =Rated V _{DRM} and V _{RRM} ; Gate Open)	T _J = 25°C T _J = 110°C	I _{DRM} I _{RRM}	----	----	10 100	uA uA
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ON CHARACTERISTICS

Peak Forward On-State Voltage (I _{TM} =± 1A Peak @T _p ≤2.0 ms, Duty Cycle ≤ 2%)	V _{TM}	----	----	1.9	Volts
Gate Trigger Current (Continuous dc) (V _D = 12 Vdc; R _L = 100 Ohms)	I _{GT1} I _{GT2} I _{GT3} I _{GT4}	----	----	5.0 5.0 5.0 7.0	mA
Holding Current (V _D = 12 V, Initiating Current = ± 200 mA, Gate Open)	I _H	----	1.5	10	mA
Turn-On Time (V _D = Rated V _{DRM} , I _{TM} = 1.0 A pk, I _G = 25 mA)	t _{gt}	----	2	----	us
Gate Trigger Voltage (Continuous dc) (V _D = 12 Vdc; R _L =100 Ohms)	V _{GT1} V _{GT2} V _{GT3} V _{GT4}	----	0.66 0.77 0.84 0.88	2.0 2.0 2.0 2.5	Volts
Latching Current (V _D =12V,I _G = 10 mA)	I _{L1} I _{L2} I _{L3} I _{L4}	----	1.6 10.5 1.5 2.5	15 20 15 15	mA
Gate Non-Trigger Voltage (V _D = 12V, R _L = 100 Ohms , T _J =110 °C)	V _{GD}	0.1	----	----	Volts

DYNAMIC CHARACTERISTICS

Critical Rate of Rise of Off-State Voltage (V _D =Rated V _{DRM} ,Exponential Waveform, Gate Open, T _J =110°C)	dv/dt	20	60	----	V/us
Repetitive Critical Rate of Rise of On-State Current Pulse Width = 20 us, I _{PK} max = 15 A, di _G /dt = 1 A/us, f = 60 Hz	di/dt	----	----	10	A/us
Rate of Change of Commutating Current (V _D = 400 V, I _{TM} = .84 A, Commutating dv/dt = 1.5 V/us, Gate Open, T _J = 110° C, f = 250 Hz, with Snubber)	di/dt(c)	1.6	----	----	A/ms

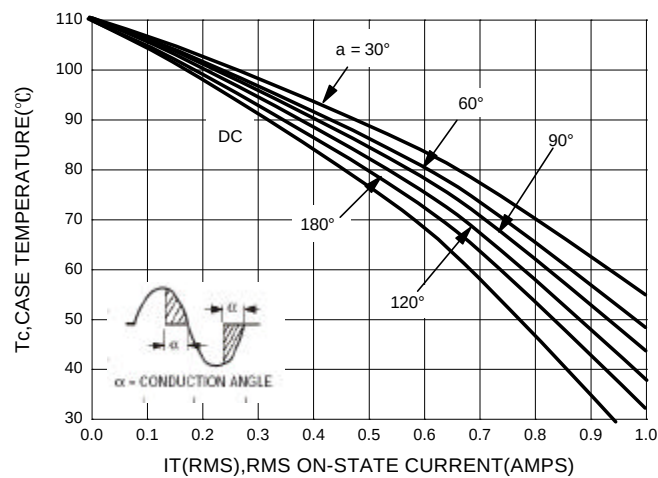


Figure 1. RMS Current Derating

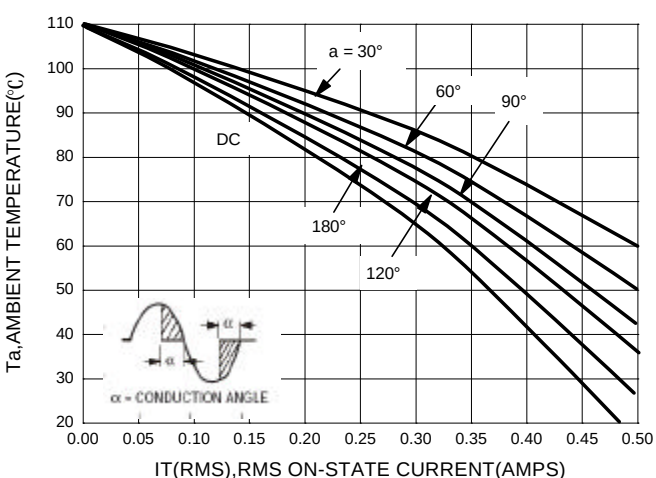


Figure 2. RMS Current Derating

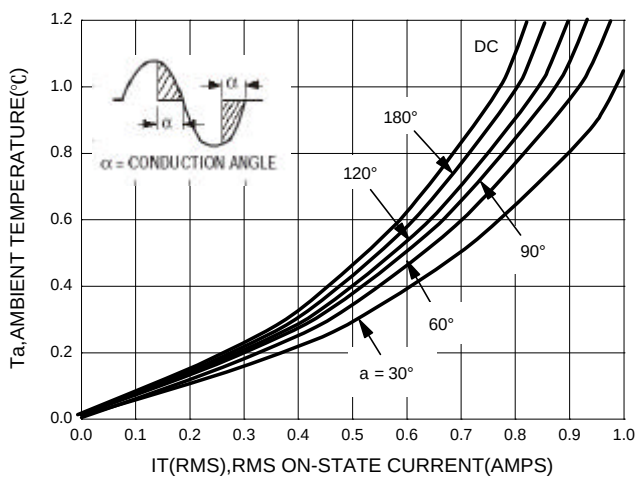


Figure 3. Power Dissipation

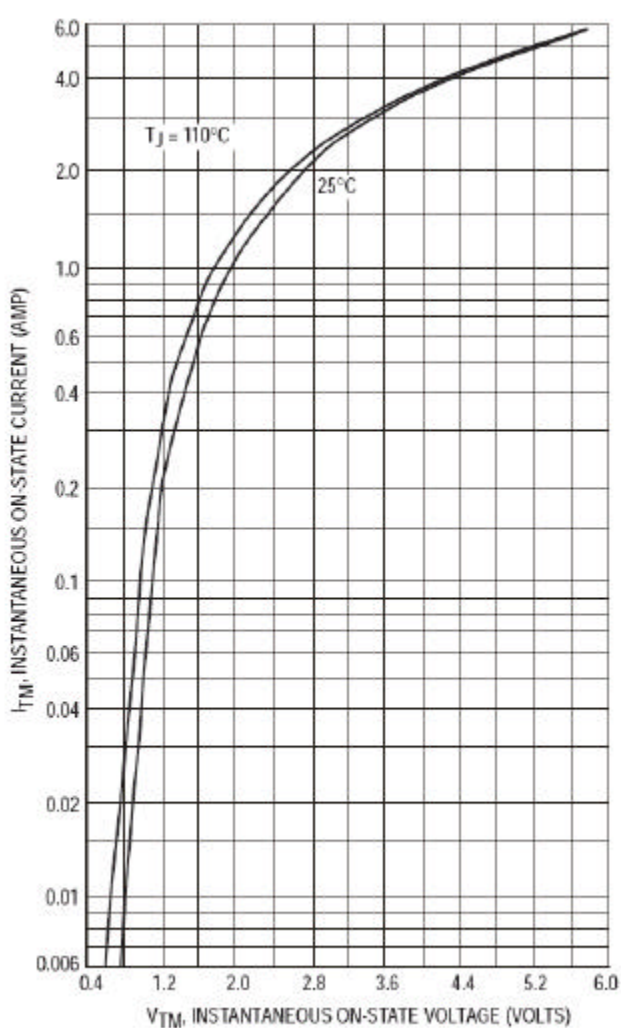


Figure 4. On-State Characteristics

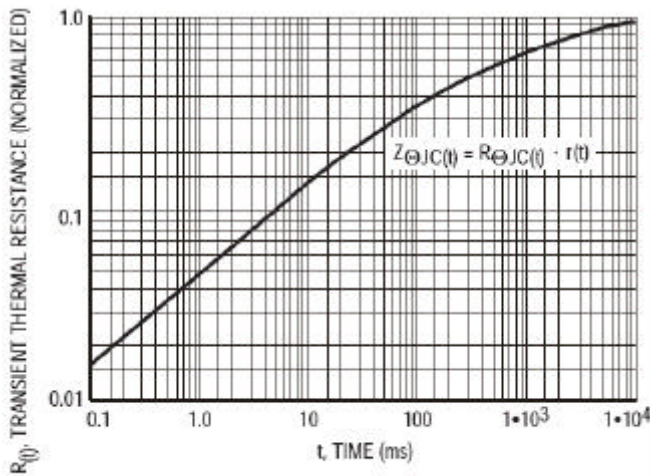


Figure 5. Transient Thermal Response

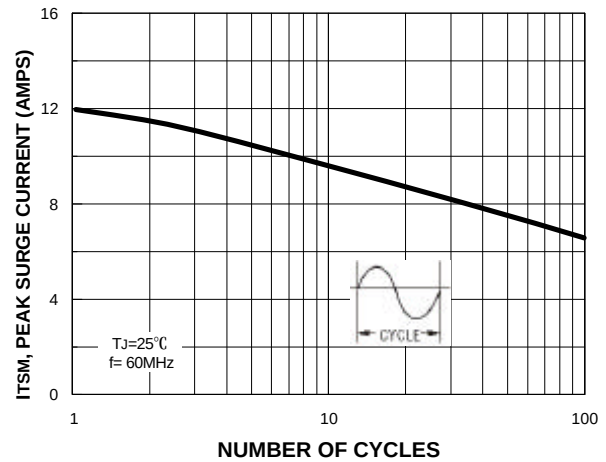


Figure 6. Maximum Allowable Surge Current

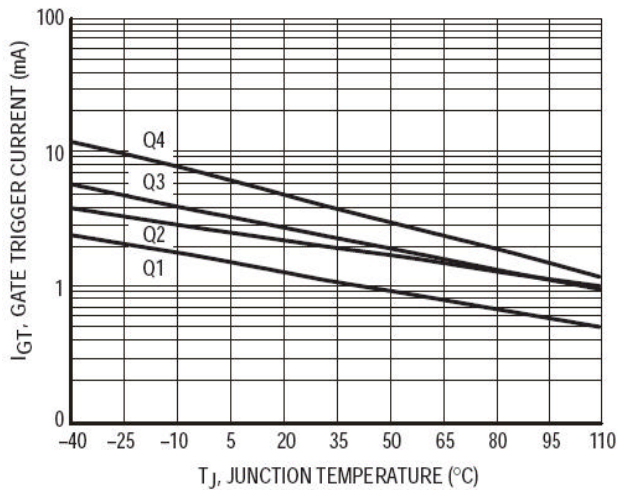


Figure 7. Typical Gate Trigger Current versus Junction Temperature

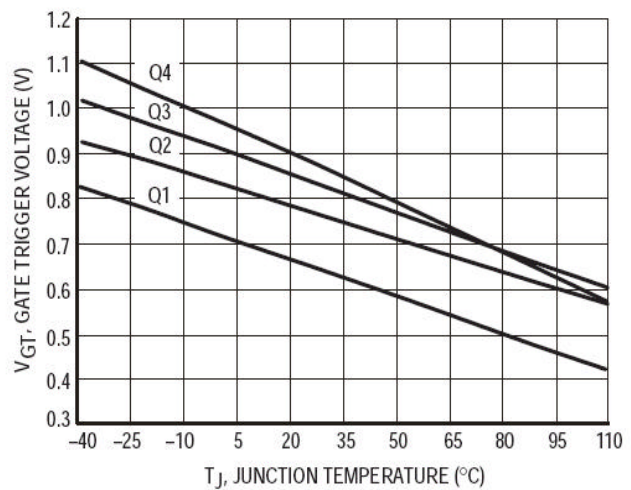


Figure 8. Typical Gate Trigger Voltage versus Junction Temperature

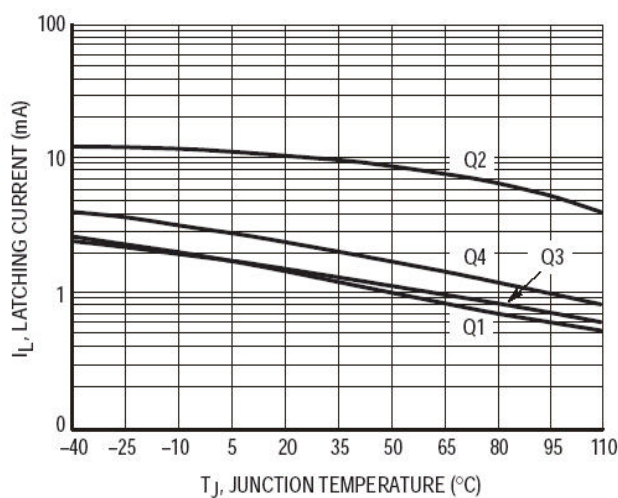


Figure 9. Typical Latching Current versus Junction Temperature

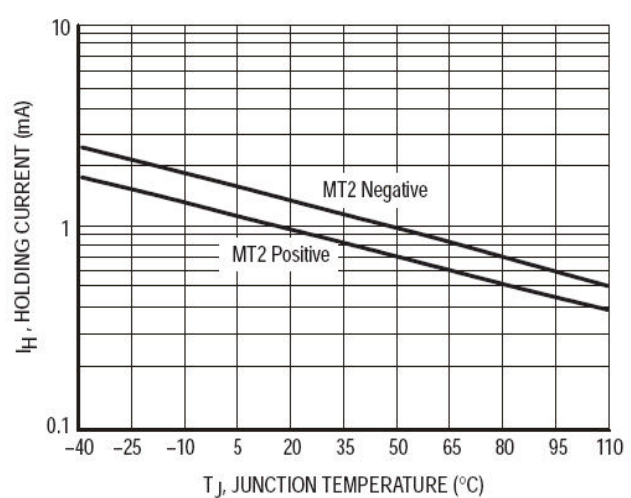


Figure 10. Typical Holding Current versus Junction Temperature