T12M35T600B(LS)

Triacs
Silicon Bidirectional Thyristors

TRIACS
12 AMPERES RMS
600 VOLTS

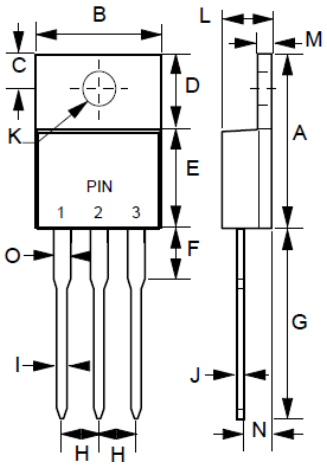
FEATURES

- Blocking voltage to 600V
- High immunity to dv/dt – 400V/us Minimum at +125°C
- High Surge Current of 100 Amperes
- Uniform Gate Trigger Currents in Three Quadrants, Q1, Q2, and Q3
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

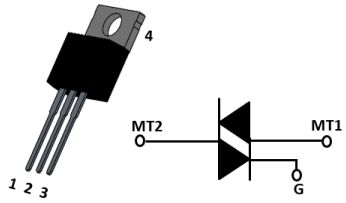
MECHANICAL DATA

- Package: TO-220AB
- Package Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Terminals: Finish – Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208 e3
- Weight: 0.07 ounces, 2.0 grams (Approximate)

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	3.53Ø	4.09Ø
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 AND ELECTRICAL CHARACTERISTICS

Ratings at +25°C ambient temperature unless otherwise specified.

MAXIMUM RATINGS

PARAMETER	SYMBOL	VALUE	UNIT
Peak repetitive off-state voltage (T_J = -40 to +110°C, sine wave, 50 to 60Hz; gate open)	V_{DRM} V_{RRM}	600 600	Volts
On-stage RMS current (full sine wave 50 to 60Hz, T_C = +70°C)	$I_{T(RMS)}$	12	Amp
Peak non-repetitive surge current (one full cycle 60Hz, T_J = +25°C)	I_{TSM}	100	Amps
Circuit fusing consideration (t = 8.3ms)	I^2t	41	A^2s
Operating junction temperature range	T_J	-40 to +125	°C
Storage temperature range	T_{STG}	-40 to +150	°C

Notes:

1. EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant. All applicable RoHS exemptions applied.
2. See https://www.diodes.com/quality/lead-free/ for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
4. V_{DRM} and V_{RRM} 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.

OFF CHARACTERISTICS

PARAMETER		SYMBOL	MAX	UNIT
Peak repetitive forward or reverse blocking current (V_{AK} = rated V_{DRM} and V_{RRM}, gate open)	T_J = +25°C T_J = +125°C	I_{DRM} I_{RRM}	0.01 2.0	mA

ON CHARACTERISTICS

PARAMETER	SYMBOL	MAX	UNIT
Peak forward on-state voltage (I_{TM} = ±12A @ t_P ≤ 2.0ms, duty cycle ≤ 2%)	V_{TM}	1.85	Volts
Gate trigger current (V_D = 12V, R_L = 100Ω)	I_{GT1} I_{GT2} I_{GT3}	35 35 35	mA
Gate trigger voltage (V_D = 12V, R_L = 100Ω)	V_{GT1} V_{GT2} V_{GT3}	1.5 1.5 1.5	Volts
Holding current (V_D = 12V, initiation current = ±150mA, gate open)	I_H	40	mA
Latching current (V_D = 12V, I_G = 35mA)	I_{L1} I_{L2} I_{L3}	50 80 50	mA

DYNAMIC CHARACTERISTICS

PARAMETER	SYMBOL	MIN	UNIT
Critical rate of rise of Commutation voltage V_D = 67% rated V_{DRM}, exponential waveform, gate open, T_J = +125°C	dv/dt	400	V/µs

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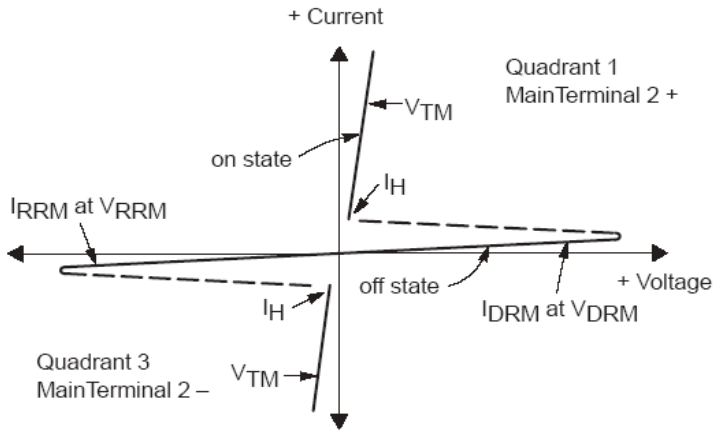
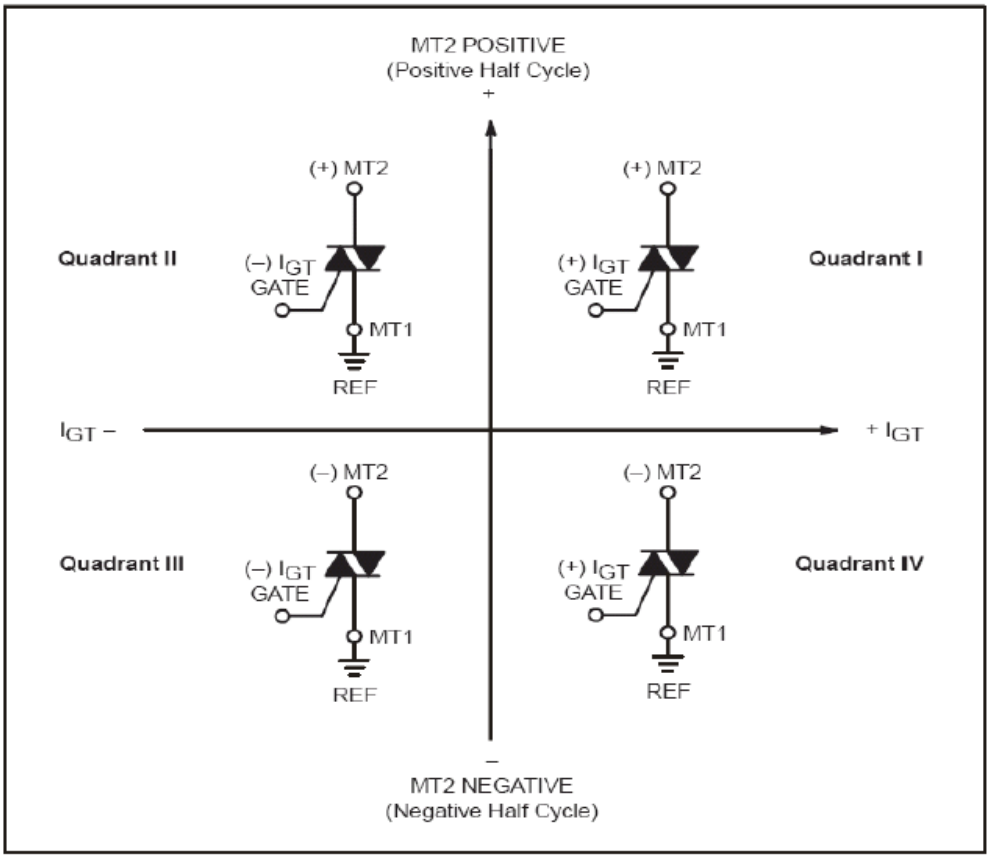
Symbol	Parameter
V_{DRM}	Peak Repetitive Forward Off State Voltage
I_{DRM}	Peak Forward Blocking Current
V_{RRM}	Peak Repetitive Reverse Off State Voltage
I_{RRM}	Peak Reverse Blocking Current
V_{TM}	Maximum On State Voltage
I_H	Holding Current



Quadrant Definitions



All polarities are referenced to MT1
Whith in -phase signal (using standard AC lines) quadrants I and III are used

RATING AND CHARACTERISTIC CURVES
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Figure 1. Typical Gate Trigger Current) versus Junction Temperature

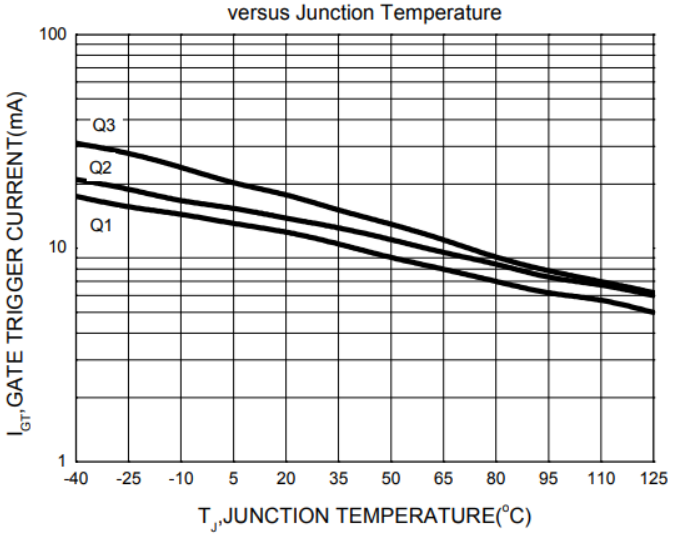

Figure 2. Typical Gate Trigger Voltage versus Junction Temperature

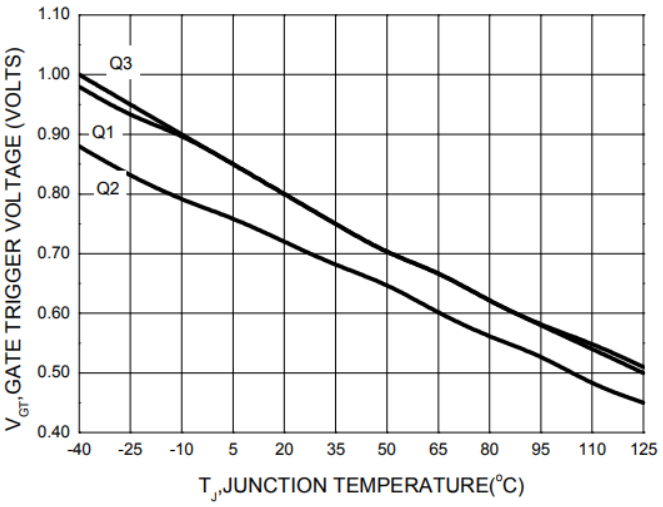

Figure 3. Typical Holding Current versus Junction Temperature

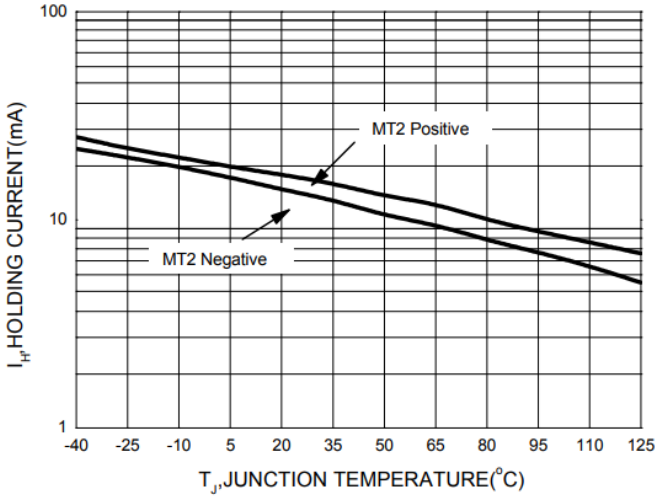

Figure 4. Typical Latching Current versus Junction Temperature

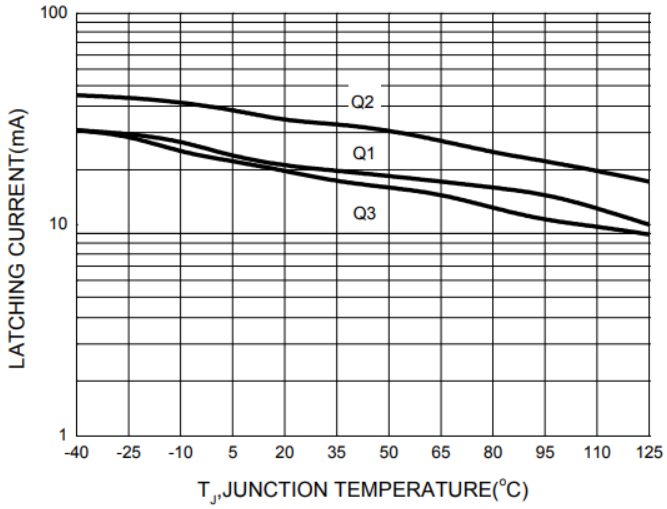

Figure 5. Typical RMS Current Derating

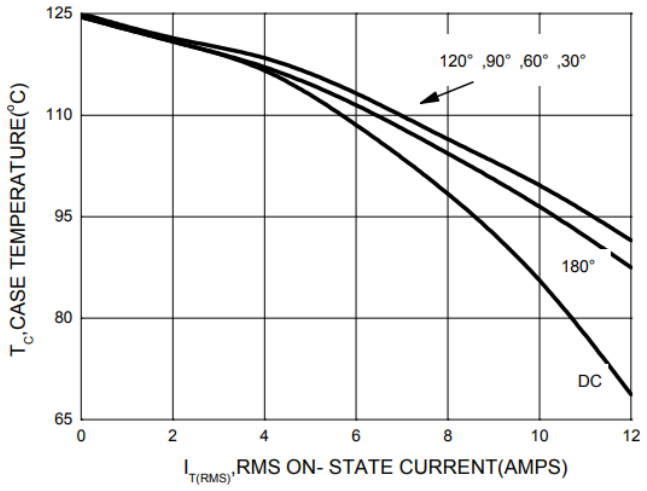

Figure 6. On-State Power Dissipation

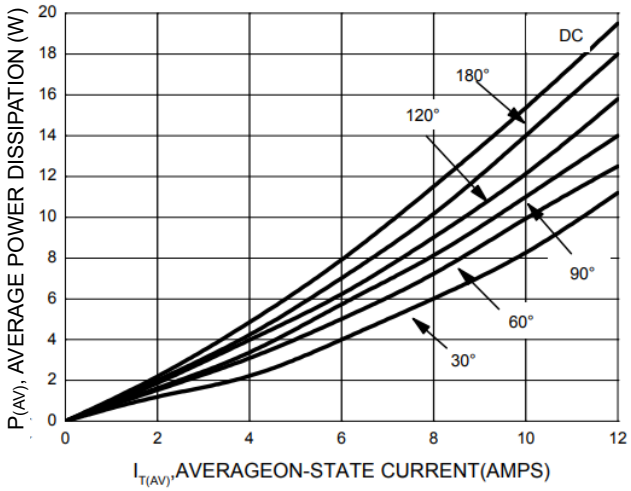

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Figure 7. Typical On-State Characteristics

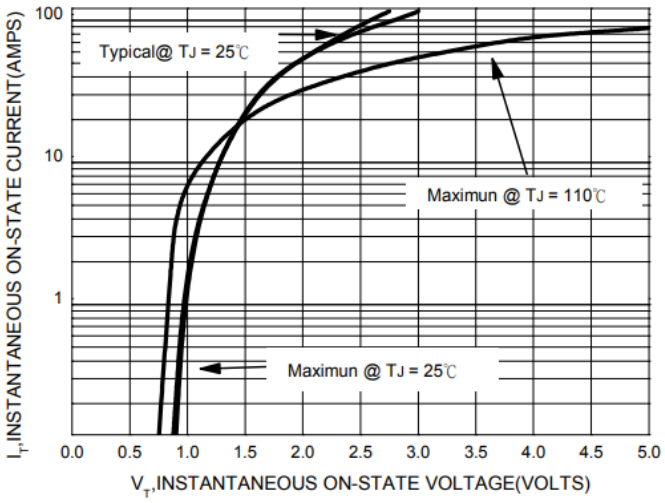
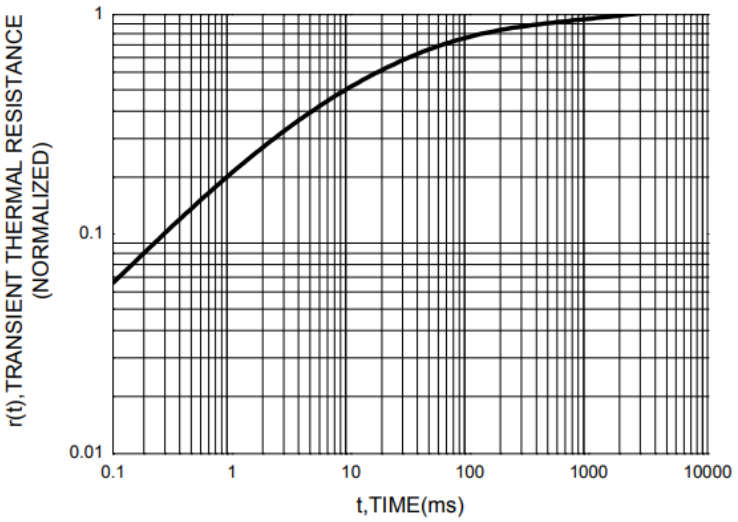


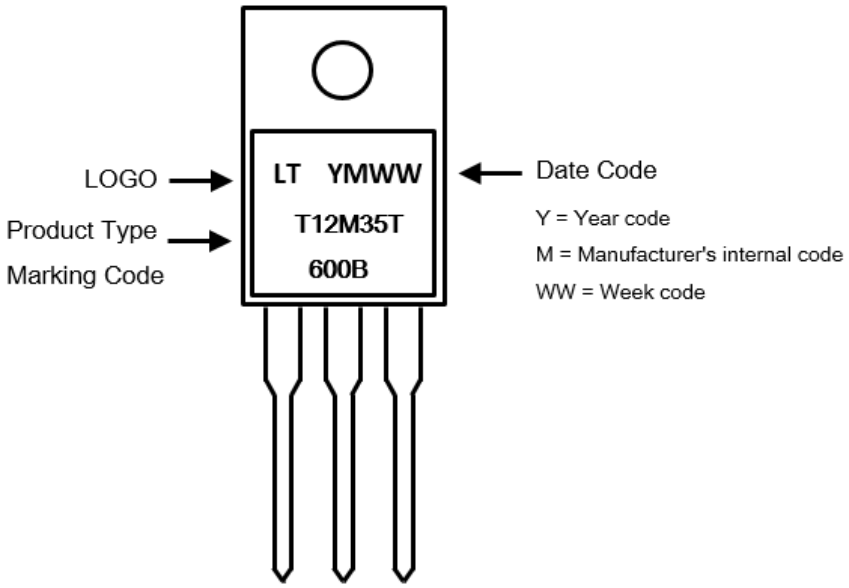
Figure 8. Typical Thermal Response



Ordering Information:

Part Number	Package	Packing	
		Qty.	Carrier
T12M35T600B	TO-220AB	50pcs	Tube

Marking Information:



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