

T12M50F600B(LS)

Triacs Silicon Bidirectional Thyristors

TRIACS 12 AMPERES RMS 600 VOLTS

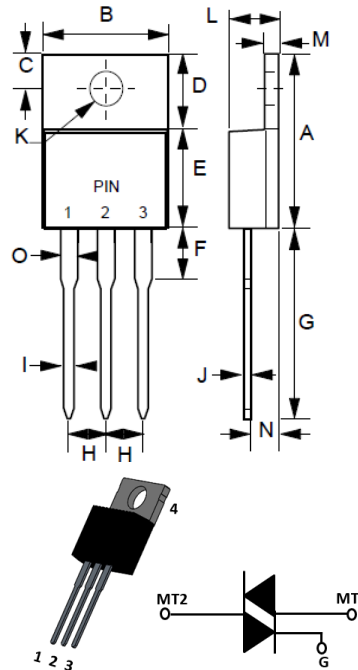
FEATURES

- Blocking voltage to 600V
- All Diffused and Glass Passivated Junctions for
- Greater Parameter Uniformity and Stability
- Gate Triggering Guaranteed in Four Modes
- **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 $+125^\circ\text{C}$, sine wave, 50 to 60Hz; gate open)	V_{DRM} V_{RRM}	600 600	Volts
On-stage RMS current (full sine wave 50 to 60Hz, $T_C = +85^\circ\text{C}$)	$I_{T(RMS)}$	12	Amp
Peak Non-Repetitive Surge Current (One Full Cycle Sine Wave, 60 Hz, $T_J = +25^\circ\text{C}$)	I_{TSM}	100	Amps
Circuit fusing consideration ($t = 8.3\text{ms}$)	I^2t	40	A^2s
Operating junction temperature range	T_J	-40 to +125	$^\circ\text{C}$
Storage temperature range	T_{STG}	-40 to +150	$^\circ\text{C}$

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.

OFF CHARACTERISTICS

PARAMETER		SYMBOL	MAX	UNIT
Peak repetitive forward or reverse blocking current ($V_{AK} = \text{rated } V_{DRM}$ and V_{RRM} , gate open)	$T_J = +25^\circ\text{C}$	I_{DRM}	10	μA
	$T_J = +125^\circ\text{C}$	I_{RRM}	2	mA

ON CHARACTERISTICS

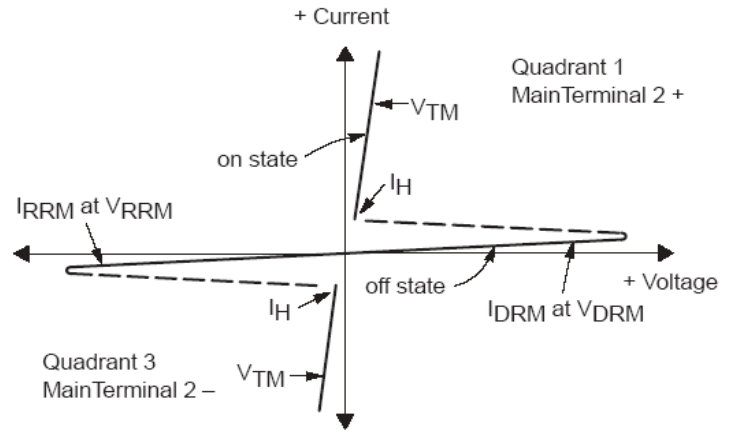
PARAMETER	SYMBOL	MAX	UNIT
Peak On-State Voltage ($I_{TM} = \pm 12\text{A Peak @ } T_p = 1 \text{ to } 2 \text{ ms, Duty Cycle } \leq 2\%$)	V_{TM}	1.75	Volts
Gate trigger current ($V_D = 12\text{V}, R_L = 100\Omega$)	I_{GT1}	50	mA
	I_{GT2}	50	
	I_{GT3}	50	
	I_{GT4}	75	
Gate trigger voltage ($V_D = 12\text{V}, R_L = 100\Omega$)	V_{GT1}	2	Volts
	V_{GT2}	2	
	V_{GT3}	2	
	V_{GT4}	2.5	
Holding current ($V_D = 12\text{V}$, initiation current = $\pm 200\text{mA}$, gate open)	I_H	50	mA

DYNAMIC CHARACTERISTICS

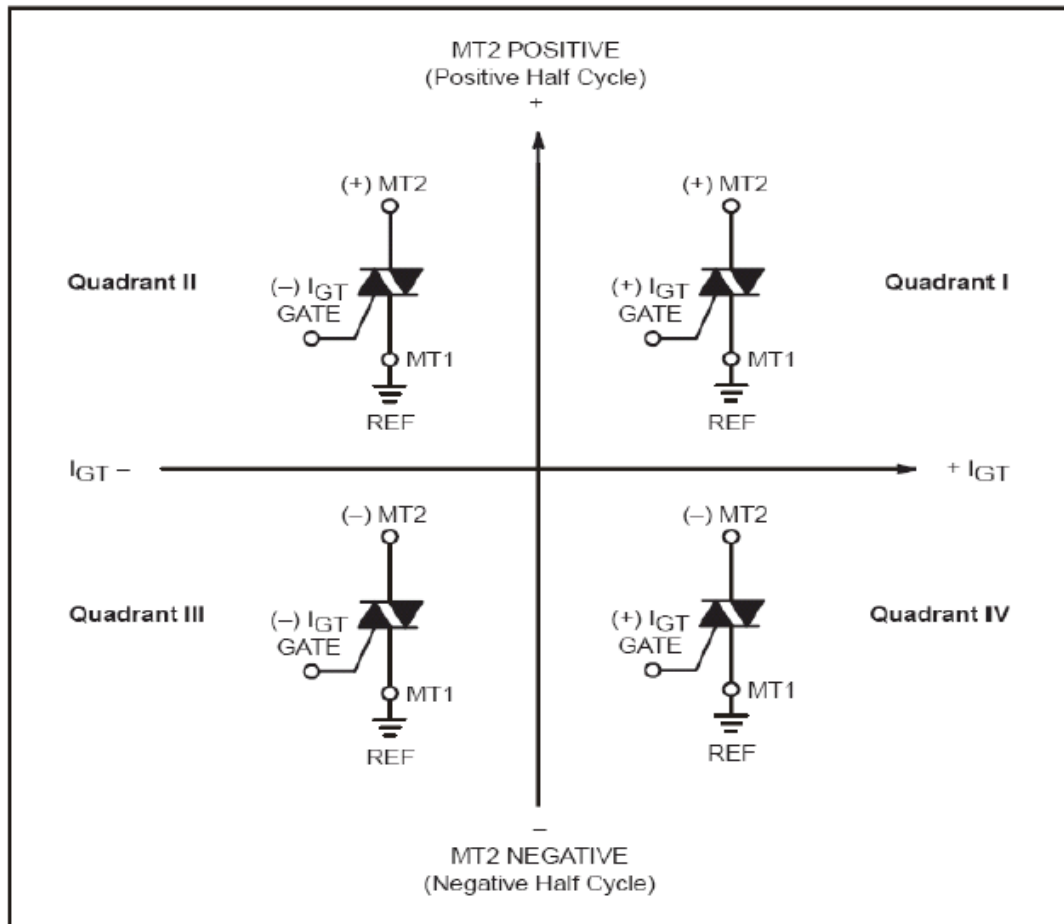
PARAMETER	SYMBOL	TYP	UNIT
Critical Rate of Rise of Off-State Voltage ($V_D = \text{Rated } V_{DRM}$, Exponential Waveform, $T_J = 85^\circ\text{C}$)	dv/dt	100	$\text{V}/\mu\text{s}$

RATING AND CHARACTERISTIC CURVES
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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

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

RATING AND CHARACTERISTIC CURVES (continued)
T12M50F600B

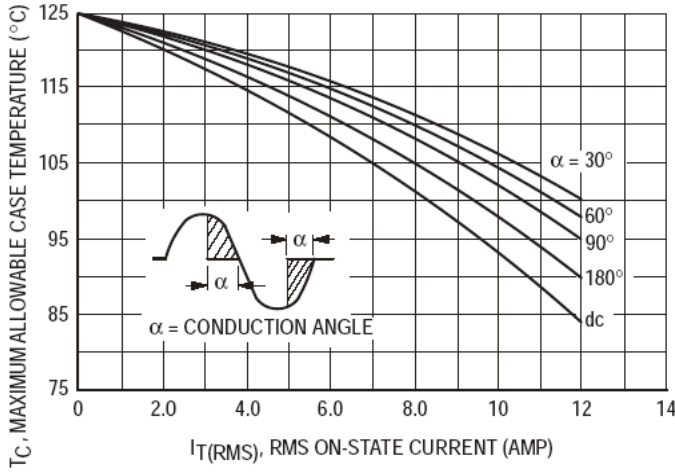


Figure 1. Current Derating

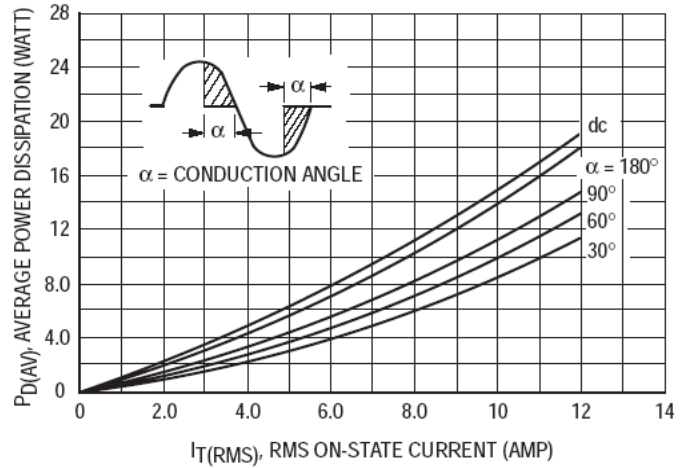


Figure 2. Power Dissipation

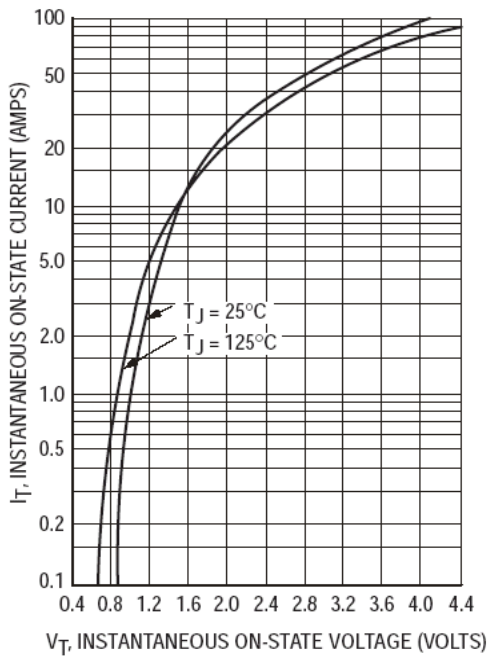


Figure 3. Maximum On-State Voltage Characteristics

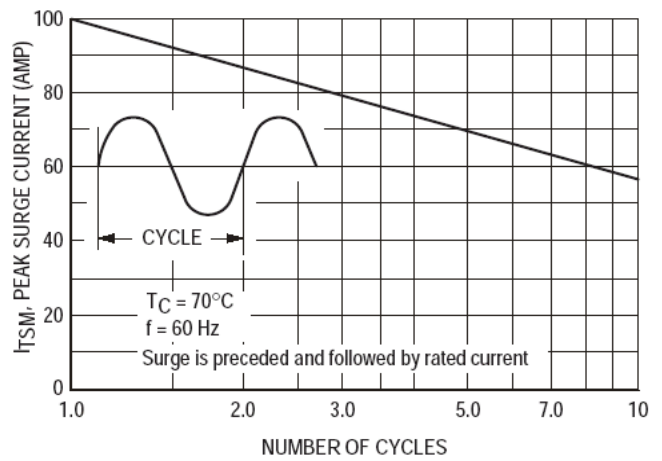
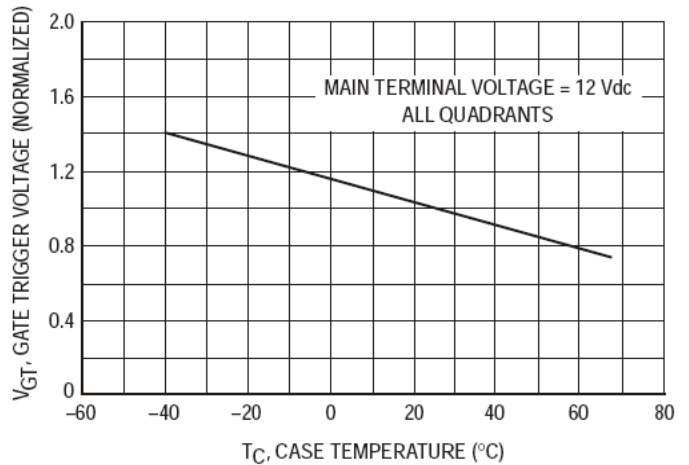


Figure 4. Maximum Non-Repetitive Surge Current



RATING AND CHARACTERISTIC CURVES (continued)

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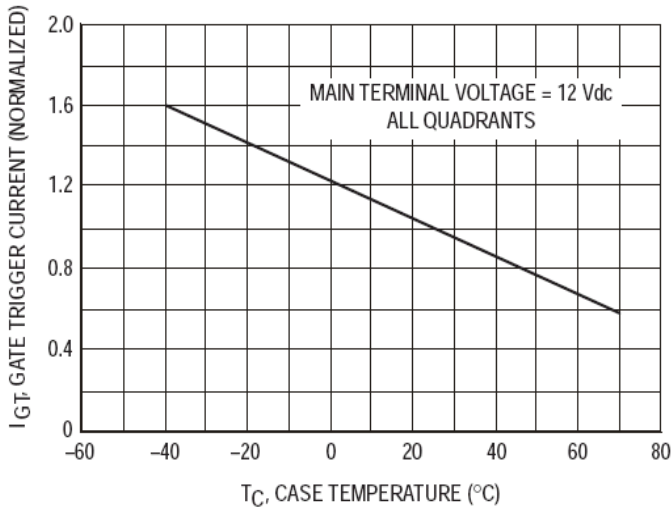


Figure 6. Typical Gate Trigger Current

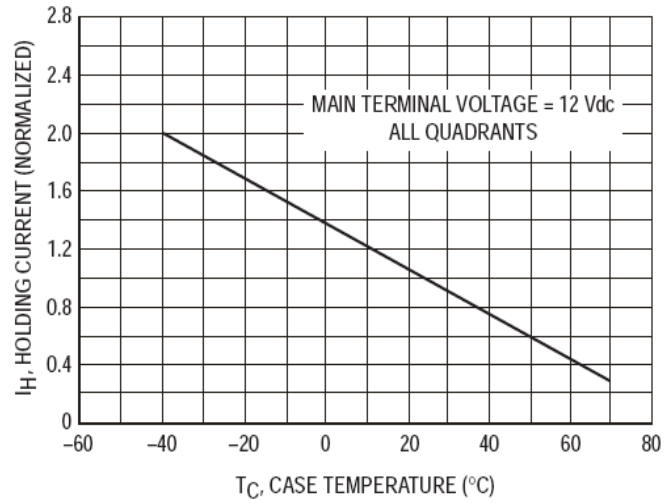


Figure 7. Typical Holding Current

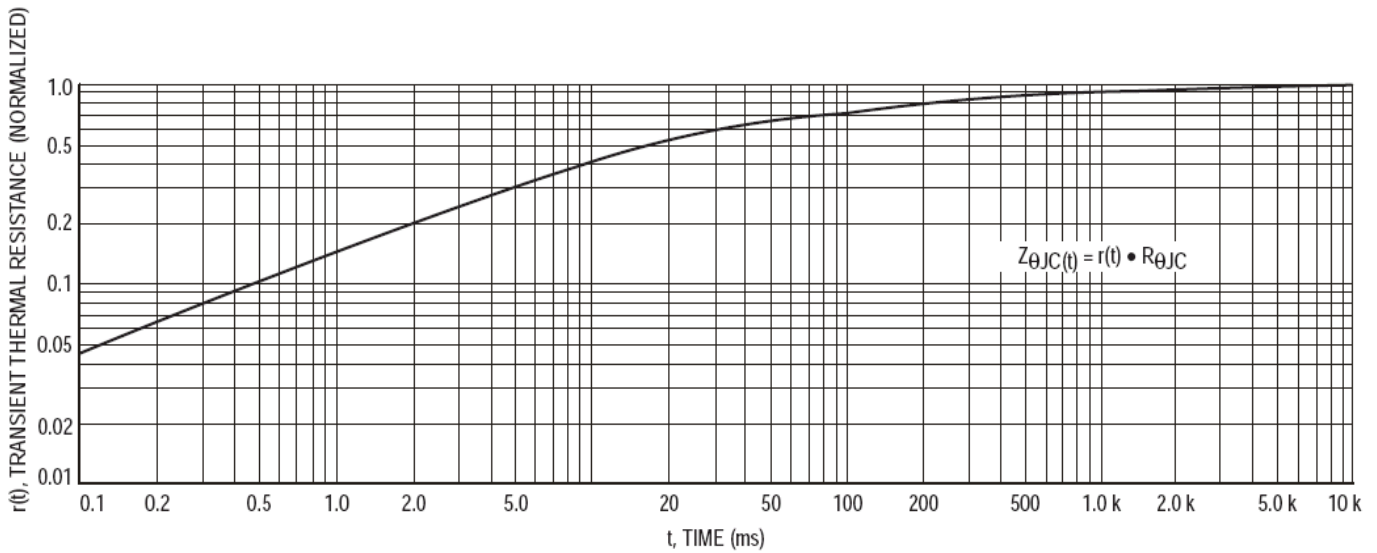
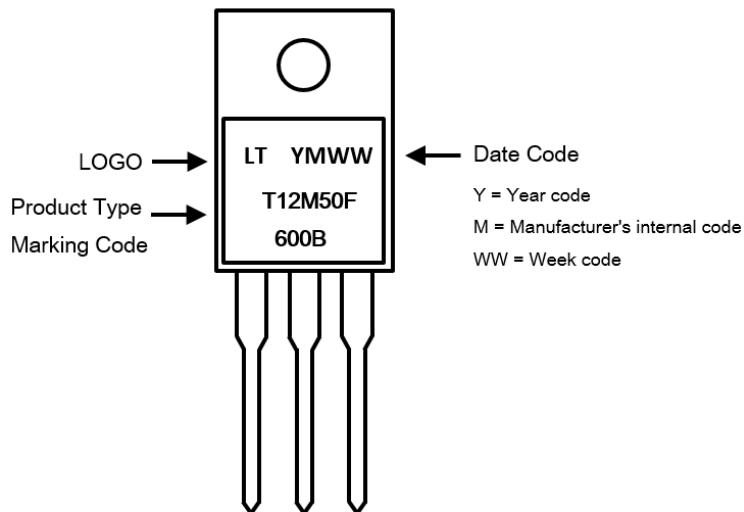


Figure 8. Thermal Response

Ordering Information:

Part Number	Package	Packing	
		Qty.	Carrier
T12M50F600B	TO-220AB	50pcs	Tube

Marking Information:



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