



element14

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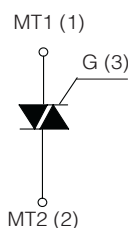
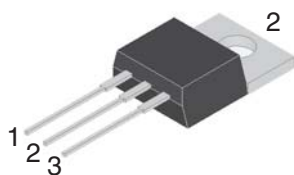
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the manufacturer

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Dieses Datenblatt wird vom
Hersteller bereitgestellt

FR

Cette fiche technique est
présentée par le fabricant

LOGIC LEVEL TRIAC
TO-220AB

On-State Current

4 Amp

Gate Trigger Current
 $\leq 10 \text{ mA}$
Off-State Voltage

400 V ÷ 800 V

FEATURES

- Glass/passivated die junctions
- Medium current Triac
- Ideal for automated placement
- Low thermal resistance
- High surge current capability
- Low forward voltage drop
- Solder dip 260°C, 10s
- Component in accordance to RoHS 2011/65/EU and WEEE 2002/96/EC
- Meets MSL level 3, per J-STD-020, LF maximum peak of 260° C


RoHS
COMPLIANT

MECHANICAL DATA

- **Case:** TO-220AB. Epoxy meets UL 94V-0 flammability rating.
- **Polarity:** As marked on the body.
- **Terminals:** Matte tin plated leads, solderable per MIL-STD-750 Method 2026, J-STD-002 and JESD22-B102. Consumer grade, meets JESD 201 class 1A whisker test.

TYPICAL APPLICATIONS

Logic level versions are designed to interface directly with low power drivers such as microcontrollers.

Maximun Ratings and Electrical Characteristics at 25°C

SYMBOL	PARAMETER	CONDITIONS	Value	Unit
$I_{T(RMS)}$	RMS On-state Current (full sine wave)	All Conduction Angle, $T_c = 95^\circ\text{C}$	4	A
I_{TSM}	Non-repetitive On-State Current	Full Cycle, 60 Hz ($t = 16.7 \text{ ms}$)	33	A
I_{TSM}	Non-repetitive On-State Current	Full Cycle, 50 Hz ($t = 20 \text{ ms}$)	30	A
I^2t	Fusing Current	$t_p = 10 \text{ ms}$, Half Cycle	4.5	A^2s
I_{GM}	Peak Gate Current	$20 \mu\text{s max.}$ $T_j = 125^\circ\text{C}$	4	A
$P_{G(AV)}$	Average Gate Power Dissipation	$T_j = 125^\circ\text{C}$	1	W
di/dt	Critical rate of rise of on-state current	$I_G = 2 \times I_{GT}$, $t_r \leq 100\text{ns}$ $f = 120 \text{ Hz}$, $T_j = 125^\circ\text{C}$	50	$\text{A}/\mu\text{s}$
T_j	Operating Temperature		$(-40 + 125)$	$^\circ\text{C}$
T_{stg}	Storage Temperature		$(-40 + 150)$	$^\circ\text{C}$
T_{sld}	Soldering Temperature	10s max	260	$^\circ\text{C}$

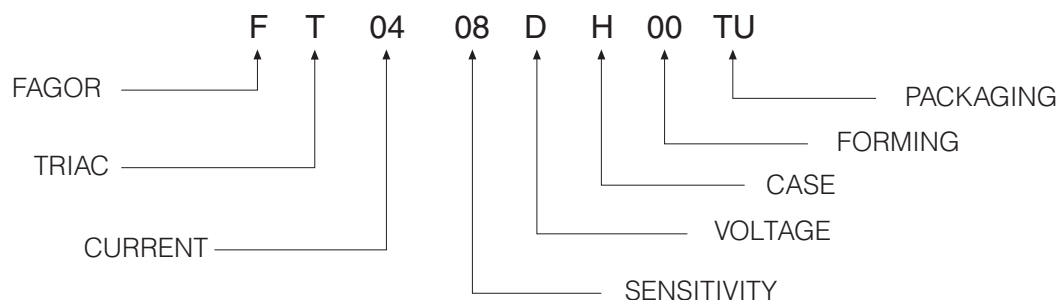
SYMBOL	PARAMETER	VOLTAGE			Unit
		D	M	N	
V_{DRM}/V_{RRM}	Repetitive Peak Off State Voltage	400	600	800	V

LOGIC LEVEL TRIAC
Electrical Characteristics at Tamb = 25 °C

SYMBOL	PARAMETER	CONDITIONS	Quadrant		SENSITIVITY					Unit
					04	05	07	08	09	
$I_{GT}^{(1)}$	Gate Trigger Current	$V_D = 12 V_{DC}, R_L = 33\Omega, T_j = 25^\circ C$	Q1÷Q3	MAX	5	5	5	10	10	mA
			Q4	MAX		5	7		10	mA
V_{GT}	Gate Trigger Voltage	$V_D = 12 V_{DC}, R_L = 33\Omega, T_j = 25^\circ C$	Q1÷Q3	MAX	1.3					V
			Q1÷Q4	MAX	1.3					V
V_{GD}	Gate Non Trigger Voltage	$V_D = V_{DRM}, R_L = 3.3 K\Omega, T_j = 125^\circ C$	Q1÷Q3	MIN	0.2					V
			Q1÷Q4	MIN	0.2					V
$I_H^{(2)}$	Holding Current	$I_T = 100 mA, \text{Gate open}, T_j = 25^\circ C$		MAX	10	10	15	15	20	mA
I_L	Latching Current	$I_G = 1.2 I_{GT}, T_j = 25^\circ C$	Q1,Q3	MAX	10			25		mA
			Q1,Q3,Q4	MAX		10	20		20	mA
			Q2	MAX	20	20	30	30	25	mA
$dV/dt^{(2)}$	Critical Rate of Voltage Rise	$V_D = 0.67 \times V_{DRM}, \text{Gate open}$ $T_j = 125^\circ C$		MIN	20	20	20	40	40	V/ μs
$(dl/dt)_c^{(2)}$	Critical Rate of Current Rise	$(dv/dt)_c = 0.1 V/\mu s, T_j = 125^\circ C$		MIN	1.8	1.8	1.8	2.7	2.5	A/ms
		$(dv/dt)_c = 10 V/\mu s, T_j = 125^\circ C$		MIN	0.9	0.9	0.9	2.0	1.5	A/ms
		without snubber $T_j = 125^\circ C$		MIN	-	-	-	-	-	
$V_{TM}^{(2)}$	On-state Voltage	$I_T = 5.5 \text{ Amp}, t_p = 380 \mu s, T_j = 25^\circ C$		MAX	1.6					V
$V_{t(o)}^{(2)}$	Threshold Voltage	$T_j = 125^\circ C$		MAX	0.9					V
$r_d^{(2)}$	Dynamic resistance	$T_j = 125^\circ C$		MAX	120					m Ω
I_{DRM}/I_{RRM}	Off-State Leakage Current	$V_D = V_{DRM}, T_j = 125^\circ C$		MAX	0.5					mA
		$V_R = V_{RRM}, T_j = 25^\circ C$		MAX	5					μA
$R_{th(j-c)}$	Thermal Resistance Junction-Case	for AC 360° conduction angle			2.0					°C/W
$R_{th(j-a)}$	Thermal Resistance Junction-Ambient	$S = 1 \text{ cm}^2$			60					°C/W

(1) Minimum I_{GT} is guaranteed at 5% of I_{GT} max.

(2) For either polarity of electrode MT2 voltage with reference to electrode MT1.

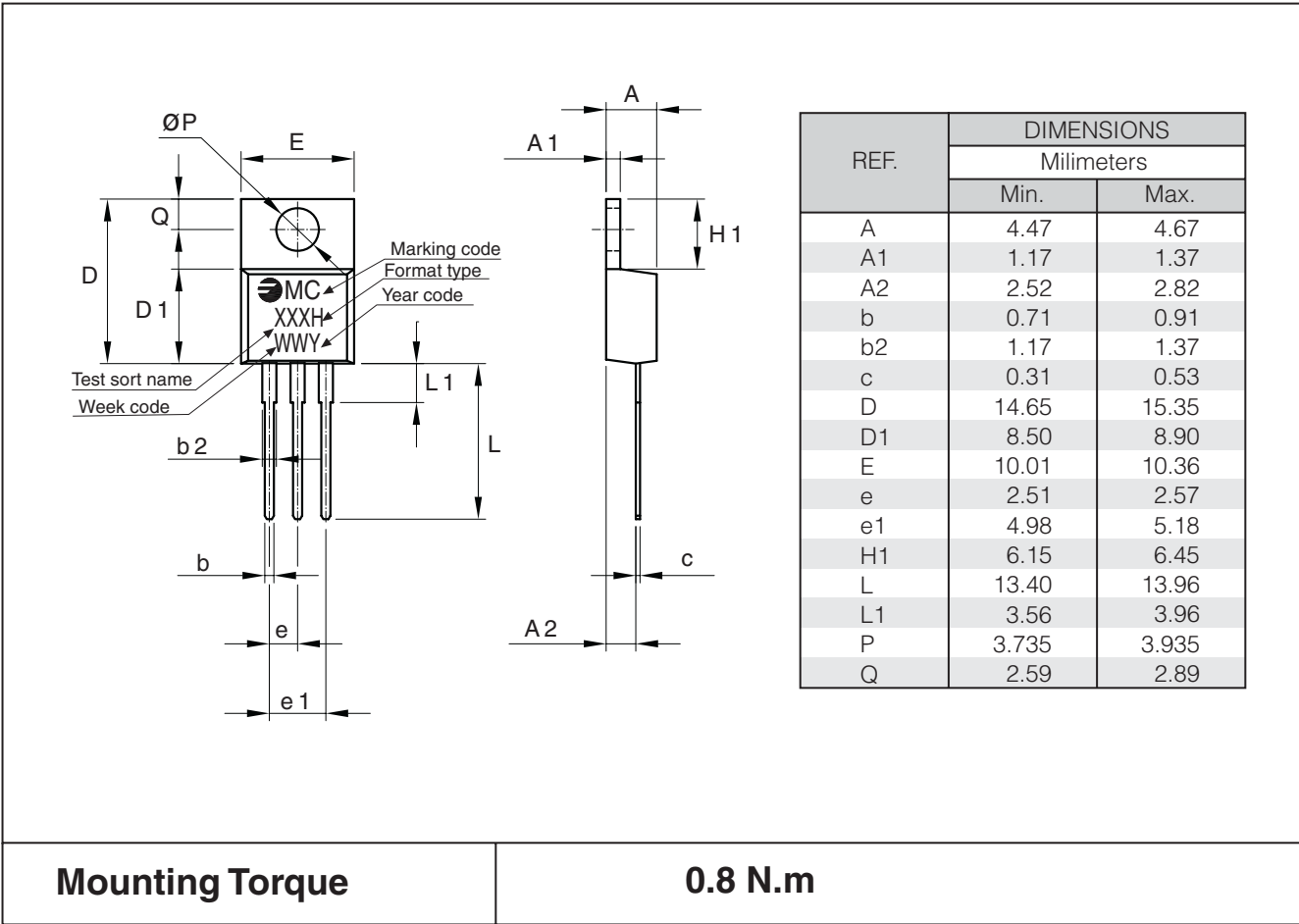
Part Number Information


LOGIC LEVEL TRIAC

Ordering information

PREFERRED P/N	PACKAGE CODE	DELIVERY MODE	BASE QUANTITY	UNIT WEIGHT (g)
FT0408MH 00TU	TU	TUBE	1,000	2.30

Package Outline Dimensions: (mm) TO-220AB



LOGIC LEVEL TRIAC

Ratings and Characteristics (Ta 25 °C unless otherwise noted)

Fig. 1: Maximum power dissipation versus RMS on-state current (full cycle).

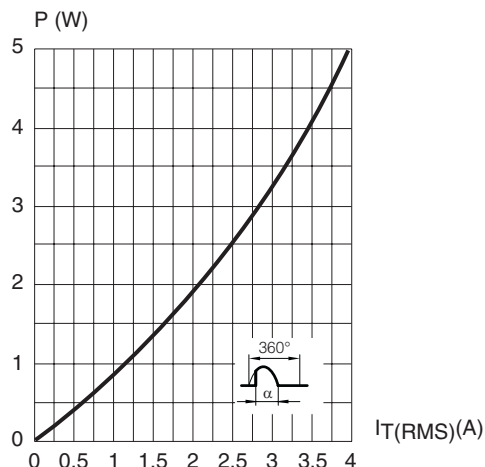


Fig. 2: RMS on-state current versus case temperature (full cycle).

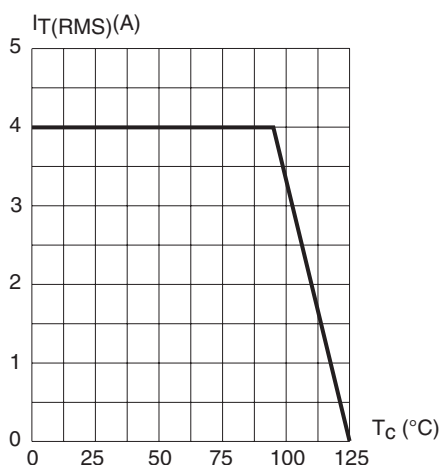


Fig. 3: Relative variation of thermal impedance versus pulse duration.

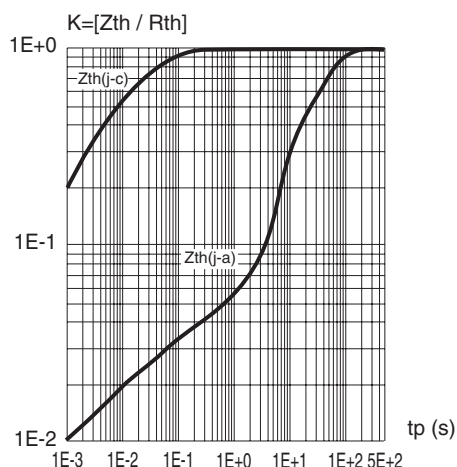


Fig. 4: On-state characteristics (maximum values)

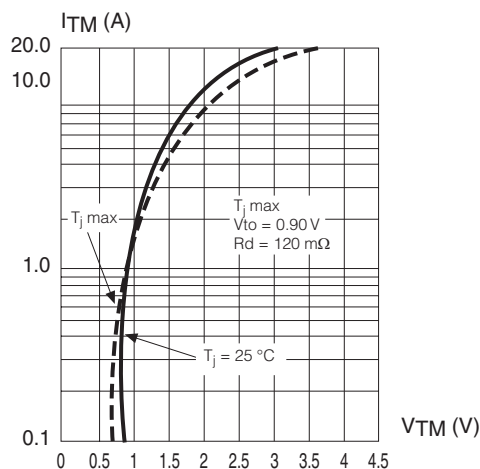


Fig. 5: Surge peak on-state current versus number of cycles

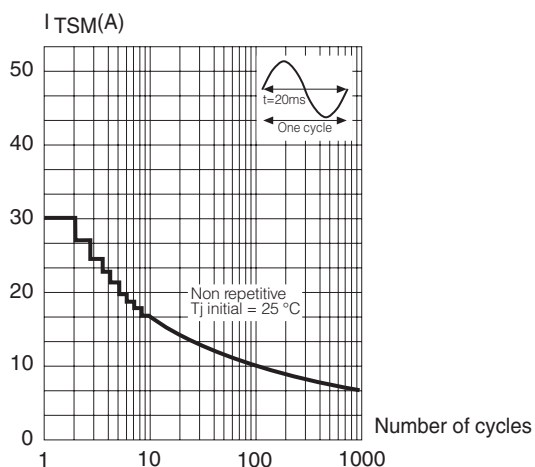
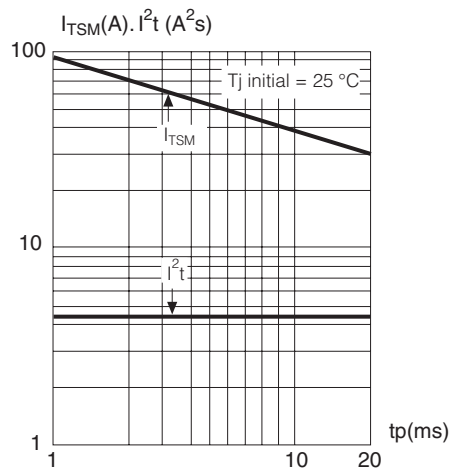


Fig. 6: Non repetitive surge peak on-state current for a sinusoidal pulse with width: $t_p < 10$ ms, and corresponding value of $I^2 t$.



LOGIC LEVEL TRIAC
Ratings and Characteristics (Ta 25 °C unless otherwise noted)

Fig. 7: Relative variation of gate trigger current, holding current and latching versus junction temperature (typical values)

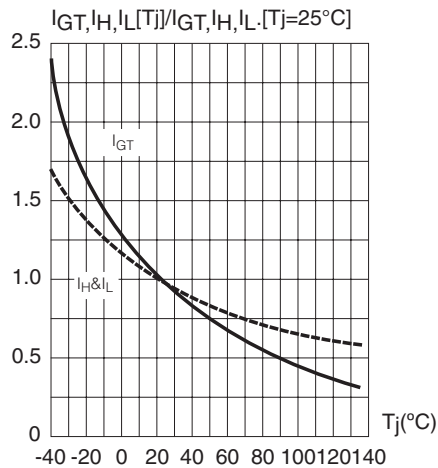


Fig. 8: Relative variation of critical rate of decrease of main current versus junction temperature

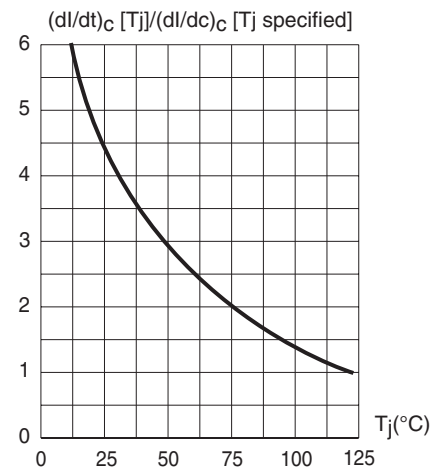
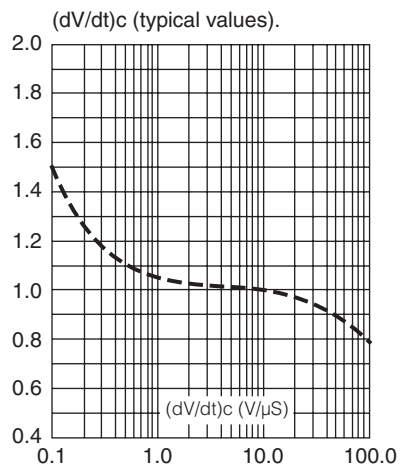


Fig. 9: Relative variation of critical rate of decrease of main current versus



LOGIC LEVEL TRIAC**Revision History**

Date	Revision	Description of Changes
14-Jun-2011	0	Original Data Sheet
10-Mar-2015	1	200V and 700V eliminated

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