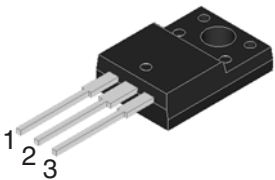
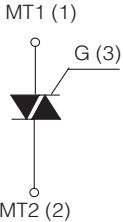


**STANDARD TRIAC**

<p style="text-align: center;"><b>TO-220F</b> (FULLY ISOLATED CASE)</p>  	<table border="1"> <tr> <td><b>On-State Current</b> 12 Amp</td><td><b>Gate Trigger Current</b> ≤ 100 mA</td></tr> <tr> <td colspan="2"><b>Off-State Voltage</b> 400 V ÷ 800 V</td></tr> </table> <p><b>FEATURES</b></p> <ul style="list-style-type: none"> <li>• Glass/passivated die junctions</li> <li>• Medium current Triac</li> <li>• Ideal for automated placement</li> <li>• Low thermal resistance</li> <li>• High surge current capability</li> <li>• Low forward voltage drop</li> <li>• Solder dip 260°C, 10s</li> <li>• Component in accordance to RoHS 2011/65/EU and WEEE 2002/96/EC</li> <li>• Meets MSL level 3, per J-STD-020, LF maximum peak of 260° C</li> </ul> <p><b>MECHANICAL DATA</b></p> <ul style="list-style-type: none"> <li>• <b>Case:</b> TO-220F. Epoxy meets UL 94V-0 flammability rating.</li> <li>• <b>Polarity:</b> As marked on the body.</li> <li>• <b>Terminals:</b> 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.</li> </ul> <p><b>TYPICAL APPLICATIONS</b></p> <p>Suitable for general purpose AC switching. They can be used as an ON/OFF function in applications such as static relays, heating regulation, induction motor starting circuits... or for phase control operation in light dimmers, motor speed controllers, ....</p>	<b>On-State Current</b> 12 Amp	<b>Gate Trigger Current</b> ≤ 100 mA	<b>Off-State Voltage</b> 400 V ÷ 800 V	
<b>On-State Current</b> 12 Amp	<b>Gate Trigger Current</b> ≤ 100 mA				
<b>Off-State Voltage</b> 400 V ÷ 800 V					

**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, $T_c = 56^\circ C$	12	A
$I_{TSM}$	Non-repetitive On-State Current	Full Cycle, 60 Hz ( $t = 16.7$ ms)	110	A
$I_{TSM}$	Non-repetitive On-State Current	Full Cycle, 50 Hz ( $t = 20$ ms)	100	A
$I^2t$	Fusing Current	$t_p = 10$ ms, Half Cycle	50	A <sup>2</sup> s
$I_{GM}$	Peak Gate Current	20 $\mu$ s max. $T_j = 125^\circ C$	4	A
$P_{G(AV)}$	Average Gate Power Dissipation	$T_j = 125^\circ C$	1	W
$di/dt$	Critical rate of rise of on-state current	$I_G = 2 \times I_{GT}$ , $t_r \leq 100$ ns $f = 120$ Hz, $T_j = 125^\circ C$	50	A/ $\mu$ s
$T_j$	Operating Temperature		(-40 +125)	°C
$T_{stg}$	Storage Temperature		(-40 +150)	°C
$T_{sld}$	Soldering Temperature	10s max	260	°C
$V_{iso}$	R.M.S. isolation voltage 50/60 Hz sinusoidal waveform		2.500	Vac

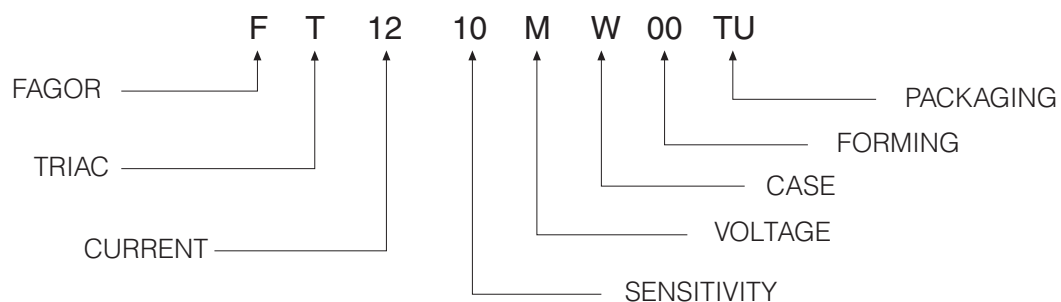
SYMBOL	PARAMETER	VOLTAGE			Unit
		D	M	N	
$V_{DRM}/V_{RRM}$	Repetitive Peak Off State Voltage	400	600	800	V

**STANDARD TRIAC**
**Electrical Characteristics at Tamb = 25 °C**

SYMBOL	PARAMETER	CONDITIONS	Quadrant		SENSITIVITY			Unit
					10	18	17	
$I_{GT}^{(1)}$	Gate Trigger Current	$V_D = 12 V_{DC}, R_L = 33\Omega, T_j = 25\text{ °C}$	Q1÷Q3 Q4	MAX MAX	25 25	25 50	50 100	mA
$V_{GT}$	Gate Trigger Voltage	$V_D = 12 V_{DC}, R_L = 33\Omega, T_j = 25\text{ °C}$	Q1÷Q4	MAX	1.3			V
$V_{GD}$	Gate Non Trigger Voltage	$V_D = V_{DRM}, R_L = 3.3 K\Omega, T_j = 125\text{ °C}$	Q1÷Q4	MIN	0.2			V
$I_H^{(2)}$	Holding Current	$I_T = 100\text{ mA}, \text{Gate open}, T_j = 25\text{ °C}$		MAX	25	25	50	mA
$I_L$	Latching Current	$I_G = 1.2 I_{GT}, T_j = 25\text{ °C}$	Q1, Q3, Q4 Q2	MAX MAX	40 60	40 80	70 100	mA
$dV/dt^{(2)}$	Critical Rate of Voltage Rise	$V_D = 0.67 \times V_{DRM}, \text{Gate open}$ $T_j = 125\text{ °C}$		MIN	200	200	400	V/ $\mu$ s
$(dV/dt)_c^{(2)}$	Critical Rate of Commu- tating off-state voltage	$(dI/dt)_c = 2.7\text{ A/ms}, T_j = 125\text{ °C}$		MIN	3	5	10	V/ $\mu$ s
$V_{TM}^{(2)}$	On-state Voltage	$I_T = 17\text{ Amp}, t_p = 380\text{ }\mu\text{s}, T_j = 25\text{ °C}$		MAX	1.55			V
$V_{t(o)}^{(2)}$	Threshold Voltage	$T_j = 125\text{ °C}$		MAX	0.85			V
$r_d^{(2)}$	Dynamic resistance	$T_j = 125\text{ °C}$		MAX	35			m $\Omega$
$I_{DRM}/I_{RRM}$	Off-State Leakage Current	$V_D = V_{DRM}, T_j = 125\text{ °C}$ $V_R = V_{RRM}, T_j = 25\text{ °C}$		MAX MAX	1 5			mA $\mu$ A
$R_{th(j-c)}$	Thermal Resistance Junction-Case	for AC 360° conduction angle			4			°C/W
$R_{th(j-a)}$	Thermal Resistance Junction-Ambient				55			°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.

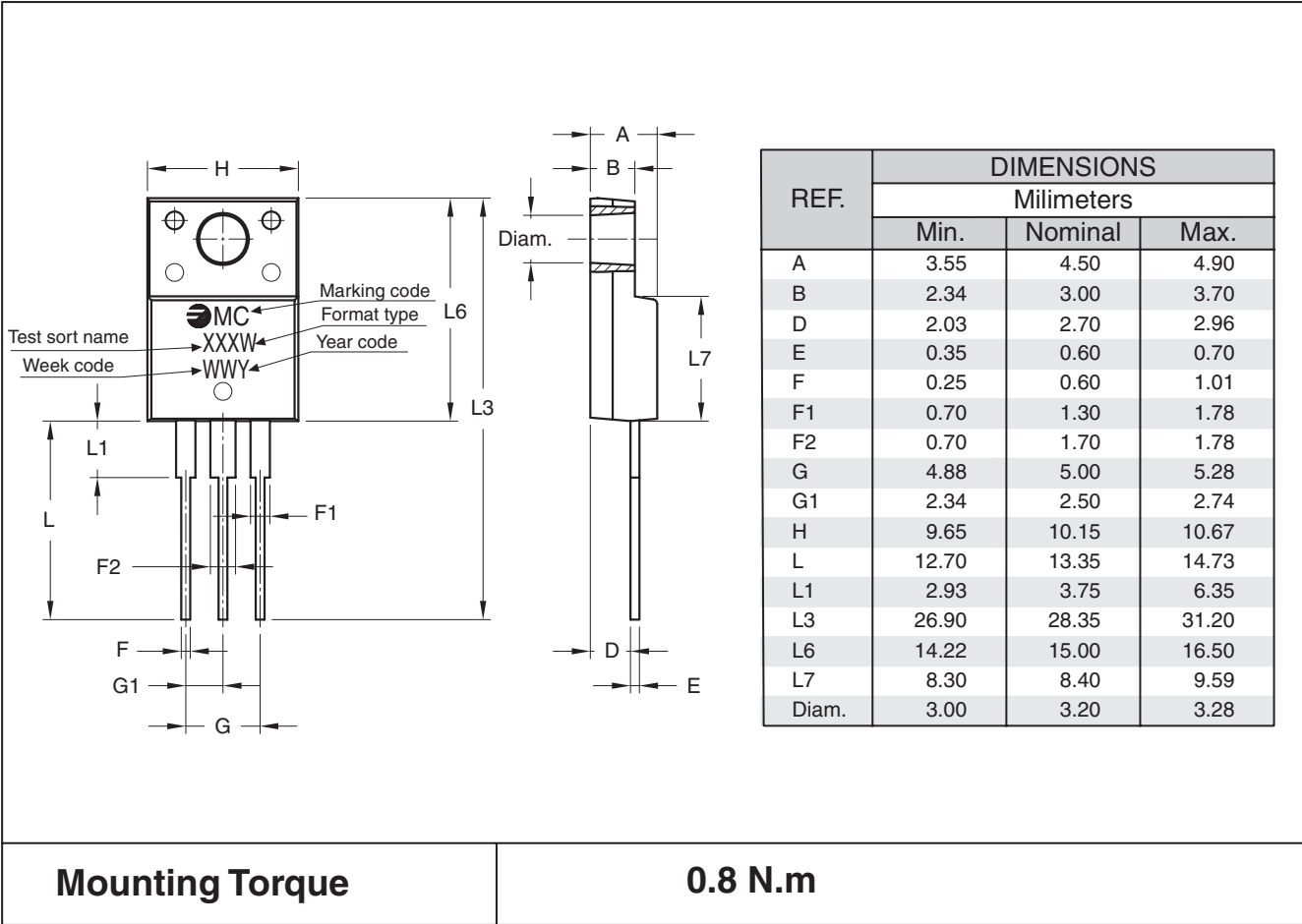
**Part Number Information**


STANDARD TRIAC

Ordering information

PREFERRED P/N	PACKAGE CODE	DELIVERY MODE	BASE QUANTITY	UNIT WEIGHT (g)
FT1210MW 00TU	TU	TUBE	1,000	2.00

Package Outline Dimensions: (mm) TO-220F



## STANDARD TRIAC

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

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

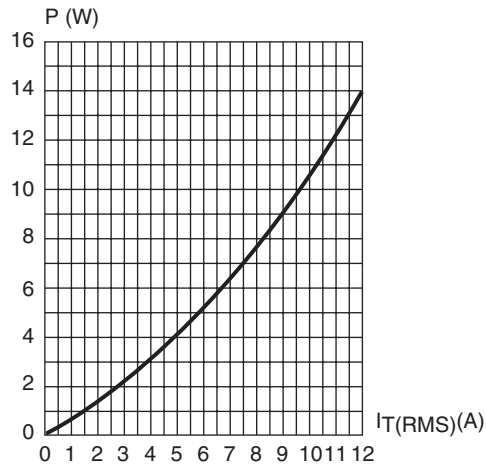


Fig. 2: RMS on-state current versus case temperature (full cycle).

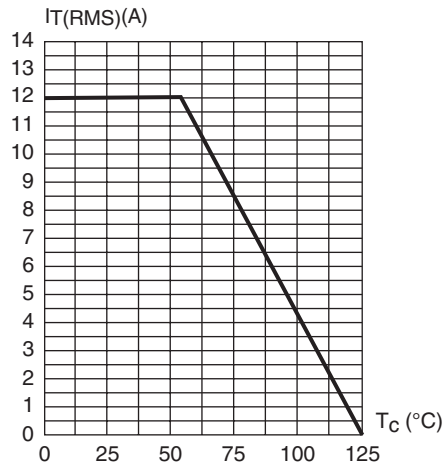


Fig. 3: Relative variation of thermal impedance versus pulse duration.

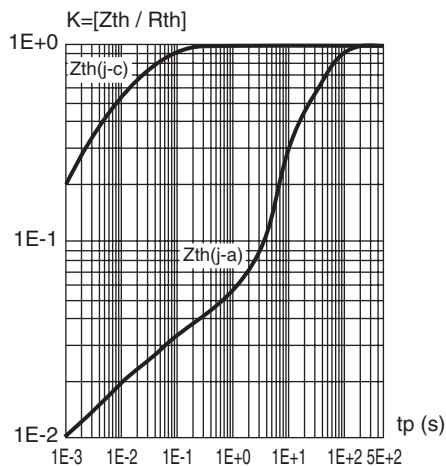


Fig. 4: On-state characteristics (maximum values)

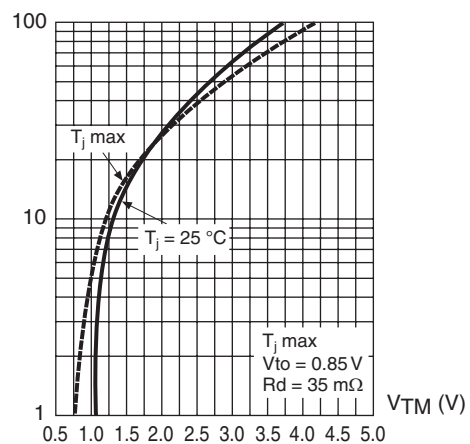


Fig. 5: Surge peak on-state current versus number of cycles

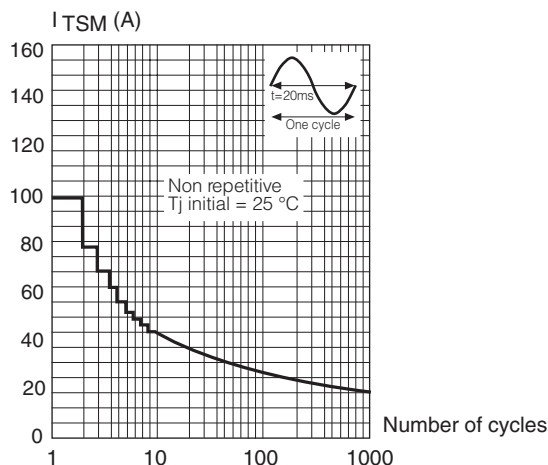
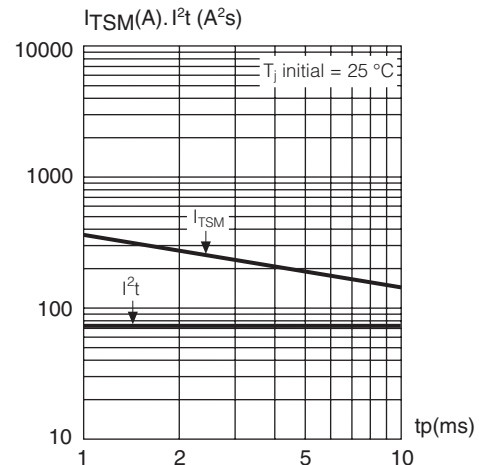


Fig. 6: Non repetitive surge peak on-state current for a sinusoidal pulse with width:  $t_p < 10$  ms, and corresponding value of  $I^2t$ .



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

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

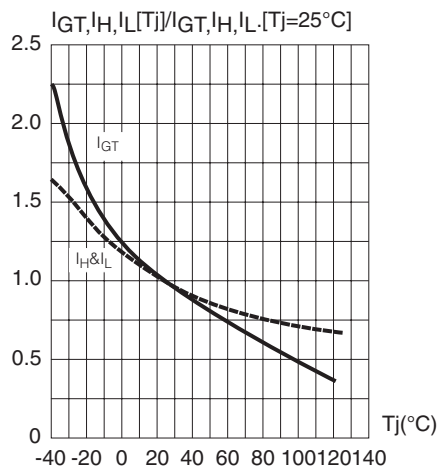


Fig. 8: Relative variation of critical rate of decrease of main current versus junction temperature

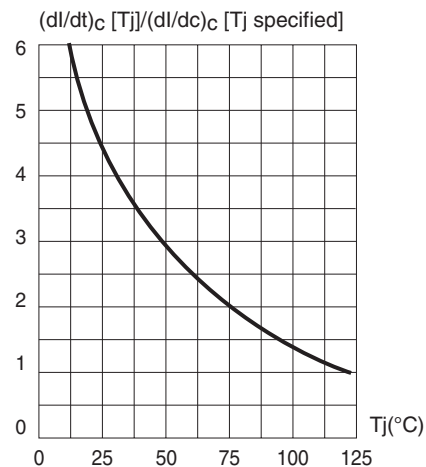
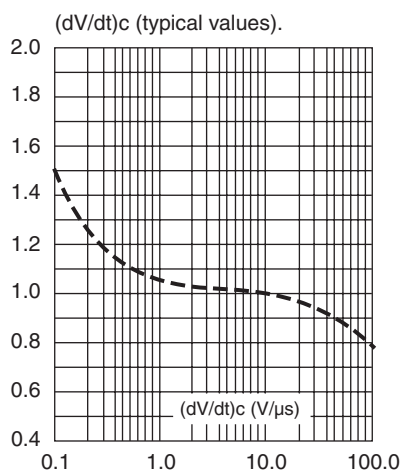


Fig. 9: Relative variation of critical rate of decrease of main current versus



## STANDARD TRIAC

### Revision History

Date	Revision	Description of Changes
14-Apr-2005	0	Original Data Sheet
11-Jun-2013	1	Change values of: $I_{T(RMS)}$ / $I_{TSM}$ / $I^2t$ / $V_{t(o)}$ / $r_d$ / $R_{th(j-c)}$ / $R_{th(j-a)}$

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