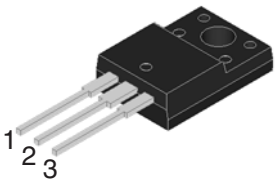
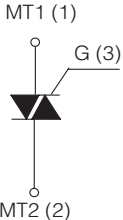


## STANDARD TRIAC

|                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p style="text-align: center;"><b>TO-220F</b><br/>(FULLY ISOLATED CASE)</p>   | <p><b>On-State Current</b><br/>10 Amp</p> <p><b>Gate Trigger Current</b><br/><math>\leq 100 \text{ mA}</math></p> <p><b>Off-State Voltage</b><br/>400 V ÷ 800 V</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                                                                                                                                                                                                                                   | <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> <div style="text-align: right;">   <p><b>RoHS</b><br/>COMPLIANT</p> </div> |
|                                                                                                                                                                                                                                                   | <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>                                                                                                                                                                                                                                                                                                                                                                                                                           |

### 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, $T_c = 105^\circ\text{C}$                                                       | 10            | A                      |
| $I_{TSM}$    | Non-repetitive On-State Current                       | Full Cycle, 60 Hz ( $t = 16.7 \text{ ms}$ )                                                           | 105           | A                      |
| $I_{TSM}$    | Non-repetitive On-State Current                       | Full Cycle, 50 Hz ( $t = 20 \text{ ms}$ )                                                             | 100           | A                      |
| $I^2t$       | Fusing Current                                        | $t_p = 10 \text{ ms}$ , Half Cycle                                                                    | 55            | $\text{A}^2\text{s}$   |
| $I_{GM}$     | 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             | $I_G = 2 \times I_{GT}$ , $t_r \leq 100\text{ns}$<br>$f = 120 \text{ Hz}$ , $T_j = 125^\circ\text{C}$ | 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           | $^\circ\text{C}$       |
| $V_{iso}$    | R.M.S. isolation voltage 50/60 Hz sinusoidal waveform |                                                                                                       | 2.500         | Vac                    |

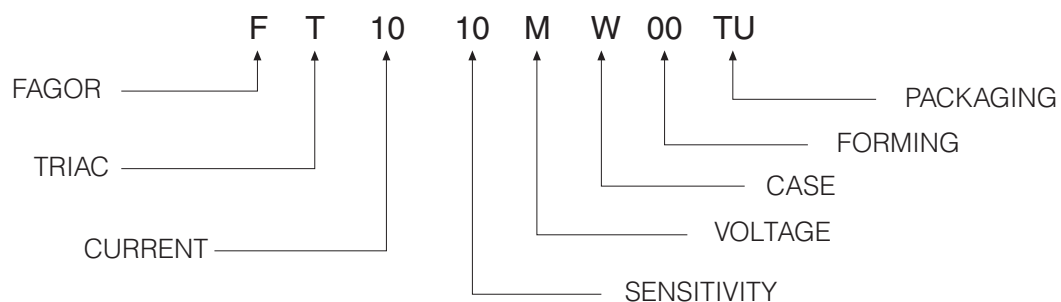
| SYMBOL            | PARAMETER                         | VOLTAGE |     |     | Unit |
|-------------------|-----------------------------------|---------|-----|-----|------|
|                   |                                   | D       | M   | N   |      |
| $V_{DRM}/V_{RRM}$ | Repetitive Peak Off 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    | MAX | 25          | 25  | 10   | mA         |
|                   |                                                     |                                                                         | Q4       | MAX | 25          | 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 | MAX | 40          | 40  | 70   | mA         |
|                   |                                                     |                                                                         | Q2       | MAX | 60          | 80  | 100  |            |
| $dV/dt^{(2)}$     | Critical Rate of Voltage Rise                       | $V_D = 0.67 \times V_{DRM}, \text{Gate open}$<br>$T_j = 125\text{ °C}$  |          | MIN | 500         | 700 | 1000 | V/ $\mu$ s |
| $(dV/dt)_c^{(2)}$ | Critical Rise Rate of Commutating 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                                    | $I_T = 14\text{ Amp}, t_p = 380\text{ }\mu\text{s}, T_j = 25\text{ °C}$ |          | 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 | 40          |     |      | m $\Omega$ |
| $I_{DRM}/I_{RRM}$ | Off-State Leakage Current                           | $V_D = V_{DRM}, T_j = 125\text{ °C}$                                    |          | MAX | 1           |     |      | mA         |
|                   |                                                     | $V_R = V_{RRM}, T_j = 25\text{ °C}$                                     |          | MAX | 5           |     |      | $\mu$ A    |
| $R_{th(j-c)}$     | Thermal Resistance Junction-Case                    | for AC 360° conduction angle                                            |          |     | 3.2         |     |      | °C/W       |
| $R_{th(j-a)}$     | Thermal Resistance Junction-Ambient                 |                                                                         |          |     | 50          |     |      | °C/W       |

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

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

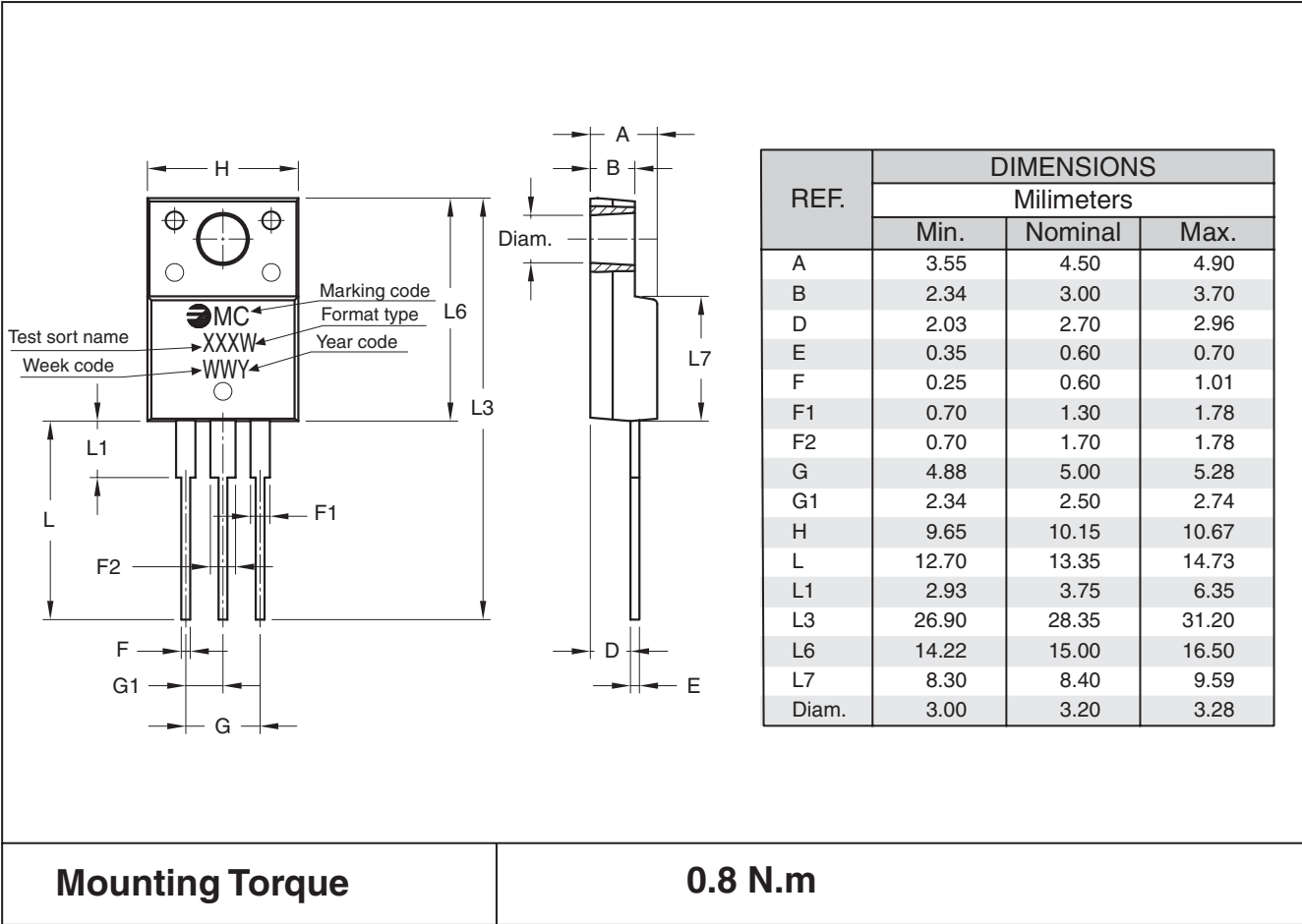
**Part Number Information**


STANDARD TRIAC

Ordering information

| PREFERRED P/N | PACKAGE CODE | DELIVERY MODE | BASE QUANTITY | UNIT WEIGHT (g) |
|---------------|--------------|---------------|---------------|-----------------|
| FT1010MW 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)

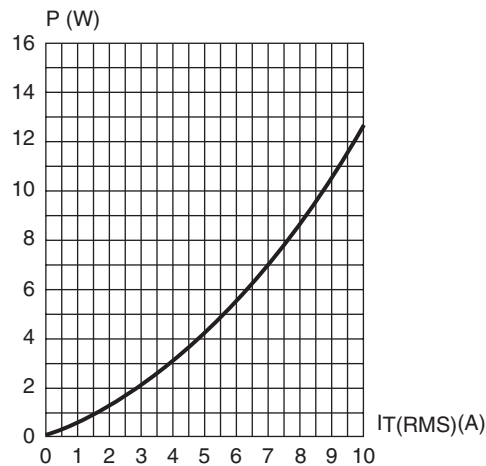


Fig. 2: RMS on-state current versus case temperature (full cycle).

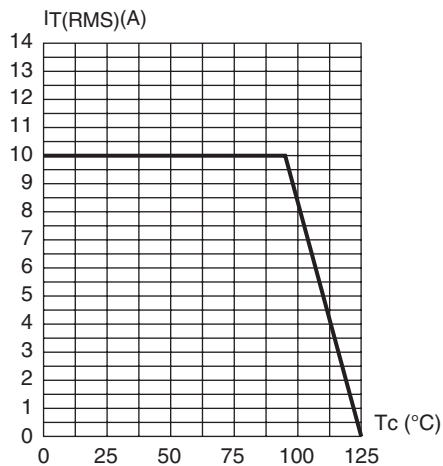


Fig. 3: Relative variation of thermal impedance versus pulse duration.

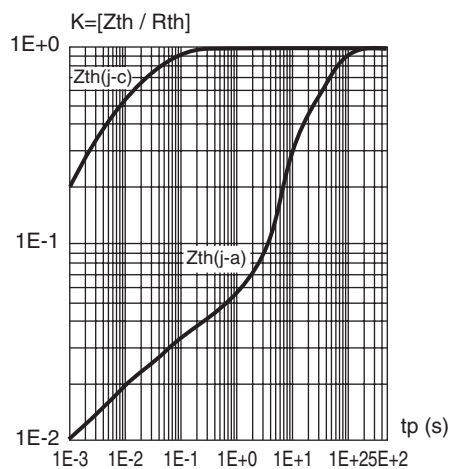


Fig. 4: On-state characteristics (maximum values)

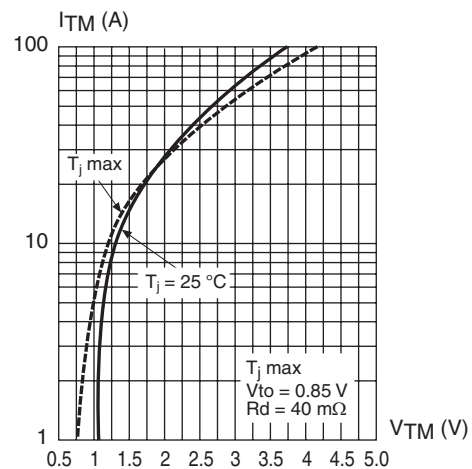


Fig. 5: Surge peak on-state current versus number of cycles

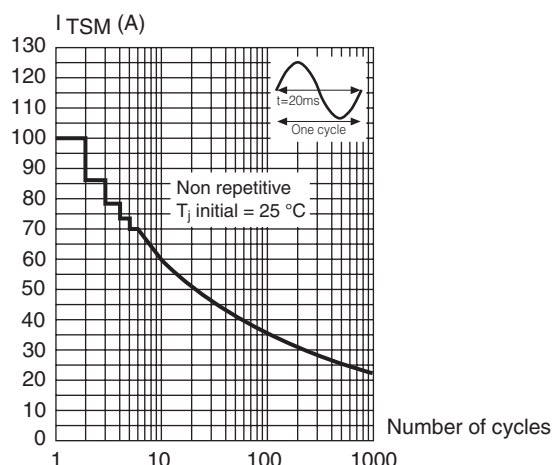
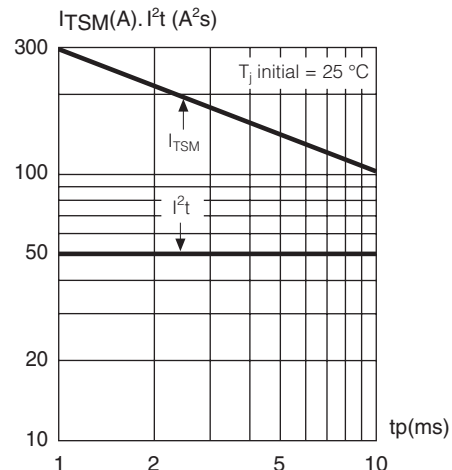


Fig. 6: Non repetitive surge peak on-state current for a sinusoidal pulse with width:  $t_p < 10$  ms, and corresponding value of  $I^2t$ .



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

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

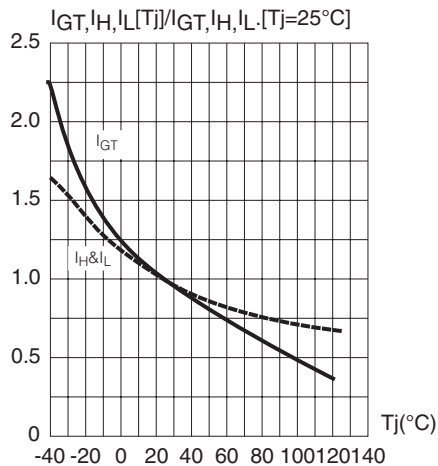


Fig. 8: Relative variation of critical rate of decrease of main current versus junction temperature

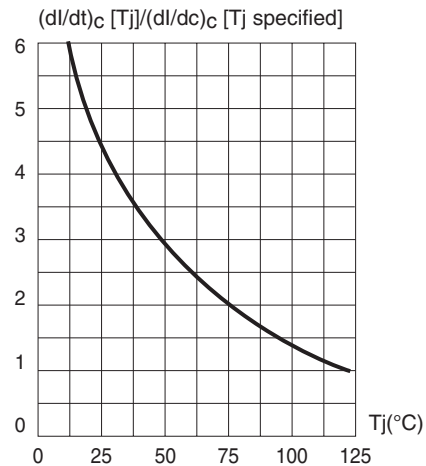
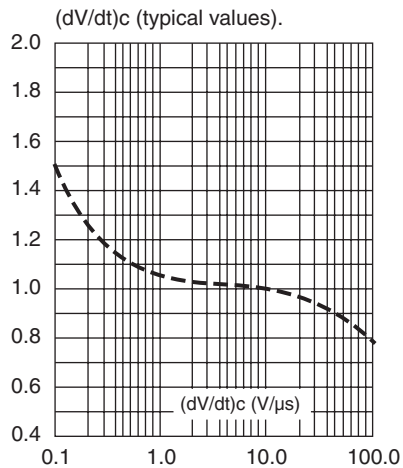


Fig. 9: Relative variation of critical rate of decrease of main current versus



**STANDARD TRIAC****Revision History**

| Date        | Revision | Description of Changes                    |
|-------------|----------|-------------------------------------------|
| 12-Jun-2007 | 0        | Original Data Sheet                       |
| 22-May-2017 | 1        | Eliminated: 200V, 700V and Sensitivity 13 |

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