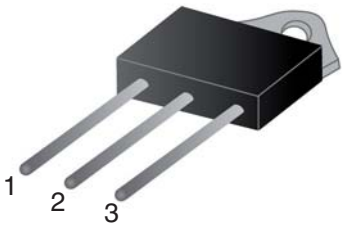
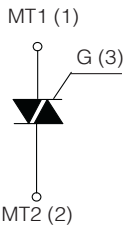


## INSULATED HIGH COMMUTATION TRIAC

<p style="text-align: center; font-weight: bold; font-size: 1.2em;">INSULATED TO3P</p> <div style="text-align: center; margin: 20px 0;">  </div> <div style="text-align: center; margin: 20px 0;">  </div>	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; border-right: 1px solid black; padding: 5px;"> <p><b>On-State Current</b> 40 Amp</p> </td> <td style="width: 50%; padding: 5px;"> <p><b>Gate Trigger Current</b> ≤ 50 mA (16) ≤ 35 mA (14)</p> </td> </tr> <tr> <td colspan="2" style="text-align: center; padding: 5px;"> <p><b>Off-State Voltage</b> 600 V ÷ 800 V</p> </td> </tr> <tr> <td colspan="2" style="padding: 5px;"> <p><b>FEATURES</b></p> <ul style="list-style-type: none"> <li>Provides voltage insulated tab (rated at 2500V RMS)</li> <li>Glass/passivated die junctions</li> <li>High current Triac</li> <li>Low thermal resistance</li> <li>High commutation</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>Certified compliance of UL 1557 Standard for Electrically Isolated Semiconductors, Fille reference E320541, Vol. 3</li> </ul> </td> </tr> <tr> <td colspan="2" style="padding: 5px;"> <p><b>MECHANICAL DATA</b></p> <ul style="list-style-type: none"> <li><b>Case:</b> INSULATED TO3P. 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> </td> </tr> <tr> <td colspan="2" style="padding: 5px;"> <p><b>TYPICAL APPLICATIONS</b></p> <ul style="list-style-type: none"> <li>Used on inductive loads, thanks to their high commutation performances.</li> </ul> </td> </tr> </table>	<p><b>On-State Current</b> 40 Amp</p>	<p><b>Gate Trigger Current</b> ≤ 50 mA (16) ≤ 35 mA (14)</p>	<p><b>Off-State Voltage</b> 600 V ÷ 800 V</p>		<p><b>FEATURES</b></p> <ul style="list-style-type: none"> <li>Provides voltage insulated tab (rated at 2500V RMS)</li> <li>Glass/passivated die junctions</li> <li>High current Triac</li> <li>Low thermal resistance</li> <li>High commutation</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>Certified compliance of UL 1557 Standard for Electrically Isolated Semiconductors, Fille reference E320541, Vol. 3</li> </ul>		<p><b>MECHANICAL DATA</b></p> <ul style="list-style-type: none"> <li><b>Case:</b> INSULATED TO3P. 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> <ul style="list-style-type: none"> <li>Used on inductive loads, thanks to their high commutation performances.</li> </ul>	
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### 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, $T_c = 80\text{ °C}$	40	A
$I_{TSM}$	Non-repetitive On-State Current	Full Cycle, 60 Hz ( $t = 16.7\text{ ms}$ )	420	A
$I_{TSM}$	Non-repetitive On-State Current	Full Cycle, 50 Hz ( $t = 20\text{ ms}$ )	400	A
$I^2t$	Fusing Current	$t_p = 10\text{ ms}$ , Half Cycle	1000	$A^2s$
$I_{GM}$	Peak Gate Current	20 $\mu s$ max. $T_j = 125\text{ °C}$	8	A
$P_{G(AV)}$	Average Gate Power Dissipation	$T_j = 125\text{ °C}$	1	W
$di/dt$	Critical rate of rise of on-state current	$I_G = 2x I_{GT}$ , $t_r \leq 100ns$ $f = 120\text{ Hz}$ , $T_j = 125\text{ °C}$	50	A/ $\mu s$
$T_j$	Operating Temperature		(-40 +125)	°C
$T_{stg}$	Storage Temperature		(-40 +125)	°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
		M	N	
$V_{DRM}/V_{RRM}$	Repetitive Peak Off State Voltage	600	800	V

## INSULATED HIGH COMMUTATION TRIAC

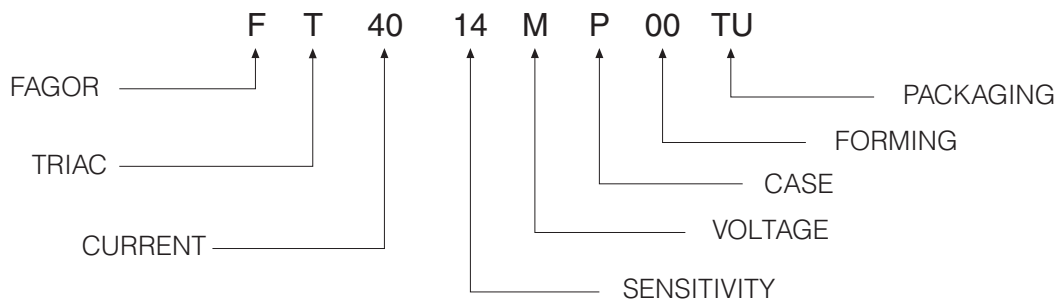
### Electrical Characteristics at Tamb = 25 °C

SYMBOL	PARAMETER	CONDITIONS	Quadrant		SENSITIVITY		Unit
					14	16	
$I_{GT}^{(1)}$	Gate Trigger Current	$V_D = 12 V_{DC}, R_L = 33\Omega, T_j = 25\text{ °C}$	Q1÷Q3	MAX	35	50	mA
$V_{GT}$	Gate Trigger Voltage	$V_D = 12 V_{DC}, R_L = 33\Omega, T_j = 25\text{ °C}$	Q1÷Q3	MAX	1.3		V
$V_{GD}$	Gate Non Trigger Voltage	$V_D = V_{DRM}, R_L = 3.3\text{ K}\Omega, T_j = 125\text{ °C}$	Q1÷Q3	MIN	0.2		V
$I_H^{(2)}$	Holding Current	$I_T = 500\text{ mA}, \text{Gate open}, T_j = 25\text{ °C}$		MAX	60	80	mA
$I_L$	Latching Current	$I_G = 1.2 I_{GT}, T_j = 25\text{ °C}$	Q1,Q3	MAX	50	70	mA
			Q2	MAX	160	160	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	400	500	V/ $\mu$ s
$(dV/dt)_c^{(2)}$	Critical Rate of Commutating off-state voltage	$(dI/dt)_c = 20\text{ A/ms}, T_j = 125\text{ °C}$		MIN	10		V/ms
$V_{TM}^{(2)}$	On-state Voltage	$I_T = 60\text{ Amp}, t_p = 380\text{ }\mu\text{s}, T_j = 25\text{ °C}$		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	10		m $\Omega$
$I_{DRM}/I_{RRM}$	Off-State Leakage Current	$V_D = V_{DRM}, T_j = 125\text{ °C}$		MAX	5		mA
		$V_R = V_{RRM}, T_j = 25\text{ °C}$		MAX	20		$\mu$ A
$R_{th(j-c)}$	Thermal Resistance Junction-Case	for AC 360° conduction angle			0.9		°C/W
$R_{th(j-a)}$	Thermal Resistance Junction-Ambient				50		°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

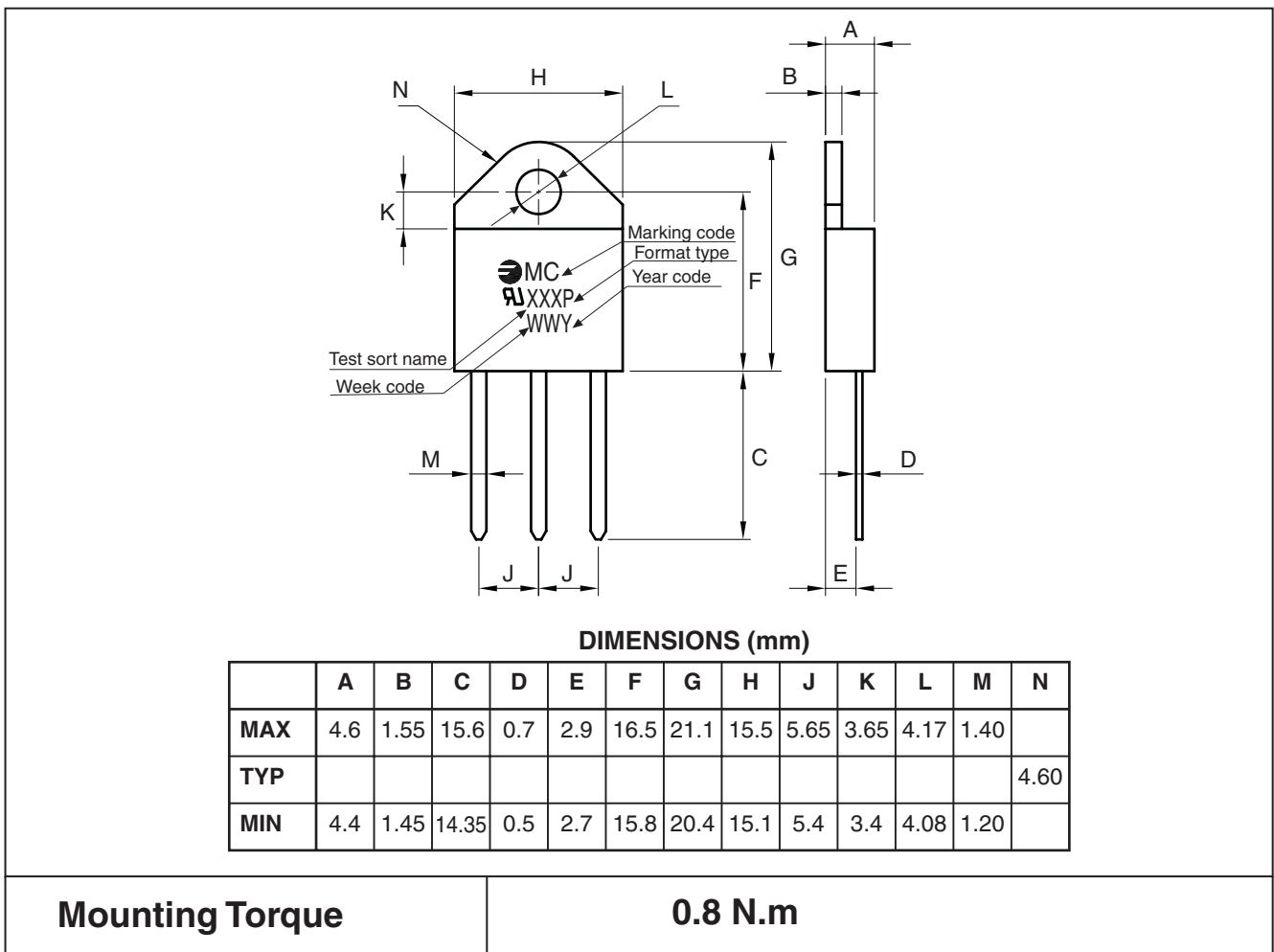


**INSULATED HIGH COMMUTATION TRIAC**

**Ordering information**

PREFERRED P/N	PACKAGE CODE	DELIVERY MODE	BASE QUANTITY	UNIT WEIGHT (g)
FT4014MP 00TU	TU	TUBE	450	4.50

**Package Outline Dimensions: (mm) INSULATED TO3P**



**INSULATED HIGH COMMUTATION TRIAC**

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

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

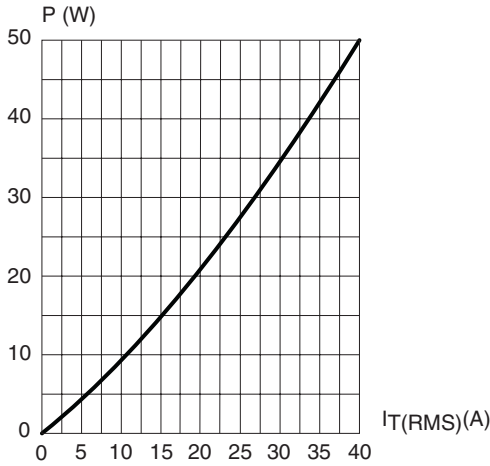


Fig. 2: RMS on-state current versus case temperature (full cycle).

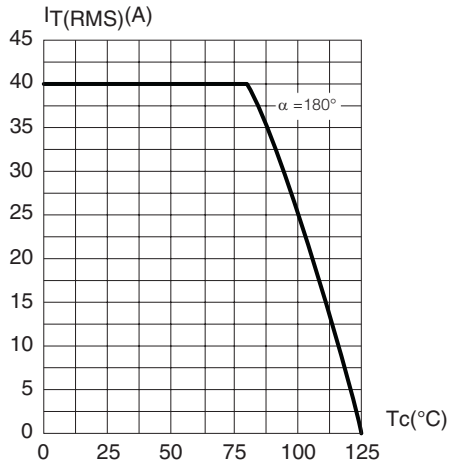


Fig. 3: On-state characteristics (maximum values)

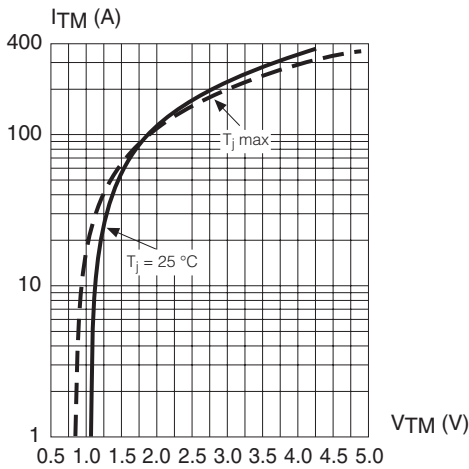


Fig. 4: Surge peak on-state current versus number of cycles

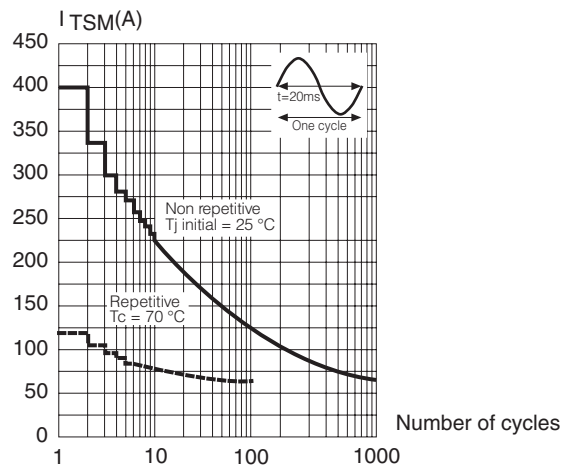


Fig. 5: Non repetitive surge peak on-state current for a sinusoidal current with width:  $t_p < 10 ms$ , and corresponding value of  $I^2t$ .

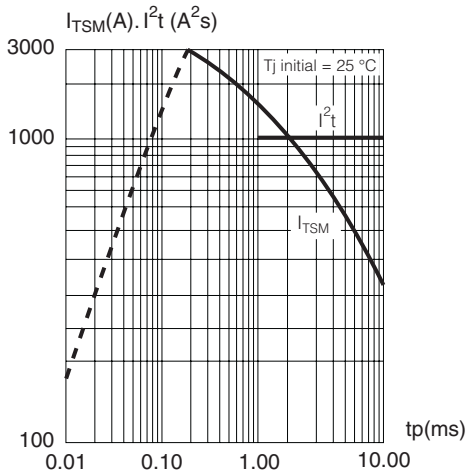
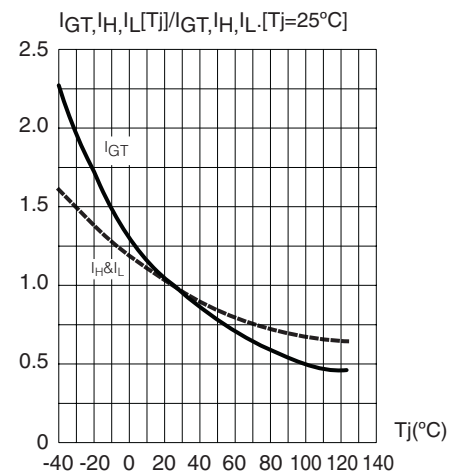


Fig. 7: Relative variation of gate trigger current, holding current and latching current versus junction temperature (typical values)



## INSULATED HIGH COMMUTATION TRIAC

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