

## INSULATED HIGH COMMUTATION TRIAC

<p style="text-align: center; font-weight: bold; font-size: 1.2em;">INSULATED TO-220AB</p> <div style="text-align: center; margin: 10px 0;"> </div> <div style="text-align: center; margin: 10px 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> 6 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> 200 V ÷ 800 V</p> </td> </tr> </table> <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>Medium 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>Meets MSL level 3, per J-STD-020, LF maximum peak of 260° C</li> <li>Certified compliance of UL 1557 Standard for Electrically Isolated Semiconductors. Fille reference E320541, Vol. 3</li> </ul> <div style="text-align: right; margin-top: 10px;"> <p><b>RoHS</b> COMPLIANT</p> </div> <p><b>MECHANICAL DATA</b></p> <ul style="list-style-type: none"> <li><b>Case:</b> INSULATED TO-220AB. 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>	<p><b>On-State Current</b> 6 Amp</p>	<p><b>Gate Trigger Current</b> ≤ 50 mA (16) ≤ 35 mA (14)</p>	<p><b>Off-State Voltage</b> 200 V ÷ 800 V</p>	
<p><b>On-State Current</b> 6 Amp</p>	<p><b>Gate Trigger Current</b> ≤ 50 mA (16) ≤ 35 mA (14)</p>				
<p><b>Off-State Voltage</b> 200 V ÷ 800 V</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, $T_c = 105^\circ C$	6	A
$I_{TSM}$	Non-repetitive On-State Current	Full Cycle, 60 Hz ( $t = 16.7$ ms)	63	A
$I_{TSM}$	Non-repetitive On-State Current	Full Cycle, 50 Hz ( $t = 20$ ms)	60	A
$I^2t$	Fusing Current	$t_p = 10$ ms, Half Cycle	18	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	$I_G = 2x I_{GT}$ , $t_r \leq 100$ 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 +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
		B	D	M	N	
$V_{DRM}/V_{RRM}$	Repetitive Peak Off State Voltage	200	400	600	800	V

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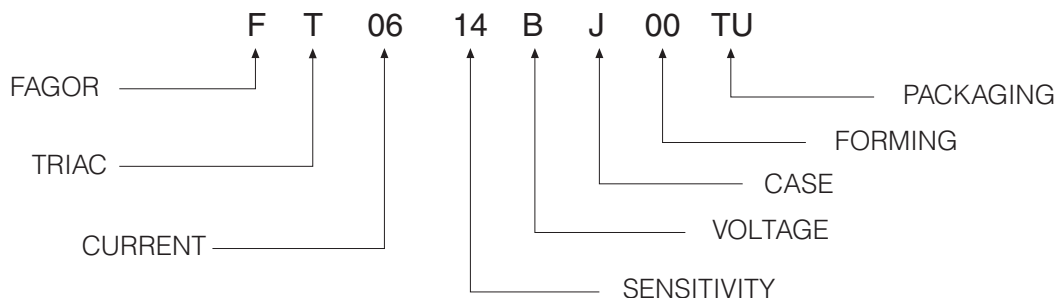
## Electrical Characteristics at Tamb = 25 °C

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	$I_T = 100\text{ mA}, \text{Gate open}, T_j = 25\text{ °C}$		MAX	35	50	mA
$I_L$	Latching Current	$I_G = 1.2 I_{GT}, T_j = 25\text{ °C}$	Q1,Q3	MAX	50	70	mA
			Q2	MAX	80	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	400	1000	V/ $\mu$ s
$(dI/dt)^c^{(2)}$	Critical Rate of Current Rise	$(dv/dt)^c = 0.1\text{ V}/\mu\text{s}$ $T_j = 125\text{ °C}$		MIN	-	-	A/ms
		$(dv/dt)^c = 10\text{ V}/\mu\text{s}$ $T_j = 125\text{ °C}$		MIN	-	-	
		without snubber $T_j = 125\text{ °C}$		MIN	3.5	5.3	
$V_{TM}^{(2)}$	On-state Voltage	$I_T = 7.5\text{ Amp}, t_p = 380\text{ }\mu\text{s}, T_j = 25\text{ °C}$		MAX	1.6		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	60		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			2.7		°C/W
$R_{th(j-a)}$	Thermal Resistance Junction-Ambient				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



**INSULATED HIGH COMMUTATION TRIAC**

**Ordering information**

PREFERRED P/N	PACKAGE CODE	DELIVERY MODE	BASE QUANTITY	UNIT WEIGHT (g)
FT0614MJ 00TU	TU	TUBE	1000	2.30

**Package Outline Dimensions: (mm) INSULATED TO-220AB**

Optional with chamfer

REF.	DIMENSIONS	
	Milimeters	
	Min.	Max.
A	4.32	4.62
A1	1.21	1.29
A2	2.40	2.70
b	0.80	0.83
b2	1.40	--
c	0.42	0.48
D	15.5	15.68
D1	9.26	9.42
E	10.08	10.24
e	2.54	2.54
e1	5.08	5.08
H1	6.24	6.26
L	12.81	13.81
L1	3.28	4.17
P	3.70	3.80
Q	2.75	2.85

<b>Mounting Torque</b>	<b>0.8 N.m</b>
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**Ratings and Characteristics (Ta 25 °C unless otherwise noted)**

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

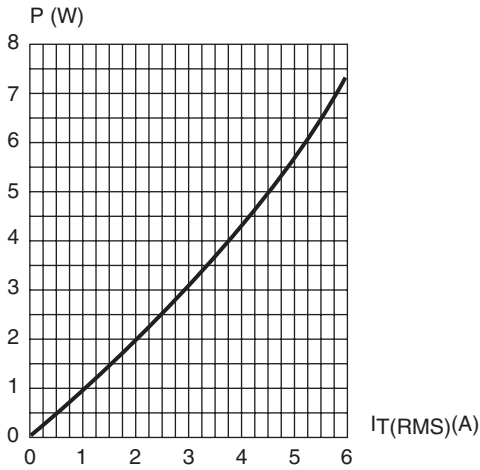


Fig. 2: RMS on-state current versus case temperature (full cycle).

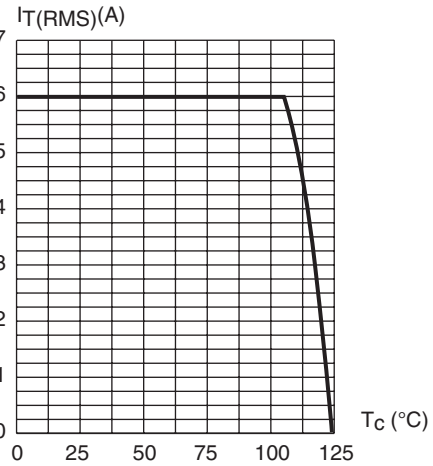


Fig. 3: Relative variation of thermal impedance versus pulse duration.

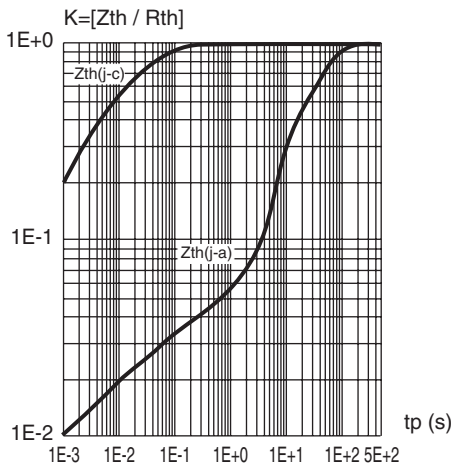


Fig. 4: On-state characteristics (maximum values)

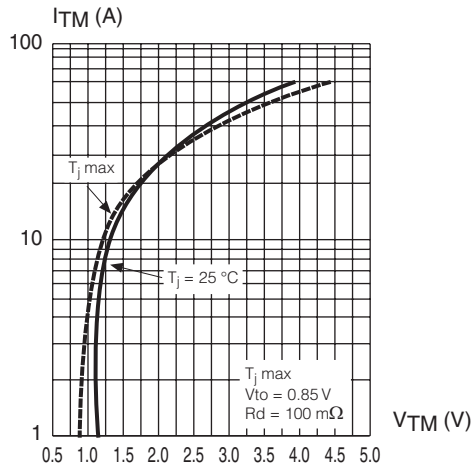


Fig. 5: Surge peak on-state current versus number of cycles

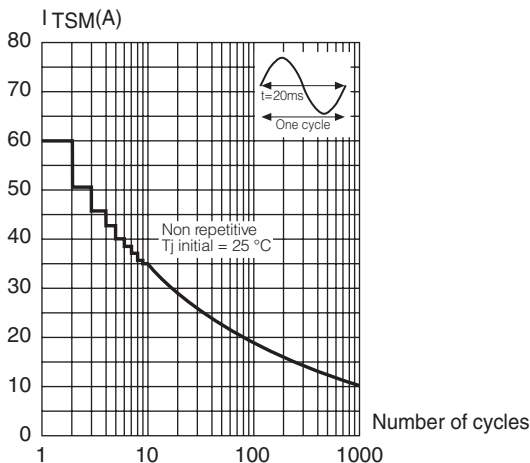
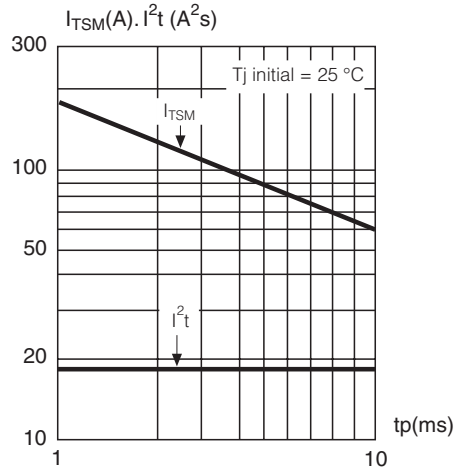


Fig. 6: Non repetitive surge peak on-state current for a sinusoidal pulse with width: tp < 10 ms, and corresponding value of I<sup>2</sup>t.



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

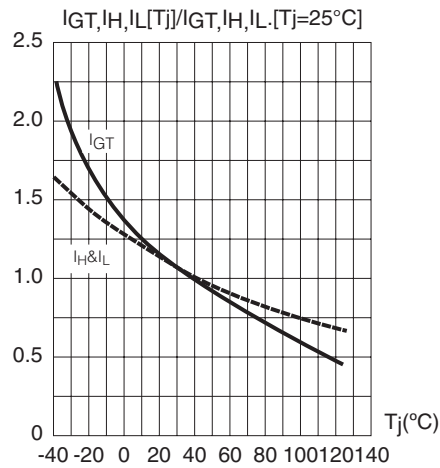
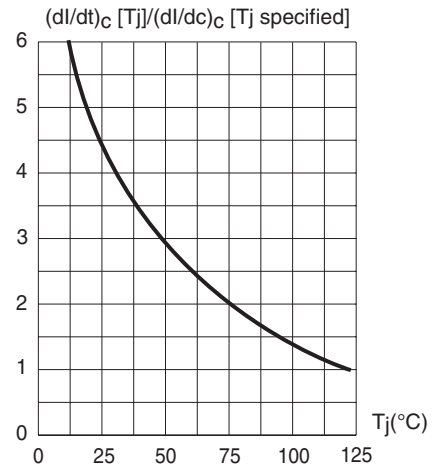


Fig. 8: Relative variation of critical rate of decrease of main current versus junction temperature



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