

## INSULATED STANDARD TRIAC

<p style="text-align: center; font-weight: bold; font-size: 1.2em;">INSULATED TO-220AB</p> <div style="text-align: center; margin-top: 20px;"> </div> <div style="text-align: center; margin-top: 20px;"> </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> 16 Amp</p> </td> <td style="width: 50%; padding: 5px;"> <p><b>Gate Trigger Current</b> ≤ 50 mA (18) ≤ 100 mA (17)</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>Glass/passivated die junctions</li> <li>Provides voltage insulated tab (rated at 2500V RMS)</li> <li>Medium current Triac</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> <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 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> <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>	<p><b>On-State Current</b> 16 Amp</p>	<p><b>Gate Trigger Current</b> ≤ 50 mA (18) ≤ 100 mA (17)</p>	<p><b>Off-State Voltage</b> 200 V ÷ 800 V</p>	
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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, $T_c = 83\text{ °C}$	16	A
$I_{TSM}$	Non-repetitive On-State Current	Full Cycle, 60 Hz ( $t = 16.7\text{ ms}$ )	168	A
$I_{TSM}$	Non-repetitive On-State Current	Full Cycle, 50 Hz ( $t = 20\text{ ms}$ )	160	A
$I^2t$	Fusing Current	$t_p = 10\text{ ms}$ , Half Cycle	144	A <sup>2</sup> s
$I_{GM}$	Peak Gate Current	$20\text{ }\mu\text{s max.}$ $T_j = 125\text{ °C}$	4	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	$I_G = 2x I_{GT}$ , $t_r \leq 100\text{ ns}$ $f = 120\text{ Hz}$ , $T_j = 125\text{ °C}$	50	A/ $\mu\text{s}$
$T_j$	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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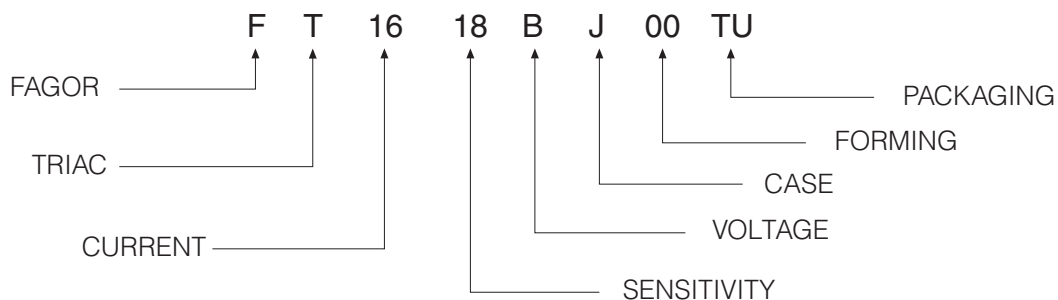
## Electrical Characteristics at Tamb = 25 °C

SYMBOL	PARAMETER	CONDITIONS	Quadrant		SENSITIVITY		Unit
					18	17	
I <sub>GT</sub> <sup>(1)</sup>	Gate Trigger Current	V <sub>D</sub> = 12 V <sub>DC</sub> , R <sub>L</sub> = 33Ω, T <sub>j</sub> = 25 °C	Q1÷Q3	MAX	25	50	mA
			Q4	MAX	50	100	mA
V <sub>GT</sub>	Gate Trigger Voltage	V <sub>D</sub> = 12 V <sub>DC</sub> , R <sub>L</sub> = 33Ω, T <sub>j</sub> = 25 °C	Q1÷Q4	MAX	1.3		V
V <sub>GD</sub>	Gate Non Trigger Voltage	V <sub>D</sub> = V <sub>DRM</sub> , R <sub>L</sub> = 3.3 KΩ, T <sub>j</sub> = 125 °C	Q1÷Q4	MIN	0.2		V
I <sub>H</sub> <sup>(2)</sup>	Holding Current	I <sub>T</sub> = 500 mA, Gate open, T <sub>j</sub> = 25 °C		MAX	25	50	mA
I <sub>L</sub>	Latching Current	I <sub>G</sub> = 1.2 I <sub>GT</sub> , T <sub>j</sub> = 25 °C	Q1,Q3,Q4	MAX	50	60	mA
			Q2	MAX	80	120	mA
dV/dt <sup>(2)</sup>	Critical Rate of Voltage Rise	V <sub>D</sub> = 400V, Gate open T <sub>j</sub> = 125 °C		MIN	200		V/μs
(dV/dt) <sub>c</sub> <sup>(2)</sup>	Critical rise rate of Commu- tating off-state voltage	(dI/dt) <sub>c</sub> = 2.7 A/ms T <sub>j</sub> = 125 °C		MIN	5	10	V/μs
V <sub>TM</sub> <sup>(2)</sup>	On-state Voltage	I <sub>T</sub> = 22.5 Amp, tp = 380 μs, T <sub>j</sub> = 25 °C		MAX	1.6		V
V <sub>t(o)</sub> <sup>(2)</sup>	Threshold Voltage	T <sub>j</sub> = 125 °C		MAX	0.85		V
r <sub>d</sub> <sup>(2)</sup>	Dynamic resistance	T <sub>j</sub> = 125 °C		MAX	25		mΩ
I <sub>DRM</sub> /I <sub>RRM</sub>	Off-State Leakage Current	V <sub>D</sub> = V <sub>DRM</sub> , T <sub>j</sub> = 125 °C		MAX	2		mA
		V <sub>R</sub> = V <sub>RRM</sub> , T <sub>j</sub> = 25 °C		MAX	10		μA
R <sub>th(j-c)</sub>	Thermal Resistance Junction-Case	for AC 360° conduction angle			2.1		°C/W
R <sub>th(j-a)</sub>	Thermal Resistance Junction-Ambient				60		°C/W

(1) Minimum I<sub>GT</sub> is guaranteed at 5% of I<sub>GT</sub> max.

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

## Part Number Information



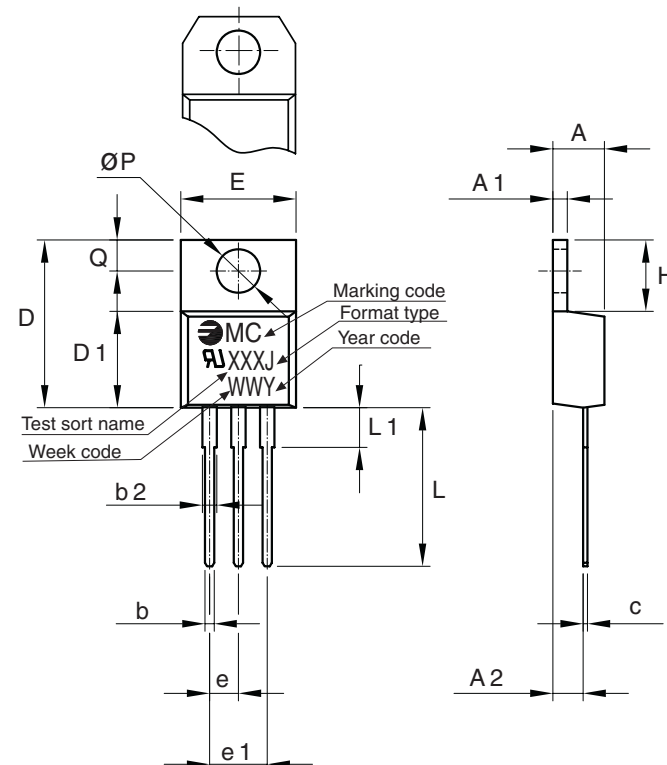
**INSULATED STANDARD TRIAC**

**Ordering information**

PREFERRED P/N	PACKAGE CODE	DELIVERY MODE	BASE QUANTITY	UNIT WEIGHT (g)
FT1618MJ 00TU	TU	TUBE	1000	2.30

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

Optional with chamfer



The drawing shows a top view and a side view of the triac package. The top view includes dimensions:  $\varnothing P$  (hole diameter),  $E$  (width),  $D$  (height),  $Q$  (height to hole center),  $D1$  (height to marking code),  $L$  (height to leads),  $L1$  (height to lead base),  $b$  (lead width),  $b2$  (lead width at base),  $e$  (lead pitch), and  $e1$  (lead pitch at base). The side view shows dimensions:  $A$  (width),  $A1$  (width to lead base),  $A2$  (width to lead tip),  $H1$  (height to lead base), and  $c$  (lead thickness).

Marking code details:  
 MC (Fagor logo)  
 XXXJ (Format type)  
 WWY (Year code)  
 Test sort name  
 Week code

REF.	DIMENSIONS	
	Millimeters	
	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).

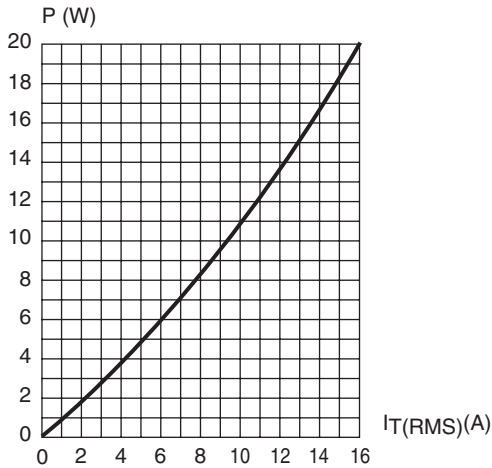


Fig. 2: RMS on-state current versus case temperature (full cycle).

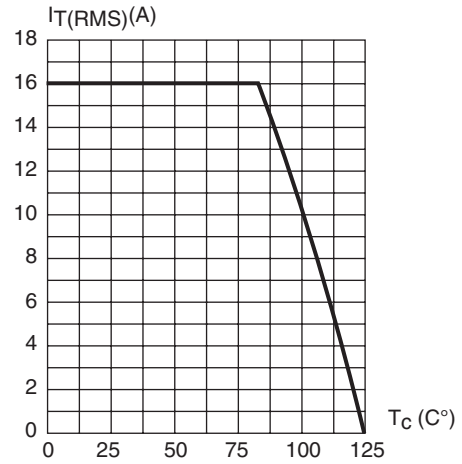


Fig. 3: Relative variation of thermal impedance versus pulse duration.

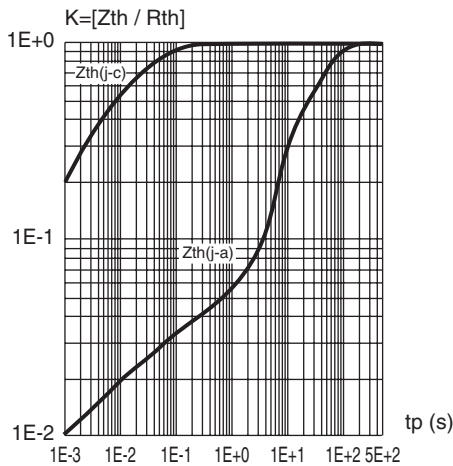


Fig. 4: On-state characteristics (maximum values)

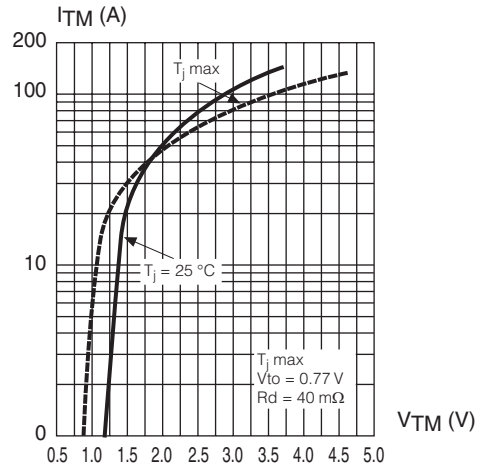


Fig. 5: Surge peak on-state current versus number of cycles

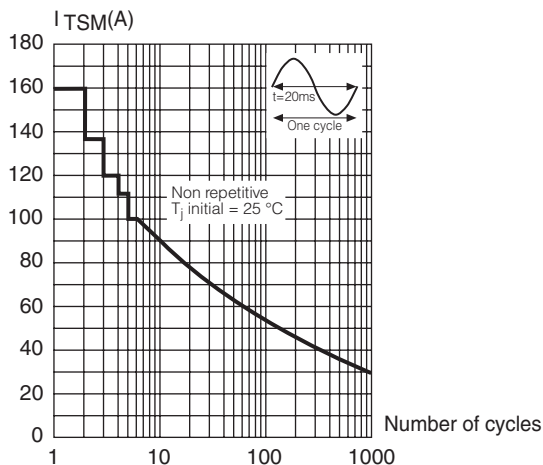
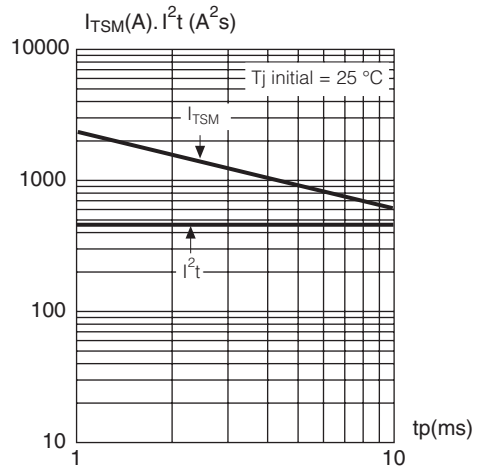


Fig. 6: Non repetitive surge peak on-state current for a sinusoidal pulse with width: tp < 10 ms, and corresponding value of I<sup>2</sup>t.



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**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)

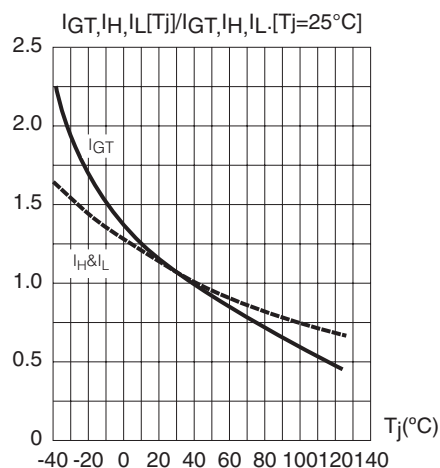


Fig. 8: Relative variation of critical rate of decrease of main current versus junction temperature

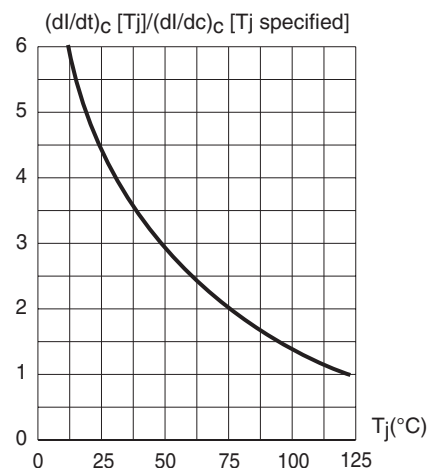
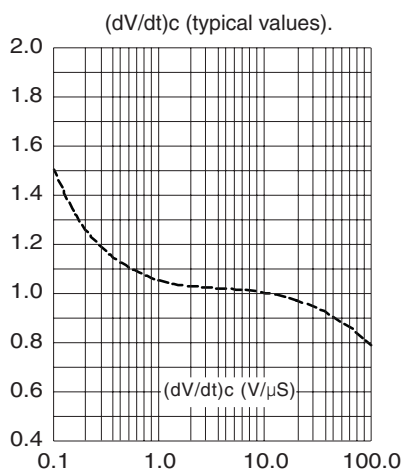


Fig. 9: Relative variation of critical rate of decrease of main current versus



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

Date	Revision	Description of Changes
14-Oct-2012	0	Original Data Sheet
16-May-2013	1	Change values of: $I_H$ / $I_L$

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