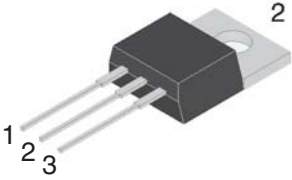
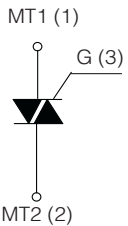




HIGH COMMUTATION TRIAC

<p style="text-align: center;">TO-220AB</p>  	<p>On-State Current 12 Amp</p> <p>Gate Trigger Current ≤ 50 mA</p> <p>Off-State Voltage 400 V ÷ 800 V</p>
	<p>FEATURES</p> <ul style="list-style-type: none"> • Glass/passivated die junctions • Medium current Triac • Low thermal resistance • High commutation • High surge current capability • Low forward voltage drop • Solder dip 260°C, 10s • Component in accordance to RoHS 2011/65/EU and WEEE 2002/96/EC • Meets MSL level 3, per J-STD-020, LF maximum peak of 260° C <div style="text-align: right;">   RoHS COMPLIANT </div>
	<p>MECHANICAL DATA</p> <ul style="list-style-type: none"> • Case: TO-220AB. Epoxy meets UL 94V-0 flammability rating. • Polarity: As marked on the body. • Terminals: 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.
<p>TYPICAL APPLICATIONS</p> <ul style="list-style-type: none"> • Used on inductive loads, thanks to their high commutation performances. 	

Maximum 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, $T_c = 105^\circ\text{C}$	12	A
I_{TSM}	Non-repetitive On-State Current	Full Cycle, 60 Hz ($t = 16.7\text{ ms}$)	110	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	50	A ² s
I_{GM}	Peak Gate Current	20 μs 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	$I_G = 2 \times I_{GT}$, $t_r \leq 100\text{ ns}$ $f = 120\text{ Hz}$, $T_j = 125^\circ\text{C}$	50	A/ μs
T_j	Operating Temperature		(-40 +125)	°C
T_{stg}	Storage Temperature		(-40 +150)	°C
T_{sld}	Soldering Temperature	10s max	260	°C

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

HIGH COMMUTATION TRIAC

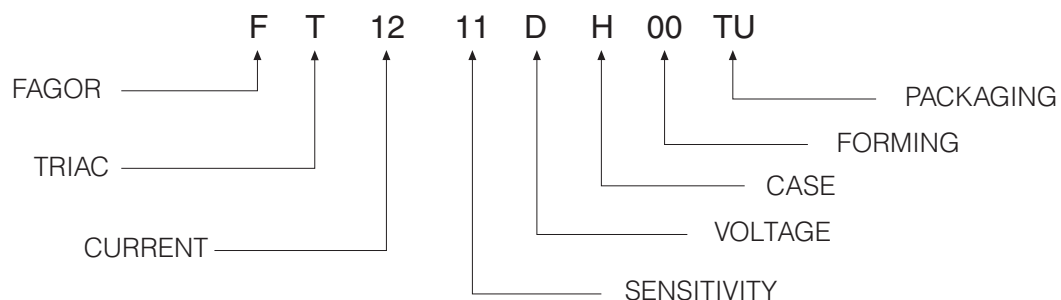
Electrical Characteristics at Tamb = 25 °C

SYMBOL	PARAMETER	CONDITIONS	Quadrant		SENSITIVITY			Unit
					11	14	16	
$I_{GT}^{(1)}$	Gate Trigger Current	$V_D = 12 V_{DC}, R_L = 33\Omega, T_j = 25^\circ C$	Q1÷Q3	MAX	25	35	50	mA
V_{GT}	Gate Trigger Voltage	$V_D = 12 V_{DC}, R_L = 33\Omega, T_j = 25^\circ C$	Q1÷Q3	MAX	1.3			V
V_{GD}	Gate Non Trigger Voltage	$V_D = V_{DRM}, R_L = 3.3 K\Omega, T_j = 125^\circ C$	Q1÷Q3	MIN	0.2			V
$I_H^{(2)}$	Holding Current	$I_T = 100 \text{ mA}, \text{Gate open}, T_j = 25^\circ C$		MAX	25	35	50	mA
I_L	Latching Current	$I_G = 1.2 I_{GT}, T_j = 25^\circ C$	Q1,Q3	MAX	40	50	70	mA
			Q2	MAX	50	60	80	mA
$dV/dt^{(2)}$	Critical Rate of Voltage Rise	$V_D = 0.67 \times V_{DRM}, \text{Gate open}$ $T_j = 125^\circ C$		MIN	200	500	1000	V/ μs
$(dI/dt)_C^{(2)}$	Critical Rate of Current Rise	$(dv/dt)_C = 0.1 \text{ V}/\mu s, T_j = 125^\circ C$		MIN	-	-	-	A/ms
		$(dv/dt)_C = 10 \text{ V}/\mu s, T_j = 125^\circ C$		MIN	-	-	-	
		without snubber $T_j = 125^\circ C$		MIN	5.3	6.5	12	
$V_{TM}^{(2)}$	On-state Voltage	$I_T = 17 \text{ Amp}, t_p = 380 \mu s, T_j = 25^\circ C$		MAX	1.55			V
$V_{t(o)}^{(2)}$	Threshold Voltage	$T_j = 125^\circ C$		MAX	0.85			V
$r_d^{(2)}$	Dynamic resistance	$T_j = 125^\circ C$		MAX	3.5			m Ω
I_{DRM}/I_{RRM}	Off-State Leakage Current	$V_D = V_{DRM}, T_j = 125^\circ C$		MAX	1			mA
		$V_R = V_{RRM}, T_j = 25^\circ C$		MAX	5			μA
$R_{th(j-c)}$	Thermal Resistance Junction-Case	for AC 360° conduction angle			1.4			°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

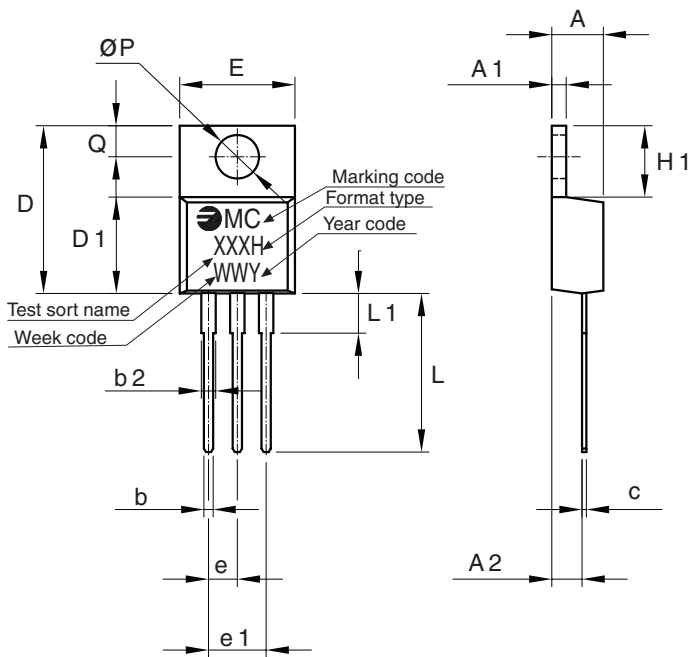


HIGH COMMUTATION TRIAC

Ordering information

PREFERRED P/N	PACKAGE CODE	DELIVERY MODE	BASE QUANTITY	UNIT WEIGHT (g)
FT1216DH 00TU	TU	TUBE	1000	2.30

Package Outline Dimensions: (mm) TO-220AB



REF.	DIMENSIONS	
	Milimeters	
	Min.	Max.
A	4.47	4.67
A1	1.17	1.37
A2	2.52	2.82
b	0.71	0.91
b2	1.17	1.37
c	0.31	0.53
D	14.65	15.35
D1	8.50	8.90
E	10.01	10.36
e	2.51	2.57
e1	4.98	5.18
H1	6.15	6.45
L	13.40	13.96
L1	3.56	3.96
P	3.735	3.935
Q	2.59	2.89

Mounting Torque

0.8 N.m

HIGH COMMUTATION TRIAC

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

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

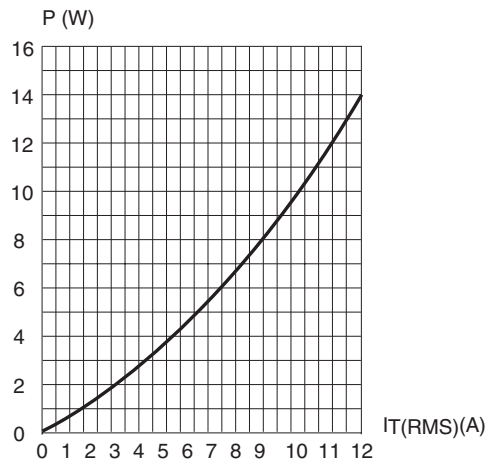


Fig. 2: RMS on-state current versus case temperature (full cycle)

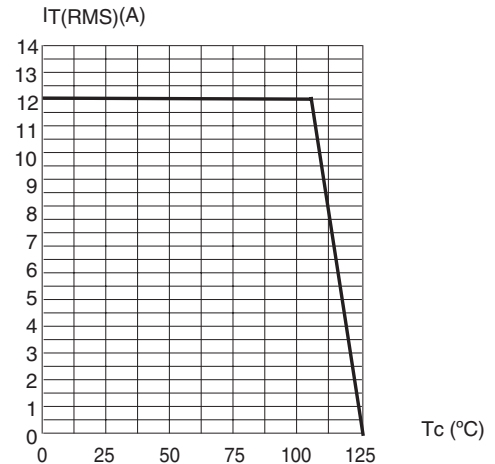


Fig. 3: Relative variation of thermal impedance versus pulse duration

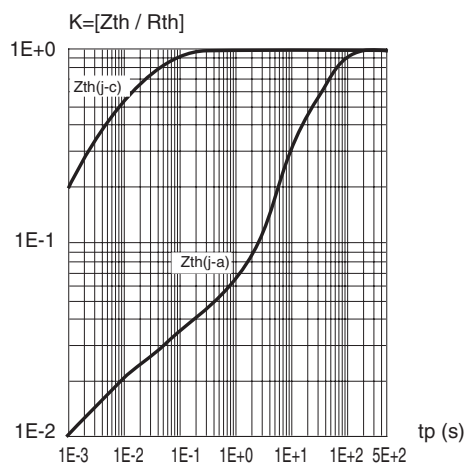


Fig. 4: On-state characteristics (maximum values)

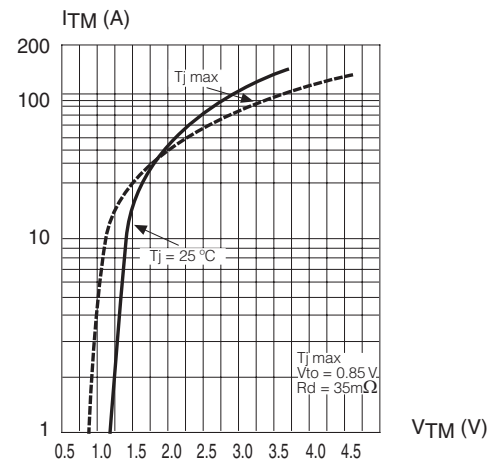


Fig. 5: Surge peak on-state current versus number of cycles

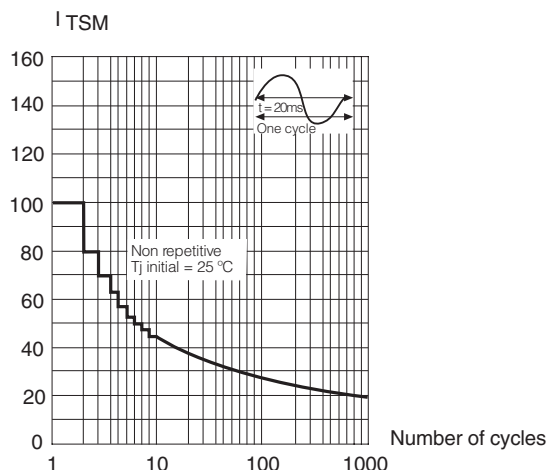
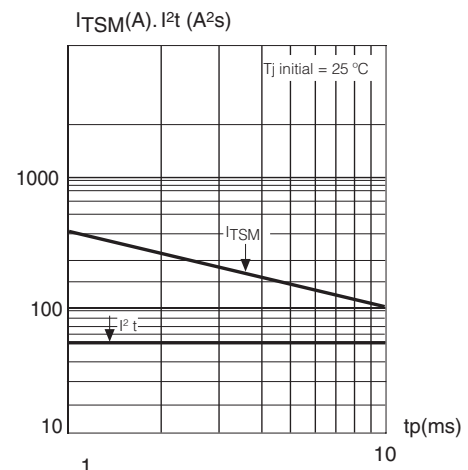


Fig. 6: Non repetitive surge peak on-state current for a sinusoidal pulse with width: $t_p < 10$ ms, and corresponding value of $I^2 t$.



HIGH COMMUTATION 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)

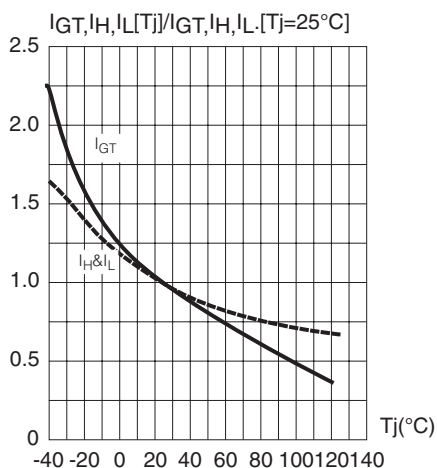
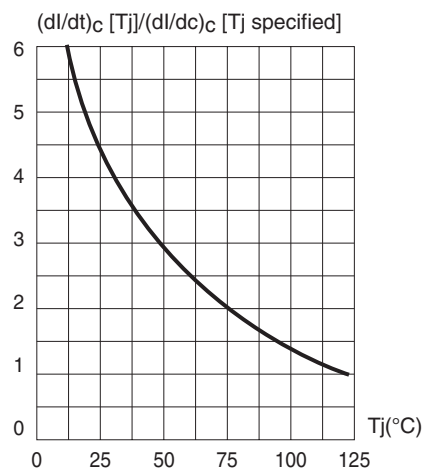


Fig. 8: Relative variation of critical rate of decrease of main current versus junction temperature



HIGH COMMUTATION TRIAC**Revision History**

Date	Revision	Description of Changes
14-Jun-2011	0	Original Data Sheet
10-May-2013	1	Change values of: $I_{T(RMS)}$ / I_{TSM} / I^2t / V_{TM} / $V_{t(o)}$ / r_d / $R_{th(j-c)}$
3-Jul-2013	2	Rescale curves in Figure 7

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