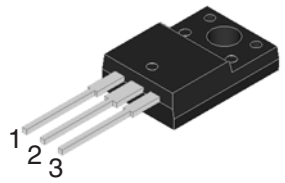
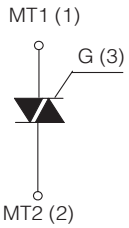
HIGH COMMUTATION TRIAC

TO-220F
(FULLY ISOLATED CASE)





On-State Current	Gate Trigger Current
25 Amp	≤ 50 mA

Off-State Voltage
400 V ÷ 800 V

FEATURES

- Glass/passivated die junctions
- High current Triac
- Low thermal resistance
- Ideal for automated placement
- 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

Pb e3 **RoHS** COMPLIANT

MECHANICAL DATA

- **Case:** TO-220F. 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.

TYPICAL APPLICATIONS

- Used on inductive loads, thanks to their high commutation performances.

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 = 100 °C	25	A
I_{TSM}	Non-repetitive On-State Current	Full Cycle, 60 Hz (t = 16.7 ms)	215	A
I_{TSM}	Non-repetitive On-State Current	Full Cycle, 50 Hz (t = 20 ms)	200	A
I^2t	Fusing Current	tp = 10 ms, Half Cycle	205	A^2s
I_{GM}	Peak Gate Current	20 µs max. T_j = 125 °C	4	A
$P_{G(AV)}$	Average Gate Power Dissipation	T_j = 125 °C	1	W
dI/dt	Critical rate of rise of on-state current	I_G = 2x I_{GT}, t_r ≤100ns f = 120 Hz, T_j = 125 °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
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

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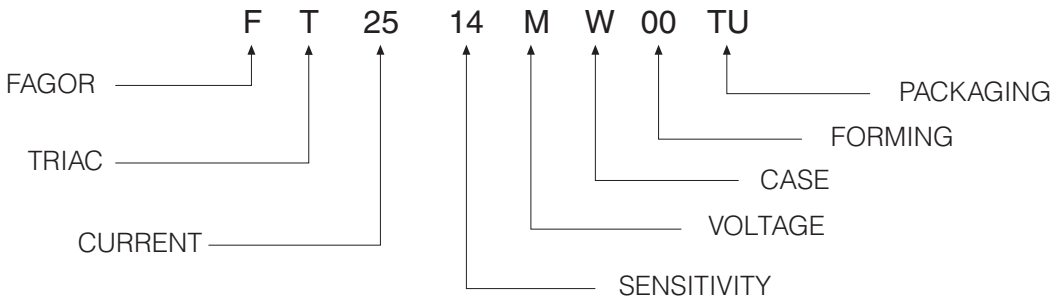
Electrical Characteristics at Tamb = 25 °C

SYMBOL	PARAMETER	CONDITIONS	Quadrant		SENSITIVITY		Unit
					14	16	
I_{GT} (1)	Gate Trigger Current	V_D = 12 V_{DC}, R_L = 33Ω, T_j = 25 °C	Q1÷Q3	MAX	35	50	mA
V_{GT}	Gate Trigger Voltage	V_D = 12 V_{DC}, R_L = 33Ω, T_j = 25 °C	Q1÷Q3	MAX	1.3		V
V_{GD}	Gate Non Trigger Voltage	V_D = V_{DRM}, R_L = 3.3 KΩ, T_j = 125 °C	Q1÷Q3	MIN	0.2		V
I_H (2)	Holding Current	I_T =100 mA, Gate open, T_j = 25 °C		MAX	50	75	mA
I_L	Latching Current	I_G = 1.2 I_{GT}, T_j = 25 °C	Q1,Q3	MAX	70	80	mA
			Q2	MAX	80	100	
dV/dt (2)	Critical Rate of Voltage Rise	V_D = 0.67 x V_{DRM}, Gate open T_j = 125 °C		MIN	500	1000	V/µs
(dI/dt)c (2)	Critical Rate of Current Rise	(dv/dt)c = 0.1 V/µs T_j = 125 °C		MIN	-	-	A/ms
		(dv/dt)c = 10 V/µs T_j = 125 °C		MIN	-	-	
		witthout snubber T_j = 125 °C		MIN	13	22	
V_{TM} (2)	On-state Voltage	I_T = 35 Amp, tp = 380 µs, T_j = 25 °C		MAX	1.55		V
$V_{t(o)}$ (2)	Threshold Voltage	T_j = 125 °C		MAX	0.85		V
r_d (2)	Dynamic resistance	T_j = 125 °C		MAX	16		mΩ
I_{DRM}/I_{RRM}	Off-State Leakage Current	V_D = V_{DRM}, T_j = 125 °C		MAX	2		mA
		V_R = V_{RRM}, T_j = 25 °C		MAX	5		µA
$R_{th(j-c)}$	Thermal Resistance Junction-Case	for AC 360° conduction angle			2.5		°C/W
$R_{th(j-a)}$	Thermal Resistance Junction-Ambient				55		°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



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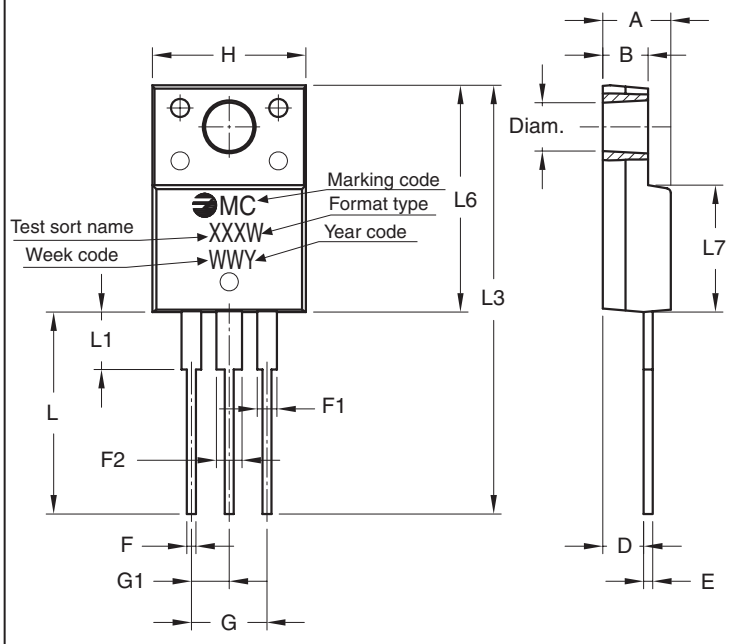
Ordering information

PREFERRED P/N	PACKAGE CODE	DELIVERY MODE	BASE QUANTITY	UNIT WEIGHT (g)
FT2514MW 00TU	TU	TUBE	1,000	2.00

Package Outline Dimensions: (mm) TO-220F



REF.	DIMENSIONS Milimeters		
	Min.	Nominal	Max.
A	3.55	4.50	4.90
B	2.34	3.00	3.70
D	2.03	2.70	2.96
E	0.35	0.60	0.70
F	0.25	0.60	1.01
F1	0.70	1.30	1.78
F2	0.70	1.70	1.78
G	4.88	5.00	5.28
G1	2.34	2.50	2.74
H	9.65	10.15	10.67
L	12.70	13.35	14.73
L1	2.93	3.75	6.35
L3	26.90	28.35	31.20
L6	14.22	15.00	16.50
L7	8.30	8.40	9.59
Diam.	3.00	3.20	3.28

Mounting Torque	**0.8 N.m**

Ratings and Characteristics (Ta 25 ºC unless otherwise noted)

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

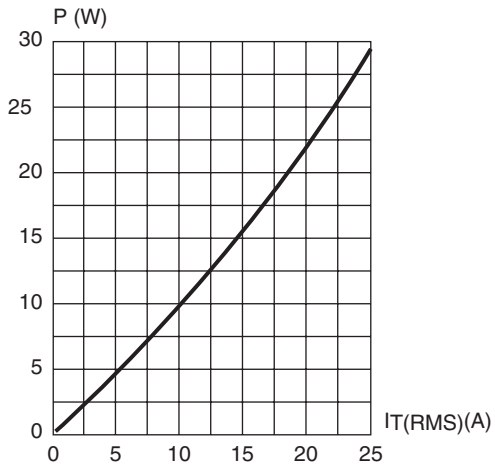


Fig. 2: RMS on-state current versus case temperature (full cycle).

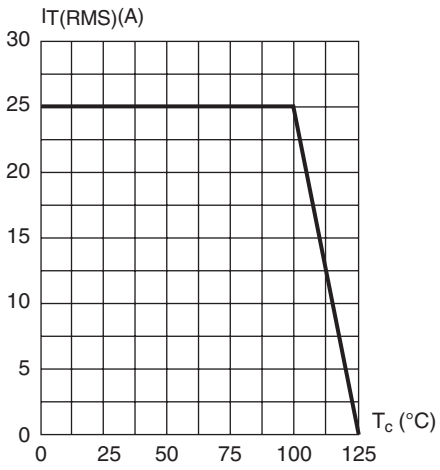


Fig. 3: Relative variation of thermal impedance versus pulse duration.

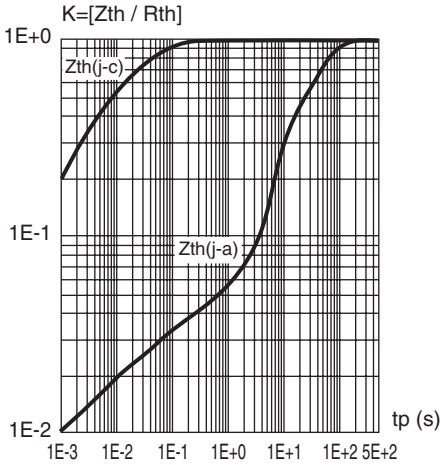


Fig. 4: On-state characteristics (maximum values)

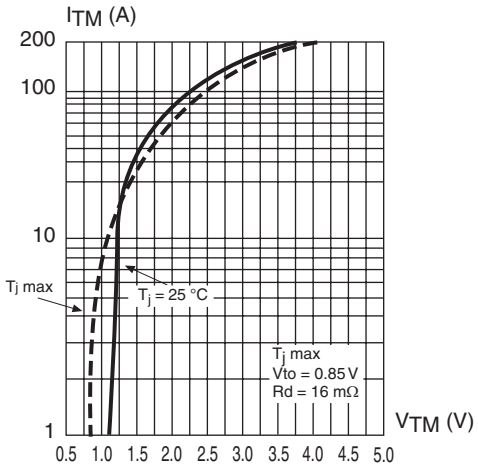


Fig. 5: Surge peak on-state current versus number of cycles

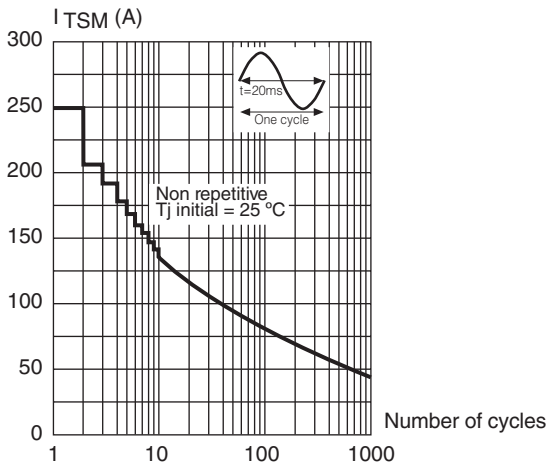
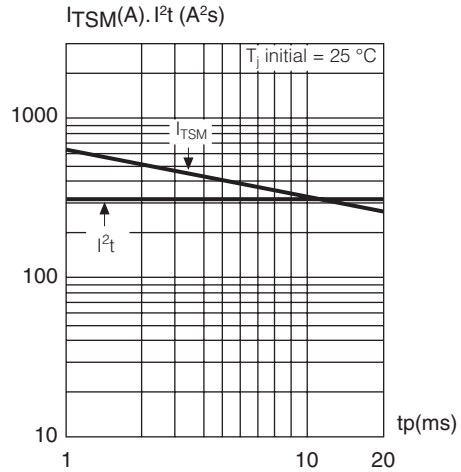


Fig. 6: Non repetitive surge peak on-state current for a sinusoidal pulse with width: tp < 20 ms, and corresponding value of I^2t.



Ratings and Characteristics (Ta 25 ºC unless otherwise noted)

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

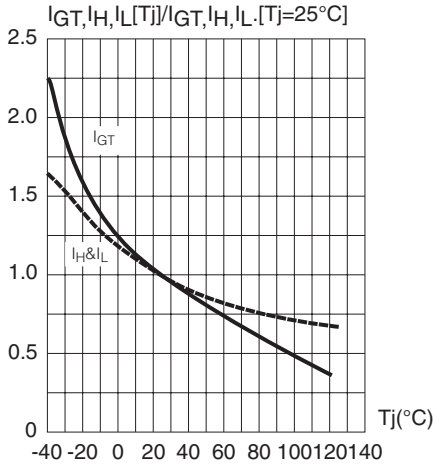
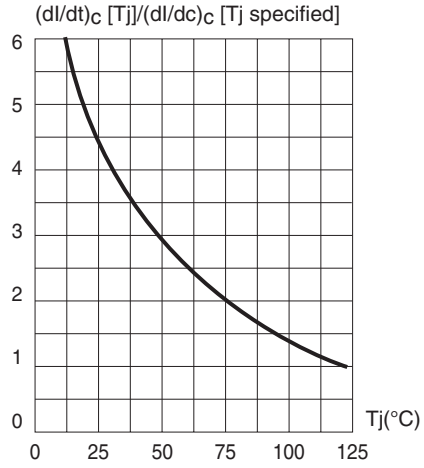


Fig. 8: Relative variation of critical rate of decrease of main current versus junction temperature



Revision History

Date	Revision	Description of Changes
14-Jun-2011	0	Original Data Sheet
12-Apr-2017	1	Change values of: I_{TSM} / I^2t / r_d / $R_{th(j-a)}$

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