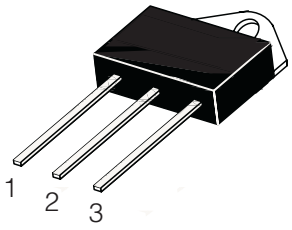
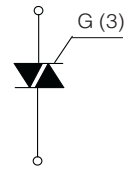
INSULATED HIGH COMMUTATION TRIAC

INSULATED TO3P





On-State Current
40 Amp

Gate Trigger Current
≤ 50 mA (16)
≤ 35 mA (14)

Off-State Voltage
600 V ÷ 800 V

FEATURES

- Provides voltage insulated tab (rated at 2500V RMS)
- Glass/passivated die junctions
- High current Triac
- Low thermal resistance
- High commutation
- High surge current capability
- Low forward voltage drop
- Solder dip 260ºC, 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 260º C
- Certified compliance of UL 1557 Standard for Electrically Isolated Semiconductors. Fille reference E320541, Vol. 3

Pb e3 **RoHS** COMPLIANT

MECHANICAL DATA

- **Case:** INSULATED TO3P. 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 = 80 °C	40	A
I_{TSM}	Non-repetitive On-State Current	Full Cycle, 60 Hz (t = 16.7 ms)	420	A
I_{TSM}	Non-repetitive On-State Current	Full Cycle, 50 Hz (t = 20 ms)	400	A
I^2t	Fusing Current	tp = 10 ms, Half Cycle	1000	A^2s
I_{GM}	Peak Gate Current	20 µs max. T_j = 125 °C	8	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 +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

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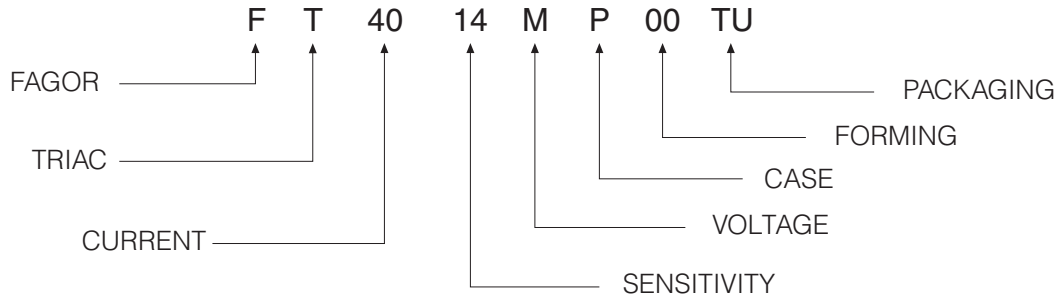
Electrical Characteristics at Tamb = 25 °C

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 =500 mA,Gate open, T_j = 25 °C		MAX	60	80	mA
I_L	Latching Current	I_G = 1.2 I_{GT}, T_j = 25 °C	Q1,Q3	MAX	50	70	mA
			Q2	MAX	160	160	mA
dV/dt (2)	Critical Rate of Voltage Rise	V_D = 0.67 x V_{DRM}, Gate open T_j = 125 °C		MIN	400	500	V/µs
(dV/dt)c (2)	Critical Rate of Commutating off-state voltage	(dI/dt)c = 20 A/ms T_j = 125 °C		MIN	10		V/ms
V_{TM} (2)	On-state Voltage	I_T = 60 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	10		mΩ
I_{DRM}/I_{RRM}	Off-State Leakage Current	V_D = V_{DRM}, T_j = 125 °C		MAX	5		mA
		V_R = V_{RRM}, T_j = 25 °C		MAX	20		µA
$R_{th(j-c)}$	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 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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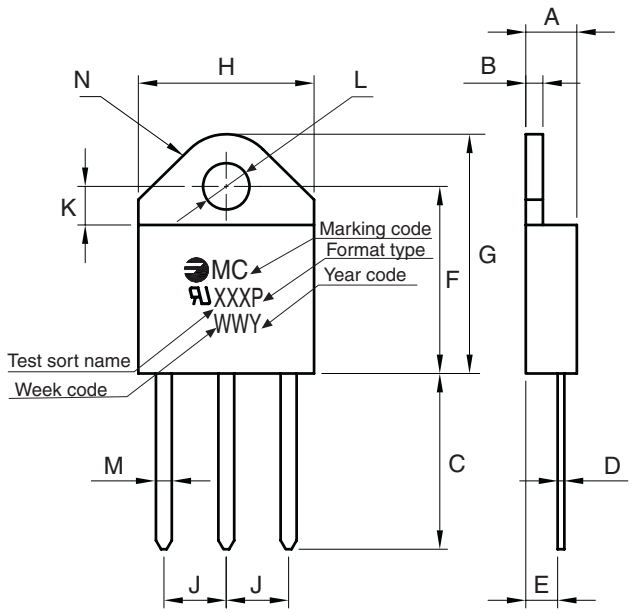
Ordering information

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

Package Outline Dimensions: (mm) INSULATED TO3P



DIMENSIONS (mm)

	A	B	C	D	E	F	G	H	J	K	L	M	N
MAX	4.6	1.55	15.6	0.7	2.9	16.5	21.1	15.5	5.65	3.65	4.17	1.40	
TYP													4.60
MIN	4.4	1.45	14.35	0.5	2.7	15.8	20.4	15.1	5.4	3.4	4.08	1.20	

Mounting Torque	0.8 N.m

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Ratings and Characteristics (Ta 25 ºC unless otherwise noted)

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

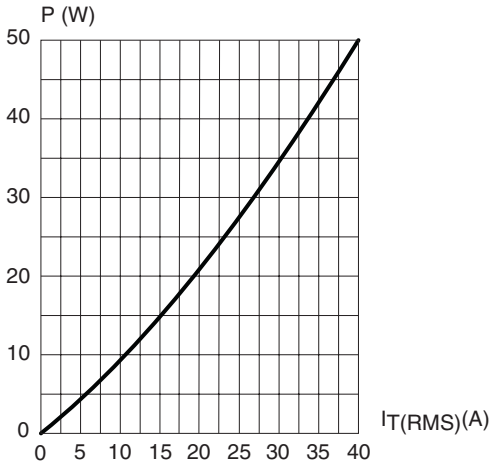


Fig. 2: RMS on-state current versus case temperature (full cycle).

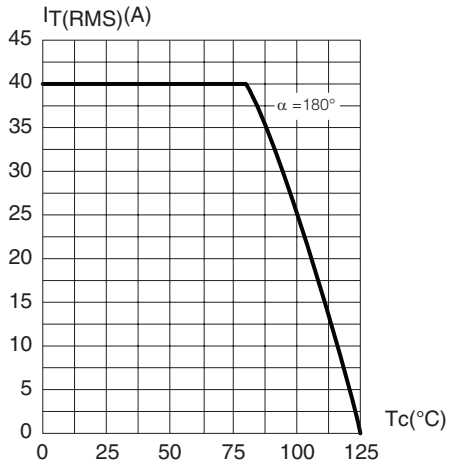


Fig. 3: On-state characteristics (maximum values)

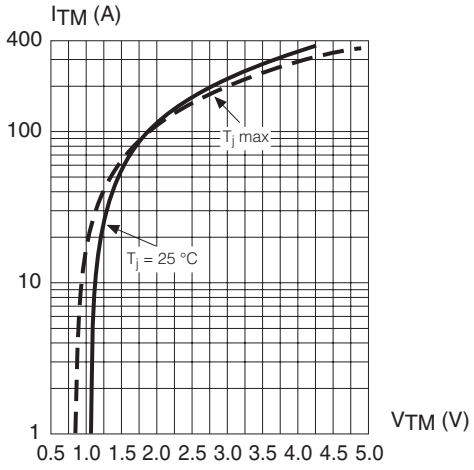


Fig. 4: Surge peak on-state current versus number of cycles

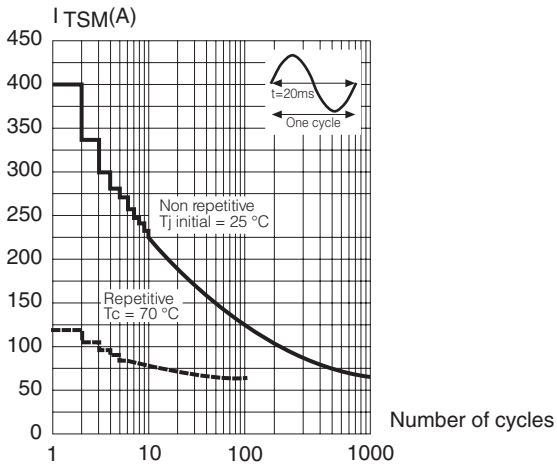


Fig. 5: Non repetitive surge peak on-state current for a sinusoidal pulse with width: tp < 10 ms, and corresponding value of I^2t.

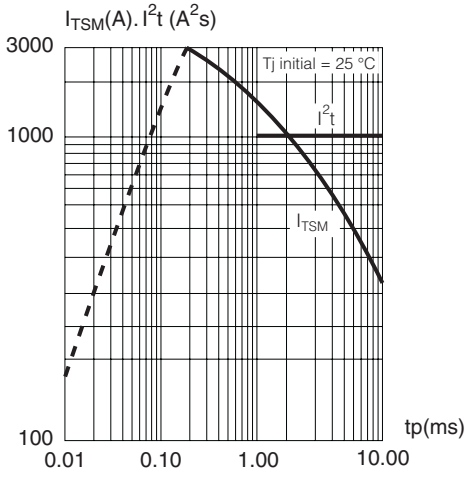
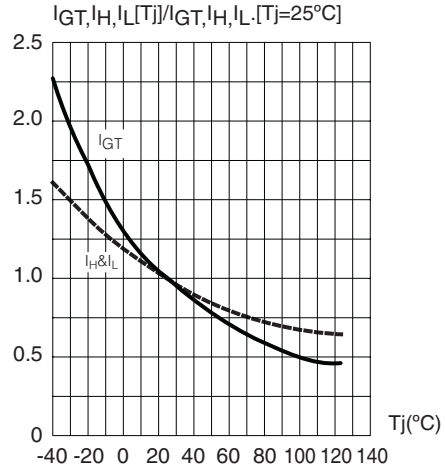


Fig. 7: Relative variation of gate trigger current, holding current and latching versus junction temperature (typical values)



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