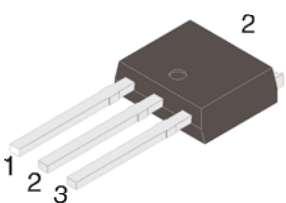
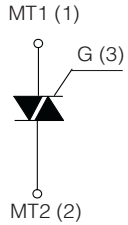




HIGH COMMUTATION TRIAC

<p style="text-align: center;">TO-251AA (IPAK)</p> <div style="text-align: center;">  </div> <div style="text-align: center; margin-top: 20px;">  </div>	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">On-State Current 8 Amp</td> <td style="width: 50%;">Gate Trigger Current ≤ 50 mA</td> </tr> <tr> <td colspan="2" style="text-align: center;">Off-State Voltage 400 V ÷ 800 V</td> </tr> </table> <p>FEATURES</p> <ul style="list-style-type: none"> Glass/passivated die junctions Medium 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 <div style="text-align: right; margin-top: 10px;">   RoHS <small>COMPLIANT</small> </div> <p>MECHANICAL DATA</p> <ul style="list-style-type: none"> Case: TO-251AA (IPAK). 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. 	On-State Current 8 Amp	Gate Trigger Current ≤ 50 mA	Off-State Voltage 400 V ÷ 800 V	
On-State Current 8 Amp	Gate Trigger Current ≤ 50 mA				
Off-State Voltage 400 V ÷ 800 V					

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, $T_c = 95\text{ °C}$	8	A
I_{TSM}	Non-repetitive On-State Current	Full Cycle, 60 Hz ($t = 16.7\text{ ms}$)	84	A
I_{TSM}	Non-repetitive On-State Current	Full Cycle, 50 Hz ($t = 20\text{ ms}$)	80	A
I^2t	Fusing Current	$t_p = 10\text{ ms}$, Half Cycle	36	A^2s
I_{GM}	Peak Gate Current	$20\text{ }\mu s$ 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	$I_G = 2 \times I_{GT}$, $t_r \leq 100ns$ $f = 120\text{ Hz}$, $T_j = 125\text{ °C}$	50	$A/\mu s$
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

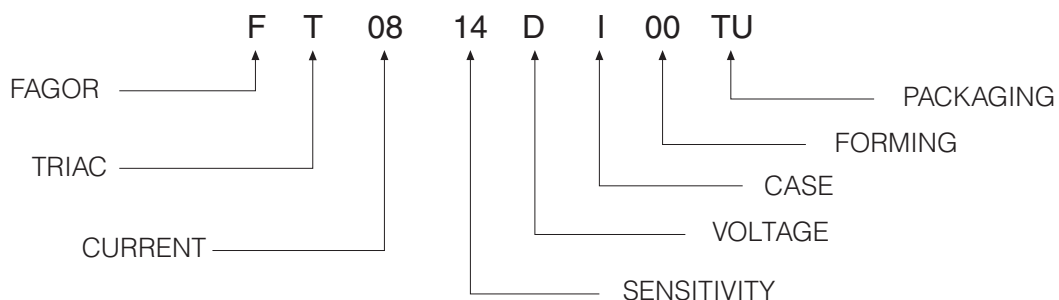
Electrical Characteristics at Tamb = 25 °C

SYMBOL	PARAMETER	CONDITIONS	Quadrant		SENSITIVITY			Unit
					11	14	16	
$I_{GT}^{(1)}$	Gate Trigger Current	$V_D = 12 V_{DC}, R_L = 33\Omega, T_j = 25\text{ °C}$	Q1÷Q3	MAX	25	35	50	mA
V_{GT}	Gate Trigger Voltage	$V_D = 12 V_{DC}, R_L = 33\Omega, T_j = 25\text{ °C}$	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	25	35	50	mA
I_L	Latching Current	$I_G = 1.2 I_{GT}, T_j = 25\text{ °C}$	Q1, Q3	MAX	40	50	70	mA
			Q2	MAX	50	60	80	
$dv/dt^{(2)}$	Critical Rate of Voltage Rise	$V_D = 0.67 \times V_{DRM}, \text{Gate open}$ $T_j = 125\text{ °C}$		MIN	200	400	1000	V/ μ s
$(di/dt)_c^{(2)}$	Critical Rate of Current Rise	$(dv/dt)_c = 0.1\text{ V}/\mu\text{s}$ $T_j = 125\text{ °C}$ $(dv/dt)_c = 10\text{ V}/\mu\text{s}$ $T_j = 125\text{ °C}$ without snubber $T_j = 125\text{ °C}$		MIN	-	-	-	A/ms
				MIN	-	-	-	
				MIN	4	4.5	7	
$V_{TM}^{(2)}$	On-state Voltage	$I_T = 11\text{ Amp}, t_p = 380\text{ }\mu\text{s}, T_j = 25\text{ °C}$		MAX	1.55			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	50			m Ω
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			μ A
$R_{th(j-c)}$	Thermal Resistance Junction-Case	for AC 360° conduction angle			1.6			°C/W
$R_{th(j-a)}$	Thermal Resistance Junction-Ambient				100			°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

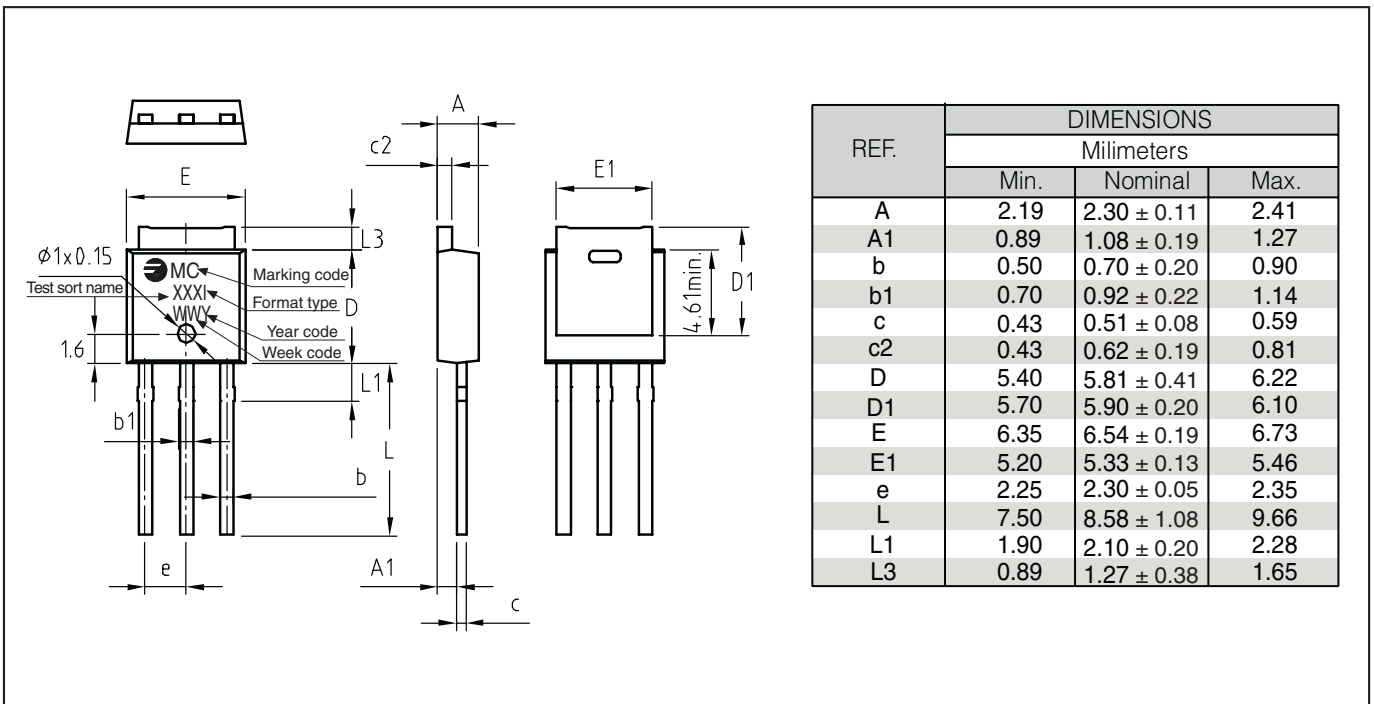


HIGH COMMUTATION TRIAC

Ordering information

PREFERRED P/N	PACKAGE CODE	DELIVERY MODE	BASE QUANTITY	UNIT WEIGHT (g)
FT0814MI 00TU	TU	TUBE	4000	0.40

Package Outline Dimensions: (mm) TO-251AA (IPAK)



HIGH COMMUTATION TRIAC

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

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

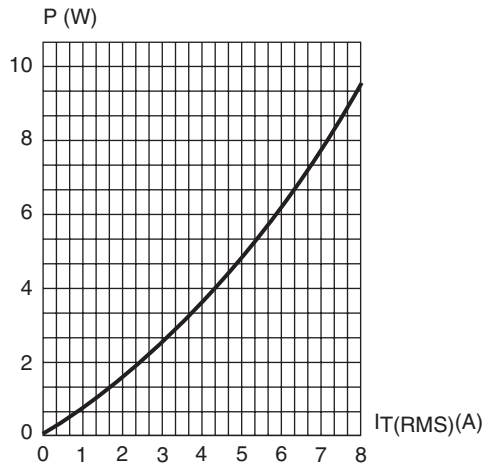


Fig. 2: RMS on-state current versus case temperature (full cycle).

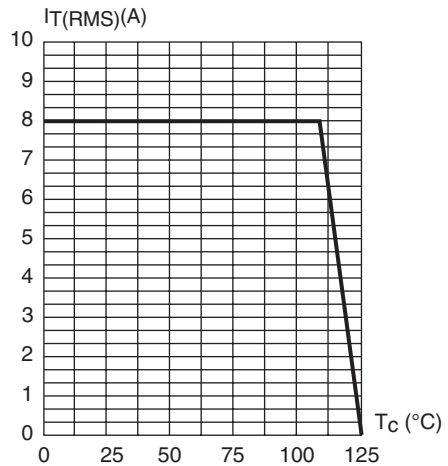


Fig. 3: Relative variation of thermal impedance versus pulse duration.

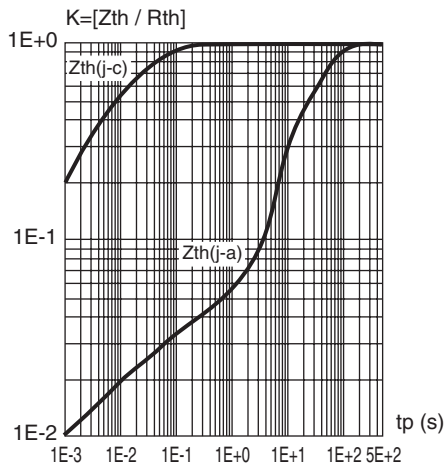


Fig. 4: On-state characteristics (maximum values)

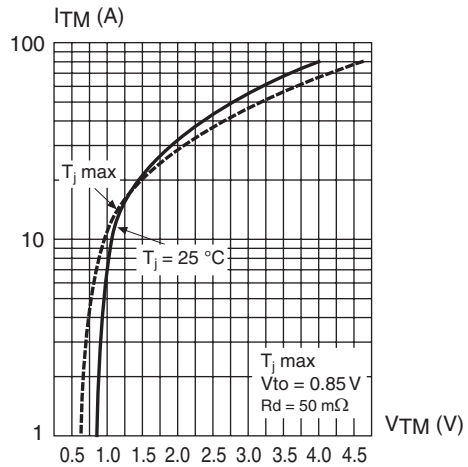


Fig. 5: Surge peak on-state current versus number of cycles

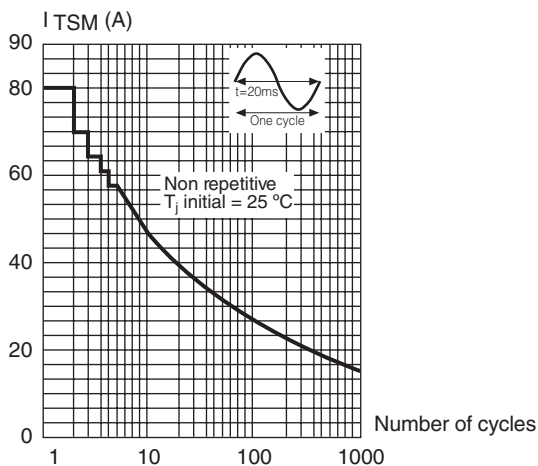
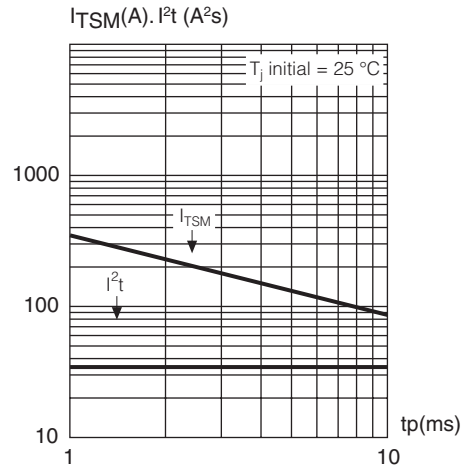


Fig. 6: Non repetitive surge peak on-state current for a sinusoidal pulse with width: tp < 10 ms, and corresponding value of I²t.



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)

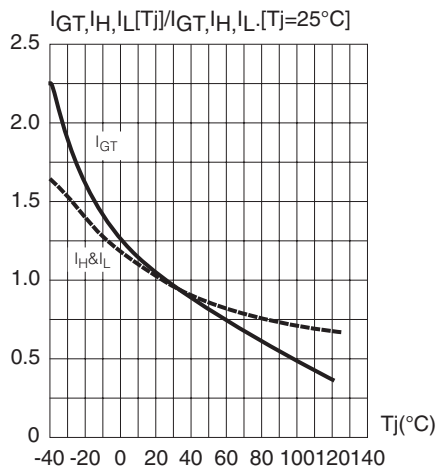
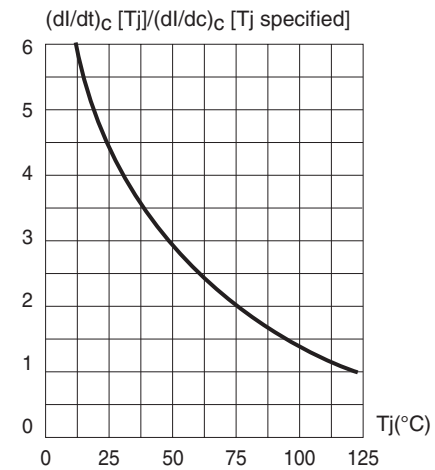


Fig. 8: Relative variation of critical rate of decrease of main current versus junction temperature



HIGH COMMUTATION TRIAC

Revision History

Date	Revision	Description of Changes
12-Nov-2005	0	Original Data Sheet
17-May-2013	1	200V and 700V eliminated
29-Mar-2017	2	Changed values of: I^2t / dV/dt / V_{TM} / r_d / $R_{th(j-a)}$

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