

LOGIC LEVEL TRIAC

<p>I_{PAK} (Plastic)</p>	<p>On-State Current 4 Amp</p> <p>Gate Trigger Current < 10 mA</p> <p>Off-State Voltage 200 V ÷ 800 V</p>
	<p>This series of TRIACs uses a high performance PNPN technology.</p> <p>These parts are intended for general purpose AC switching applications with highly inductive loads.</p>

Absolute Maximum Ratings, according to IEC publication No. 134

SYMBOL	PARAMETER	CONDITIONS	Value	Unit
$I_{T(RMS)}$	RMS On-state Current (full sine wave)	All Conduction Angle, $T_C = 95^\circ\text{C}$	4	A
I_{TSM}	Non-repetitive On-State Current	Full Cycle, 60 Hz ($t = 16.7\text{ ms}$)	33	A
I_{TSM}	Non-repetitive On-State Current	Full Cycle, 50 Hz ($t = 20\text{ ms}$)	30	A
I^2t	Fusing Current	$t_p = 10\text{ ms}$, Half Cycle	4.5	A ² s
I_{GM}	Peak Gate Current	$20\ \mu\text{s max.}$ $T_j = 125^\circ\text{C}$	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)	$^\circ\text{C}$
T_{stg}	Storage Temperature		(-40 +150)	$^\circ\text{C}$
T_{sld}	Soldering Temperature	10s max	260	$^\circ\text{C}$

SYMBOL	PARAMETER	VOLTAGE					Unit
		B	D	M	S	N	
V_{DRM} V_{RRM}	Repetitive Peak Off State Voltage	200	400	600	700	800	V

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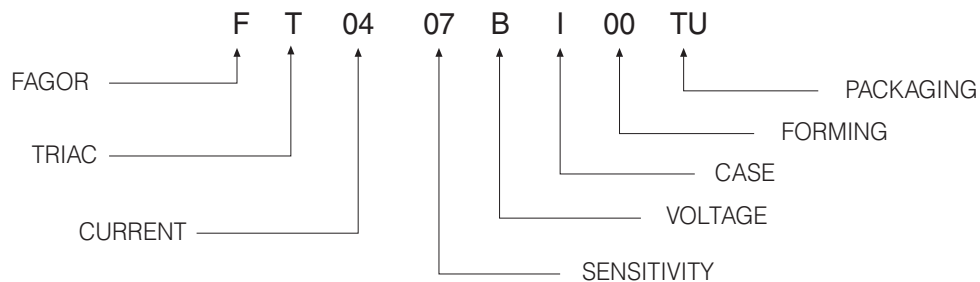
Electrical Characteristics

SYMBOL	PARAMETER	CONDITIONS	Quadrant		SENSITIVITY		Unit	
					07	08		
$I_{GT}^{(1)}$	Gate Trigger Current	$V_D = 12 V_{DC}, R_L = 33\Omega, T_j = 25^\circ C$	Q1÷Q3	MAX	5	10	mA	
			Q4	MAX	7		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	
			Q1÷Q4	MAX	1.3		V	
V_{GD}	Gate Non Trigger Voltage	$V_D = V_{DRM}, R_L = 3.3K\Omega, T_j = 125^\circ C$	Q1÷Q3	MIN	0.2		V	
			Q1÷Q4	MIN	0.2		V	
$I_H^{(2)}$	Holding Current	$I_T = 100 \text{ mA}, \text{ Gate open}, T_j = 25^\circ C$		MAX	15	15	mA	
I_L	Latching Current	$I_G = 1.2 I_{GT}, T_j = 25^\circ C$	Q1, Q3	MAX	25		mA	
			Q1,Q3,Q4	MAX	20		mA	
			Q2	MAX	30	30	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	20	40	V/ μ s	
$(dI/dt)_c^{(2)}$	Critical Rate of Current Rise	$(dv/dt)_c = 0.1 \text{ V}/\mu\text{s}$ $T_j = 125^\circ C$		MIN	1.8	2.7	A/ms	
			$(dv/dt)_c = 10 \text{ V}/\mu\text{s}$ without snubber $T_j = 125^\circ C$		MIN	0.9	2.0	A/ms
					MIN	-	-	
$V_{TM}^{(2)}$	On-state Voltage	$I_T = 5.5 \text{ Amp}, t_p = 380 \mu\text{s}, T_j = 25^\circ C$		MAX	1.6		V	
$V_{t(o)}^{(2)}$	Threshold Voltage	$T_j = 125^\circ C$		MAX	0.9		V	
$r_d^{(2)}$	Dynamic Resistance	$T_j = 125^\circ C$		MAX	140		m Ω	
I_{DRM}/I_{RRM}	Off-State Leakage Current	$V_D = V_{DRM}, T_j = 125^\circ C$ $V_R = V_{RRM}, T_j = 25^\circ C$		MAX	0.5		mA	
				MAX	5		μ A	
$R_{th(j-c)}$	Thermal Resistance Junction-Case	for AC 360° conduction angle			2.2		$^\circ C/W$	
$R_{th(j-a)}$	Thermal Resistance Junction-Ambient	$S = 1 \text{ cm}^2$			100		$^\circ C/W$	

(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



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

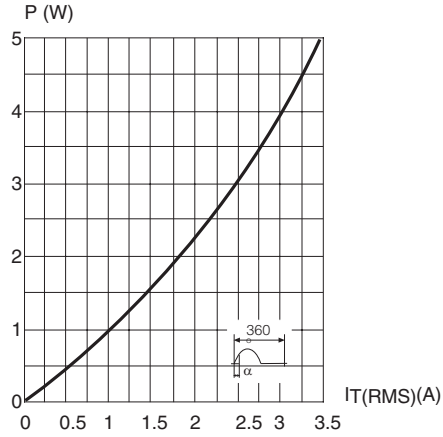


Fig. 2: RMS on-state current versus case temperature (full cycle).

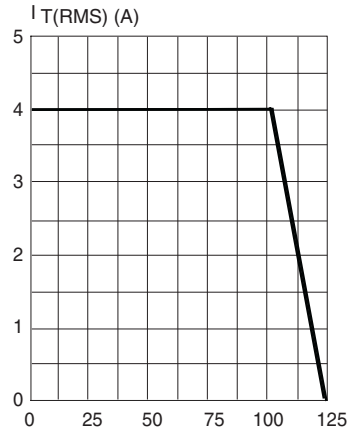


Fig. 3: Relative variation of thermal impedance versus pulse duration.

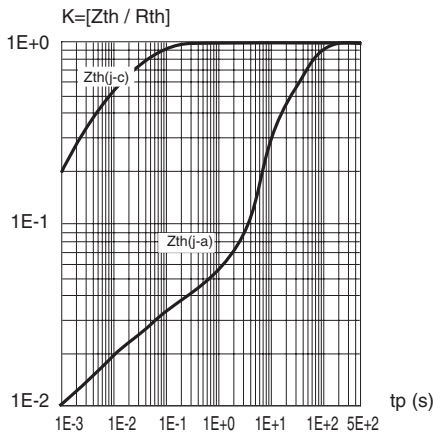


Fig. 4: On-state characteristics (maximum values)

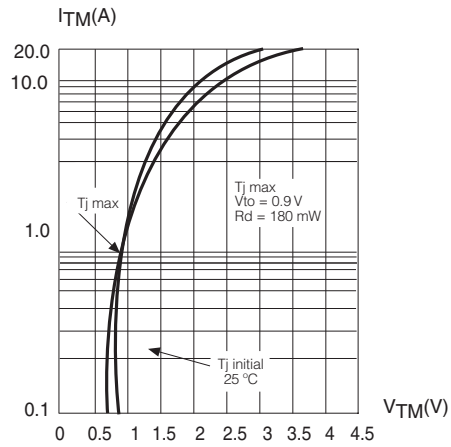


Fig. 5: Surge peak on-state current versus number of cycles

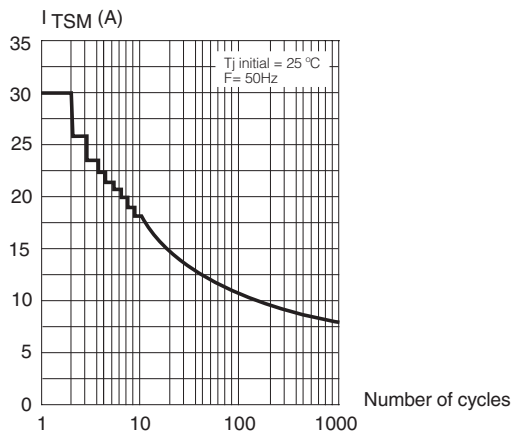
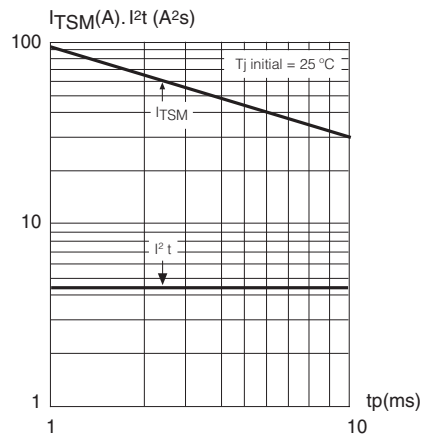


Fig. 6: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 10\text{ms}$, and corresponding value of $I^2 t$.



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

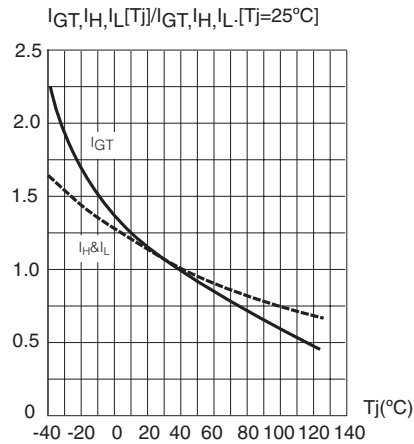


Fig. 8: Relative variation of critical rate of decrease of main current versus junction temperature

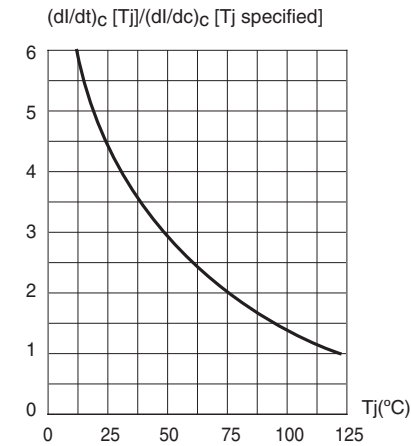
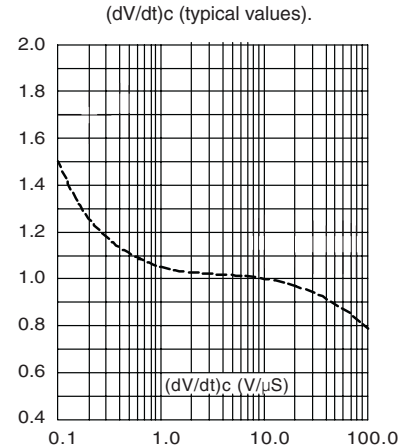


Fig. 9: Relative variation of critical rate of decrease of main current versus



PACKAGE MECHANICAL DATA

IPAK TO 251-AA

