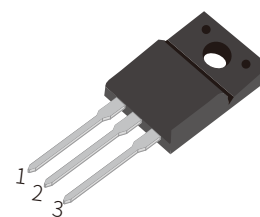


FEATURES

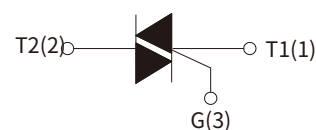
- | High current 12 A RMS current Triac
- | Low thermal resistance
- | High commutation or very high commutation capability

APPLICATIONS

- | General purpose motor control circuits
- | Phase control operations in light dimmers and motor speed controllers
- | Home appliances



TO-220F



Schematic Symbol

APPROVALS

RoHS	Compliance with 2011/65/EU
HF	Compliance with IEC61249-2-21:2003

THE MAIN PARAMETERS

Symbol	Parameter	Value	Unit
$I_{T(RMS)}$	RMS on-state current	12	A
V_{DRM}	Off-state repetitive peak voltage	600	V
V_{TM}	On-state voltage	1.5	V

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
Repetitive peak off-state voltage ($T_j=25^{\circ}\text{C}$)	V_{DRM}	600	V
Repetitive peak reverse voltage ($T_j=25^{\circ}\text{C}$)	V_{RRM}	600	V
RMS on-state current ($T_c=80^{\circ}\text{C}$)	$I_{\text{T(RMS)}}$	12	A
Non repetitive surge peak on-state current (full cycle, $F=50\text{Hz}$)	I_{TSM}	120	
I^2t value for fusing ($t_p=10\text{ms}$)	I^2t	78	A^2S
Critical rate of rise of on-state current ($I_G=2 \cdot I_{\text{GT}}$)	di/dt	50	$\text{A}/\mu\text{s}$
Peak gate current	I_{GM}	4	A
Average gate power dissipation	$P_{\text{G(AV)}}$	1	W
Storage junction temperature range	T_{STG}	$-40 \sim +150$	$^{\circ}\text{C}$
Operating junction temperature range	T_j	$-40 \sim +125$	

ELECTRICAL CHARACTERISTICS ($T_j=25^{\circ}\text{C}$ unless otherwise specified)

Symbol	Test Condition	Quadrant	Value				Unit
			TW	SW	CW	BW	
I_{GT}	$V_D=12\text{V}, R_L=33\Omega$	I - II - III	≤ 5	≤ 10	≤ 35	≤ 50	mA
V_{GT}			≤ 1.3				V
V_{GD}	$V_D=V_{\text{DRM}}, R_L=3.3\text{K}\Omega, T_j=125^{\circ}\text{C}$		≥ 0.2				V
I_{H}	$I_T=100\text{mA}$		≤ 15	≤ 20	≤ 40	≤ 60	mA
I_{L}	$I_G=1.2I_{\text{GT}}$	I - III	≤ 20	≤ 30	≤ 50	≤ 80	
		II	≤ 30	≤ 40	≤ 60	≤ 90	
dV_D/dt	$V_D=67\%V_{\text{DRM}}, T_j=125^{\circ}\text{C}$		≥ 100	≥ 200	≥ 500	≥ 1000	$\text{V}/\mu\text{s}$
V_{TM}	$I_{\text{TM}}=17\text{A}, t_p=380\mu\text{s}$		≤ 1.5				V
I_{DRM}	$V_D=V_{\text{DRM}}, V_R=V_{\text{RRM}}$	$T_j=25^{\circ}\text{C}$	≤ 5				μA
I_{RRM}		$T_j=125^{\circ}\text{C}$	≤ 1				mA

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
$R_{th(j-c)}$	Junction to case(AC)	2.5	°C/W

PARAMETER CHARACTERISTIC CURVE

FIG.1 Maximum power dissipation versus RMS on-state current

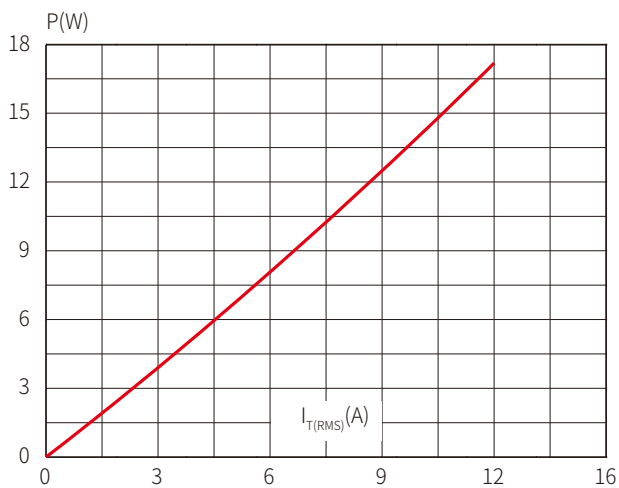


FIG.2: RMS on-state current versus case temperature

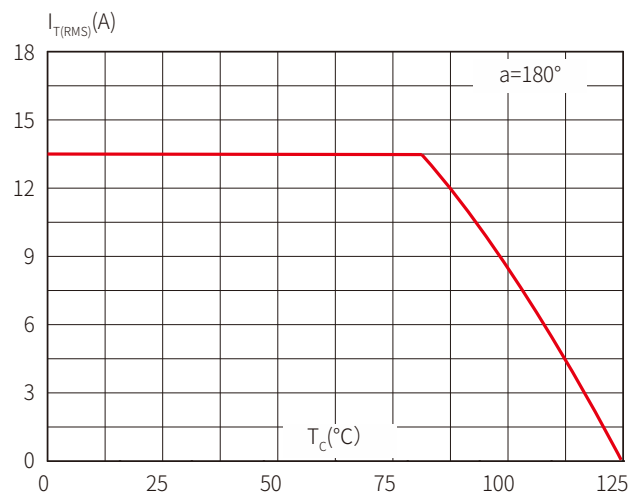


FIG.3: Surge peak on-state current versus number of cycles

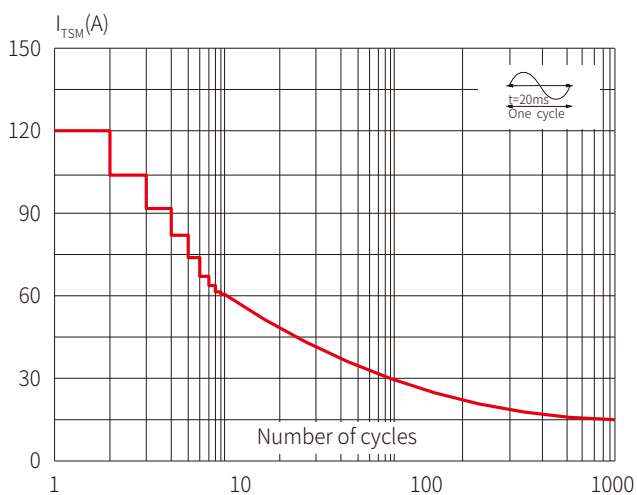


FIG.4 On-state characteristics (maximum values)

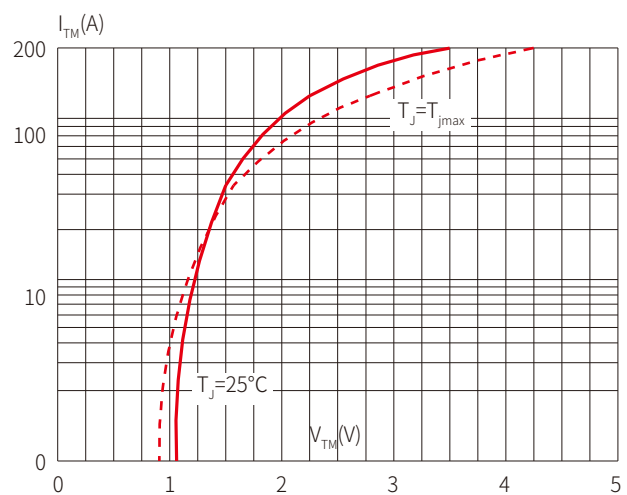


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 20\text{ms}$ and corresponding value of I^2t ($di/dt < 50\text{A}/\mu\text{s}$)

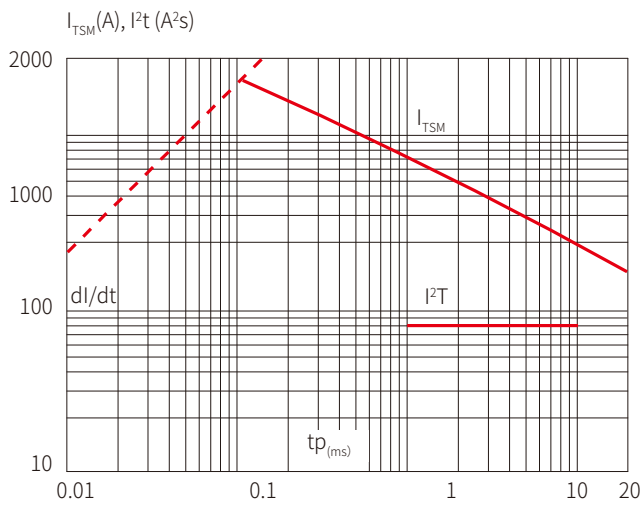


FIG.6 Relative variations of gate trigger current versus junction temperature

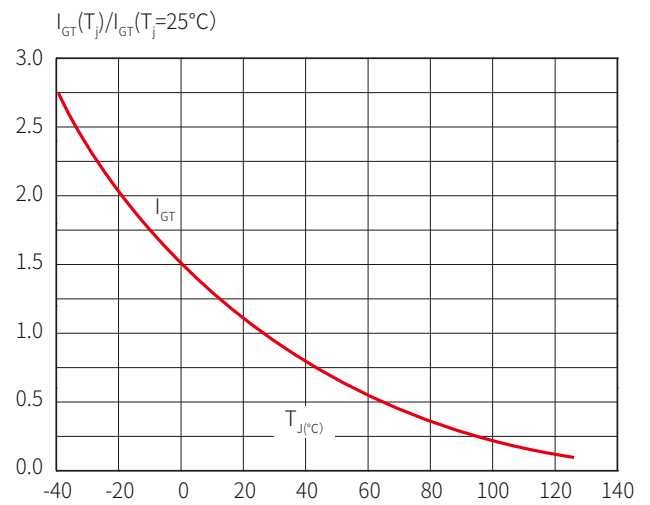


FIG.7 Relative variations of holding current versus junction temperature

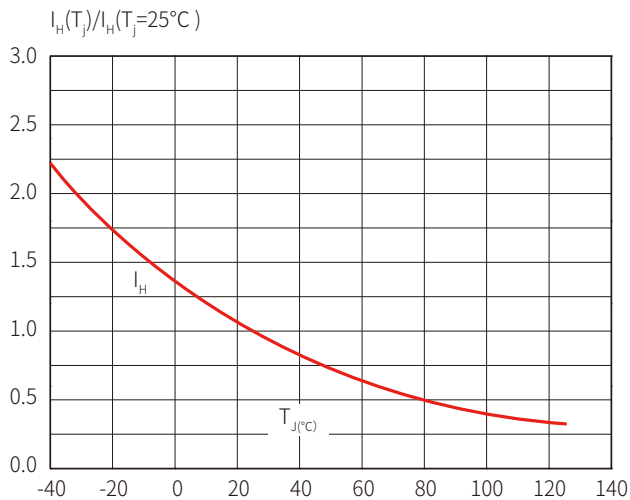
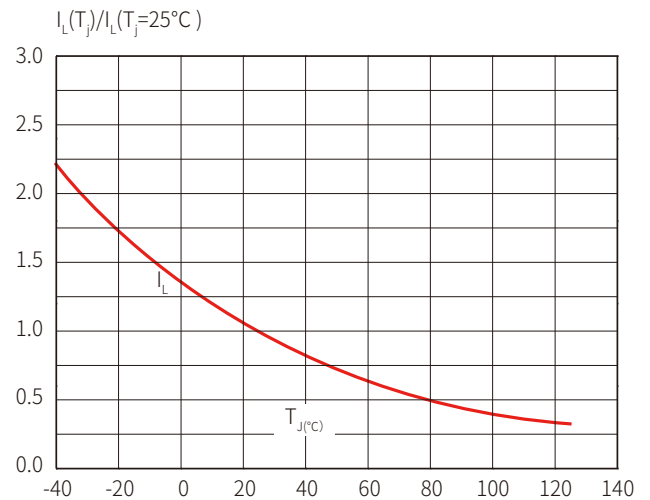
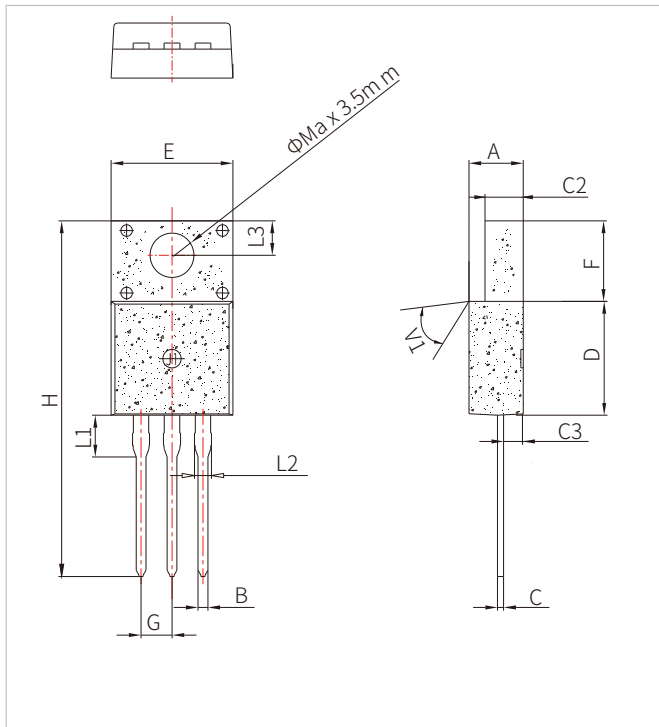


FIG.8 Relative variations of latching current versus junction temperature



TO-220F PACKAGE MECHANICAL DATA



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.40		4.90	0.173		0.193
B	0.74	0.80	0.83	0.029		0.033
C	0.45		0.75	0.018		0.030
C2	2.40		2.70	0.094		0.106
C3	2.60		3.00	0.102		0.118
D	8.80		9.30	0.346		0.366
E	9.70		10.4	0.382		0.409
F	6.40		7.00	0.252		0.276
G		2.54			0.1	
H	28.0		30.0	1.102		1.181
L1		3.55			0.140	
L2	1.14		1.70	0.045		0.067
L3		3.30			0.130	
V1		45°			45°	

ORDERING INFORMATION

Part Number	Package	Qty/pcs		
		Tube	Inner Box	Carton
STF12A60TW(SW/CW/BW)	TO-220F	50	1000	5000

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