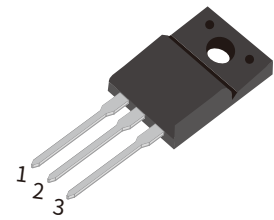


FEATURES

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



TO-220F

APPLICATIONS

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



Schematic Symbol

ABSOLUTE MAXIMUM RATINGS

Parameter		Symbol	Value	Unit
Repetitive peak off-state voltage ($T_j=25^\circ\text{C}$)		V_{DRM}	800	V
Repetitive peak reverse voltage ($T_j=25^\circ\text{C}$)		V_{RRM}	800	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}	95	
I^2t value for fusing ($t_p=10\text{ms}$)		I^2t	45	A^2S
Critical rate of rise of on-state current ($I_G=2 \cdot I_{\text{GT}}$)	I - II - III	di/dt	50	$\text{A}/\mu\text{s}$
	IV		10	
Peak gate current		I_{GM}	2	A
Average gate power dissipation		$P_{\text{G(AV)}}$	0.5	W
Peak gate power		P_{GM}	5	W
Operating junction temperature range		T_j	-40~+125	$^\circ\text{C}$
Storage junction temperature range		T_{STG}	-40~+150	

ELECTRICAL CHARACTERISTICS (T_j=25°C unless otherwise specified)

Symbol	Test Condition	Quadrant	Value				Unit
			D	E	F	G	
I _{GT}	V _D =12V, R _L =33Ω	I - II - III	≤5	≤10	≤25	≤50	mA
		IV	≤10	≤25	≤70	≤100	
V _{GT}		ALL	≤1.5				V
V _{GD}	V _D =V _{DRM} , R _L =3.3KΩ, T _j =125°C	ALL	≥0.2				V
I _H	I _T =100mA		≤10	≤25	≤30	≤60	mA
I _L	I _G =1.2I _{GT}	I - III - IV	≤15	≤30	≤40	≤60	
		II	≤20	≤40	≤80	≤90	
dV _D /dt	V _D =67%V _{DRM} , T _j =125°C		≥20	≥50	≥50	≥200	V/μs
V _{TM}	I _{TM} =15A, tp=380μs		≤1.6				V
I _{DRM}	V _D =V _{DRM} , V _R =V _{RRM}	T _j =25°C	≤5				μA
I _{RRM}		T _j =125°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

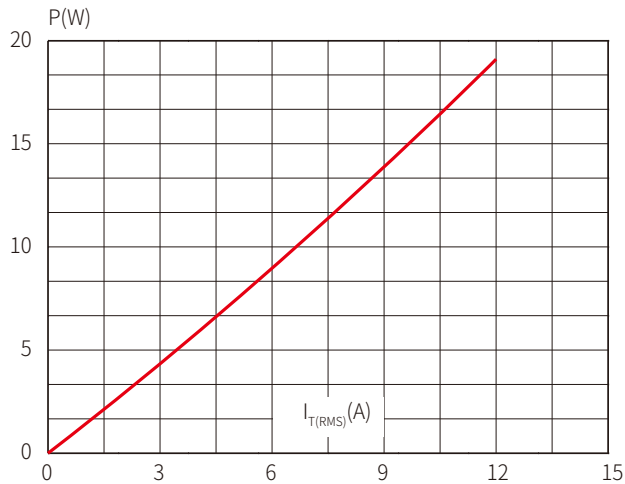


FIG.2: RMS on-state current versus case temperature

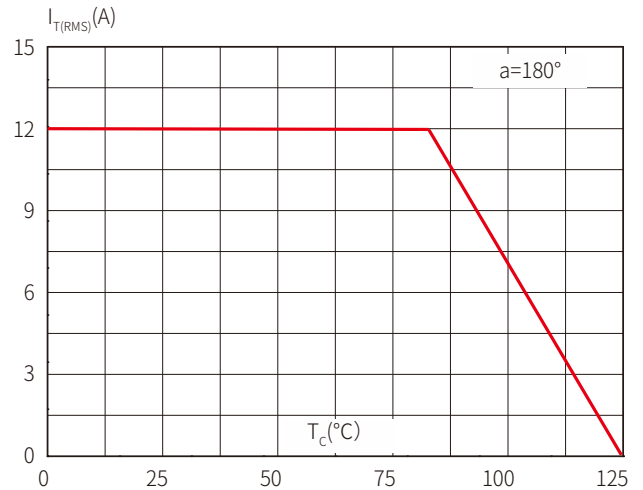


FIG.3: Surge peak on-state current versus number of cycles

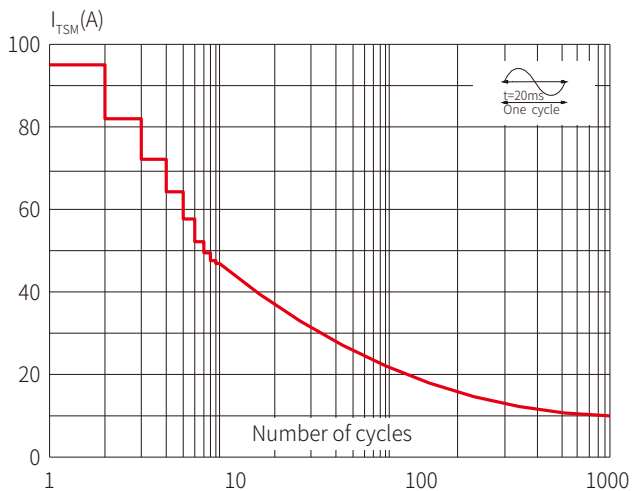


FIG.4 On-state characteristics (maximum values)

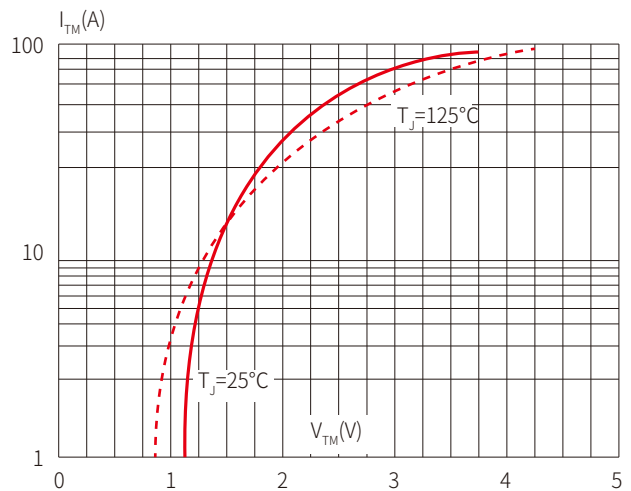


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 20\text{ms}$ and corresponding value of I^2t (I - II - III: $di/dt < 50\text{A}/\mu\text{s}$; IV: $di/dt < 10\text{A}/\mu\text{s}$)

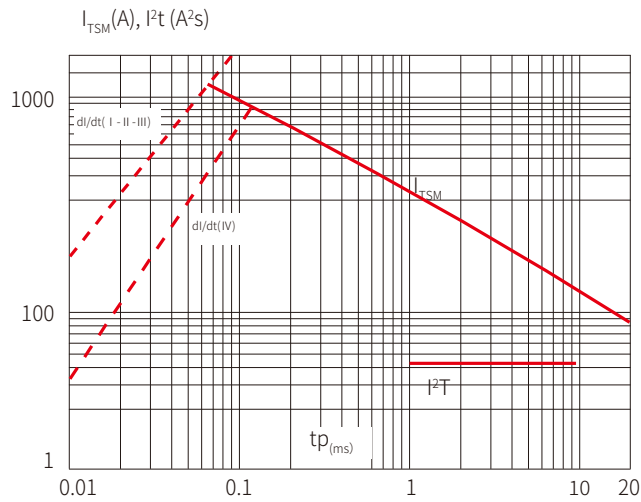


FIG.6 Relative variations of gate trigger current versus junction temperature

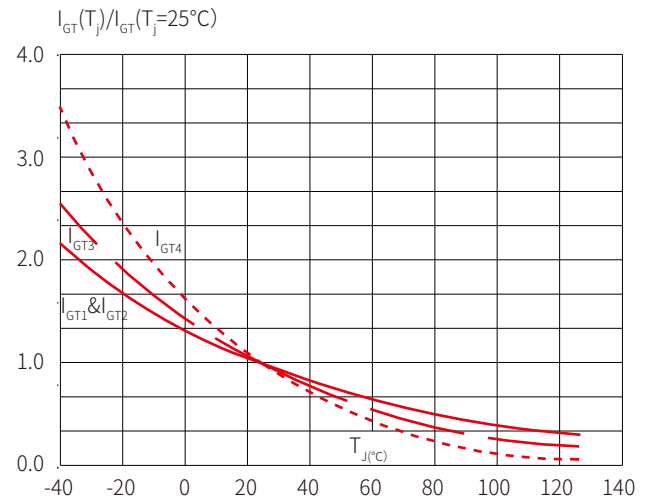


FIG.7 Relative variations of holding current versus junction temperature

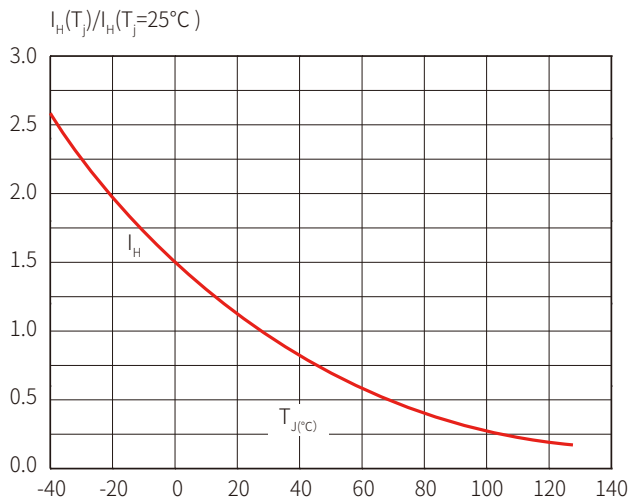
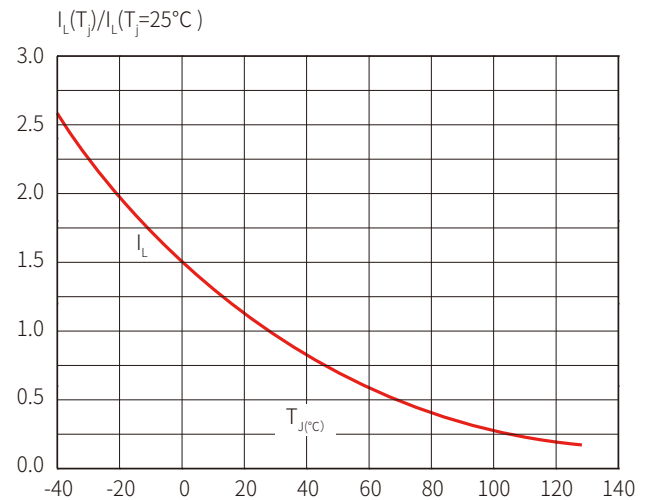
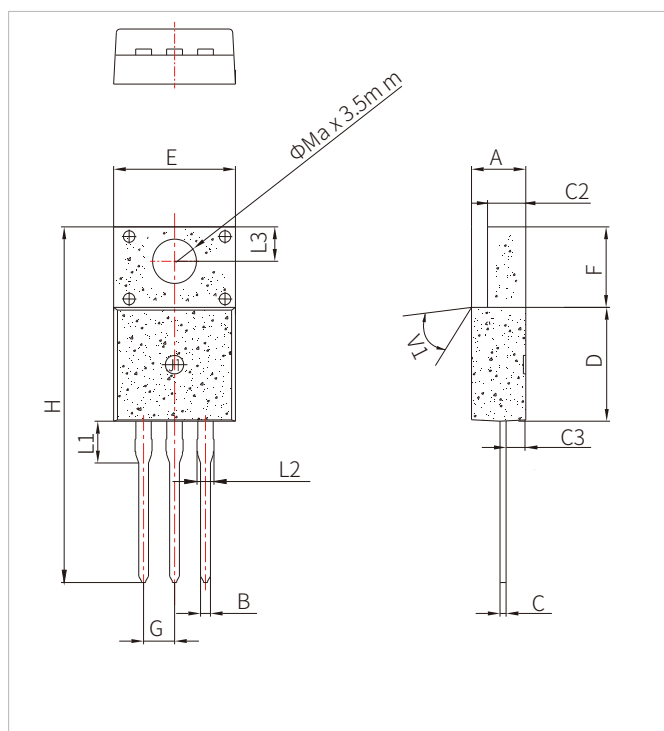


FIG.8 Relative variations of latching current versus junction temperature



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
STF12Q80D(E/F/G)	TO-220F	50	1000	5000

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