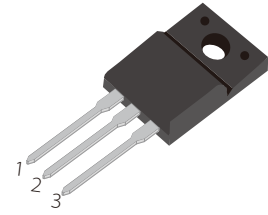


FEATURES

- | Direct interfacing to logic level ICs
- | Direct interfacing to low power gate drive circuits
- | High blocking voltage capability
- | Planar passivated for voltage ruggedness and reliability
- | Triggering in all four quadrant



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 ($T_c=100^\circ\text{C}$)	$I_{\text{T(RMS)}}$	4	A
Non repetitive surge peak on-state current (full cycle, $F=50\text{Hz}$)	I_{TSM}	35	
I^2t value for fusing ($t_p=10\text{ms}$)	I^2t	6.1	A^2S
Critical rate of rise of on-state current ($I_G=2 \cdot I_{\text{GT}}$)	I - II - III	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 ($T_j=25^{\circ}\text{C}$ unless otherwise specified)

Symbol	Test Condition	Quadrant	Value				Unit
			T	D	E	F	
I_{GT}	$V_D=12\text{V}$	I - II - III	≤ 5	≤ 5	≤ 10	≤ 25	mA
		IV	≤ 5	≤ 10	≤ 25	≤ 70	
V_{GT}		ALL	≤ 1.3				V
V_{GD}	$V_D=V_{DRM}, R_L=3.3\text{K}\Omega, T_j=125^{\circ}\text{C}$		≥ 0.2				V
I_H	$I_T=100\text{mA}$		≤ 5	≤ 15	≤ 25	≤ 30	mA
I_L	$I_G=1.2I_{GT}$	I - III	≤ 10	≤ 20	≤ 30	≤ 40	
		II - IV	≤ 15	≤ 35	≤ 45	≤ 60	
dV_D/dt	$V_D=67\%V_{DRM}, T_j=125^{\circ}\text{C}$		≥ 20	≥ 50	≥ 100	≥ 150	V/ μs
V_{TM}	$I_{TM}=5.5\text{A}, t_p=380\mu\text{s}$		≤ 1.6				V
I_{DRM}	$V_D=V_{DRM}, V_R=V_{RRM}$	$T_j=25^{\circ}\text{C}$	≤ 5				μA
I_{RRM}		$T_j=125^{\circ}\text{C}$	≤ 0.5				mA

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
$R_{th(j-c)}$	Junction to case(AC)	3.3	$^{\circ}\text{C}/\text{W}$

PARAMETER CHARACTERISTIC CURVE

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

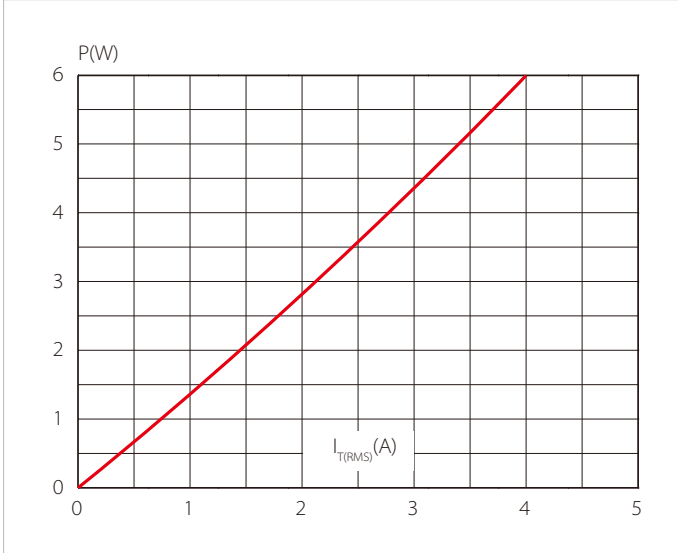


FIG.2: RMS on-state current versus case temperature

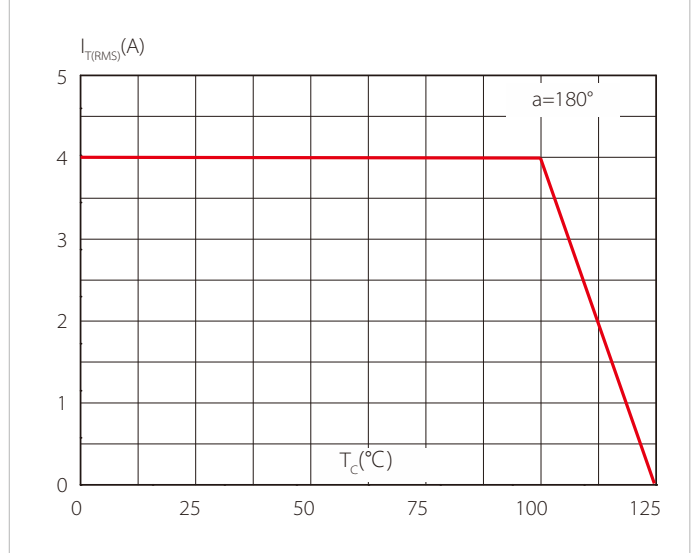


FIG.3: Surge peak on-state current versus number of cycles

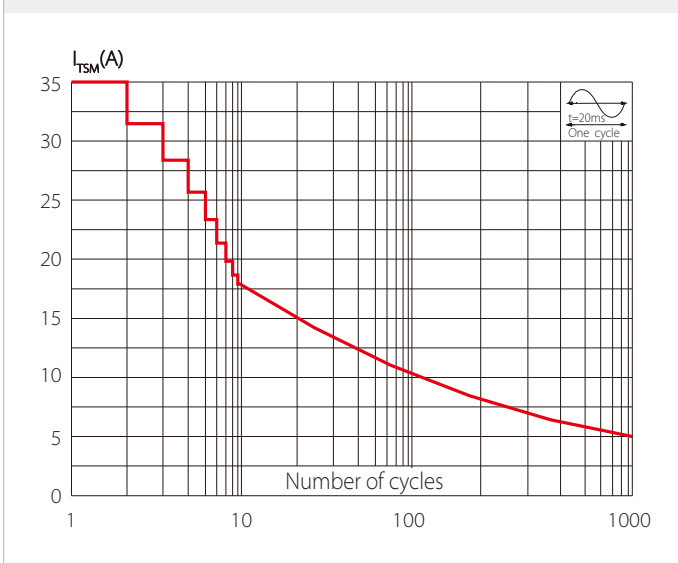


FIG.4 On-state characteristics (maximum values)

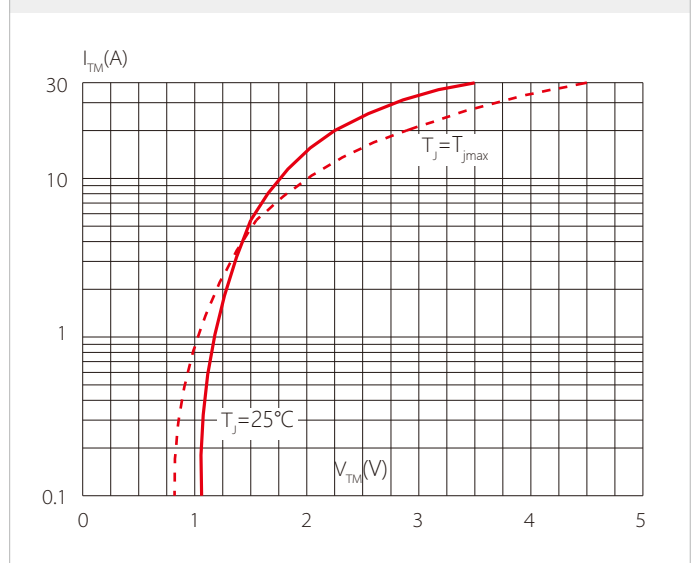


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 20\text{ms}$ and corresponding value of I^2t ($di/dt < 50\text{A}/\mu\text{s}$)

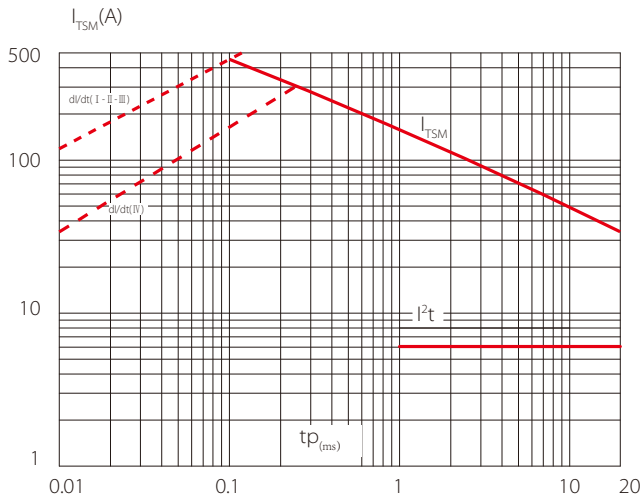


FIG.6 Relative variations of gate trigger current versus junction temperature

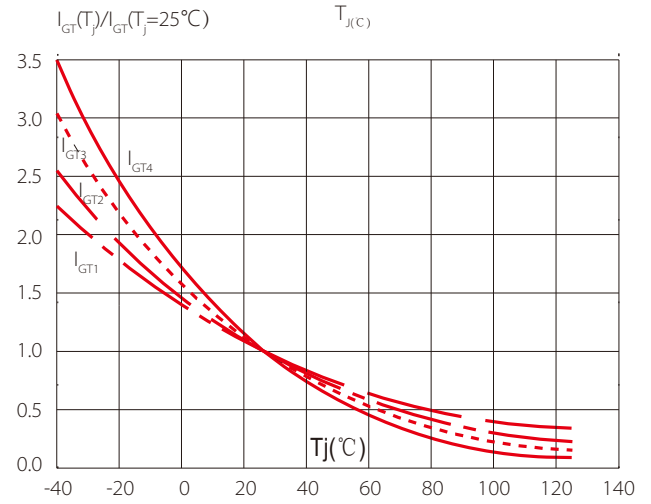


FIG.7 Relative variations of holding current versus junction temperature

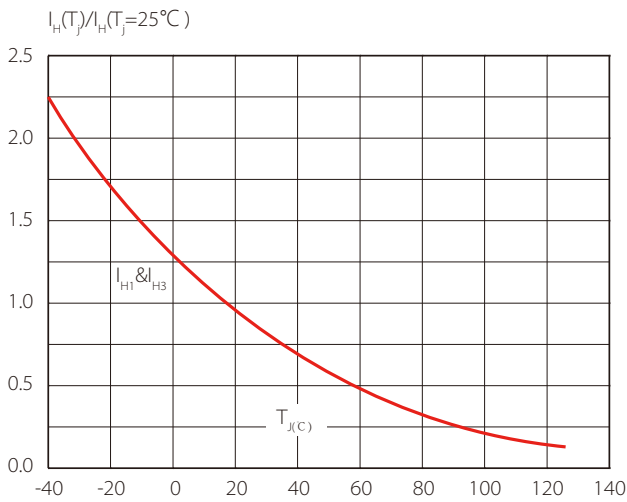
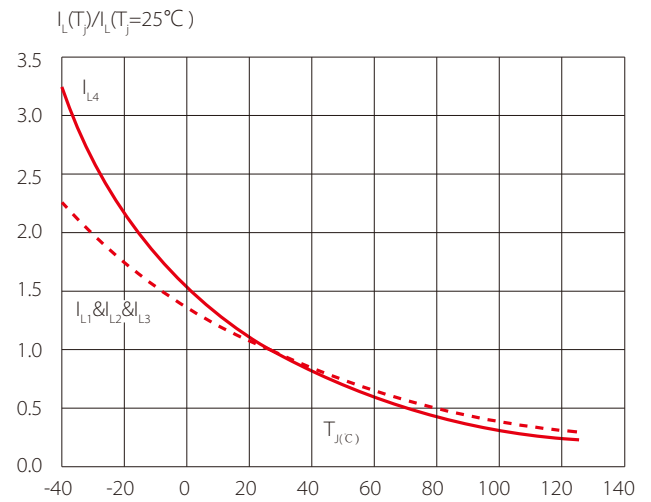
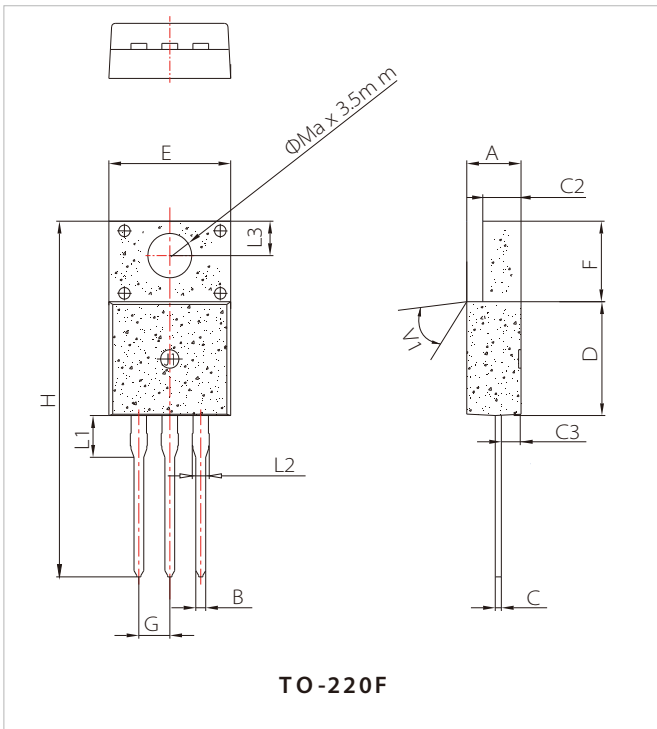


FIG.8 Relative variations of latching current versus junction temperature



PACKAGE MECHANICAL DATA



Ref.	Dimensions					
	Ref. Millimeters Inches			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.40		4.80	0.173		0.181
B	0.74	0.80	0.83	0.029		0.033
C	0.48		0.75	0.019		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		10.3	0.382		0.406
F	6.40		7.00	0.252		0.276
G		2.54			0.1	
H	28.0		29.8	1.102		1.173
L1		3.63			0.143	
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
STF4Q80T(D/E/F)	TO-220F	50	1000	5000

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