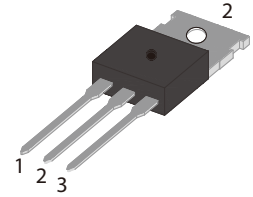


FEATURES

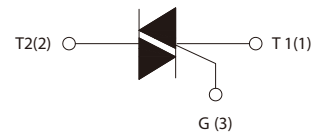
- | High current 12 A RMS current Triac
- | Low thermal resistance
- | High commutation or very high commutation capability
- | RoHS (2002/95/EC) compliant packages
- | UL-94, V0 flammability package resin compliance



TO-220C

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 ($T_c=105^\circ\text{C}$)	$I_{\text{T(RMS)}}$	12	A
Non repetitive surge peak on-state current (full cycle, F=50Hz)	I_{TSM}	95	
I ² t value for fusing (tp=10ms)	I ² t	45	A ² S
Critical rate of rise of on-state current ($I_G=2*I_{GT}$)	I - II - III	50	A/ μs
	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	°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
			D	E	F	G	
I_{GT}	$V_D=12\text{V}, R_L=33\Omega$	I - II - III	≤ 5	≤ 10	≤ 25	≤ 50	mA
		IV	≤ 10	≤ 25	≤ 70	≤ 100	
V_{GT}		ALL	≤ 1.5				V
V_{GD}	$V_D=V_{DRM}, R_L=3.3\text{K}\Omega, T_j=125^{\circ}\text{C}$	ALL	≥ 0.2				V
I_H	$I_t=100\text{mA}$		≤ 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	$V_D=67\%V_{DRM}, T_j=125^{\circ}\text{C}$		≥ 20	≥ 50	≥ 50	≥ 200	V/ μs
V_{TM}	$I_{TM}=15\text{A}, t_p=380\mu\text{s}$		≤ 1.6				V
I_{DRM}	$V_D=V_{DRM}, V_R=V_{RRM}$	$T_j=25^{\circ}\text{C}$	≤ 5				μA
I_{RRM}		$T_j=125^{\circ}\text{C}$	≤ 1				mA

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
$R_{th(j-c)}$	Junction to case(AC)	1.4	$^{\circ}\text{C}/\text{W}$

PARAMETER CHARACTERISTIC CURVE

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

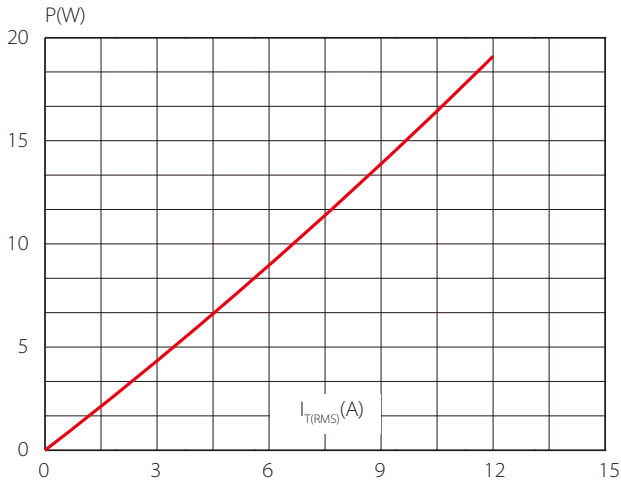


FIG.2: RMS on-state current versus case temperature

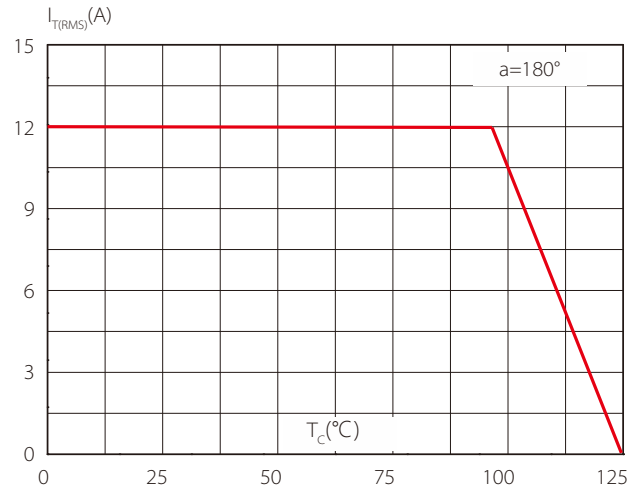


FIG.3: Surge peak on-state current versus number of cycles

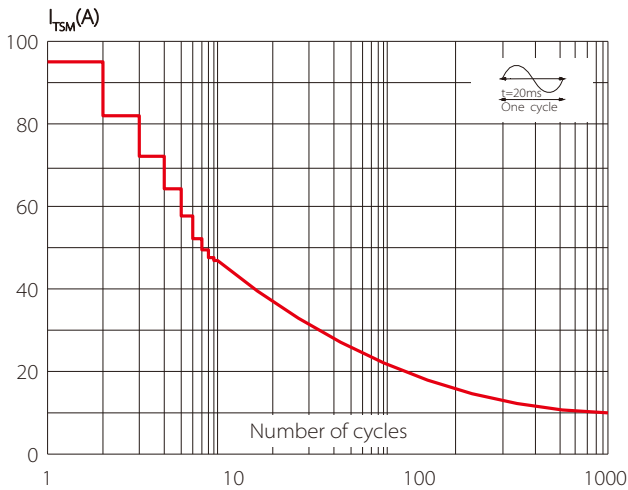


FIG.4 On-state characteristics (maximum values)

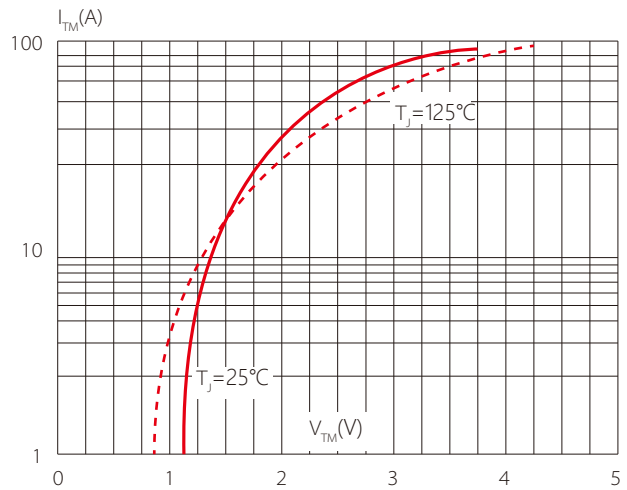


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 20\text{ms}$ and corresponding value of I^2t (I - II - III: $di/dt < 50\text{A}/\mu\text{s}$; IV: $di/dt < 10\text{A}/\mu\text{s}$)

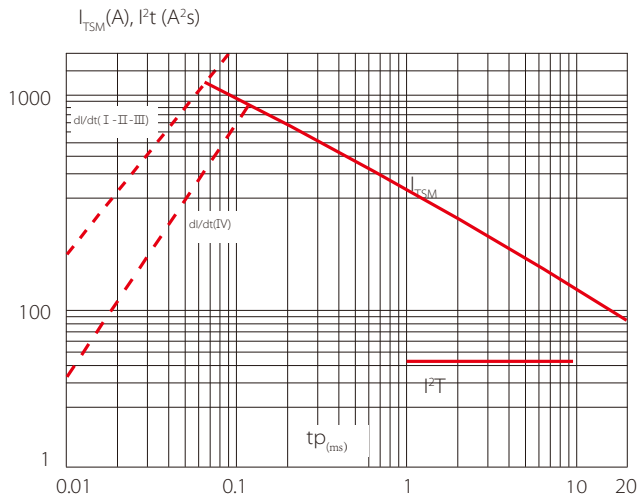


FIG.6 Relative variations of gate trigger current versus junction temperature

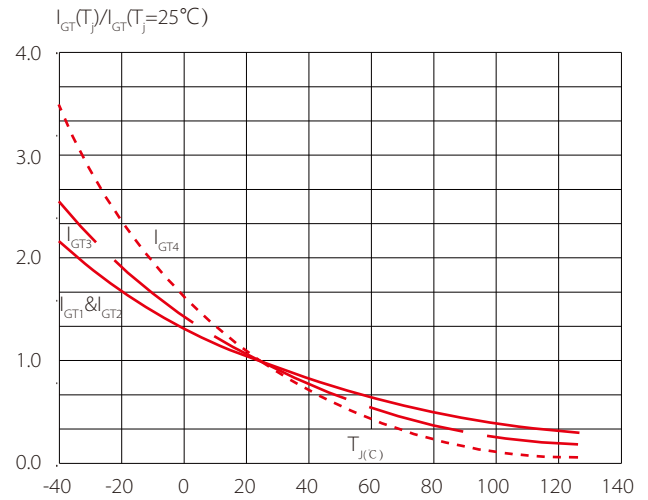


FIG.7 Relative variations of holding current versus junction temperature

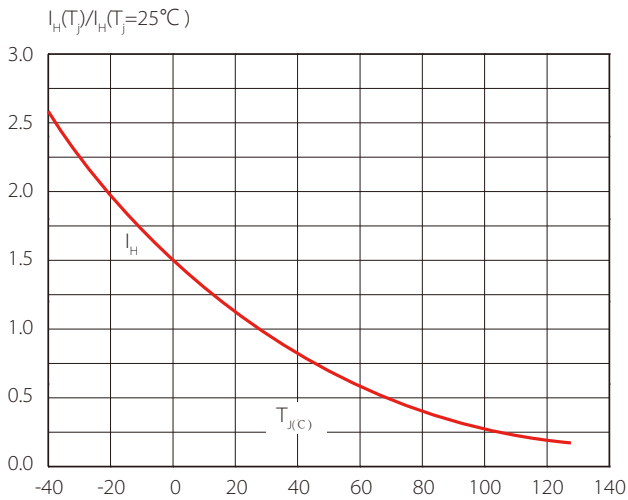
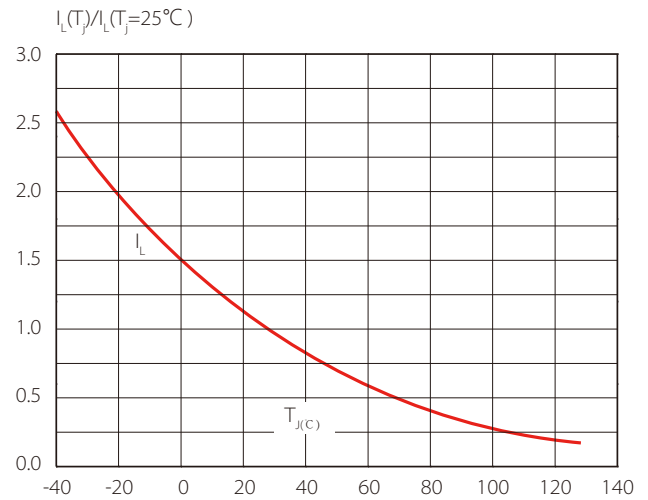
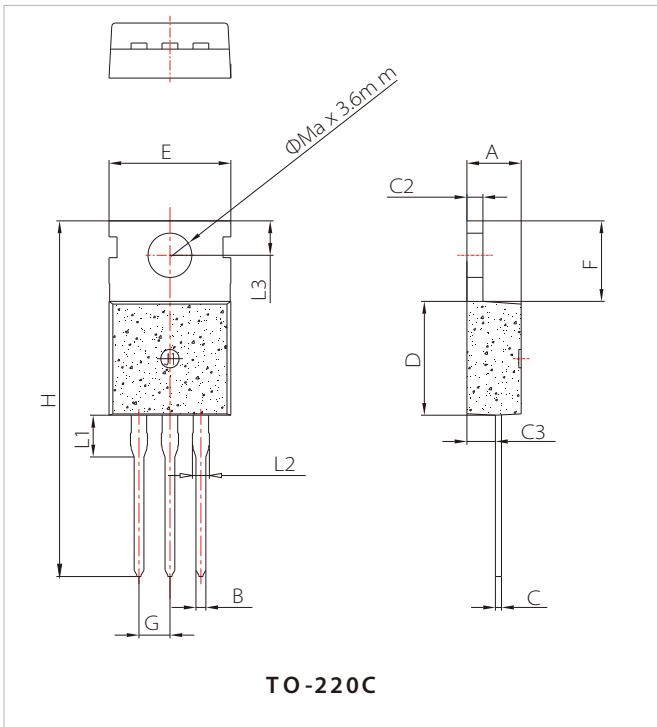


FIG.8 Relative variations of latching current versus junction temperature



PACKAGE MECHANICAL DATA



Ref.	Dimensions					
	Ref. Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.40		4.60	0.173		0.181
B	0.70		0.90	0.028		0.035
C	0.45		0.60	0.018		0.024
C2	1.23		1.32	0.048		0.052
C3	2.20		2.60	0.087		0.102
D	8.90		9.90	0.350		0.390
E	9.90		10.3	0.390		0.406
F	6.30		6.90	0.248		0.272
G		2.54			0.1	
H	28.0		29.8	1.102		1.173
L1		3.39			0.133	
L2	1.14		1.70	0.045		0.067
L3	2.65		2.95	0.104		0.116
Φ		3.6			0.142	

ORDERING INFORMATION

Part Number	Package	Qty/pcs		
		Tube	Inner Box	Carton
STC12Q80D(E/F/G)	TO-220C	50	1000	5000

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