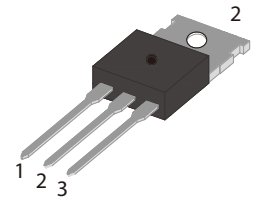


## FEATURES

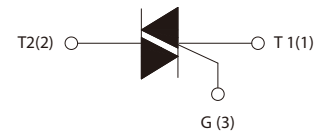
- | High current 12 A RMS current Triac
- | Low thermal resistance
- | High commutation or very high commutation capability
- | RoHS (2002/95/EC) compliant packages
- | UL-94, V0 flammability package resin compliance



TO-220C

## APPLICATIONS

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



Schematic Symbol

## APPROVALS

<b>RoHS</b>	Compliance with 2011/65/EU
<b>HF</b>	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 ( $T_j=25^\circ\text{C}$ )	$V_{\text{DRM}}$	600	V
Repetitive peak reverse voltage ( $T_j=25^\circ\text{C}$ )	$V_{\text{RRM}}$	600	V
RMS on-state current ( $T_c=100^\circ\text{C}$ )	$I_{\text{T(RMS)}}$	12	A
Non repetitive surge peak on-state current (full cycle, $F=50\text{Hz}$ )	$I_{\text{TSM}}$	120	
I <sup>2</sup> t value for fusing ( $t_p=10\text{ms}$ )	I <sup>2</sup> t	78	A <sup>2</sup> S
Critical rate of rise of on-state current ( $I_G=2 \cdot I_{\text{GT}}$ )	$d/d_t$	50	A/ $\mu\text{s}$
Peak gate current	$I_{\text{GM}}$	4	A
Average gate power dissipation	$P_{\text{G(AV)}}$	1	W
Storage junction temperature range	$T_{\text{STG}}$	-40~+150	°C
Operating junction temperature range	$T_j$	-40~+125	

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

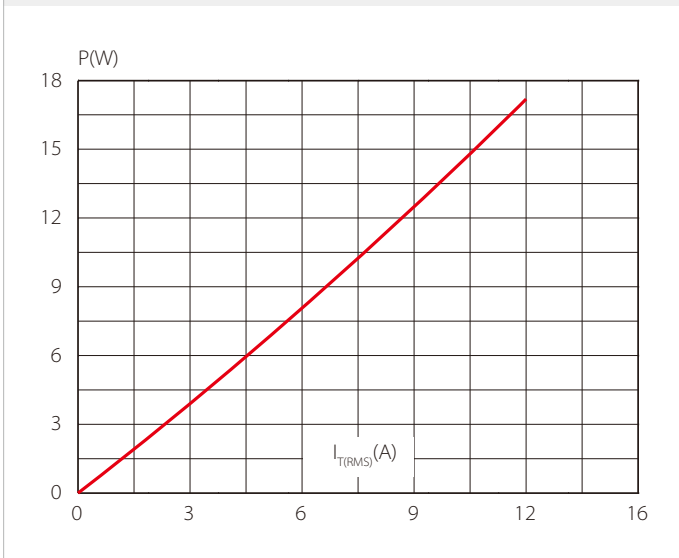
Symbol	Test Condition	Quadrant	Value				Unit
			TW	SW	CW	BW	
$I_{\text{GT}}$	$V_D=12\text{V}, R_L=33\Omega$	I - II - III	$\leq 5$	$\leq 10$	$\leq 35$	$\leq 50$	mA
$V_{\text{GT}}$			$\leq 1.3$				
$V_{\text{GD}}$	$V_D=V_{\text{DRM}}, R_L=3.3\text{K}\Omega, T_j=125^\circ\text{C}$		$\geq 0.2$				V
$I_{\text{H}}$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

## THERMAL RESISTANCES

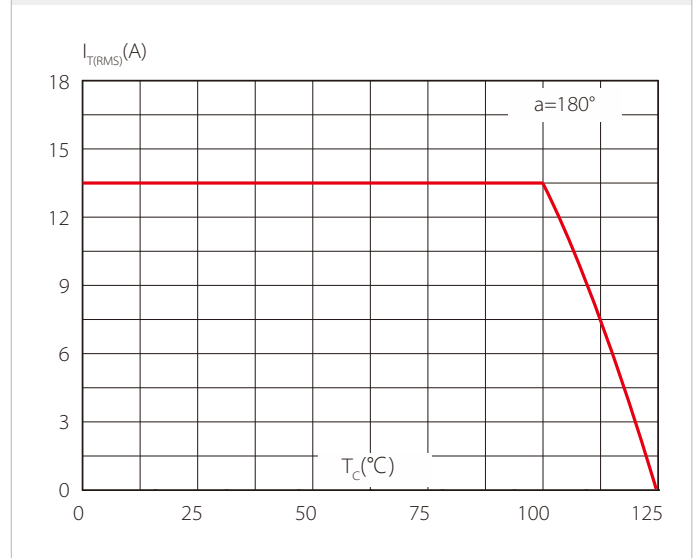
Symbol	Parameter	Value	Unit
$R_{th(j-c)}$	Junction to case(AC)	1.4	$^{\circ}\text{C}/\text{W}$

## PARAMETER CHARACTERISTIC CURVE

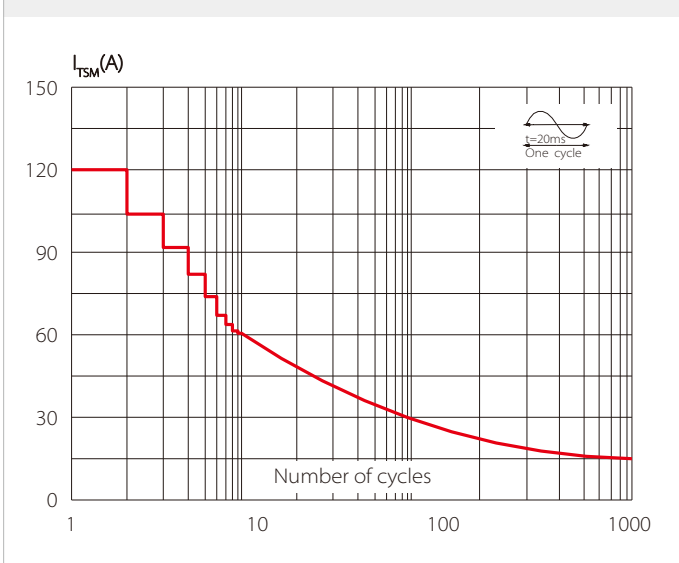
**FIG.1 Maximum power dissipation versus RMS on-state current**



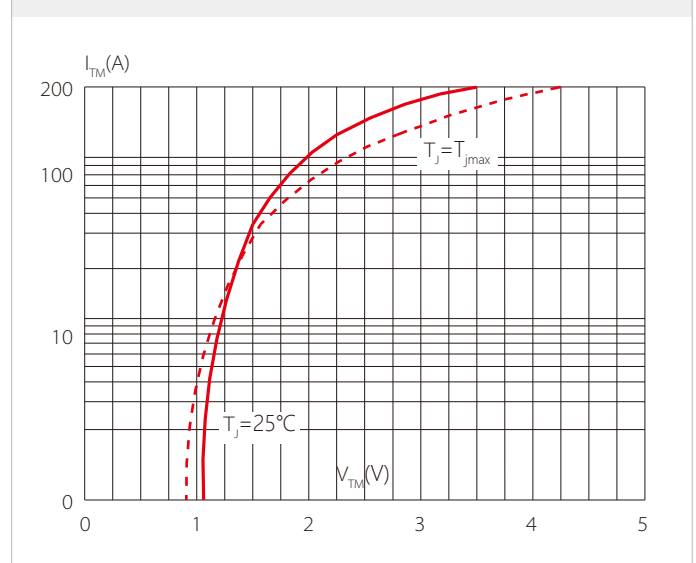
**FIG.2: RMS on-state current versus case temperature**



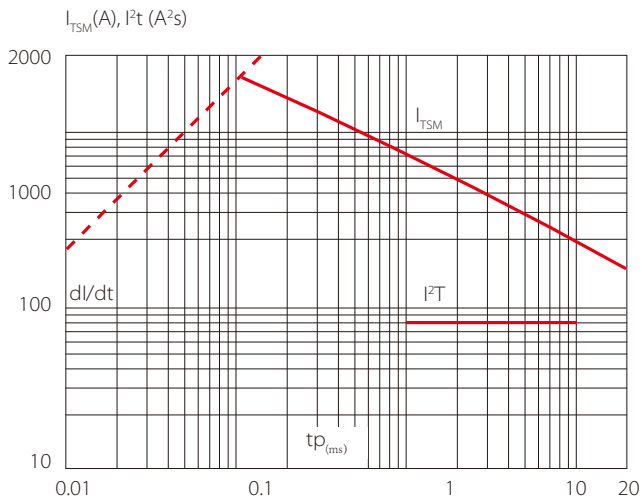
**FIG.3: Surge peak on-state current versus number of cycles**



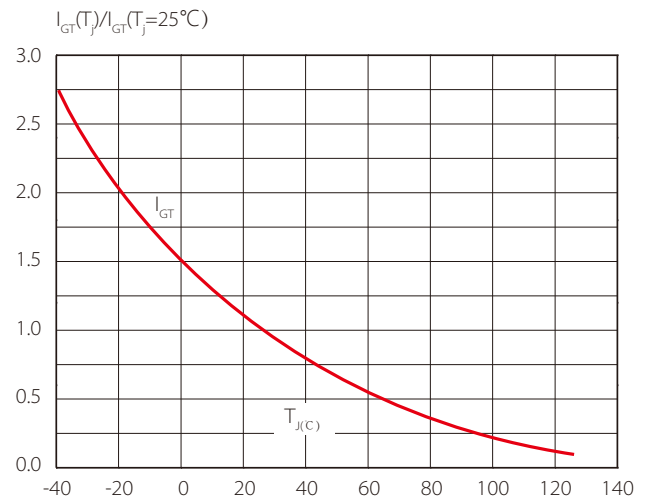
**FIG.4 On-state characteristics (maximum values)**



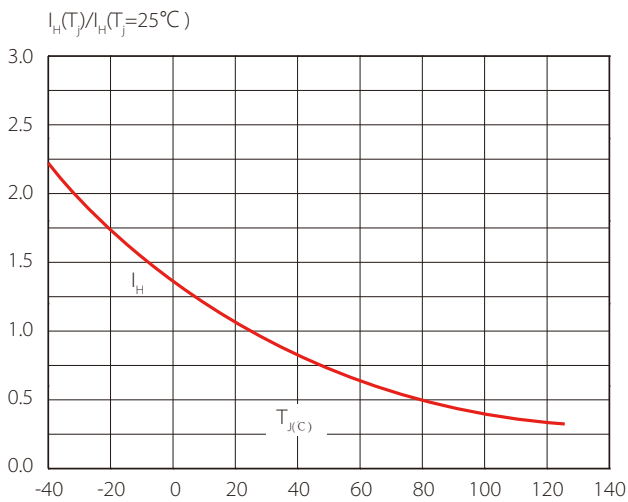
**FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width  $t_p < 20\text{ms}$  and corresponding value of  $I^2t$  ( $di/dt < 50\text{A}/\mu\text{s}$ )**



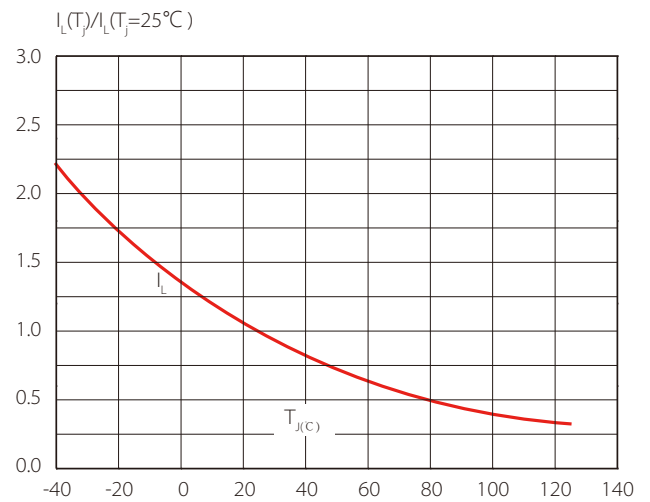
**FIG.6 Relative variations of gate trigger current versus junction temperature**



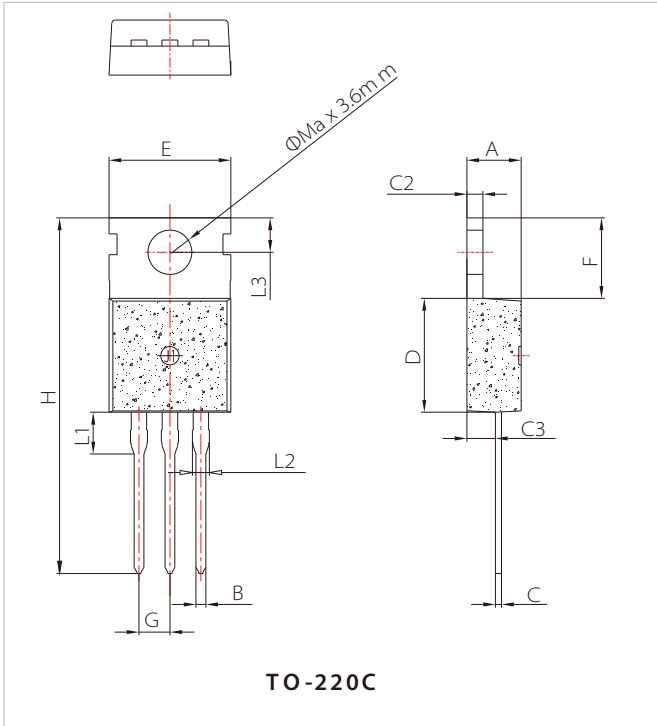
**FIG.7 Relative variations of holding current versus junction temperature**



**FIG.8 Relative variations of latching current versus junction temperature**



## PACKAGE MECHANICAL DATA



Ref.	Dimensions					
	Ref. Millimeters			Inches		
	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
STC12A60TW(SW/CW/BW)	TO-220C	50	1000	5000

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