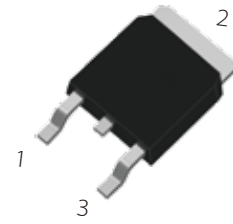


## FEATURES

- | High current 6 A RMS current Triac
- | Low thermal resistance
- | High commutation or very high commutation capability



TO-252

## 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	6	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 ( $T_c=100^\circ\text{C}$ )	$I_{\text{T(RMS)}}$	6	A
Non repetitive surge peak on-state current (full cycle, $F=50\text{Hz}$ )	$I_{\text{TSM}}$	60	
$I^2t$ value for fusing ( $t_p=10\text{ms}$ )	$I^2t$	21	$\text{A}^2\text{S}$
Critical rate of rise of on-state current ( $I_G=2 \cdot I_{\text{GT}}$ )	$dV/dt$	50	$\text{A}/\mu\text{s}$
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	$^\circ\text{C}$
Operating junction temperature range	$T_j$	-40~+125	

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

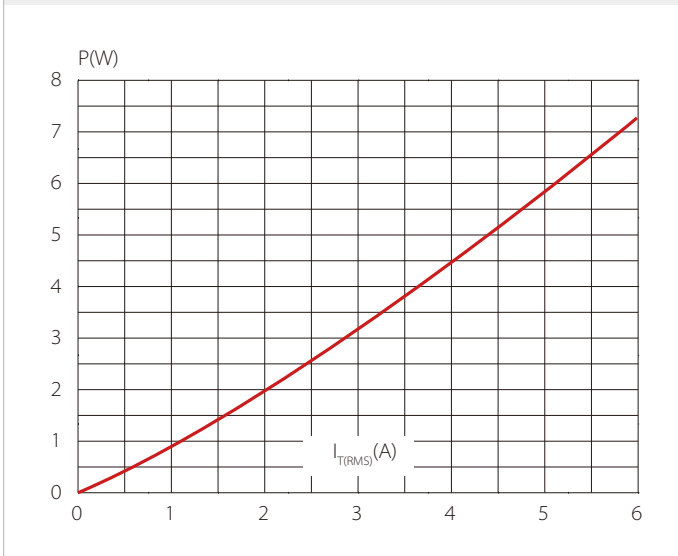
Symbol	Test Condition	Quadrant	Value				Unit
			TW	SW	CW	BW	
$I_{\text{GT}}$	$V_D=12\text{V}, R_L=33\Omega$	I - II - III	$\leq 5$	$\leq 10$	$\leq 35$	$\leq 50$	mA
$V_{\text{GT}}$			$\leq 1.3$				V
$V_{\text{GD}}$	$V_D=V_{\text{DRM}}, R_L=3.3\text{K}\Omega, T_j=125^\circ\text{C}$		$\geq 0.2$				V
$I_{\text{H}}$	$I_t=500\text{mA}$	I - III	$\leq 10$	$\leq 15$	$\leq 35$	$\leq 50$	mA
$I_{\text{L}}$	$I_G=1.2I_{\text{GT}}$		II	$\leq 15$	$\leq 30$	$\leq 60$	
$dV/dt$	$V_D=2/3V_{\text{DRM}}$ Gate open, $T_j=125^\circ\text{C}$		$\geq 20$	$\geq 40$	$\geq 400$	$\geq 1000$	$\text{V}/\mu\text{s}$
$V_{\text{TM}}$	$I_{\text{TM}}=5.5\text{A}, t_p=380\mu\text{s}$		$\leq 1.5$				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

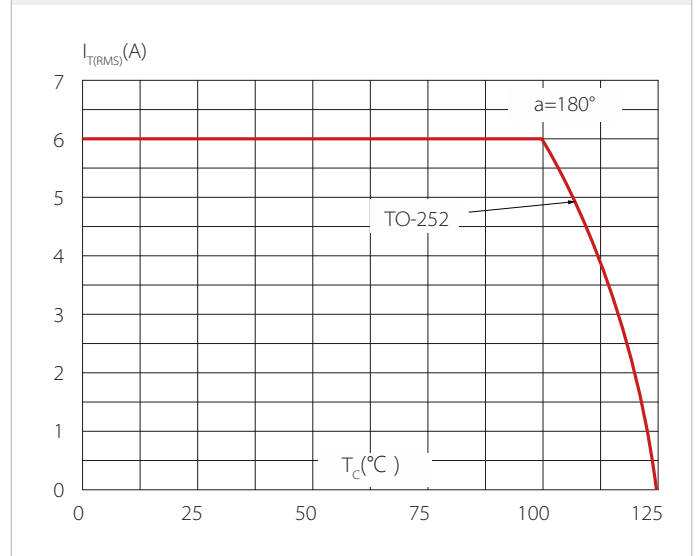
Symbol	Parameter	Value	Unit
$R_{th(j-c)}$	Junction to case(AC)	2.4	$^{\circ}\text{C}/\text{W}$
$R_{th(j-a)}$	Junction to ambient	70	$^{\circ}\text{C}/\text{W}$

## PARAMETER CHARACTERISTIC CURVE

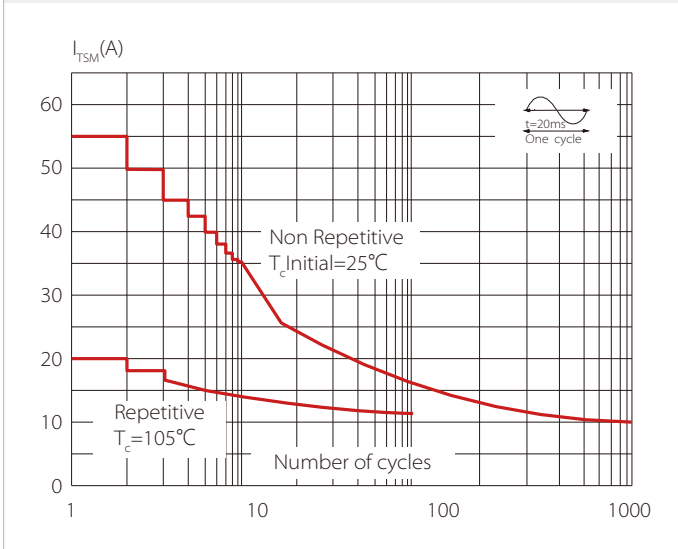
**FIG.1 Maximum power dissipation versus RMS on-state current**



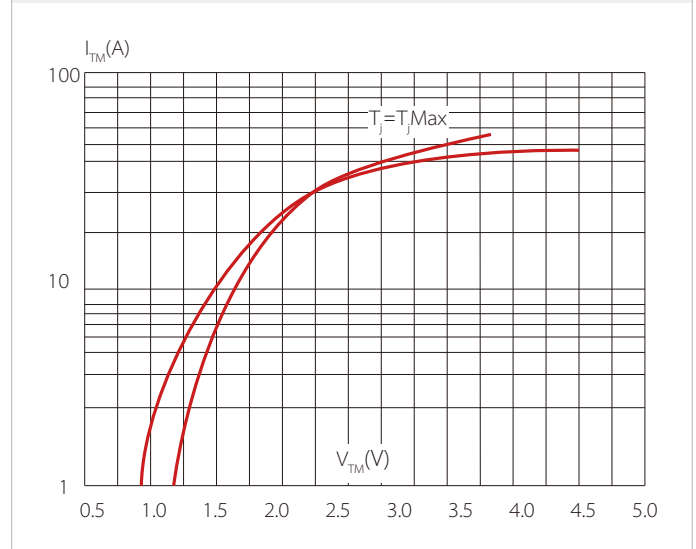
**FIG.2: RMS On-state Current Versus Case Temperature**



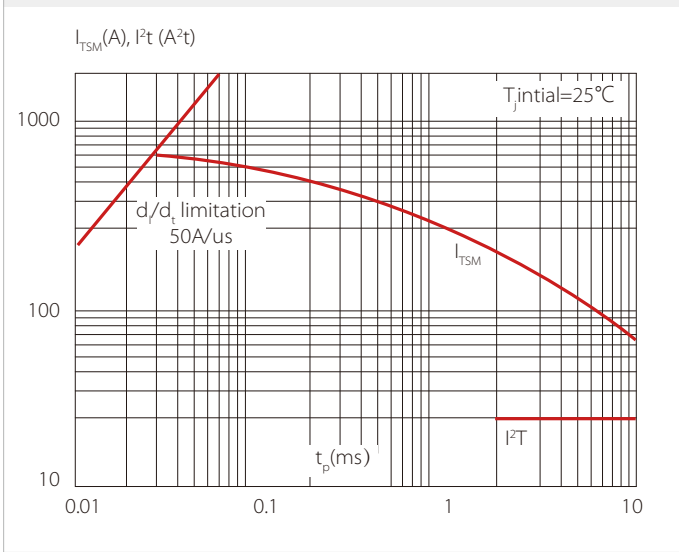
**FIG.3: Surge peak on-state current versus number of cycles**



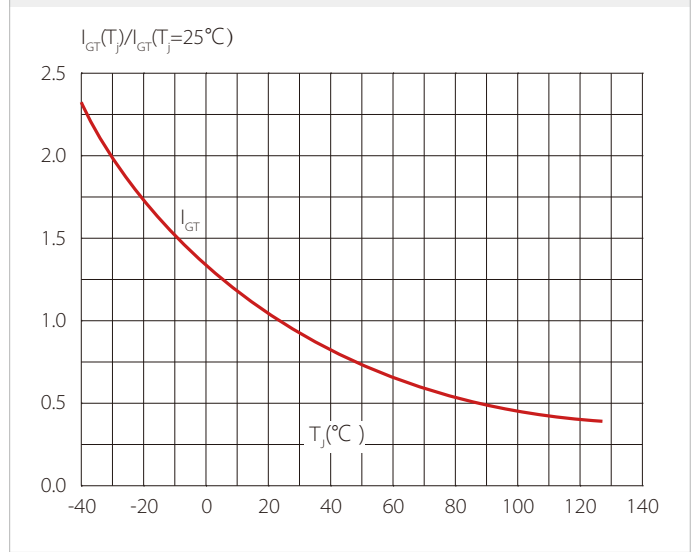
**FIG.4 On-state characteristics (maximum values)**



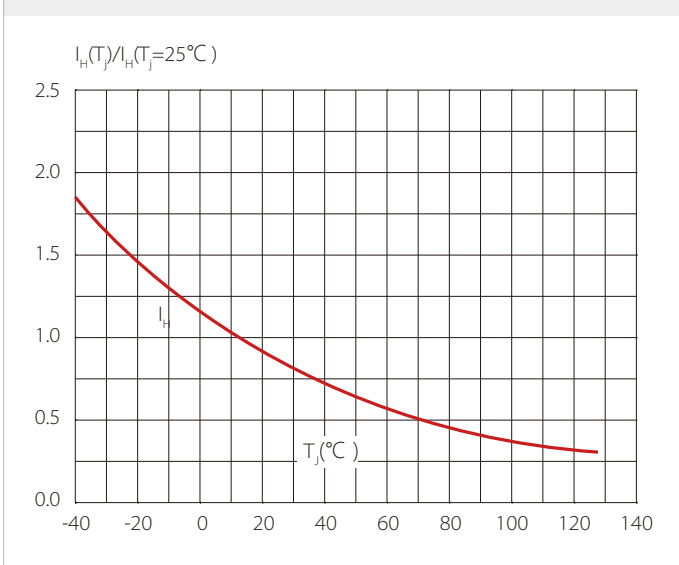
**FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width  $t_p < 20\text{ms}$ , and corresponding value of  $I^2t$**



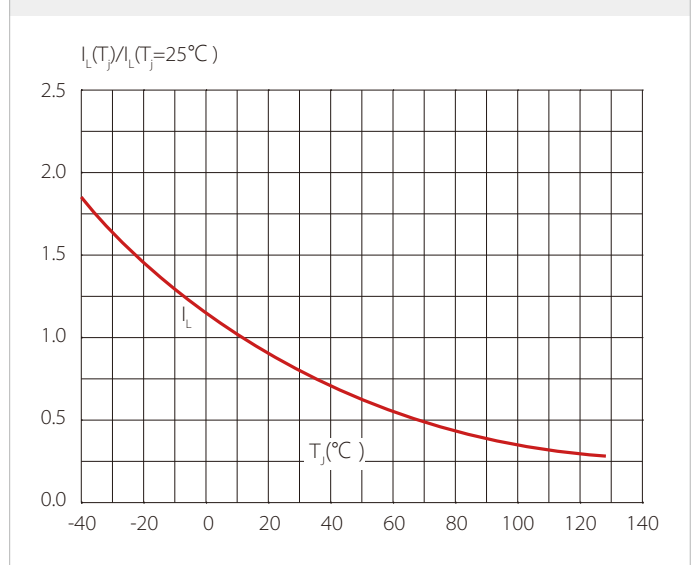
**FIG.6 Relative variations of gate trigger current versus junction temperature**



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

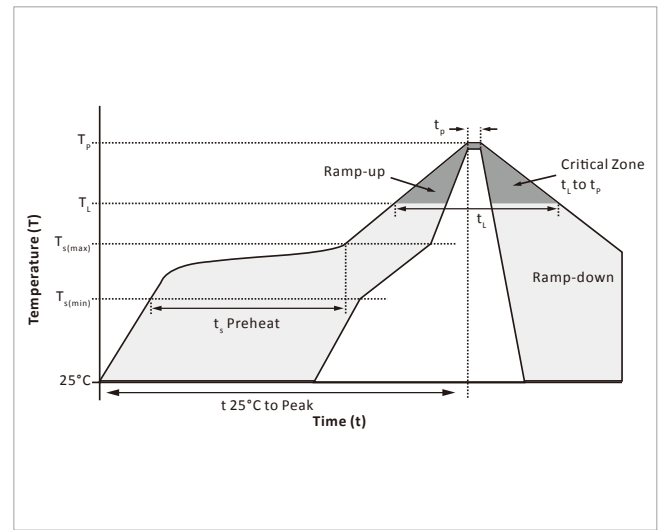


**FIG.8 Relative variations of latching current versus junction temperature**

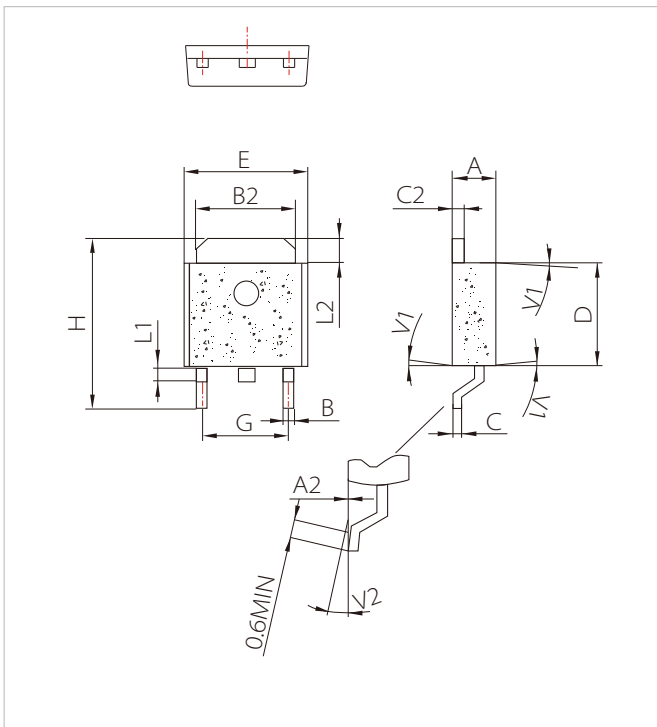


## SOLDERING PARAMETERS

Reflow Condition		Lead-free assembly
Pre Heat	Temperature Max ( $T_{s(min)}$ )	150°C
	Temperature Max ( $T_{s(max)}$ )	200°C
	Time (min to max) ( $t_s$ )	60 – 180 secs
Average ramp up rate (Liquidus Temp ( $T_L$ ) to peak)		3°C/second max
$T_{s(max)}$ to $T_L$ - Ramp-up Rate		3°C/second max
Reflow	Temperature ( $T_L$ ) (Liquidus)	217°C
	Time (min to max) ( $t_r$ )	60 – 150 seconds
Peak Temperature ( $T_p$ )		260°C
Time within 5°C of actual peak Temperature ( $t_p$ )		20 – 40 seconds
Ramp-down Rate		6°C/second max
Time 25°C to peak Temperature ( $T_p$ )		8 minutes max.
Do not exceed		260°C

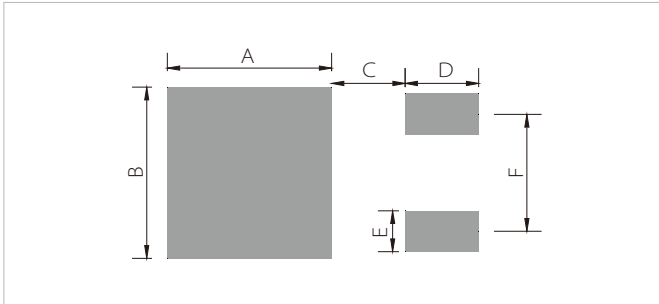


## TO-252 PACKAGE MECHANICAL DATA



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.15		2.45	0.085		0.096
A2	0.03		0.23	0.001		0.009
B	0.55		0.65	0.021		0.026
B2	5.20		5.40	0.204		0.212
C	0.45		0.62	0.017		0.024
C2	0.48		0.62	0.019		0.024
D	5.90		6.30	0.232		0.248
E	6.30		6.70	0.248		0.264
G	4.40		4.60	0.173		0.181
H	9.30		10.20	0.366		0.402
L1		0.8			0.031	
L2	1.37		1.50	0.054		0.059
V1		4°			4°	
V2	0°		8°	0°		8°

## RECOMMENDED PAD LAYOUT DIMENSIONS



Ref	mm
A	6.5
B	6.7
C	3
D	3
E	1.6
F	4.5

## ORDERING INFORMATION

Part Number	Package	Marking	QTY/Reel	Reel Size
STD6A60TW(SW/CW/BW)	TO-252		2500PCS	13"

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