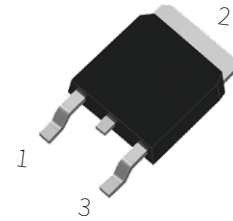


## FEATURES

- | Glass-passivated mesa chip for reliability and uniform
- | High current output up to 4.0 A
- | RoHS (2002/95/EC) compliant packages



TO-252

## APPLICATIONS

- | Flash lamp
- | Electronic ballast
- | Igniter



Schematic Symbol

## APPROVALS

<b>RoHS</b>	Compliance with 2011/65/EU
<b>HF</b>	Compliance with IEC61249-2-21:2003

## 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	
RMS on-state current ( $T_c=85^\circ\text{C}$ )	$I_{\text{T(RMS)}}$	4	A
Non repetitive surge peak on-state current ( $t_p=10\text{ms}$ )	$I_{\text{TSM}}$	30	
I <sup>2</sup> t value for fusing ( $t_p=10\text{ms}$ )	I <sup>2</sup> t	4.5	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	$I_{\text{GM}}$	1.2	A
Average gate power dissipation	$P_{\text{G(AV)}}$	0.2	W
Storage junction temperature range	$T_{\text{STG}}$	-40~+150	°C
Operating junction temperature range	$T_j$	-40~+125	

## ELECTRICAL CHARACTERISTICS (T<sub>j</sub>=25°C unless otherwise specified)

Symbol	Test Condition	Value			Unit
		Min.	Typ.	Max.	
I <sub>GT</sub>	V <sub>D</sub> =12V, R <sub>L</sub> =33Ω	-	50	200	μA
V <sub>GT</sub>		-	0.6	0.8	V
V <sub>GD</sub>	V <sub>D</sub> =V <sub>DRM</sub> , R <sub>L</sub> =3.3KΩ, T <sub>j</sub> =150°C	0.2	-	-	
I <sub>H</sub>	I <sub>j</sub> =500mA	-	-	5	mA
I <sub>L</sub>	I <sub>G</sub> =1.2I <sub>GT</sub>	-	-	6	
dV <sub>D</sub> /dt	V <sub>D</sub> =2/3V <sub>DRM</sub> , R <sub>GK</sub> =1KΩ, T <sub>j</sub> =125°C	10	-	-	V/μs

## STATIC CHARACTERISTICS

Symbol	Parameter	Value	Unit
V <sub>TM</sub>	I <sub>TM</sub> =8A, t <sub>p</sub> =380μs	≤1.5	V
I <sub>DRM</sub>	V <sub>D</sub> =V <sub>DRM</sub> , V <sub>R</sub> =V <sub>RRM</sub>		
I <sub>RRM</sub>		T <sub>j</sub> =125°C	≤100

## THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
R <sub>th(j-c)</sub>	Junction to case(AC)	6.5	°C/W
R <sub>th(j-a)</sub>	Junction to ambient	70	°C/W

# PARAMETER CHARACTERISTIC CURVE

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

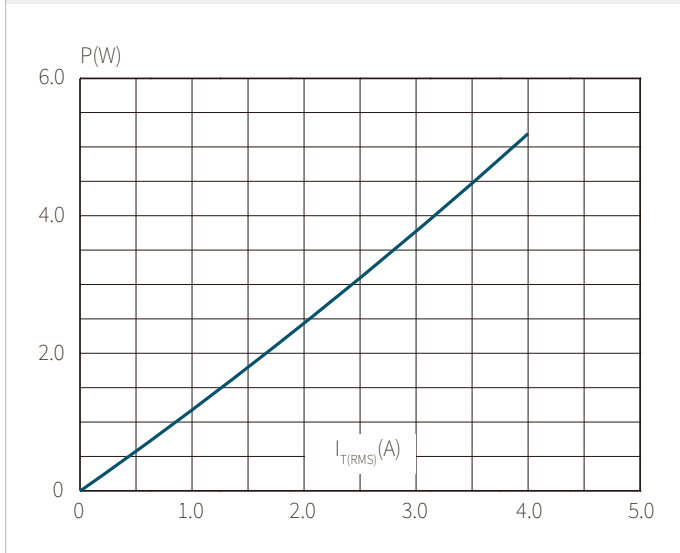


FIG.2: RMS on-state current versus ambient temperature (printed circuit board FR4, copper thickness:35 $\mu$ m)(full cycle)

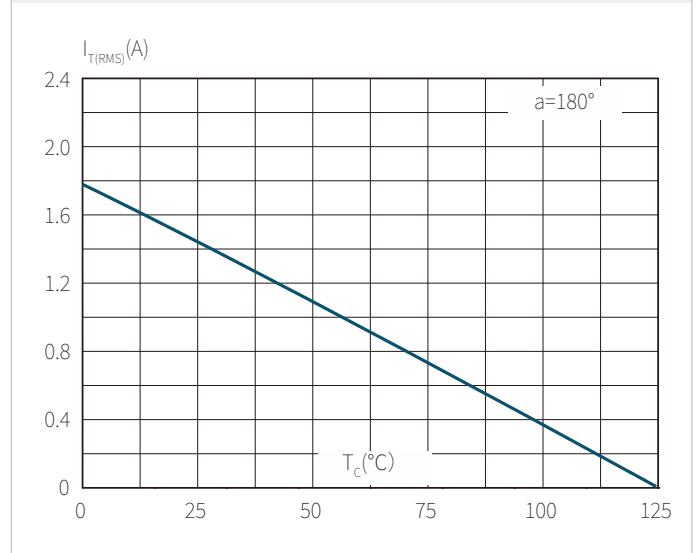


FIG.3: Surge peak on-state current versus number of cycles

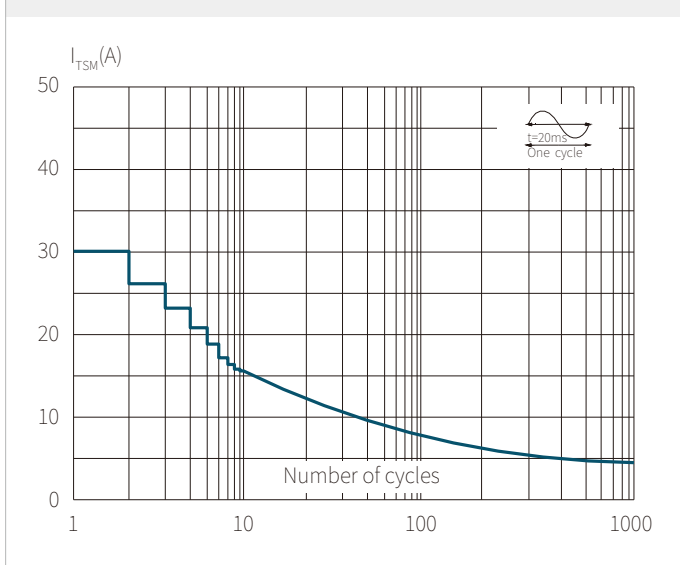


FIG.4 On-state characteristics (maximum values)

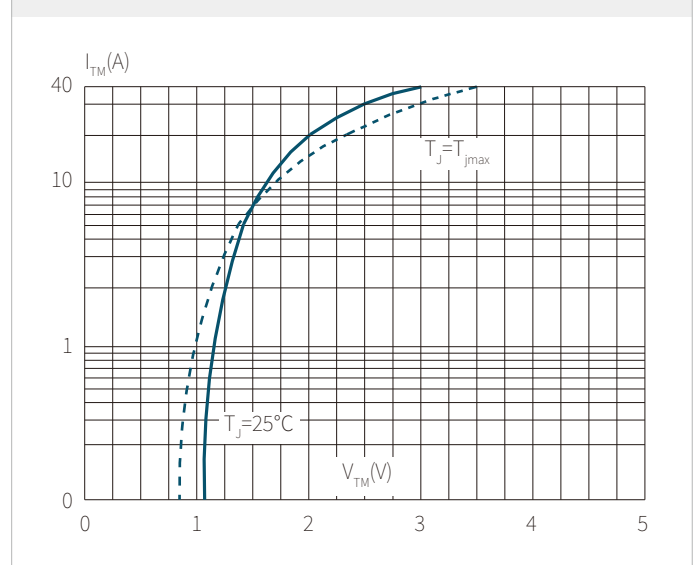


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width  $t_p < 10\text{ms}$  and corresponding value of  $I^2t$  ( $dI/dt < 50\text{A}/\mu\text{s}$ )

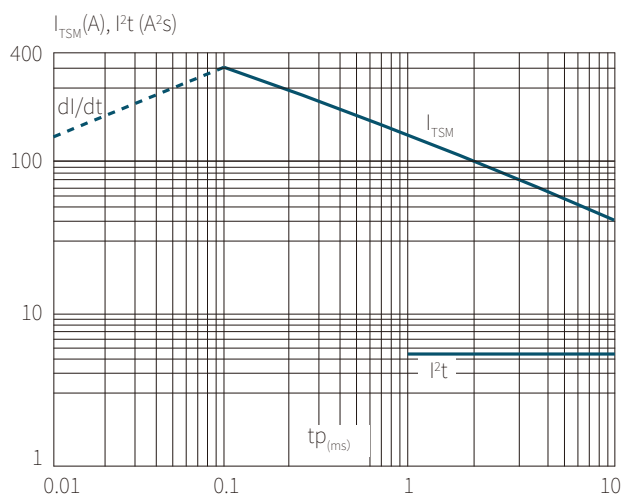


FIG.6 Relative variations of gate trigger current versus junction temperature

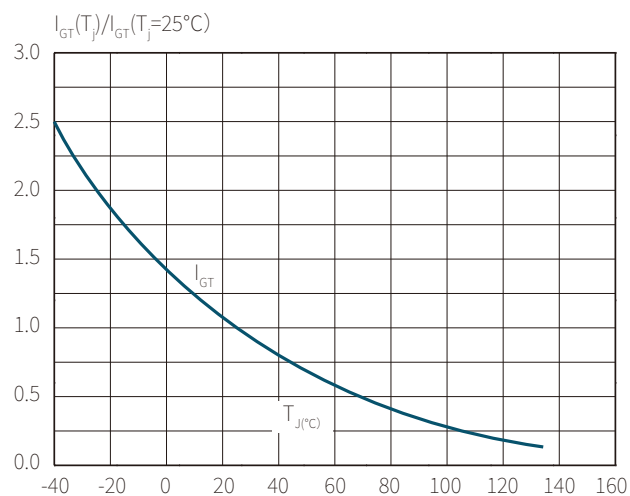


FIG.7 Relative variations of holding current versus junction temperature

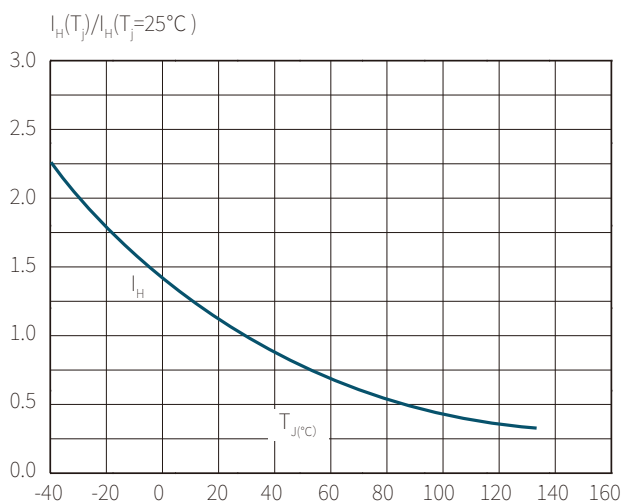
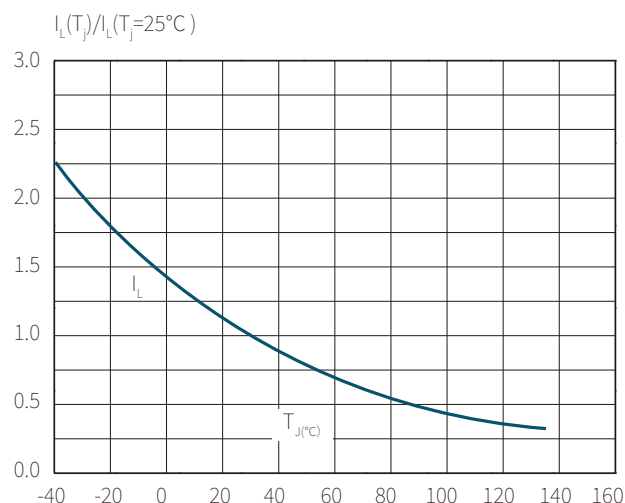
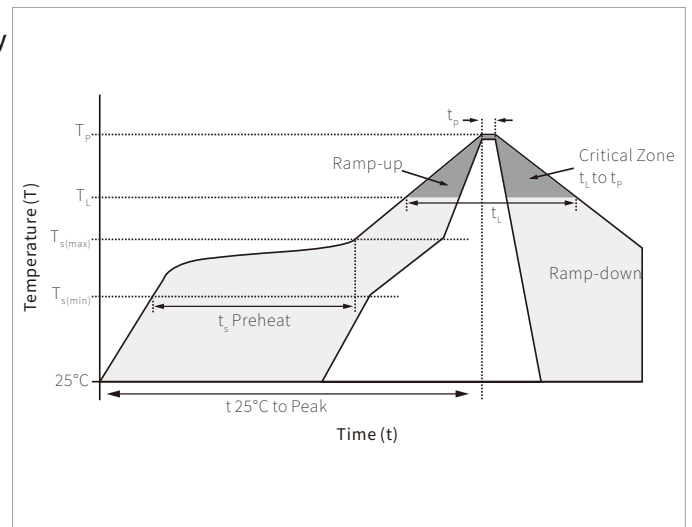


FIG.8 Relative variations of latching current versus junction temperature

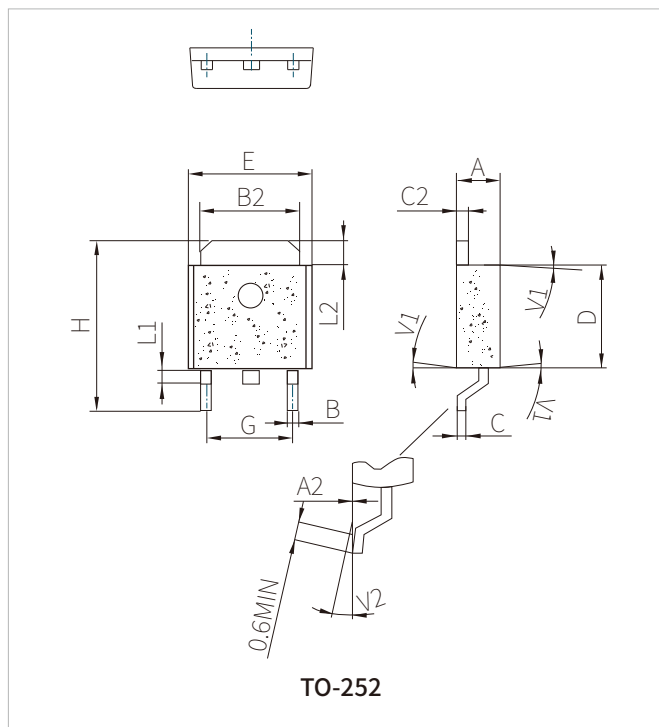


## SOLDERING PARAMETERS

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) ( $t_t$ )	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



## PACKAGE MECHANICAL DATA



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.20		2.40	0.086		0.095
A2	0.03		0.23	0.001		0.009
B	0.55		0.65	0.022		0.026
B2	5.10		5.40	0.200		0.213
C	0.45		0.62	0.018		0.024
C2	0.48		0.62	0.019		0.024
D	6.00		6.20	0.236		0.244
E	6.40		6.70	0.252		0.264
G	4.40		4.70	0.173	0.1	0.185
H	9.35		10.6	0.368		0.417
L1	1.30		1.70	0.051	0.143	0.067
L2	1.37		1.50	0.054		0.059
L1		4°			0.130	
V2	0°		8°	0°		8°

## ORDERING INFORMATION

Part Number	Package	QTY/Reel	Reel Size
X0405	TO-252	2500CS	13"

To find your local partner within Semiwell' s website : [www.semiwell.com.cn](http://www.semiwell.com.cn)

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