

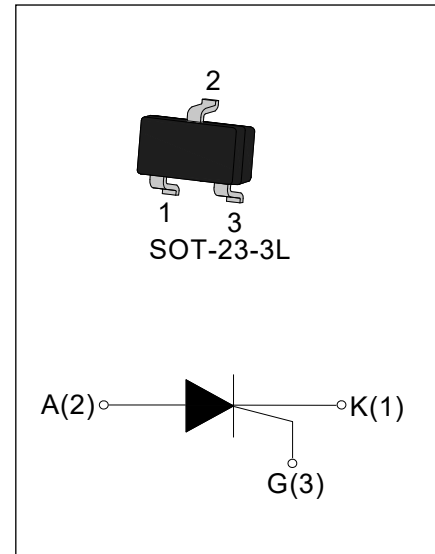


## 100-8 0.8A Sensitive SCRs

Rev.1

### DESCRIPTION:

The 100-8 SCR provide high dv/dt rate with strong resistance to electromagnetic interface. They are especially recommended for use on residual current circuit breaker, straight hair, igniter etc. Package SOT-23-3L is RoHS compliant. (2011/65/EU)



### MAIN FEATURES

Symbol	Value	Unit
$I_{T(RMS)}$	0.8	A
$I_{GT}$	$\leq 200$	$\mu A$

### ABSOLUTE MAXIMUM RATINGS

Parameter		Symbol	Value	Unit
Storage junction temperature range		$T_{stg}$	-40-150	$^{\circ}C$
Operating junction temperature range		$T_j$	-40-125 <sup>①</sup>	$^{\circ}C$
Repetitive peak off-state voltage		$V_{DRM}$	800	V
Repetitive peak reverse voltage		$V_{RRM}$	800	V
RMS on-state current	SOT-23-3L ( $T_C=50^{\circ}C$ )	$I_{T(RMS)}$	0.8	A
Non repetitive surge peak on-state current (F=50Hz tp=10ms)		$I_{TSM}$	8	A
Non repetitive surge peak on-state current (F=60Hz tp=8.3ms)		$I_{TSM}$	9	A
$I^2t$ value for fusing (tp=10ms)		$I^2t$	0.32	$A^2s$
Critical rate of rise of on-state current		di/dt	50	$A/\mu s$
Peak gate current (tp=20 $\mu s$ , $T_j=125^{\circ}C$ )		$I_{GM}$	0.2	A
Peak gate power (tp=20 $\mu s$ , $T_j=125^{\circ}C$ )		$P_{GM}$	0.5	W
Average gate power dissipation( $T_j=125^{\circ}C$ )		$P_{G(AV)}$	0.1	W
Peak pulse voltage ( $T_j=25^{\circ}C$ ; non-repetitive, off-state; FIG.8)		$V_{pp}$	0.7	kV

**NOTE 1:** When we parallel connect a  $\leq 1K\Omega$  resistor between Gate and Cathode, the  $T_j$  can reach  $125^{\circ}C$ ; if without this resistor, the  $T_j$  only can reach  $110^{\circ}C$ .

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

Symbol	Test Condition	Value			Unit
		MIN.	TYP.	MAX.	
$I_{GT}$	$V_D=12\text{V } R_L=33\Omega$	20	50	200	$\mu\text{A}$
$V_{GT}$		-	0.6	0.8	V
$V_{GD}$	$V_D=V_{DRM} T_j=125^{\circ}\text{C}$	0.2	-	-	V
$I_L$	$I_G=1.2 I_{GT}$	-	-	4	mA
$I_H$	$I_T=0.05\text{A}$	-	-	3	mA
dv/dt	$V_D=400\text{V } T_j=125^{\circ}\text{C } R_{GK}=1\text{K}\Omega$	600	-	-	$\text{V}/\mu\text{s}$
dv/dt	$V_D=400\text{V } T_j=125^{\circ}\text{C } R_{GK}=220\Omega$	1000	-	-	$\text{V}/\mu\text{s}$

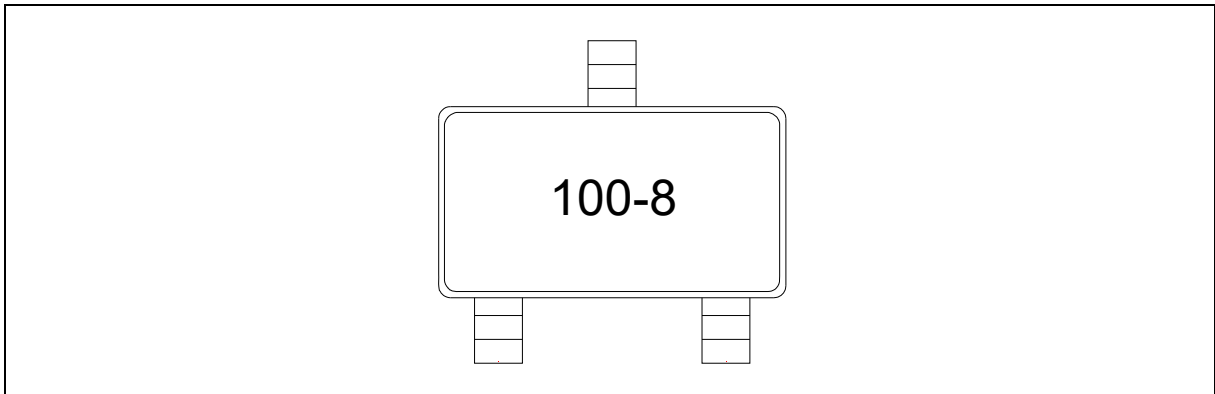
**STATIC CHARACTERISTICS**

Symbol	Parameter		Value(MAX)	Unit
$V_{TM}$	$I_T=1.1\text{A } t_p=380\mu\text{s}$	$T_j=25^{\circ}\text{C}$	1.5	V
$V_{TO}$	Threshold voltage	$T_j=125^{\circ}\text{C}$	0.93	V
$V_d$	Dynamic Resistance	$T_j=125^{\circ}\text{C}$	340	$\text{m}\Omega$
$I_{DRM}$	$V_D=V_{DRM} V_R=V_{RRM}$	$T_j=25^{\circ}\text{C}$	5	$\mu\text{A}$
$I_{RRM}$		$T_j=125^{\circ}\text{C}$	100	$\mu\text{A}$

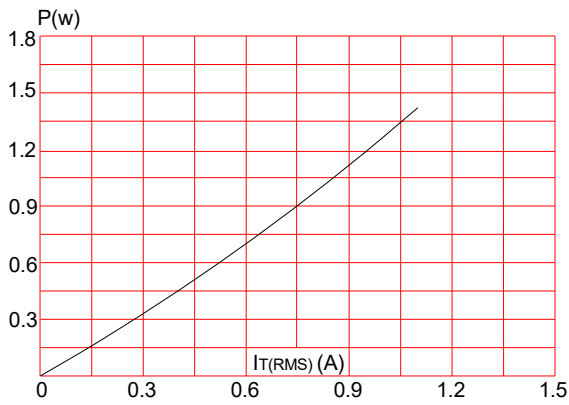
**THERMAL RESISTANCES**

Symbol	Parameter		Value	Unit
$R_{th(j-c)}$	junction to case	SOT-23-3L	75	$^{\circ}\text{C}/\text{W}$
$R_{th(j-a)}$	junction to ambient		125	

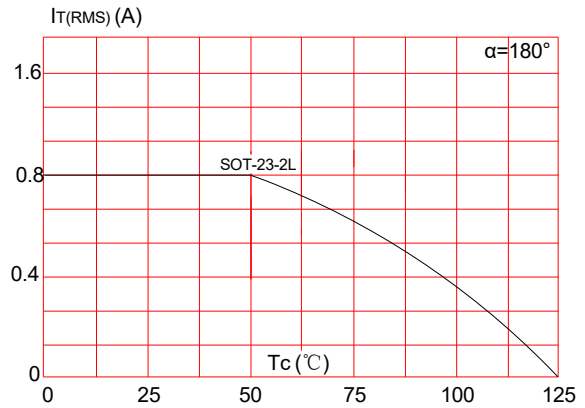
MARKING



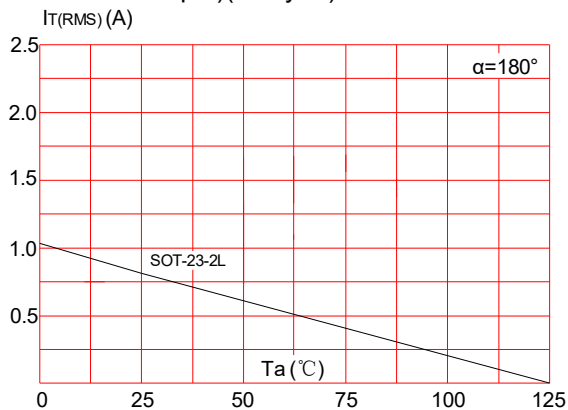
**FIG.1** Maximum power dissipation versus RMS on-state current



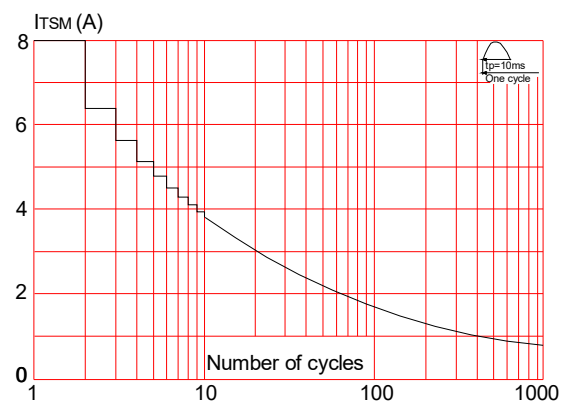
**FIG.2:** RMS on-state current versus ambient temperature (printed circuit board FR4, copper thickness:35 $\mu$ m)(full cycle)



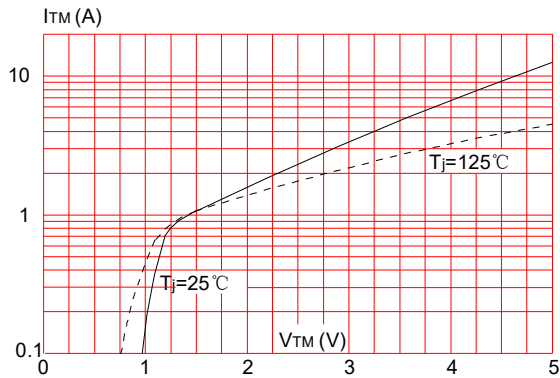
**FIG.3:** RMS on-state current versus ambient temperature (printed circuit board FR4, copper thickness:35 $\mu$ m)(full cycle)



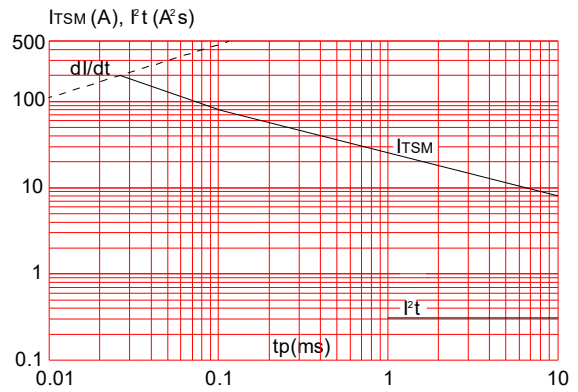
**FIG.4:** Surge peak on-state current versus number of cycles



**FIG.5:** On-state characteristics (maximum values)



**FIG.6:** Non-repetitive surge peak on-state current for a sinusoidal pulse with width  $t_p < 10ms$ , and corresponding value of  $I^2 t$  ( $dI/dt < 50A/\mu s$ )



**FIG.7:** Relative variations of gate trigger current, holding current and latching current versus junction temperature

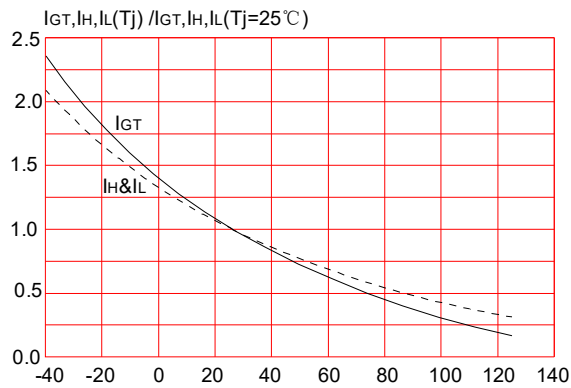
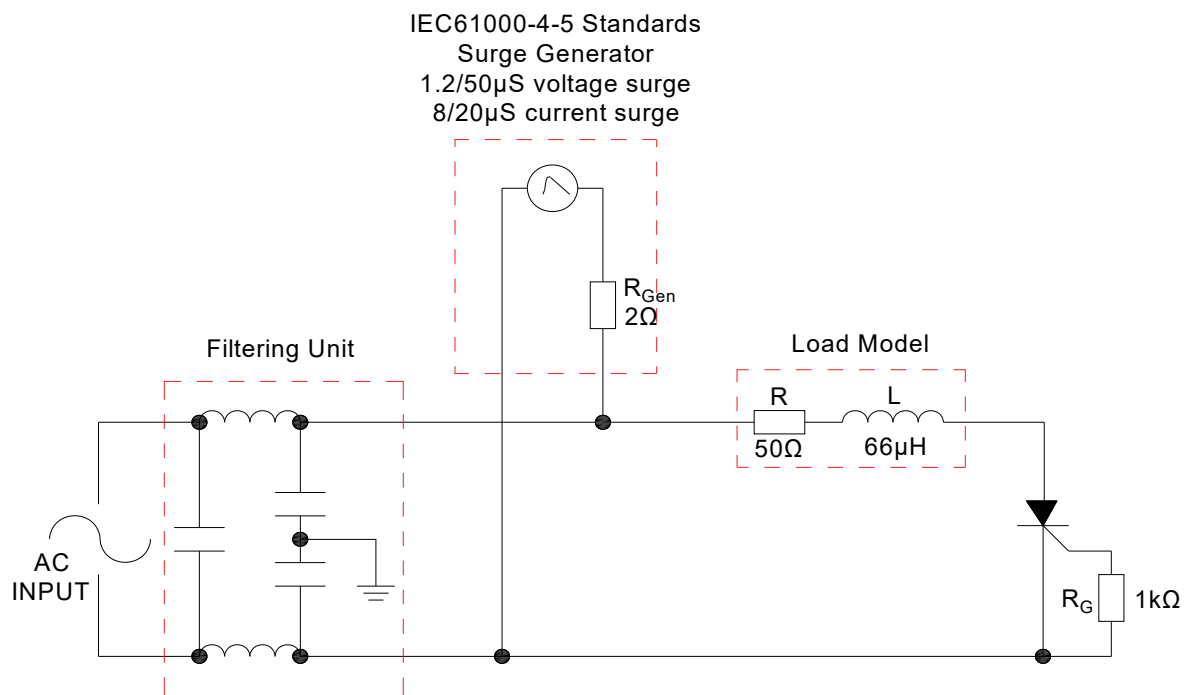
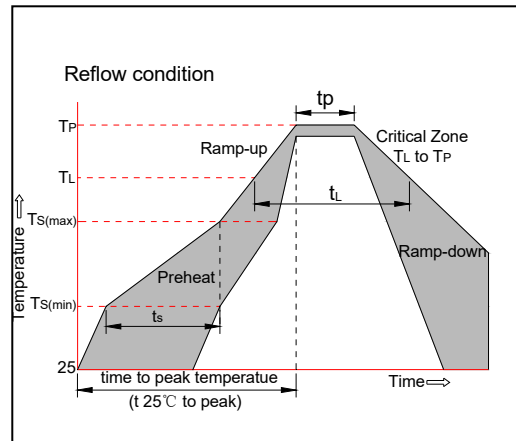


FIG.8: Test circuit for inductive and resistive loads to IEC-61000-4-5 standards



## SOLDERING PARAMETERS

Reflow Condition		Pb-Free assembly (see figure at right)
Pre Heat	-Temperature Min ( $T_{s(min)}$ )	+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/sec. Max
$T_{s(max)}$ to $T_L$ - Ramp-up Rate		3°C/sec. Max
Reflow	-Temperature( $T_L$ ) (Liquidus)	+217°C
	-Temperature( $t_L$ )	60-150 secs.
Peak Temp ( $T_p$ )		+260(+0/-5)°C
Time within 5°C of actual Peak Temp ( $t_p$ )		20-40secs.
Ramp-down Rate		6°C/sec. Max
Time 25°C to Peak Temp ( $T_p$ )		8 min. Max
Do not exceed		+260°C



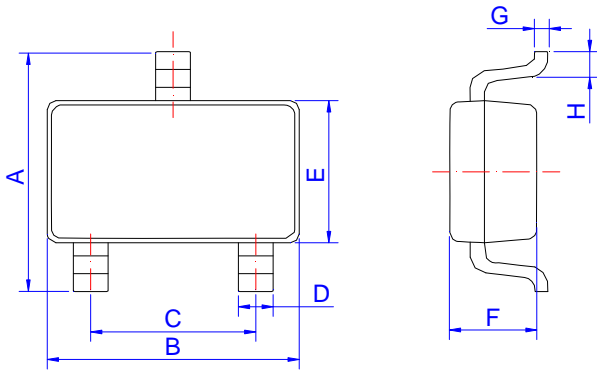
## ORDERING INFORMATION

Order code	Voltage $V_{\text{DRM}}/V_{\text{RRM}}$ (V)	IGT( $\mu\text{A}$ )	Package	Base qty. (pcs)	Delivery mode
100-8	800	200	SOT-23-3L	3,000	Tape & Reel

## Document Revision History

Date	Revision	Changes
Mar 24, 2022	1	Last update

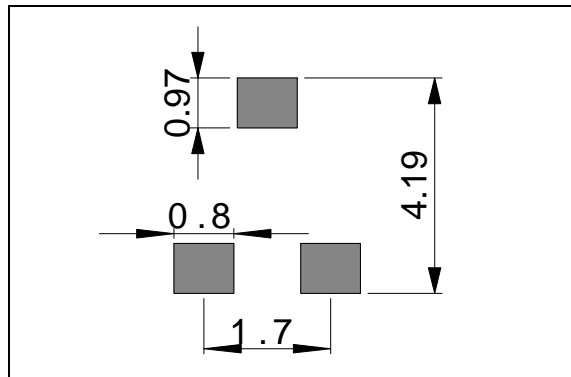
PACKAGE MECHANICAL DATA



SOT-23-3L

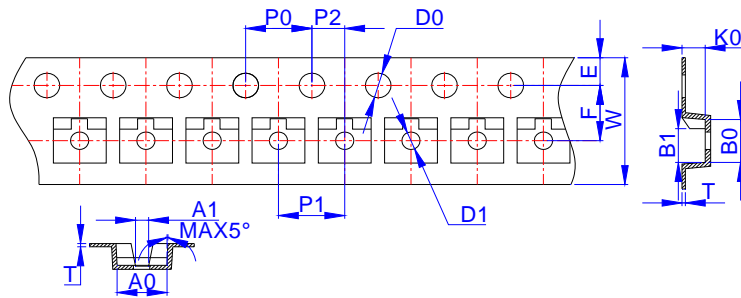
Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.65	2.80	2.95	0.104	0.110	0.116
B	2.82	2.92	3.02	0.111	0.115	0.119
C	1.80	1.90	2.00	0.071	0.075	0.079
D	0.30	0.35	0.50	0.012	0.014	0.020
E	1.50	1.60	1.70	0.059	0.063	0.067
F	1.07	1.17	1.27	0.042	0.046	0.050
G	0.05	0.15	0.25	0.002	0.006	0.010
H	0.25	0.40	0.55	0.010	0.016	0.022

FOOTPRINT-SOT-23-3L (dimensions in mm)





DELIVERY MODE



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A0	3.10	3.20	3.30	0.122	0.126	0.130
A1	1.02	1.04	1.06	0.040	0.041	0.042
B0	3.18	3.28	3.38	0.125	0.129	0.133
B1	2.39	2.49	2.59	0.094	0.098	0.102
K0	1.22	1.32	1.42	0.048	0.052	0.056
P0	3.90	4.00	4.10	0.154	0.157	0.161
P1	3.90	4.00	4.10	0.154	0.157	0.161
P2	1.95	2.00	2.05	0.077	0.079	0.081
T	0.15	0.20	0.25	0.006	0.008	0.010
E	1.65	1.75	1.85	0.065	0.069	0.073
F	3.45	3.50	3.55	0.136	0.138	0.140
D0	1.50	1.55	1.60	0.059	0.061	0.063
D1	1.00	1.10	1.20	0.039	0.043	0.047
W	7.90	8.00	8.20	0.311	0.315	0.323

PACKAGE	OUTLINE	REEL (PCS)	PER CARTON (PCS)	TAPE & REEL
SOT-23-3L	TAPING	3,000	120,000	7 inch



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