

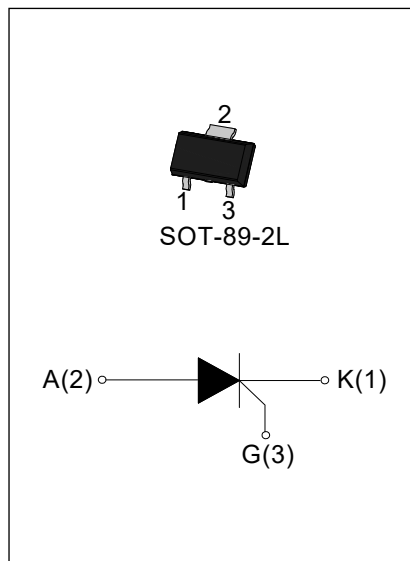


## 100-8 Sensitive gate SCRs

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-89-2L is RoHS compliant. (2011/65/EU)



### MAIN FEATURES

Symbol	Value	Unit
$I_{T(RMS)}$	1	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		$V_{DRM}$	900	V
Repetitive peak reverse voltage		$V_{RRM}$	900	V
RMS on-state current	SOT-89-2L ( $T_C=70^{\circ}C$ )	$I_{T(RMS)}$	1	A
Non repetitive surge peak on-state current (F=50Hz tp=10ms)		$I_{TSM}$	12	A
Non repetitive surge peak on-state current (F=60Hz tp=8.3ms)		$I_{TSM}$	13.2	A
$I^2t$ value for fusing (tp=10ms)		$I^2t$	0.72	$A^2s$
Critical rate of rise of on-state current		di/dt	50	$A/\mu s$
Peak gate current (tp=20 $\mu s$ , $T_j=125^{\circ}C$ )		$I_{GM}$	0.3	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

**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.	
$I_{GT}$	$V_D=12\text{V } R_L=33\Omega$	-	40	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
$I_L$	$I_G=1.2 I_{GT}$	-	-	5	mA
$I_H$	$I_T=0.05\text{A}$	-	-	4	mA
dv/dt	$V_D=540\text{V } T_j=125^{\circ}\text{C } R_{GK}=1\text{K}\Omega$	100	-	-	V/ $\mu\text{s}$
	$V_D=540\text{V } T_j=125^{\circ}\text{C } R_{GK}=220\Omega$	700	-	-	

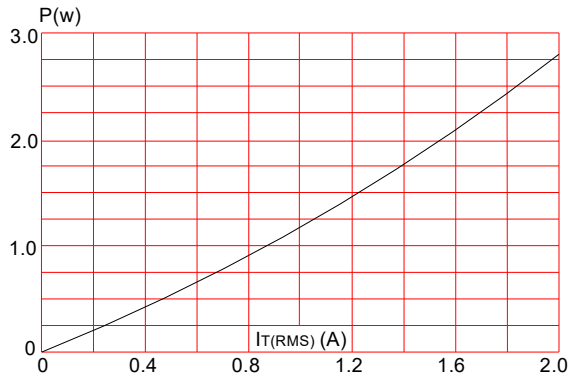
**STATIC CHARACTERISTICS**

Symbol	Parameter		Value(MAX)	Unit
$V_{TM}$	$I_T=2\text{A } t_p=380\mu\text{s}$	$T_j=25^{\circ}\text{C}$	1.4	V
$V_{T0}$	Threshold voltage	$T_j=125^{\circ}\text{C}$	0.93	V
$R_d$	Dynamic resistance	$T_j=125^{\circ}\text{C}$	0.2	$\Omega$
$I_{DRM}$	$V_D=V_{DRM} V_R=V_{RRM}$	$T_j=25^{\circ}\text{C}$	5	$\mu\text{A}$
$I_{RRM}$		$T_j=125^{\circ}\text{C}$	100	$\mu\text{A}$

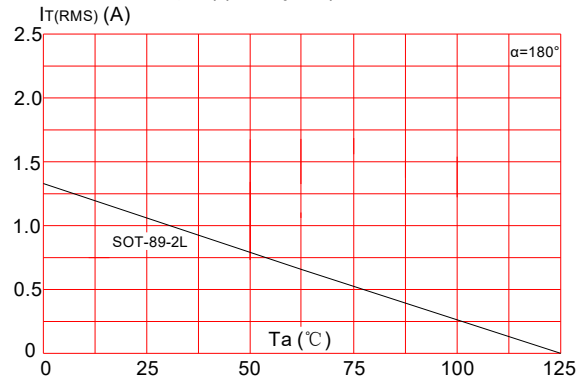
**THERMAL RESISTANCES**

Symbol	Parameter		Value	Unit
$R_{th(j-c)}$	junction to case	SOT-89-2L	38	$^{\circ}\text{C}/\text{W}$
$R_{th(j-a)}$	junction to ambient		90	

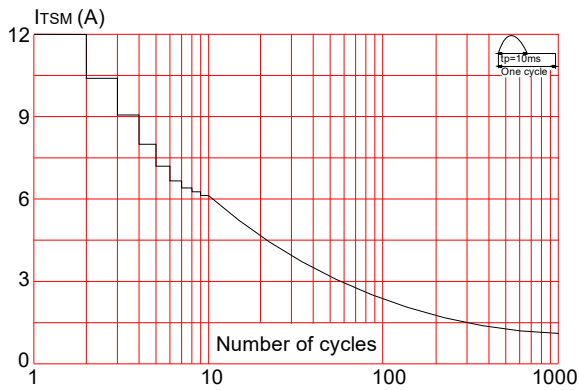
**FIG.1:** Maximum power dissipation versus RMS on-state current



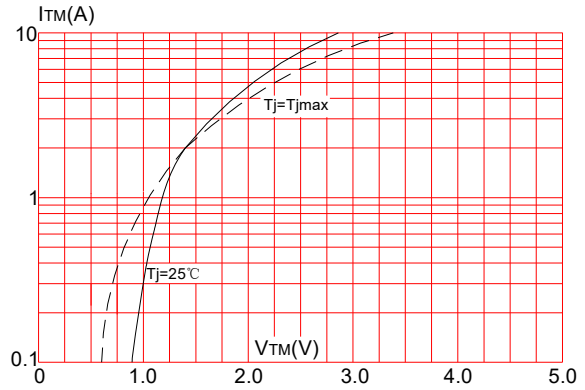
**FIG.2:** RMS on-state current versus ambient temperature (printed circuit board FR4, copper thickness:35μm)(full cycle)



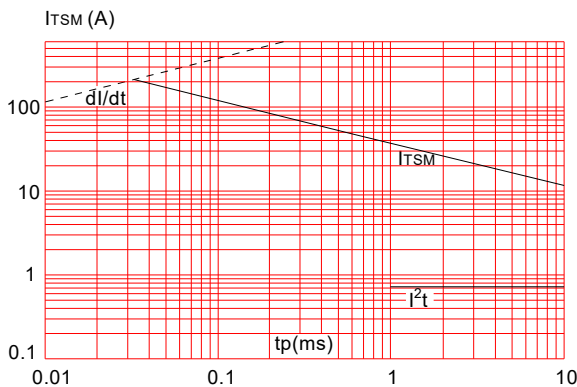
**FIG.3:** Surge peak on-state current versus number of cycles



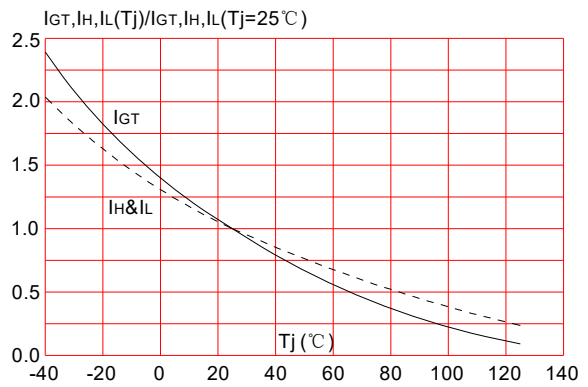
**FIG.4:** On-state characteristics (maximum values)



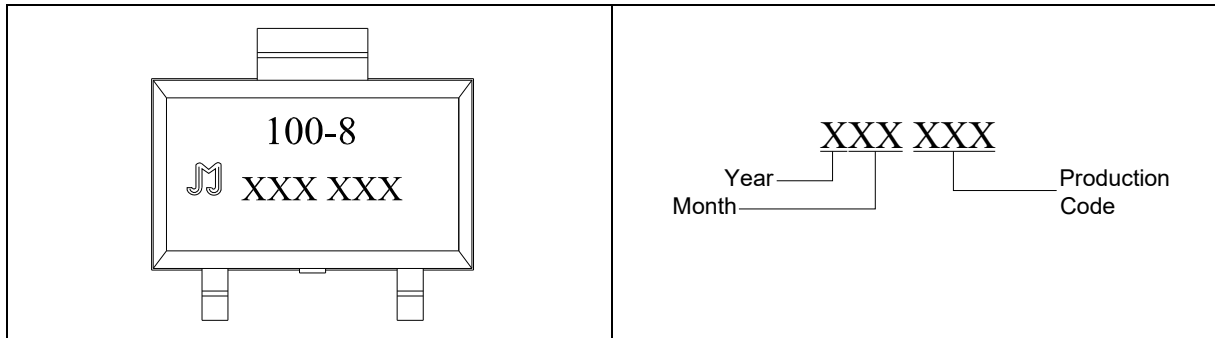
**FIG.5:** Non-repetitive surge peak on-state current for a sinusoidal pulse with width  $t_p < 10\text{ms}$  ( $di/dt \leq 50\text{A}/\mu\text{s}$ )



**FIG.6:** Relative variations of gate trigger current, holding current and latching current versus junction temperature

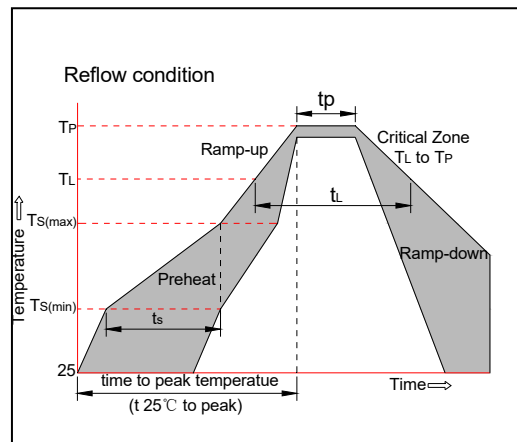


**MARKING**



**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



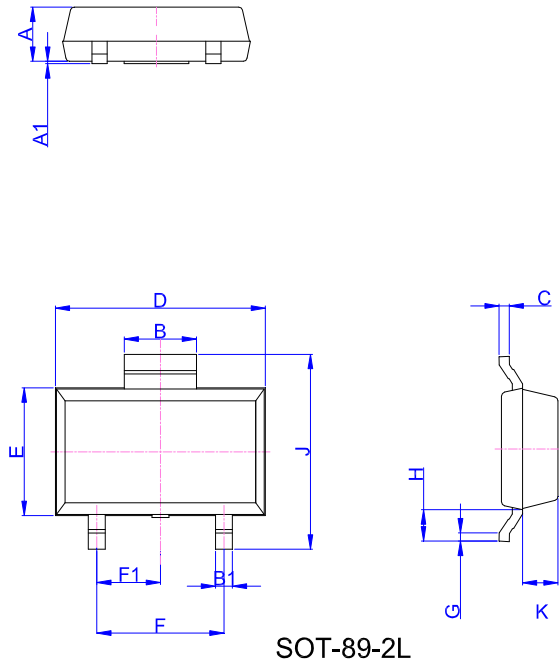
**ORDERING INFORMATION**

Order code	Voltage $V_{\text{DRM}}/V_{\text{RRM}}$ (V)	IGT( $\mu\text{A}$ )	Package	Base qty. (pcs)	Delivery mode
100-8	900	200	SOT-89-2L	4,000	Tape & Reel

**Document Revision History**

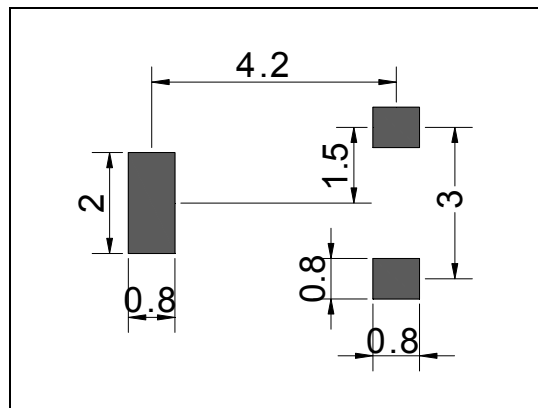
Date	Revision	Changes
Mar 24, 2022	1	Last update

PACKAGE MECHANICAL DATA

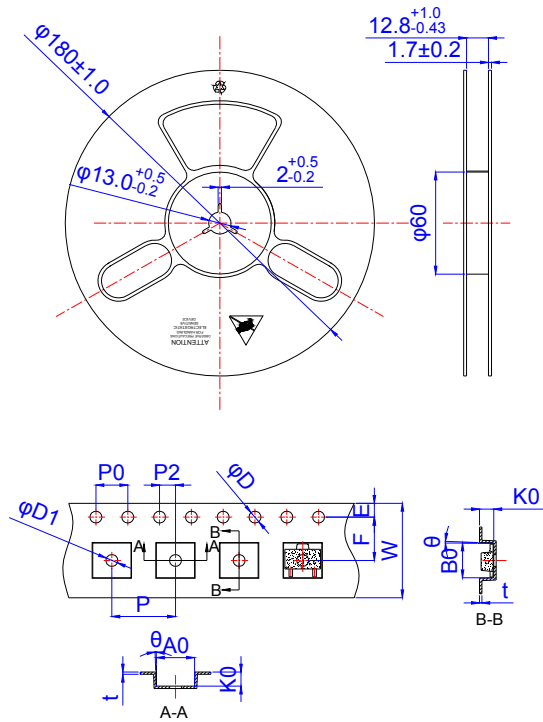


Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	1.3	1.4	1.5	0.051	0.055	0.059
A1	0.01	0.06	0.10	0.001	0.002	0.004
B	1.6	1.7	1.8	0.063	0.067	0.071
B1	0.3	0.4	0.5	0.012	0.016	0.020
C	0.22	0.254	0.32	0.009	0.010	0.013
D	4.75	4.95	5.15	0.187	0.195	0.203
E	2.75	2.95	3.15	0.108	0.116	0.124
F		3.0			0.118	
F1		1.5			0.059	
G	0.2	0.3	0.4	0.008	0.012	0.016
H	0.58	0.78	0.98	0.023	0.031	0.039
J	4.3	4.5	4.7	0.169	0.177	0.185
K		0.88			0.035	

FOOTPRINT-SOT-89-2L (dimensions in mm)



DELIVERY MODE




Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
E	1.65	1.75	1.85	0.065	0.069	0.073
F	5.45	5.50	5.55	0.215	0.217	0.219
P2	1.95	2.00	2.05	0.077	0.079	0.081
D	-	1.50	1.60	-	0.059	0.063
D1	1.40	1.50	1.60	0.055	0.059	0.063
P0	3.90	4.00	4.10	0.154	0.157	0.161
10P0	39.80	40.00	40.20	1.567	1.575	1.583
W	11.90	12.00	12.10	0.469	0.472	0.476
P	7.90	8.00	8.10	0.311	0.315	0.319
A0	4.70	4.80	4.90	0.185	0.189	0.193
B0	4.30	4.40	4.50	0.169	0.173	0.177
K0	1.70	1.80	1.90	0.067	0.071	0.075
t	0.25	0.30	0.35	0.010	0.012	0.014
$\theta$	3°		5°	3°		5°

PACKAGE	OUTLINE	REEL (PCS)	PER CARTON (PCS)	TAPE & REEL
SOT-89-2L	TAPING	4,000	40,000	13 inch



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