



## JX014 Series Sensitive gate SCRs

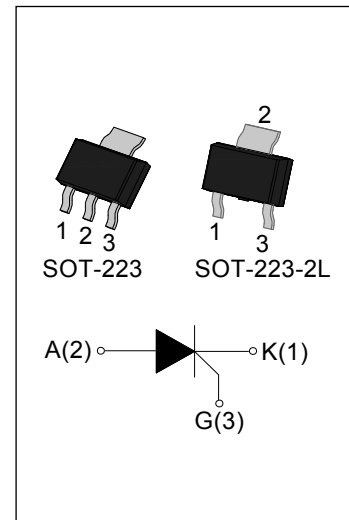
Rev.6.0

### DESCRIPTION:

The JX014 SCR series 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-223 & SOT-223-2L are RoHS compliant. (2011/65/EU)

### MAIN FEATURES

Symbol	Value	Unit
$I_{T(RMS)}$	1.25	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 ( $T_j=25^{\circ}C$ )	$V_{DRM}$	900	V	
Repetitive peak reverse voltage ( $T_j=25^{\circ}C$ )	$V_{RRM}$	900	V	
Non repetitive peak off-state voltage	$V_{DSM}$	1250	V	
Non repetitive peak reverse voltage	$V_{RSM}$	1250	V	
RMS on-state current	SOT-223-2L / SOT-223 ( $T_C=85^{\circ}C$ )	$I_{T(RMS)}$	1.25	A
Non repetitive surge peak on-state current ( $F=50Hz$ $t_p=10ms$ )	$I_{TSM}$	20	A	
Non repetitive surge peak on-state current ( $F=60Hz$ $t_p=8.3ms$ )	$I_{TSM}$	22	A	
$I^2t$ value for fusing ( $t_p=10ms$ )	$I^2t$	2	$A^2s$	
Critical rate of rise of on-state current	$di/dt$	50	$A/\mu s$	
Peak gate current ( $t_p=20\mu s$ , $T_j=125^{\circ}C$ )	$I_{GM}$	0.2	A	
Peak gate power ( $t_p=20\mu s$ , $T_j=125^{\circ}C$ )	$P_{GM}$	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.	
$I_{GT}$	$V_D=12\text{V } R_L=33\Omega$	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
$I_L$	$I_G=1.2 I_{GT}$	-	-	5	mA
$I_H$	$I_T=0.05\text{A}$	-	-	4	mA
dV/dt	$V_D=600\text{V } T_j=125^{\circ}\text{C } R_{GK}=1\text{K}\Omega$	70	-	-	V/ $\mu\text{s}$
	$V_D=600\text{V } T_j=125^{\circ}\text{C } R_{GK}=220\Omega$	800	-	-	
$R_d$	Dynamic Resistance $T_j=125^{\circ}\text{C}$	-	-	150	$\text{m}\Omega$

**STATIC CHARACTERISTICS**

Symbol	Parameter	Value(MAX)	Unit
$V_{TM}$	$I_{TM}=4\text{A } t_p=380\mu\text{s}$ $T_j=25^{\circ}\text{C}$	1.5	V
$I_{DRM}$	$V_D=V_{DRM} V_R=V_{RRM}$	$T_j=25^{\circ}\text{C}$	5
$I_{RRM}$		$T_j=125^{\circ}\text{C}$	100

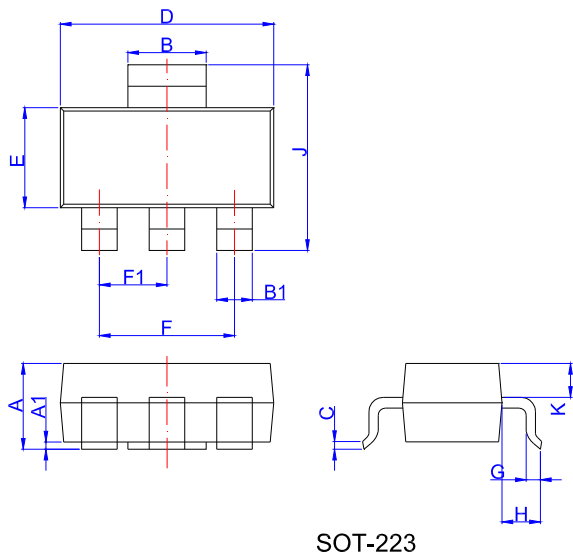
**THERMAL RESISTANCES**

Symbol	Parameter	Value	Unit
$R_{th(j-c)}$	junction to case	SOT-223-2L/ SOT-223	$^{\circ}\text{C}/\text{W}$
$R_{th(j-a)}$	junction to ambient		60

**ORDERING INFORMATION**

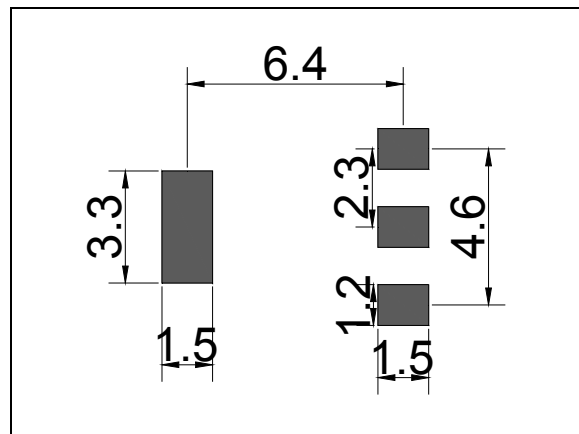
<p><b>J X 014 CR</b></p> <p>JieJie Microelectronics Co.,Ltd</p> <p>Sensitive gate SCRs</p>	<p><b>V: SOT-223</b></p> <p><b>W: SOT-223-2L</b></p> <p><math>I_{T(RMS)}: 1.25\text{A}</math></p>
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**PACKAGE MECHANICAL DATA**

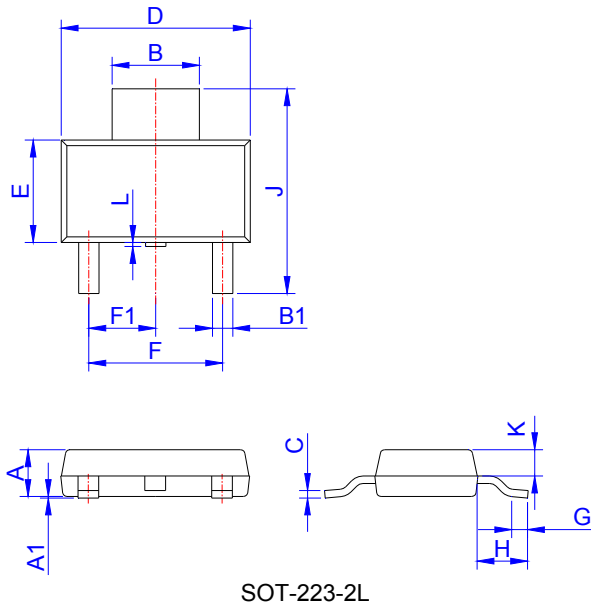


Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	1.5	1.6	1.8	0.059	0.063	0.071
A1	0.01	0.06	0.10	0.001	0.002	0.004
B	2.9	3.0	3.1	0.114	0.118	0.122
B1	0.6	0.7	0.8	0.024	0.028	0.031
C	0.22	0.26	0.32	0.009	0.010	0.013
D	6.3	6.5	6.7	0.248	0.256	0.264
E	3.3	3.5	3.7	0.130	0.138	0.146
F		4.6			0.181	
F1		2.3			0.091	
G	0.7	0.9	1.1	0.028	0.035	0.043
H	1.5	1.75	2.0	0.059	0.069	0.079
J	6.7	7.0	7.3	0.264	0.276	0.287
K	0.8	0.9	1.0	0.031	0.035	0.039

**FOOTPRINT-SOT-223 (dimensions in mm)**

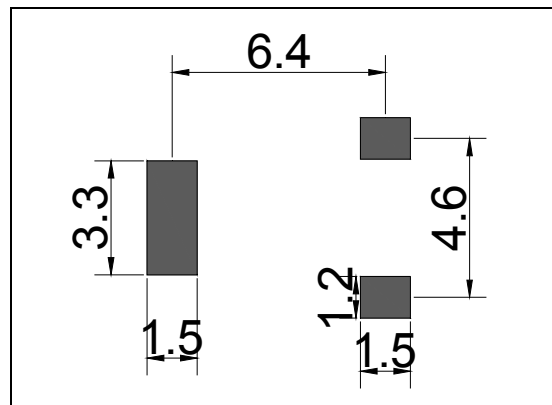


**PACKAGE MECHANICAL DATA**



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	1.50	1.60	1.80	0.059	0.063	0.071
A1	0.01	0.06	0.10	0.001	0.002	0.004
B	2.90	3.00	3.10	0.114	0.118	0.122
B1	0.60	0.70	0.80	0.024	0.028	0.031
C	0.22	0.254	0.32	0.009	0.010	0.013
D	6.30	6.50	6.70	0.248	0.256	0.264
E	3.30	3.50	3.70	0.130	0.138	0.146
F		4.60			0.181	
F1		2.30			0.091	
G	0.70	0.90	1.10	0.028	0.035	0.043
H	1.50	1.75	2.00	0.059	0.069	0.079
J	6.70	7.00	7.30	0.264	0.276	0.287
K		0.90			0.035	
L	0	0.10	0.20	0	0.004	0.008

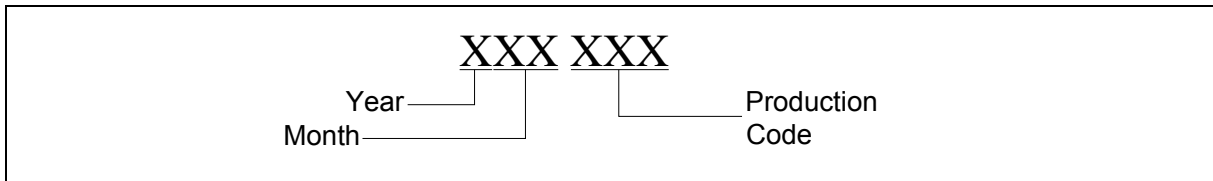
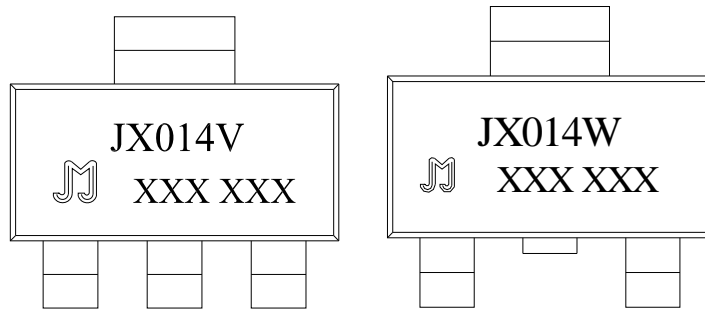
**FOOTPRINT-SOT-223-2L (dimensions in mm)**



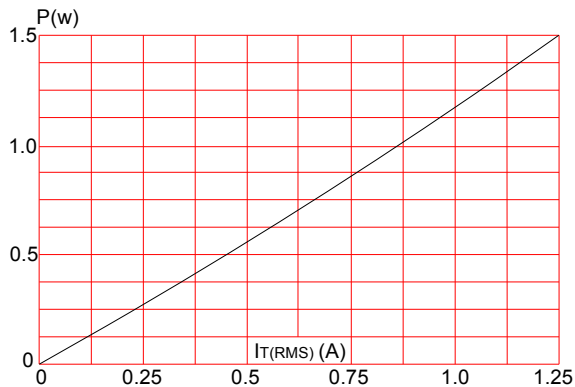
**PACKAGE INFORMATION**

PACKAGE	OUTLINE	REEL (PCS)	PER CARTON (PCS)	TAPE & REEL
SOT-223	TAPING	4,000	40,000	13 inch
SOT-223-2L	TAPING	4,000	40,000	13 inch

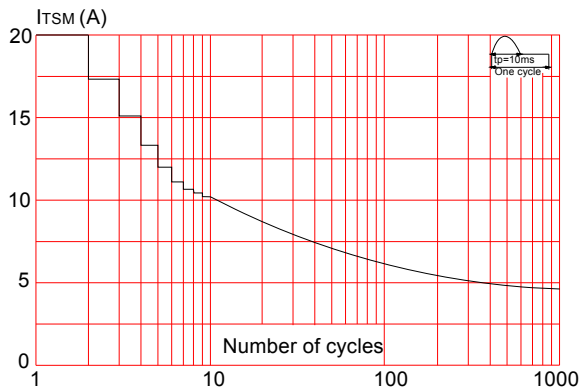
MARKING



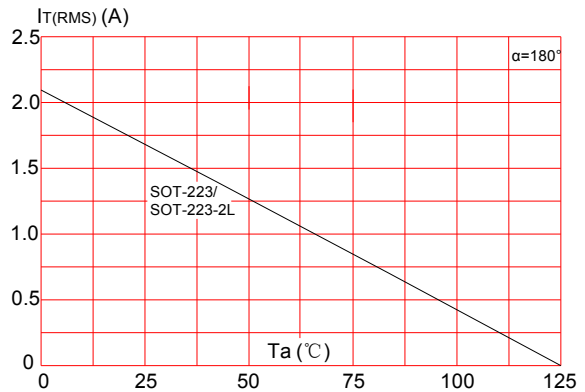
**FIG.1:** Maximum power dissipation versus RMS on-state current



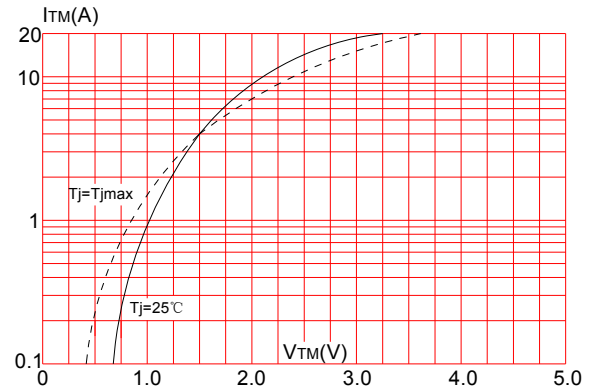
**FIG.3:** Surge peak on-state current versus number of cycles



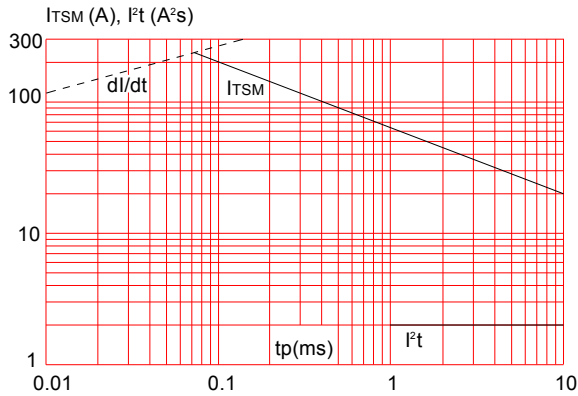
**FIG.2:** RMS on-state current versus ambient temperature (printed circuit board FR4, copper thickness:35μm)(full cycle)



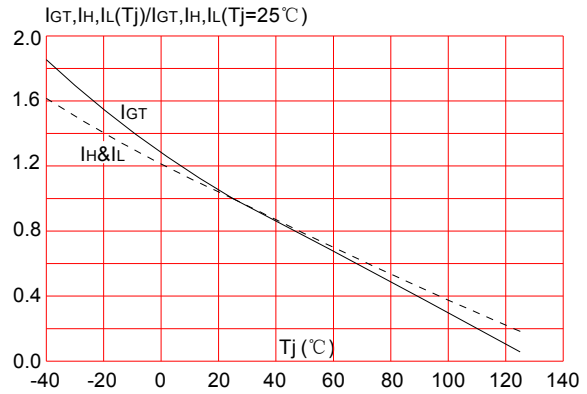
**FIG.4:** On-state characteristics (maximum values)



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

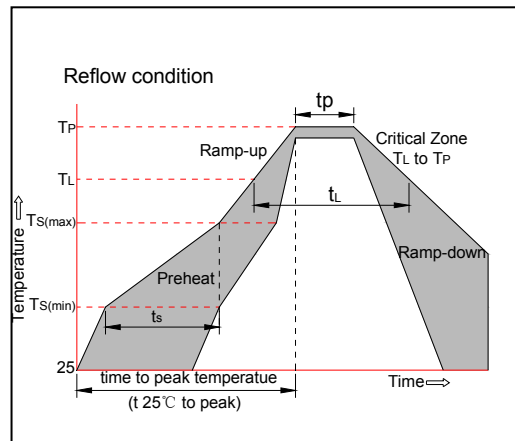


**FIG.6:** Relative variations of gate trigger current, holding current and latching current versus junction temperature




**SOLDERING PARAMETERS**

Reflow Condition		Pb-Free assembly (see figure at right)
Pre Heat	-Temperature Min ( $T_{s(\text{min})}$ )	+150°C
	-Temperature Max ( $T_{s(\text{max})}$ )	+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
$T_{s(\text{max})}$ 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



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