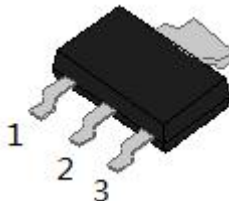
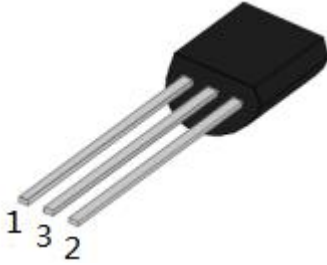
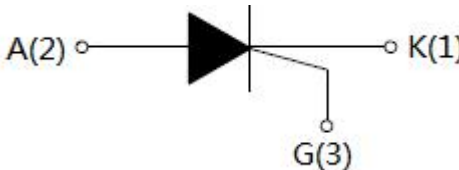


## SX011 Series Sensitive gate SCRs

### Description

The SX011 SCR series provide high  $dv/dt$  rate with strong resistance to electromagnetic interference. They are especially recommended for use on residual current circuit breaker, straight hair, igniter etc.

<p>SX011V</p> 	<p>SX011U</p> 
SOT-223	TO-92
	

### Maximum Ratings:

Characteristics	Symbol	Condition	Max.	Units
Storage junction temperature range	$T_J$	-	-40 to +110	°C
Operating junction temperature range	$T_{stg}$	-	-40 to +150	°C
Repetitive peak off-state voltage	$V_{DRM}$	-	800	V
Repetitive peak reverse voltage	$V_{RRM}$	-	800	V
RMS on-state current	$I_{(TRMS)}$	TO-92( $T_c=65^\circ\text{C}$ )	1	A
		SOT-223( $T_c=75^\circ\text{C}$ )		
Non repetitive surge peak on-state current( $t_p=10\text{ms}$ )	$I_{TSM}$	-	12	A
$I^2t$ value for fusing ( $t_p=10\text{ms}$ )	$I^2t$	-	0.72	$\text{A}^2\text{s}$
Critical rate of rise of on-state current	$di/dt$	-	50	$\text{A}/\mu\text{s}$
Peak gate current ( $t_p=20 \mu\text{s}$ , $T_j=110^\circ\text{C}$ )	$I_{GM}$	-	0.3	A
Peak gate power ( $t_p=20 \mu\text{s}$ , $T_j=110^\circ\text{C}$ )	$P_{GM}$	-	0.5	W
Average gate power dissipation( $T_j=110^\circ\text{C}$ )	$P_{G(AV)}$	-	0.1	W

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

Symbol	Condition	Min.	Typ.	Max.	Units
$I_{GT}$	$V_D=12\text{V } R_L=33\Omega$	-	40	200	$\mu\text{A}$
$V_{GT}$		-	0.6	0.8	V
$V_{GD}$	$V_D=V_{DRM} T_j=110^{\circ}\text{C}$	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	$V_D=2/3V_{DRM} T_j=110^{\circ}\text{C} R_{GK}=1\text{K}\Omega$	100	200	-	V/ $\mu\text{s}$

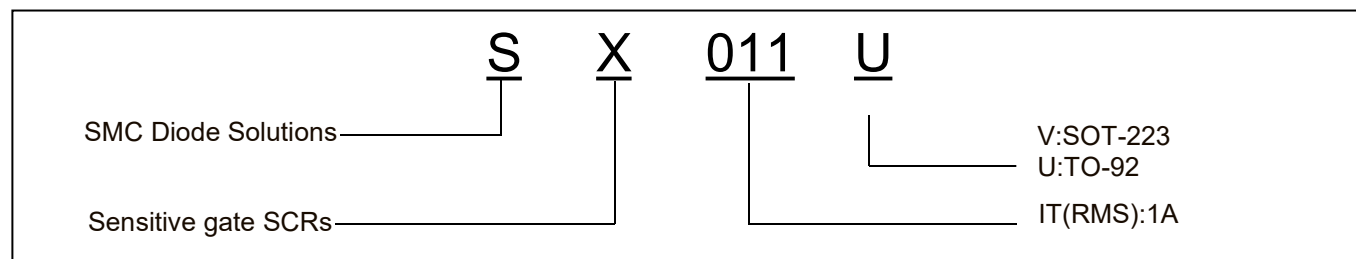
\* Pulse width < 300  $\mu\text{s}$ , duty cycle < 2%

**Static Characteristics**

Symbol	Condition	Max.	Units
$V_{TM}$	$I_T=2\text{A } t_p=380\mu\text{s}, T_j=25^{\circ}\text{C}$	1.7	V
$I_{DRM}$	$V_D=V_{DRM} V_R=V_{RRM}, T_j=25^{\circ}\text{C}$	5	$\mu\text{A}$
$I_{RRM}$	$V_D=V_{DRM} V_R=V_{RRM}, T_j=110^{\circ}\text{C}$	100	$\mu\text{A}$

**Thermal Resistances**

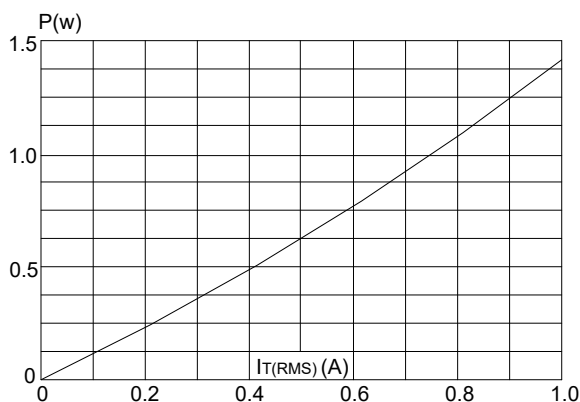
Symbol	Condition	Value	Units
$R_{th(j-c)}$	Junction to case	TO-92	70
		SOT-223	25
			$^{\circ}\text{C}/\text{W}$

**Ordering Information**


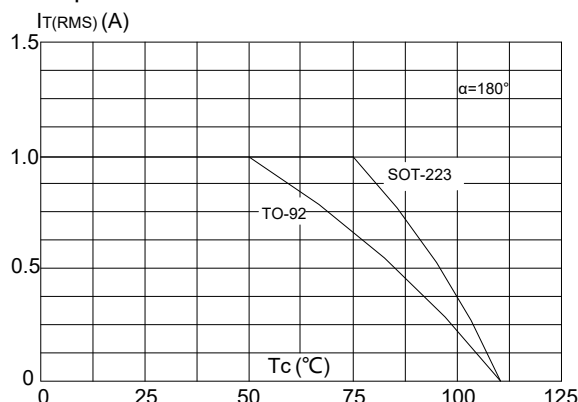
Device	Package	Shipping
SX011V	SOT-223	8000pcs/ reel
SX011VTR	SOT-223	8000pcs/ reel
SX011U	TO-92	2000pcs/ reel
SX011UTR	TO-92	2000pcs/ reel

**Ratings and Characteristics Curves**

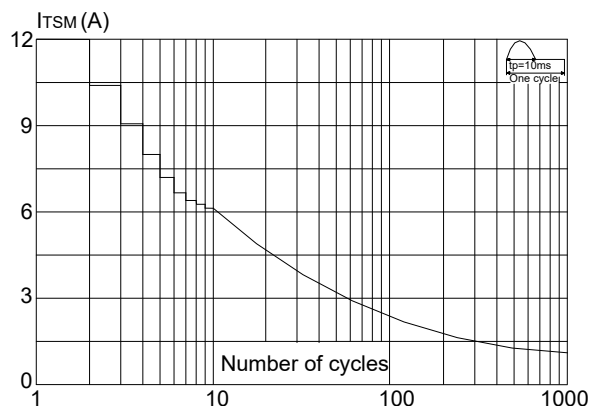
**FIG.1:** Maximum power dissipation versus RMS on-state current



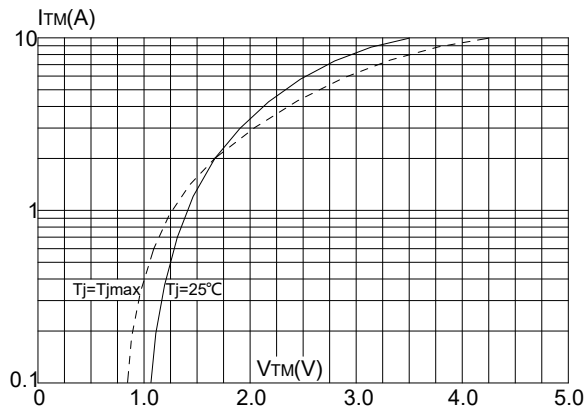
**FIG.2:** RMS on-state current versus case temperature



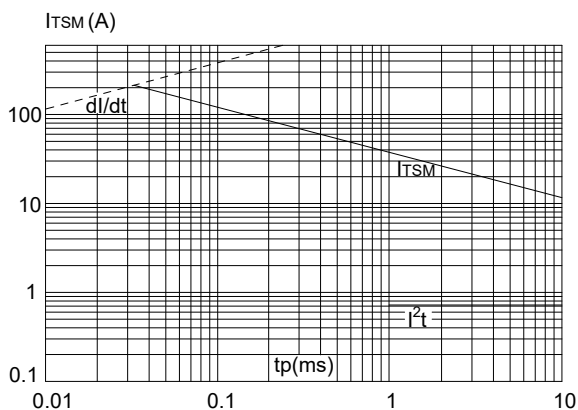
**FIG.3:** Surge peak on-state current versus number of cycles



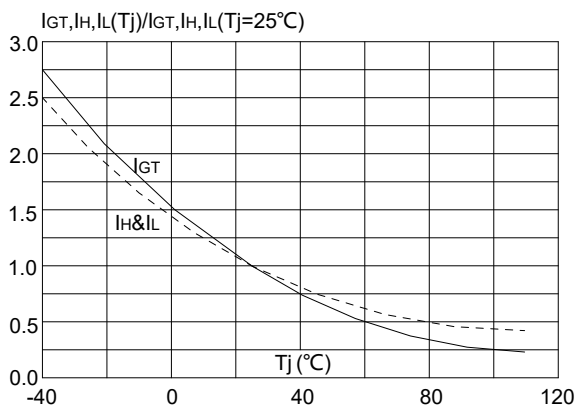
**FIG.4:** On-state characteristics (maximum values)



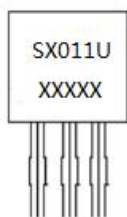
**FIG.5:** Non-repetitive surge peak on-state current for a sinusoidal pulse with width  $t_p < 10\text{ms}$  ( $di/dt \leq 50\text{A}/\mu\text{s}$ )



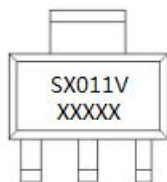
**FIG.6:** Relative variations of gate trigger current, holding current and latching current versus junction temperature



## Marking Diagram



SX011U

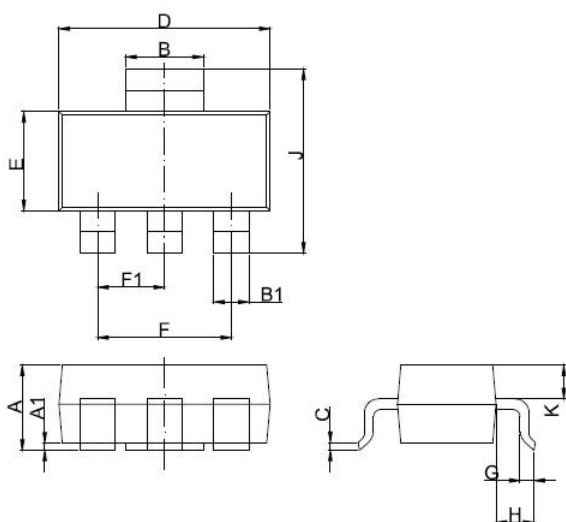


SX011V

Where XXXXX is YYWWL

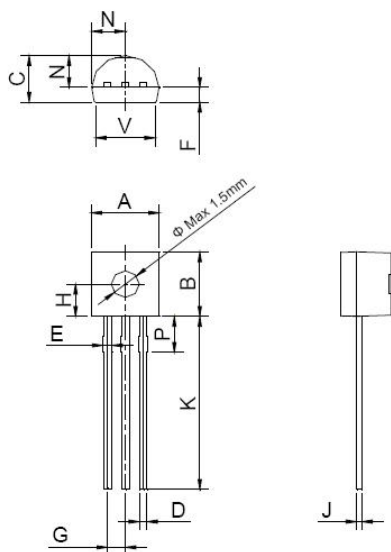
S = SMC  
X = Sensitive gate SCRs  
011 = Forward Current (1A)  
V/U = Package type  
YY = Year  
WW = Week  
L = Lot Number

## Mechanical Dimensions SOT-223



SYMBOL	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
L						
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	1.50	1.5	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

## Mechanical Dimensions TO-92



SYMBOL	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
L						
A	4.45	-	5.20	0.175	-	0.205
B	4.32	-	5.33	0.170	-	0.210
C	3.18	-	4.19	0.125	-	0.165
D	0.407	-	0.533	0.016	-	0.021
E	0.60	-	0.80	0.024	-	0.031
F	-	1.1	-	-	0.043	-
G	-	1.27	-	-	0.050	-
H	-	2.30	-	-	0.091	-
J	0.36	-	0.50	0.014	-	0.020
K	12.70	-	15.0	0.500	-	0.591
N	2.04	-	2.66	0.080	-	0.105
P	1.86	-	2.06	0.073	-	0.081
V	-	-	4.3	-	-	0.169

**Technical Data**  
**Data Sheet N2033, Rev.-**



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