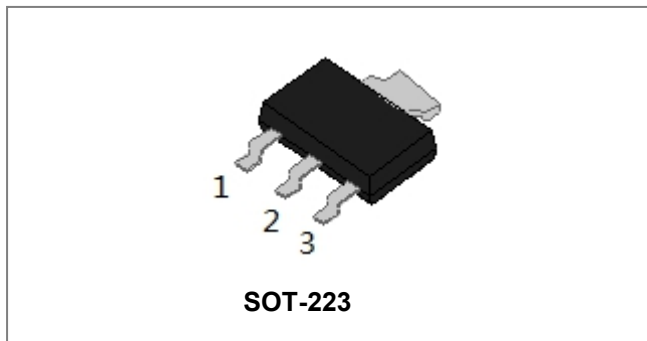
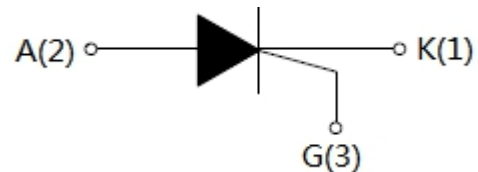


SX020V Sensitive gate SCRs



Circuit Diagram



Description

The SX020V 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.

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}	-	600	V
Repetitive peak reverse voltage	V_{RRM}	-	600	V
RMS on-state current	$I_{(TRMS)}$	SOT-223(TC=80°C)	2	A
Non repetitive surge peak on-state current($t_p=10ms$)	I_{TSM}	-	20	A
I^2t value for fusing ($t_p=10ms$)	I^2t	-	2	A ² s
Critical rate of rise of on-state current	di/dt	-	50	A/ μs
Peak gate current ($t_p=20 \mu s$, $T_J=110^\circ C$)	I_{GM}	-	0.2	A
Peak gate power ($t_p=20 \mu s$, $T_J=110^\circ C$)	P_{GM}	-	0.5	W
Average gate power dissipation($T_J=110^\circ C$)	$P_{G(AV)}$	-	0.1	W

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

Symbol	Condition	Min.	Typ.	Max.	Units
I_{GT}	$V_D=12\text{V } R_L=33\Omega$	-	50	200	μA
V_{GT}		-	0.6	0.8	V
V_{GD}	$V_D=V_{DRM} \ T_j=110^{\circ}\text{C}$	0.2	-	-	V
I_L	$I_G=1.2 \ I_{GT}$	-	-	6	mA
I_H	$I_T=0.05\text{A}$	-	-	5	mA
dV/dt	$V_D=2/3V_{DRM} \ T_j=110^{\circ}\text{C} \ R_{GK}=1\text{K}\Omega$	20	-	-	V/ μs

Static Characteristics

Symbol	Condition	Max.	Units
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	μA
I_{RRM}	$V_D=V_{DRM} \ V_R=V_{RRM}, T_j=110^{\circ}\text{C}$	100	μA

Thermal Resistances

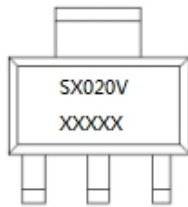
Symbol	Condition		Value	Units
$R_{th(j-c)}$	Junction to case	SOT-223	7.3	$^{\circ}\text{C/W}$

Ordering Information

SMC Diode Solutions		<u>S</u>	<u>X</u>	<u>020</u>	<u>V</u>	
Sensitive gate SCRs						V:SOT-223
						IT(RMS):2A

Device	Package	Shipping
SX020V	SOT-223	4000pcs/ reel
SX020VTR	SOT-223	4000pcs/ reel

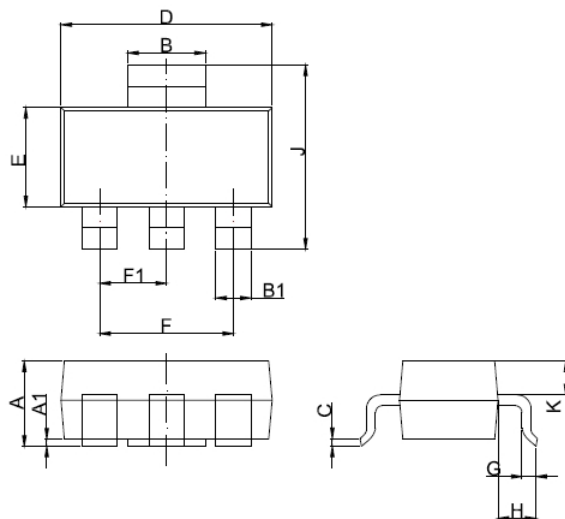
Marking Diagram



Where XXXXX is YYWWL

S = SMC
X = Sensitive gate SCRs
020 = Forward Current (2A)
V = Package type
YY = Year
WW = Week
L = Lot Number

Mechanical Dimensions SOT-223



SYMBO L	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	1.50	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

Ratings and Characteristics Curves

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

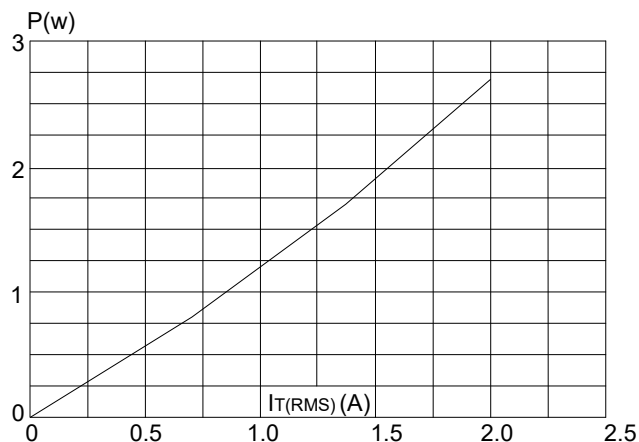


FIG.2: RMS on-state current versus case temperature

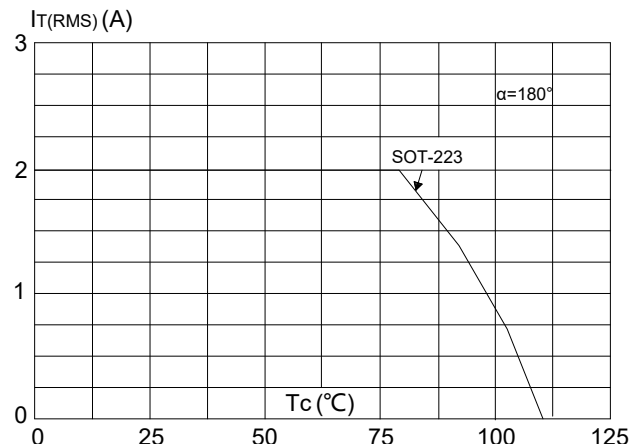


FIG.3: Surge peak on-state current versus number of cycles

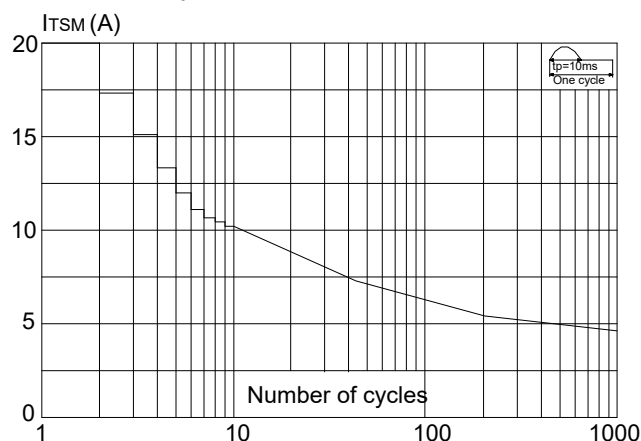


FIG.4: On-state characteristics (maximum values)

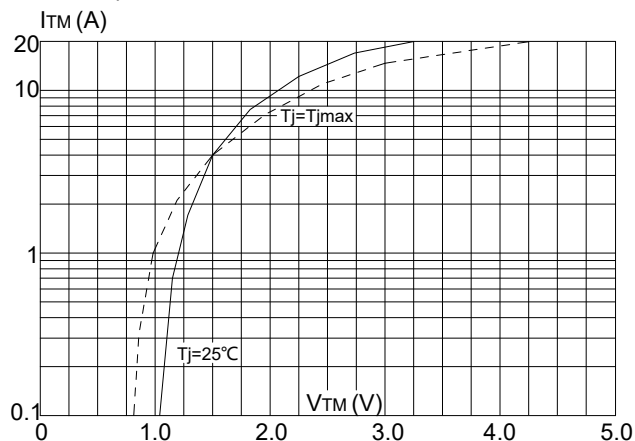


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 10\text{ms}$, and corresponding value of I^2t ($di/dt < 50\text{A}/\mu\text{s}$)

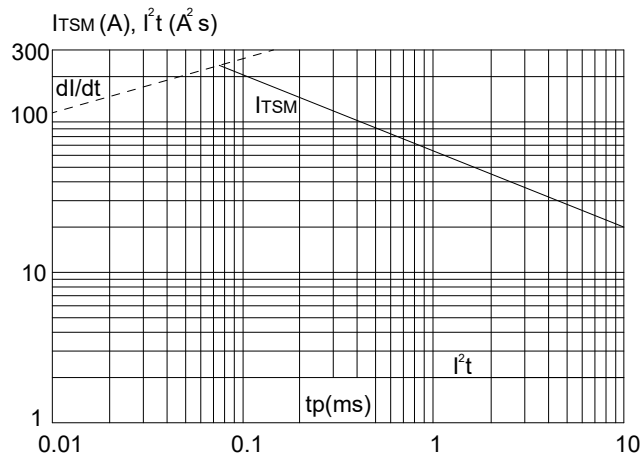
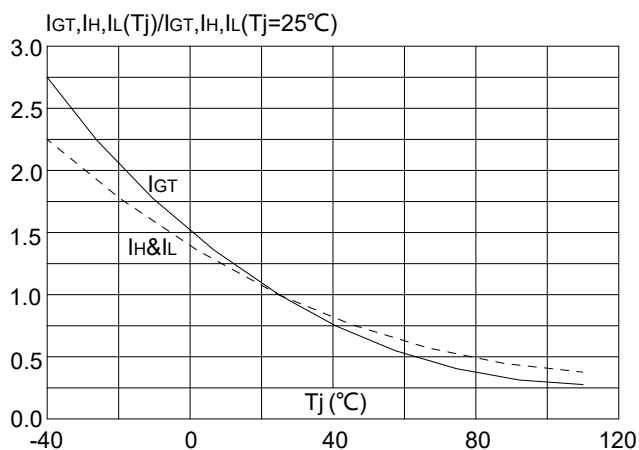


FIG.6: Relative variations of gate trigger current, holding current and latching current versus junction temperature



Technical Data
Data Sheet N2044, Rev.-



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