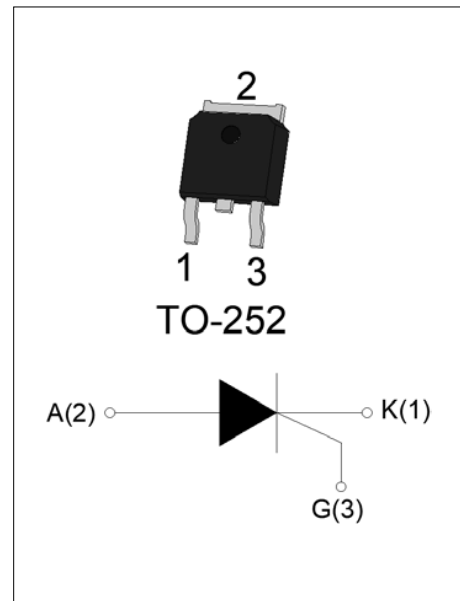


**DESCRIPTION:**

The SX080K SCR provides high  $dV/dt$  rate with strong resistance to electromagnetic interface. It is especially recommended for use on residual current circuit breaker, straight hair, igniter etc. Package TO-252 is RoHS compliant.

**MAIN FEATURES**

Symbol	Value	Unit
$I_{T(RMS)}$	8	A
$V_{DRM} / V_{RRM}$	800	V
$I_{GT}$	$\leq 200$	$\mu A$


**ABSOLUTE MAXIMUM RATINGS**

Parameter	Symbol	Value	Unit
Storage junction temperature range	$T_{stg}$	-40-150	$^{\circ}C$
Operating junction temperature range	$T_j$	-40-110	$^{\circ}C$
Repetitive peak off-state voltage ( $T_j=25^{\circ}C$ )	$V_{DRM}$	800	V
Repetitive peak reverse voltage ( $T_j=25^{\circ}C$ )	$V_{RRM}$	800	V
Average on-state current ( $T_c \leq 55^{\circ}C$ )	$I_{T(AV)}$	5	A
RMS on-state current ( $T_c \leq 55^{\circ}C$ )	$I_{T(RMS)}$	8	A
Non repetitive surge peak on-state current ( $t_p=10ms, T_j=25^{\circ}C$ )	$I_{TSM}$	80	A
Non repetitive surge peak on-state current ( $t_p=8.3ms, T_j=25^{\circ}C$ )		88	
$I^2t$ value for fusing ( $t_p=10ms, T_j=25^{\circ}C$ )	$I^2t$	32	$A^2s$
Critical rate of rise of on-state current ( $I_G=2 \times I_{GT}, f=100Hz, T_j=110^{\circ}C$ )	$di/dt$	100	$A/\mu s$
Peak gate current ( $t_p=20\mu s, T_j=110^{\circ}C$ )	$I_{GM}$	4	A
Average gate power dissipation ( $T_j=110^{\circ}C$ )	$P_{G(AV)}$	1	W
Peak gate power	$P_{GM}$	10	W

Peak pulse voltage ( $T_j=25^\circ\text{C}$ ; non-repetitive, off-state; FIG.8)	$V_{pp}$	0.5	kV
--	----------	-----	----

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

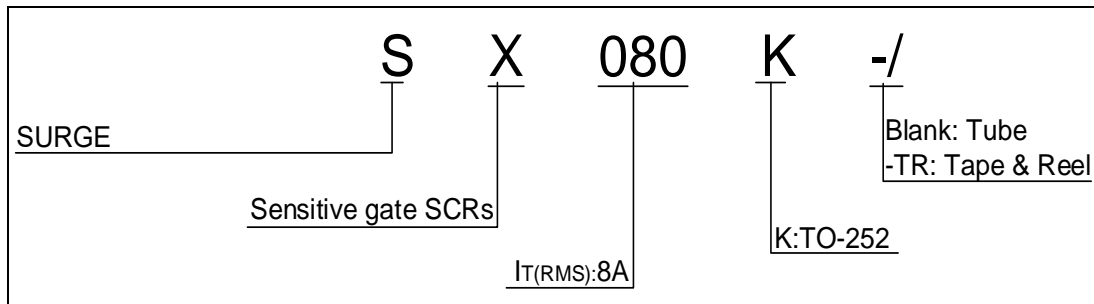
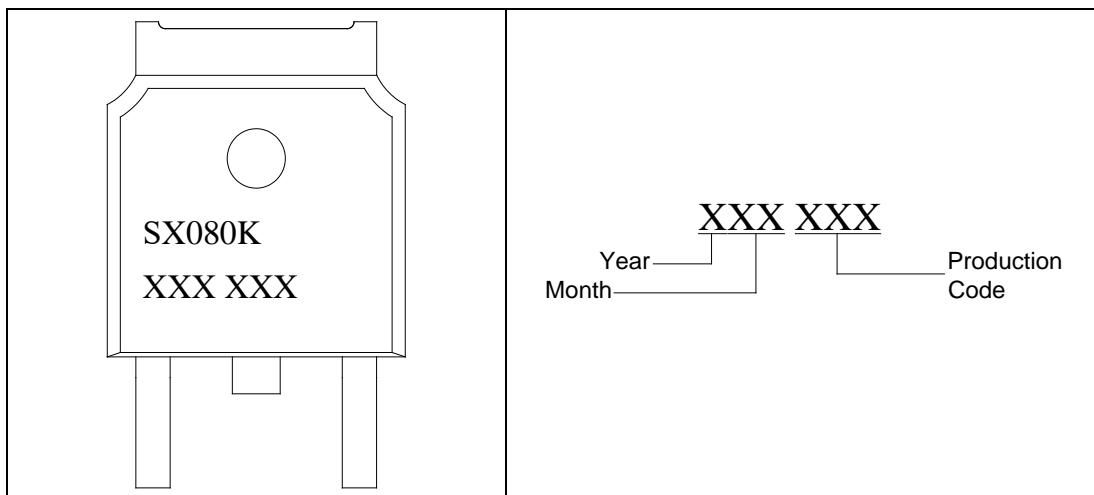
Symbol	Test Condition	Value			Unit
		MIN.	TYP.	MAX.	
$I_{GT}$	$V_D=12\text{V}$ $R_L=33\Omega$	-	60	200	$\mu\text{A}$
$V_{GT}$		-	-	0.8	V
$V_{GD}$	$V_D=V_{DRM}$ $T_j=110^\circ\text{C}$	0.2	-	-	V
$I_L$	$I_G=1.2 I_{GT}$	-	-	6	mA
$I_H$	$I_T=0.05\text{A}$	-	-	5	mA
dV/dt	$V_D=540\text{V}$ $T_j=110^\circ\text{C}$ $R_{GK}=1\text{k}\Omega$	50	-	-	V/ $\mu\text{s}$
	$V_D=540\text{V}$ $T_j=110^\circ\text{C}$ $R_{GK}=220\Omega$	200	-	-	
$t_{on}$	$I_G=10\text{mA}$ $I_A=20\text{mA}$ $I_R=2\text{mA}$ $T_j=25^\circ\text{C}$	-	2	-	$\mu\text{s}$
$t_{off}$		-	70	-	$\mu\text{s}$

**STATIC CHARACTERISTICS**

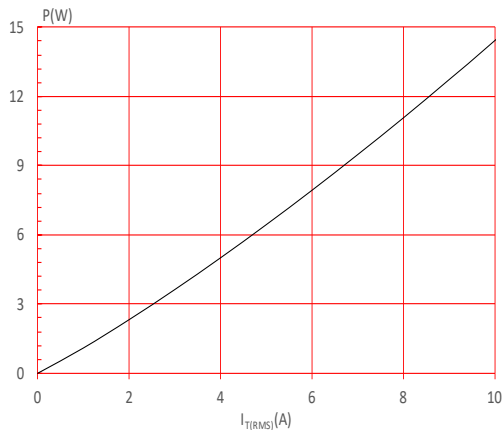
Symbol	Parameter		Value(MAX.)	Unit
$V_{TM}$	$I_T=16\text{A}$ $t_p=380\mu\text{s}$	$T_j=25^\circ\text{C}$	1.6	V
$V_{TO}$	Threshold voltage	$T_j=110^\circ\text{C}$	0.79	V
$R_D$	Dynamic Resistance	$T_j=110^\circ\text{C}$	0.04	$\Omega$
$I_{DRM}$	$V_D=V_{DRM}$ $V_R=V_{RRM}$	$T_j=25^\circ\text{C}$	5	$\mu\text{A}$
$I_{RRM}$		$T_j=110^\circ\text{C}$	0.5	mA

**THERMAL RESISTANCES**

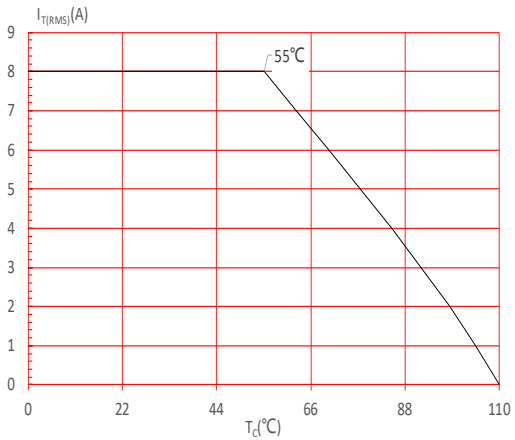
Symbol	Parameter	Value	Unit
$R_{th(j-c)}$	junction to case (DC)	5	$^\circ\text{C}/\text{W}$
$R_{th(j-a)}$	junction to ambient (DC)	120	$^\circ\text{C}/\text{W}$

**ORDERING INFORMATION**

**MARKING**


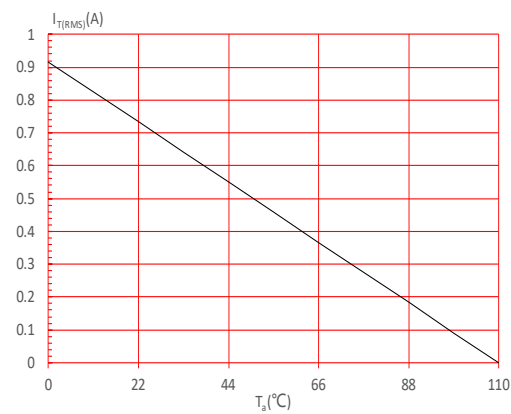
**FIG.1:** Maximum power dissipation versus RMS on-state current



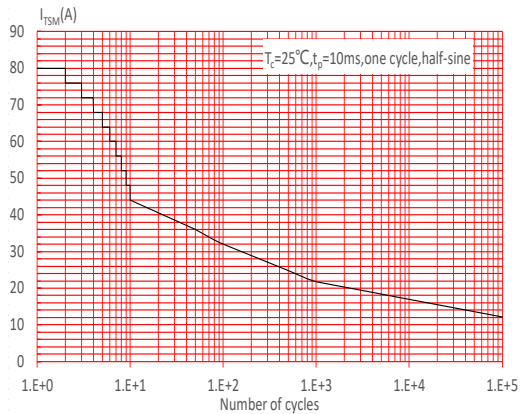
**FIG.2:** RMS on-state current versus case temperature



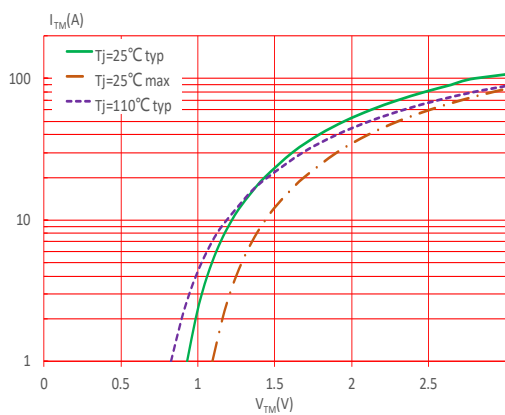
**FIG.3:** RMS on-state current versus ambient temperature (printed circuit board FR4,copper thickness:35µm)(full cycle)



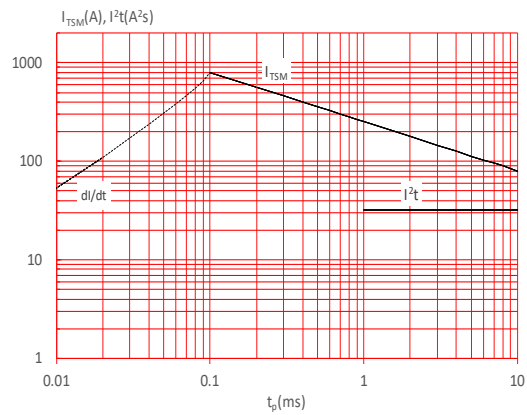
**FIG.4:** Surge peak on-state current versus number of cycles



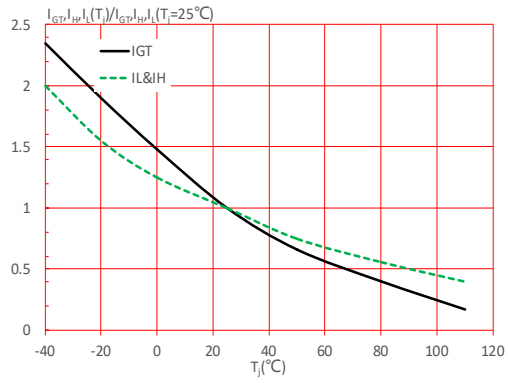
**FIG.5:** On-state characteristics

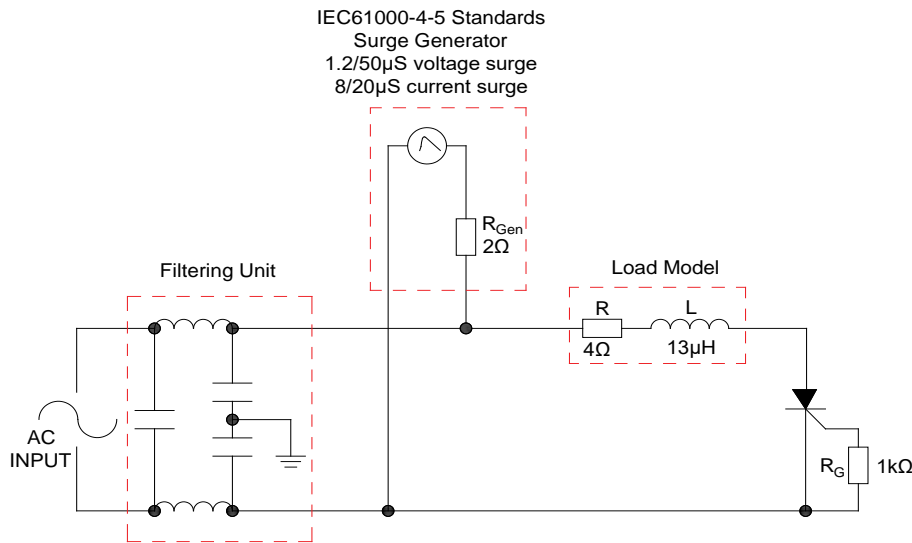


**FIG.6:** Non-repetitive surge peak on-state current for a sinusoidal pulse with width  $t_p < 10\text{ms}$ , and corresponding value of  $I^2t$  ( $di/dt < 100\text{A}/\mu\text{s}$ )

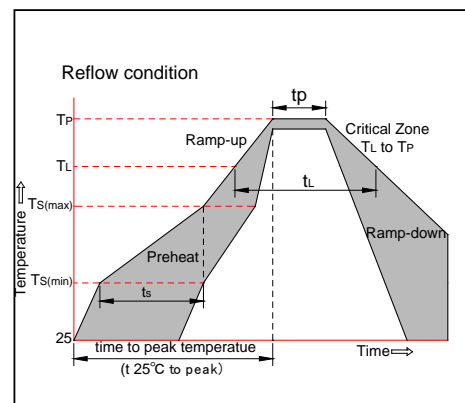


**FIG.7:** Relative variations of gate trigger current, holding current and latching current versus junction temperature



**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

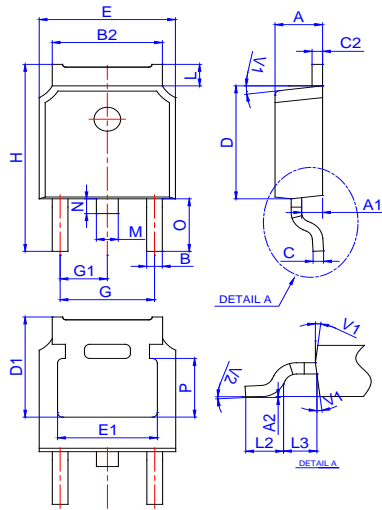


**ORDERING INFORMATION**

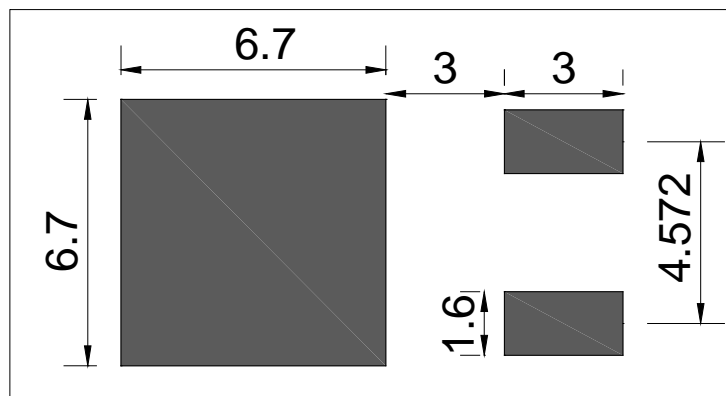
Order code	Voltage $V_{DRM}/V_{RRM}$ (V)	IGT( $\mu$ A)	Package	Base qty. (pcs)	Delivery mode
SX080K	800	$\leq 200$	TO-252	80	Tube
SX080K-TR				2,500	Tape & Reel

**Document Revision History**

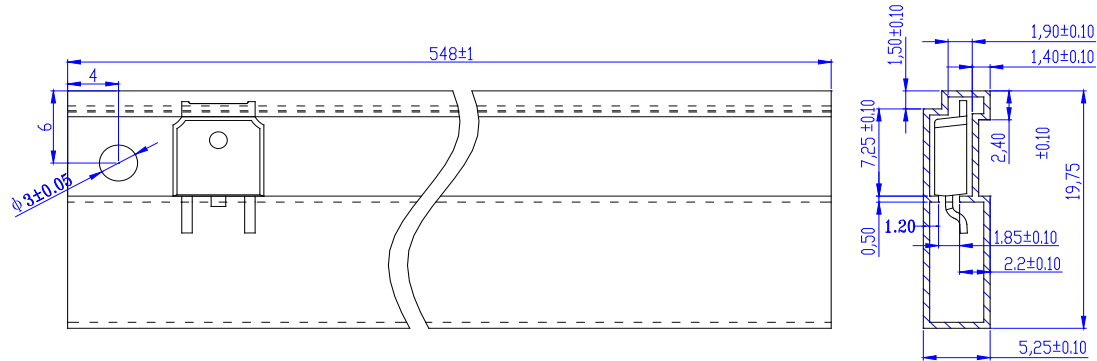
Date	Revision	Changes
May 18, 2023	A.1.0	Last update
Oct.22, 2025	A.1.1	Revise PACKAGE MECHANICAL DATA

**PACKAGE MECHANICAL DATA**


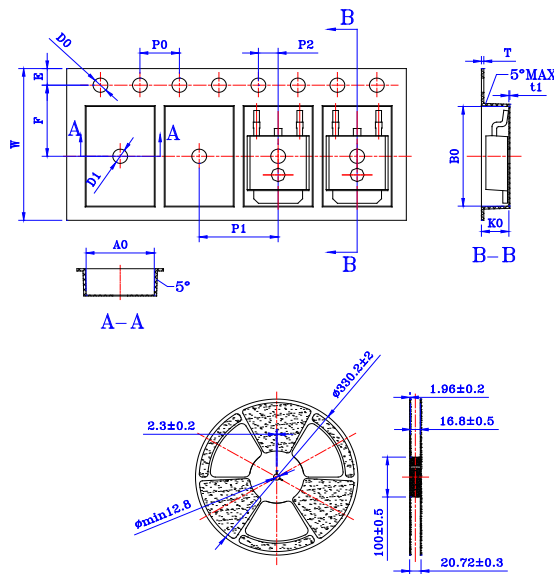
Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.10		2.50	0.083		0.098
A1	0.80		1.20	0.031		0.047
A2	0		0.15	0		0.006
B	0.66		0.86	0.026		0.034
B2	5.18		5.48	0.202		0.216
C	0.40		0.60	0.016		0.024
C2	0.44		0.58	0.017		0.023
D	5.90		6.30	0.232		0.248
D1	5.30REF			0.209REF		
E	6.40		6.80	0.252		0.268
E1	4.63			0.182		
G	4.47		4.67	0.176		0.184
G1	2.18		2.38	0.086		0.094
H	9.50		10.70	0.374		0.421
L	1.09		1.21	0.043		0.048
L2	1.35		1.65	0.053		0.065
L3	1.10		1.50	0.043		0.059
M	0.65		0.95	0.026		0.037
N	0.65		0.95	0.026		0.037
O	2.80		3.20	0.110		0.126
P	3.10		3.30	0.122		0.130
V1		7°			7°	
V2	0°		6°	0°		6°

**FOOTPRINT-TO-252 (dimensions in mm)**


## DELIVERY MODE



PACKAGE	OUTLINE	TUBE (PCS)	INNER BOX (PCS)	PER CARTON
TO-252	TUBE	80	4,000	20,000



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
W	15.90	16.00	16.10	0.626	0.630	0.634
E	1.65	1.75	1.85	0.065	0.069	0.073
F	7.40	7.50	7.60	0.291	0.295	0.299
D0	1.50	1.55	1.60	0.059	0.060	0.063
D1	1.50	-	-	0.059	-	-
P0	3.90	4.00	4.10	0.154	0.157	0.161
P1	7.90	8.00	8.10	0.311	0.315	0.319
P2	1.90	2.00	2.10	0.075	0.079	0.083
10P0	39.80	40.00	40.20	1.567	1.575	1.583
A0	6.80	6.90	7.00	0.267	0.272	0.276
B0	10.40	10.50	10.60	0.408	0.413	0.417
K0	2.60	2.70	2.80	0.102	0.106	0.110
T	0.25	0.30	0.35	0.010	0.012	0.014
t1	0.10	-	-	0.004	-	-

PACKAGE	OUTLINE	REEL (PCS)	PER CARTON (PCS)	TAPE & REEL
TO-252	TAPING	2,500	25,000	13 inch

Information furnished in this document is believed to be accurate and reliable. However, Surge Components assumes no responsibility for the consequences of use without consideration for such information nor use beyond it. Information mentioned in this document is subject to change without notice.

Products and information provided in this document have no infringement of patents. Surge Components assumes no responsibility for any infringement of other rights of third parties which may result from the use of such products and information. This document supersedes and replaces all information previously supplied.