

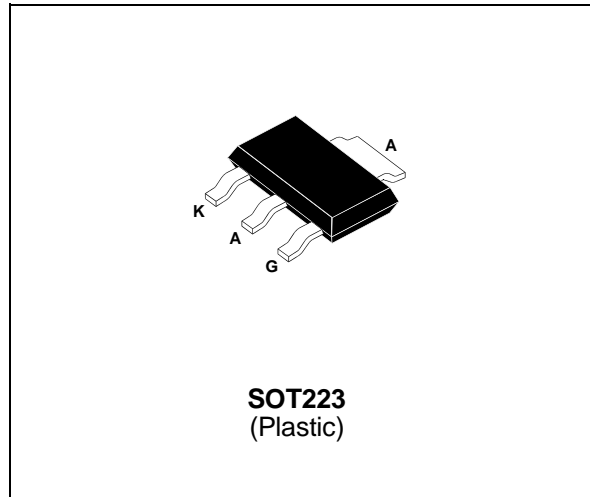
SENSITIVE GATE SCR

FEATURES

- $I_{T(RMS)} = 1.4A$
- $V_{DRM} = 200V$ to $800V$
- Low $I_{GT} < 200 \mu A$

DESCRIPTION

The X02xxxN series of SCRs uses a high performance TOP GLASS PNP technology. These parts are intended for general purpose high volume applications using surface mount technology.



ABSOLUTE RATINGS (limiting values)

Symbol	Parameter	Value	Unit	
$I_{T(RMS)}$ *	RMS on-state current (180° conduction angle)	$T_{tab} = 90^{\circ}C$	1.4	A
		$T_a = 75^{\circ}C$	1.0	A
$I_{T(AV)}$ *	Mean on-state current (180° conduction angle)	$T_{tab} = 90^{\circ}C$	0.9	A
		$T_a = 75^{\circ}C$	0.64	A
I_{TSM}	Non repetitive surge peak on-state current (T_j initial = $25^{\circ}C$)	$t_p = 8.3$ ms	25	A
		$t_p = 10$ ms	22.5	A
I^2t	I^2t Value for fusing	$t_p = 10$ ms	2.5	A^2s
di/dt	Critical rate of rise of on-state current $I_G = 10$ mA $di_G/dt = 0.1$ A/ μs .	30	A/ μs	
T_{stg} T_j	Storage and operating junction temperature range	- 40, + 150 - 40, + 125	$^{\circ}C$	
TI	Maximum lead temperature for soldering during 10s	260	$^{\circ}C$	

* : With $5cm^2$ copper ($e=35\mu m$) surface under tab.

Symbol	Parameter	Voltage				Unit
		B	D	M	N	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage $T_j = 125^{\circ}C$ $R_{GK} = 1K\Omega$	200	400	600	800	V

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THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
Rth(j-a)	Junction to ambient *	60	°C/W
Rth(j-t)	Junction to tab for DC	25	°C/W

* : With 5cm² copper (e=35µm) surface under tab.

GATE CHARACTERISTICS (maximum values)

$P_{G(AV)} = 0.2 \text{ W}$ $P_{GM} = 3 \text{ W}$ ($t_p = 20 \mu\text{s}$) $I_{GM} = 1.2 \text{ A}$ ($t_p = 20 \mu\text{s}$)

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions				Sensitivity			Unit
					02	03	05	
I _{GT}	V _D =12V (DC) R _L =140Ω	T _j = 25°C	MIN		20	20	µA	
			MAX	200	200	50		
V _{GT}	V _D =12V (DC) R _L =140Ω	T _j = 25°C	MAX	0.8			V	
V _{GD}	V _D =V _{DRM} R _L =3.3kΩ R _{GK} = 1 KΩ	T _j = 125°C	MIN	0.1			V	
V _{RGM}	I _{RG} = 10µA	T _j = 25°C	MIN	8			V	
t _{gd}	V _D =V _{DRM} I _{TM} = 3 x I _{T(AV)} dI _G /dt = 0.1A/µs I _G = 10mA	T _j = 25°C	TYP	0.5			µs	
I _H	I _T = 50mA R _{GK} = 1 KΩ	T _j = 25°C	MAX	5			mA	
I _L	I _G =1mA R _{GK} = 1 KΩ	T _j = 25°C	MAX	6			mA	
V _{TM}	I _{TM} = 2.8A t _p = 380µs	T _j = 25°C	MAX	1.5			V	
I _{DRM} I _{RDM}	V _D = V _{DRM} R _{GK} = 1 KΩ V _R = V _{RDM}	T _j = 25°C	MAX	5			µA	
		T _j = 110°C	MAX	200			µA	
dV/dt	V _D =67%V _{DRM} R _{GK} = 1 KΩ	T _j = 110°C	TYP	15	20	15	V/µs	
t _q	I _{TM} = 3 x I _{T(AV)} V _R =35V dI/dt=10A/µs t _p =100µs dV/dt=2V/µs V _D = 67%V _{DRM} R _{GK} = 1 KΩ	T _j = 110°C	MAX	100			µs	

ORDERING INFORMATION

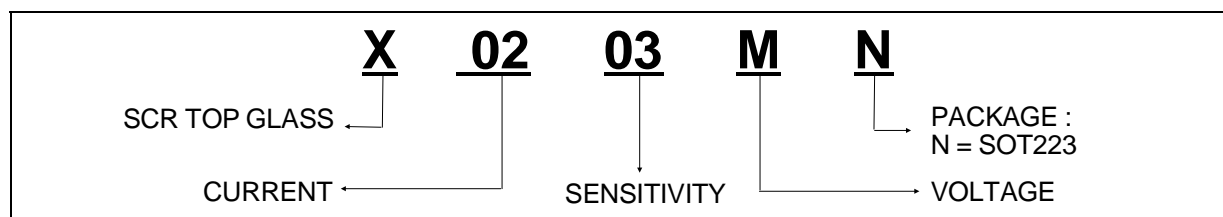


Fig.1 : Maximum average power dissipation versus average on-state current.

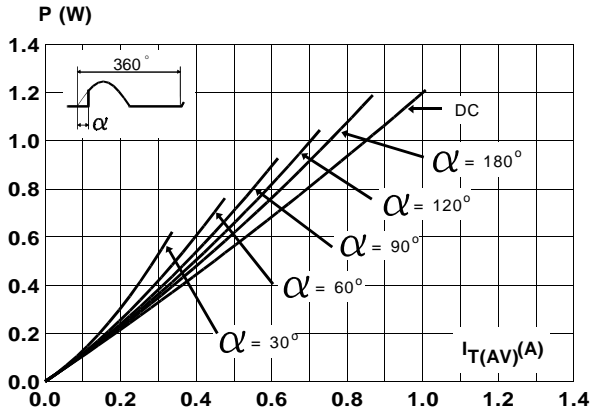


Fig.2 : Correlation between maximum average power dissipation and maximum allowable temperature (T_{amb} and T_{tab}).

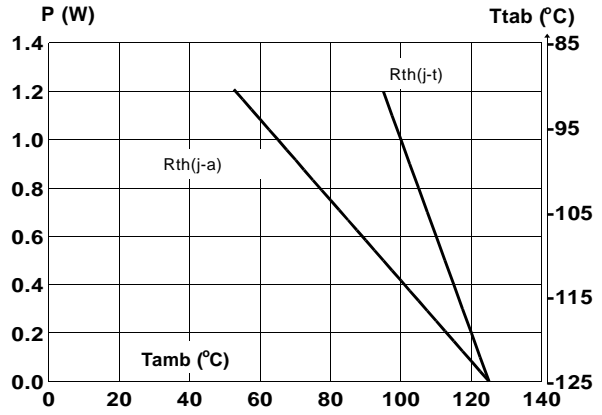


Fig.3 : Average on-state current versus tab temperature.

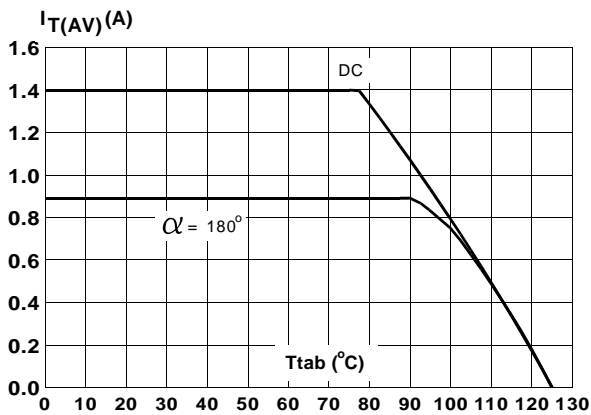


Fig.4 : Relative variation of thermal impedance junction to ambient versus pulse duration.

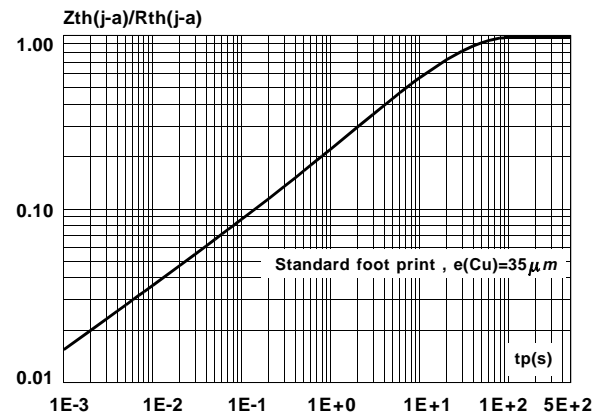


Fig.5 : Relative variation of gate trigger current and holding current versus junction temperature.

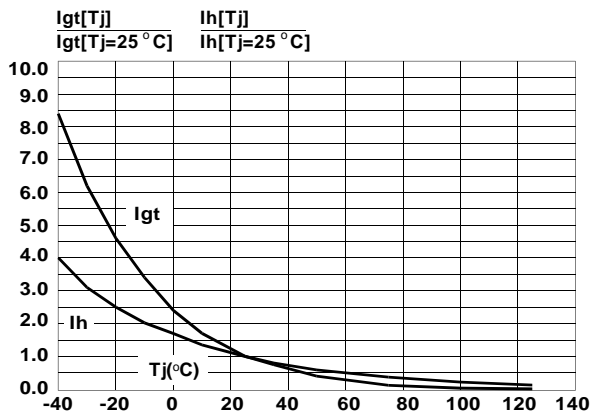
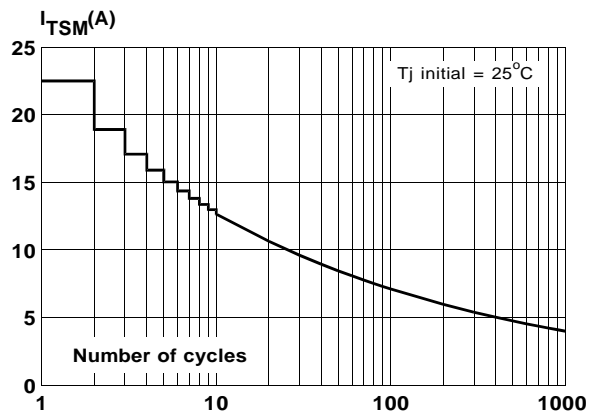


Fig.6 : Non repetitive surge peak on-state current versus number of cycles.



X02xxxN

Fig.7 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : $t_p \leq 10\text{ms}$, and corresponding value of I^2t .

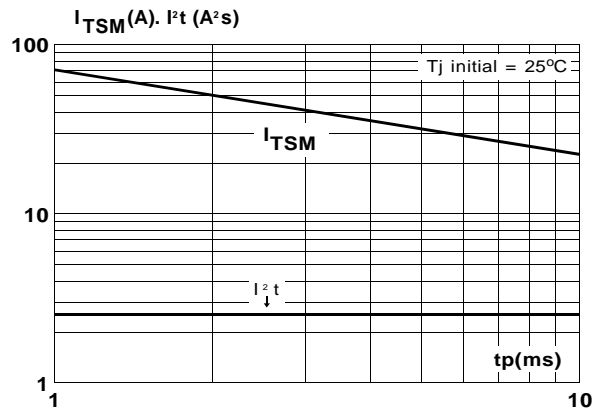
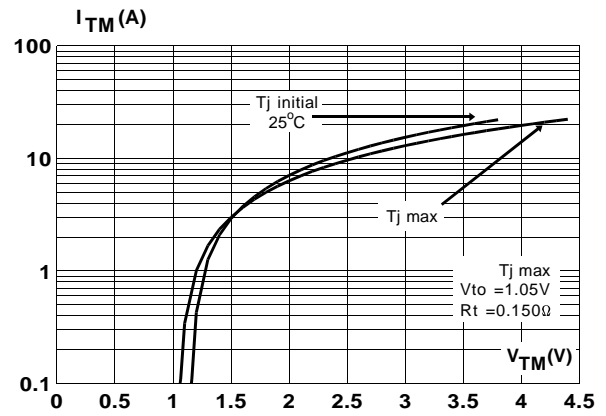
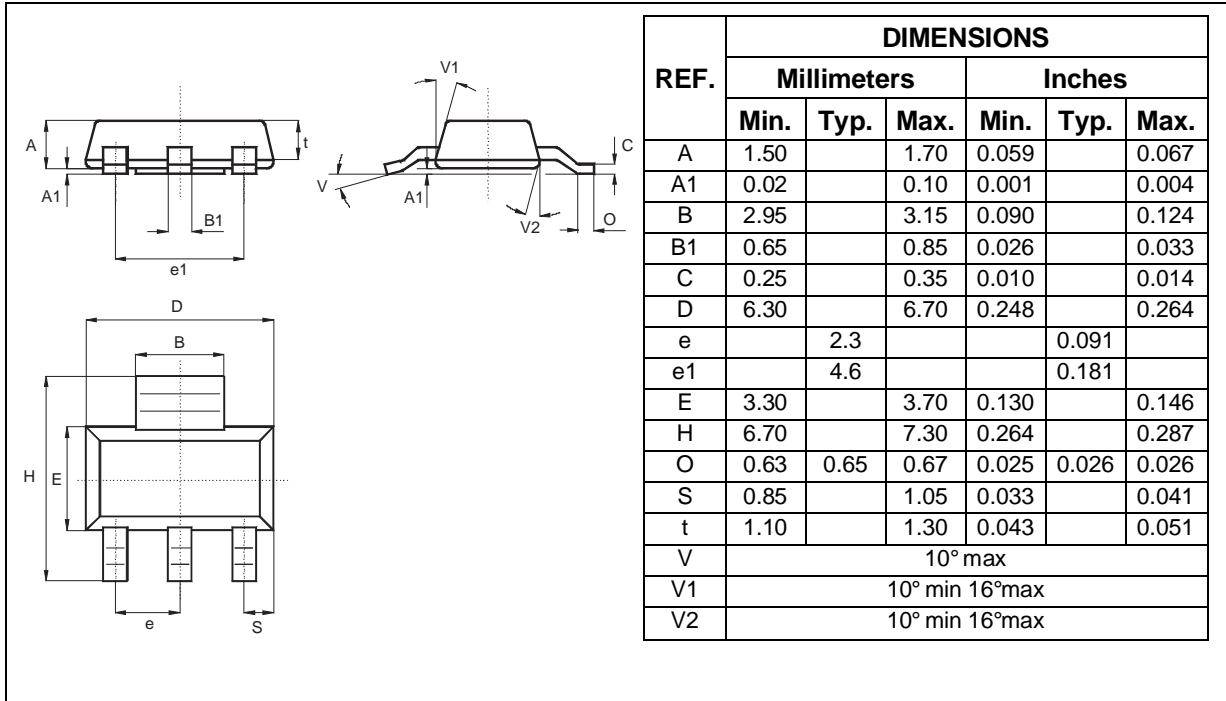


Fig.8 : On-state characteristics (maximum values).



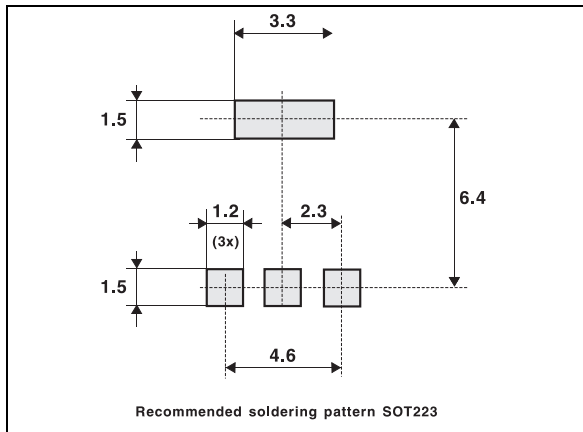
PACKAGE MECHANICAL DATA
SOT223 (Plastic)



Weight : 0.11 g

MARKING

FOOT PRINT



Type	Marking
X0202BN	X2B
X0202DN	X2D
X0202MN	X2M
X0202NN	X2N
X0203BN	X3B
X0203DN	X3D
X0203MN	X3M
X0203NN	X3N
X0205BN	X5B
X0205DN	X5D
X0205MN	X5M
X0205NN	X5N

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