

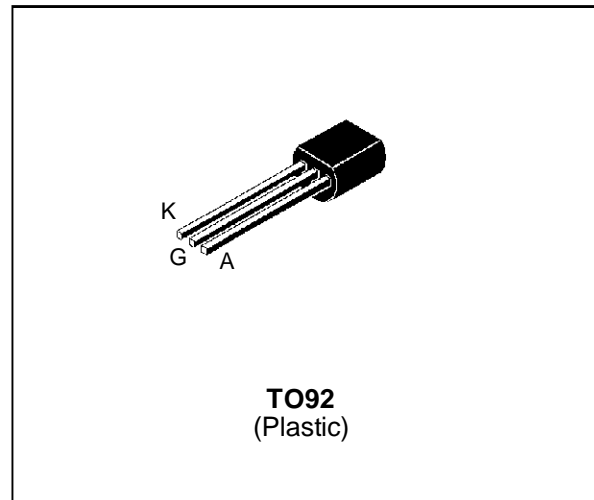
## SENSITIVE GATE SCR

### FEATURES

- $I_{T(RMS)} = 1.25A$
- $V_{DRM} = 200V$  to  $800V$
- Low  $I_{GT} < 200 \mu A$

### DESCRIPTION

The X02xxxA series of SCRs uses a high performance TOP GLASS PNP technology. These parts are intended for general purpose applications where low gate sensitivity is required.



### ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$	RMS on-state current (180° conduction angle)	$T_I = 60^\circ C$	1.25	A
$I_{T(AV)}$	Mean on-state current (180° conduction angle)	$T_I = 60^\circ C$	0.8	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	
$I^2t$	$I^2t$ 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/ $\mu s$ .		30	A/ $\mu s$
$T_{stg}$ $T_j$	Storage and operating junction temperature range		- 40, + 150 - 40, + 125	$^\circ C$
$T_I$	Maximum lead temperature for soldering during 10s at 2mm from case		260	$^\circ C$

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

## X02xxxA

### THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
Rth(j-a)	Junction to ambient	150	°C/W
Rth(j-l)	Junction to leads for DC	60	°C/W

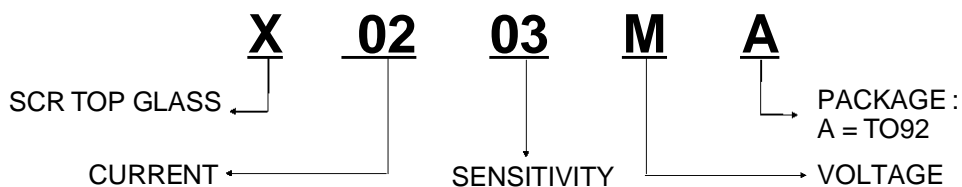
### GATE CHARACTERISTICS (maximum values)

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

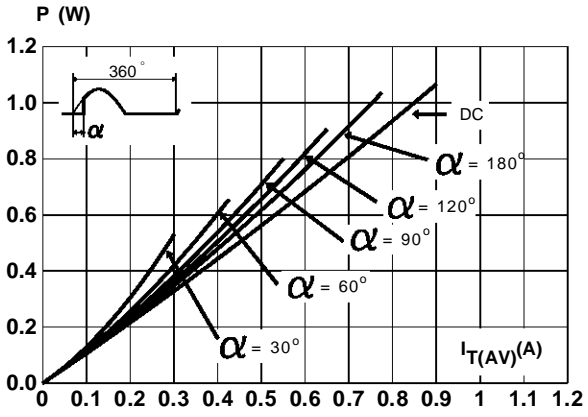
### ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions				Sensitivity			Unit
					02	03	05	
$I_{GT}$	$V_D = 12\text{V (DC)}$ $R_L = 140\Omega$	$T_j = 25^\circ\text{C}$	MIN		20	20	$\mu\text{A}$	
			MAX	200	200	50		
$V_{GT}$	$V_D = 12\text{V (DC)}$ $R_L = 140\Omega$	$T_j = 25^\circ\text{C}$	MAX	0.8			V	
$V_{GD}$	$V_D = V_{DRM}$ $R_L = 3.3\text{k}\Omega$ $R_{GK} = 1\text{K}\Omega$	$T_j = 125^\circ\text{C}$	MIN	0.1			V	
$V_{RGM}$	$I_{RG} = 10\mu\text{A}$	$T_j = 25^\circ\text{C}$	MIN	8			V	
tg <sub>d</sub>	$V_D = V_{DRM}$ $I_{TM} = 3 \times I_{T(AV)}$ $dI_G/dt = 0.1\text{A}/\mu\text{s}$ $I_G = 10\text{mA}$	$T_j = 25^\circ\text{C}$	TYP	0.5			$\mu\text{s}$	
$I_H$	$I_T = 50\text{mA}$ $R_{GK} = 1\text{K}\Omega$	$T_j = 25^\circ\text{C}$	MAX	5			mA	
$I_L$	$I_G = 1\text{mA}$ $R_{GK} = 1\text{K}\Omega$	$T_j = 25^\circ\text{C}$	MAX	6			mA	
$V_{TM}$	$I_{TM} = 2.5\text{A}$ $t_p = 380\mu\text{s}$	$T_j = 25^\circ\text{C}$	MAX	1.45			V	
$I_{DRM}$ $I_{RRM}$	$V_D = V_{DRM}$ $R_{GK} = 1\text{K}\Omega$ $V_R = V_{RRM}$	$T_j = 25^\circ\text{C}$	MAX	5			$\mu\text{A}$	
		$T_j = 110^\circ\text{C}$	MAX	200			$\mu\text{A}$	
dV/dt	$V_D = 67\%V_{DRM}$ $R_{GK} = 1\text{K}\Omega$	$T_j = 110^\circ\text{C}$	TYP	15	20	15	V/ $\mu\text{s}$	
tq	$I_{TM} = 3 \times I_{T(AV)}$ $V_R = 35\text{V}$ $dI/dt = 10\text{A}/\mu\text{s}$ $t_p = 100\mu\text{s}$ $dV/dt = 2\text{V}/\mu\text{s}$ $V_D = 67\%V_{DRM}$ $R_{GK} = 1\text{K}\Omega$	$T_j = 110^\circ\text{C}$	MAX	100			$\mu\text{s}$	

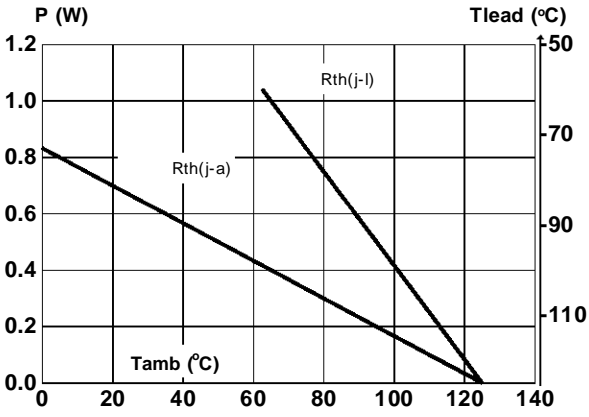
### ORDERING INFORMATION



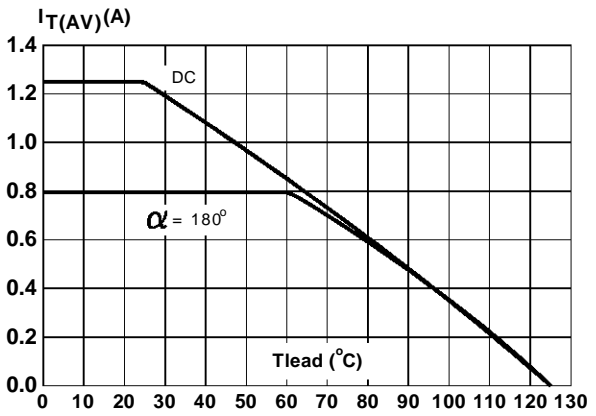
**Fig.1 :** Maximum average power dissipation versus average on-state current.



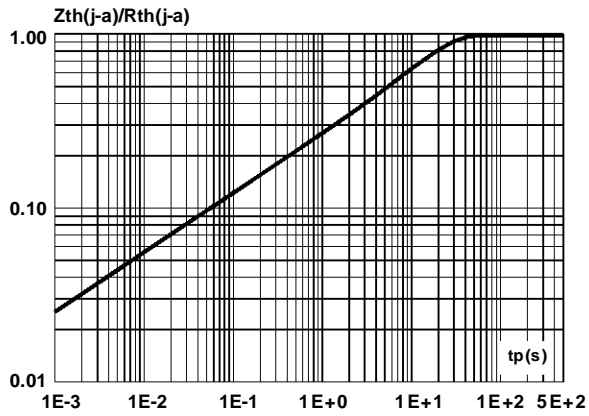
**Fig.2 :** Correlation between maximum average power dissipation and maximum allowable temperature (Tamb and Tlead).



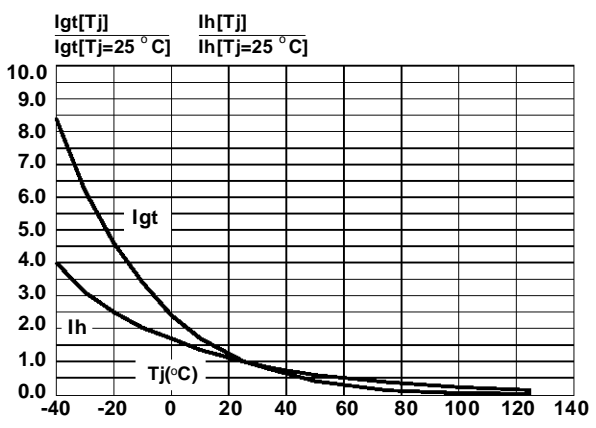
**Fig.3 :** Average on-state current versus lead temperature.



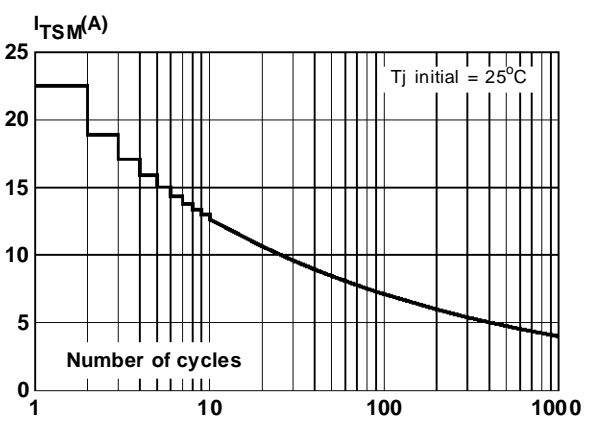
**Fig.4 :** Relative variation of thermal impedance junction to ambient versus pulse duration.



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

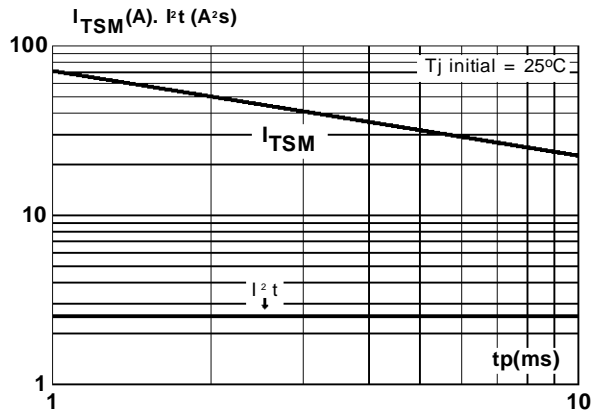


**Fig.6 :** Non repetitive surge peak on-state current versus number of cycles.

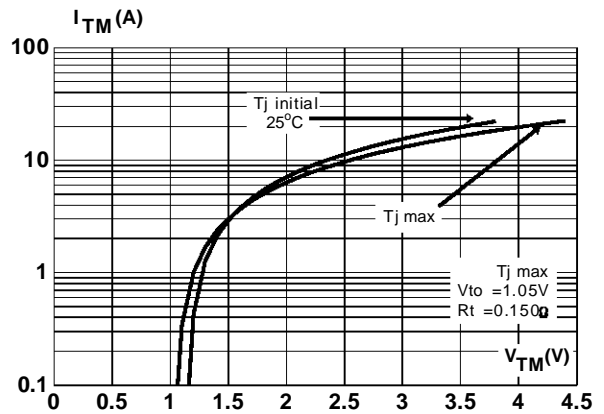


## X02xxxA

**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**

TO92 (Plastic)

REF.	DIMENSIONS					
	Millimeters			Inches		
	Typ.	Min.	Max.	Typ.	Min.	Max.
A	1.35			0.053		
B			4.7			0.185
C	2.54			0.100		
D		4.4	4.8		0.173	0.189
E		12.7			0.500	
F			3.7			0.146
a			0.45			0.017

Marking : Type number

Weight : 0.2 g

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