

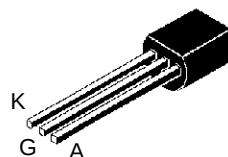
SENSITIVE GATE SCR

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.



TO92
(Plastic)

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 = $25^\circ C$)	$t_p = 8.3 \text{ ms}$	25	A
		$t_p = 10 \text{ ms}$	22.5	
I^2_t	I^2_t Value for fusing	$t_p = 10 \text{ ms}$	2.5	A^2s
di/dt	Critical rate of rise of on-state current $I_G = 10 \text{ mA}$ $di_G/dt = 0.1 \text{ A}/\mu s$.		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	μA
			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 d	$V_D = V_{DRM}$ $I_{TM} = 3 \times I_{T(AV)}$ $dI_G/dt = 0.1\text{A}/\mu\text{s}$ $I_G = 10\text{mA}$	$T_j = 25^\circ\text{C}$	TYP	0.5			μs
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			μA
		$T_j = 110^\circ\text{C}$	MAX	200			μA
dV/dt	$V_D = 67\%V_{DRM}$ $R_{GK} = 1\text{k}\Omega$	$T_j = 110^\circ\text{C}$	TYP	15	20	15	V/ μs
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			μs

ORDERING INFORMATION

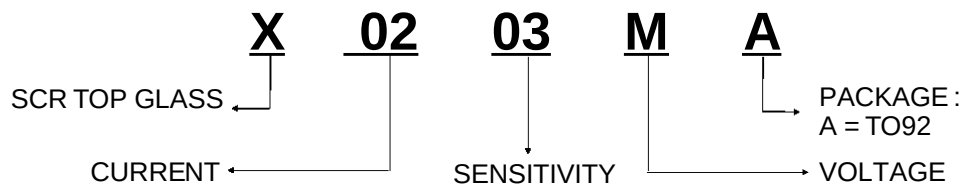


Fig.1 : Maximum average power dissipation versus average on-state current.

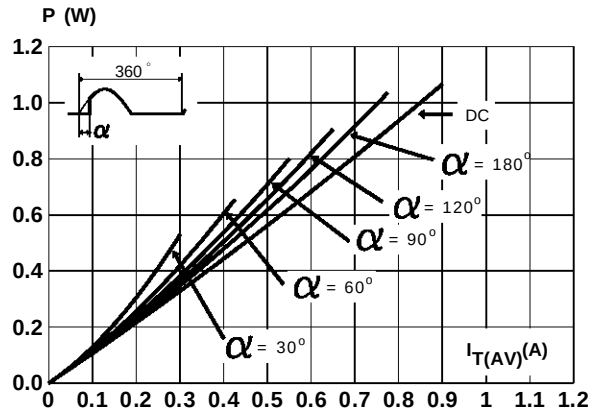


Fig.2 : Correlation between maximum average power dissipation and maximum allowable temperature (T_{amb} and T_{lead}).

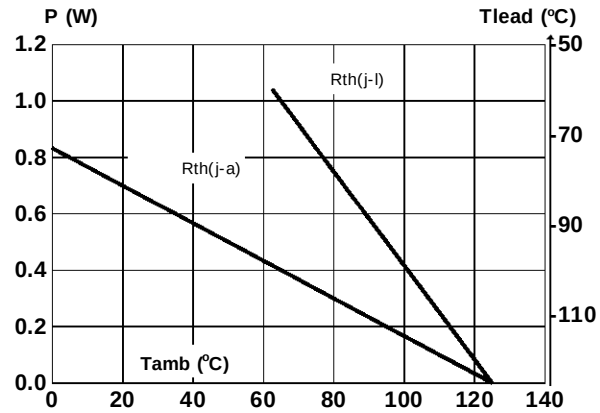


Fig.3 : Average on-state current versus lead temperature.

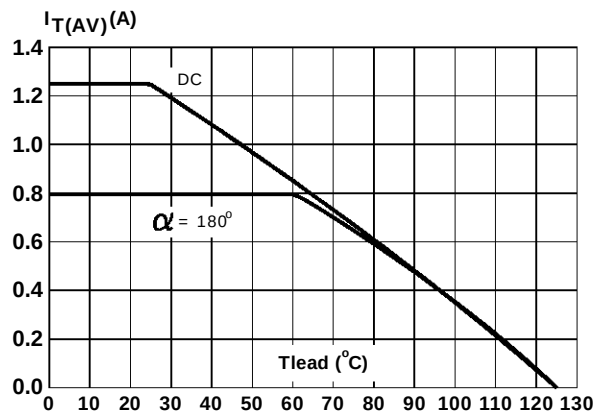


Fig.4 : Relative variation of thermal impedance junction to ambient versus pulse duration.

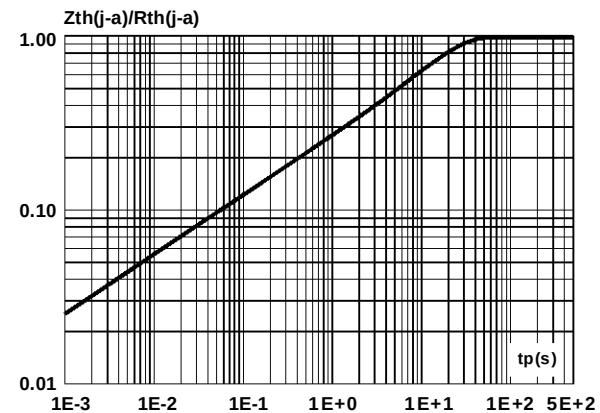


Fig.5 : Relative variation of gate trigger current and holding current versus junction temperature.

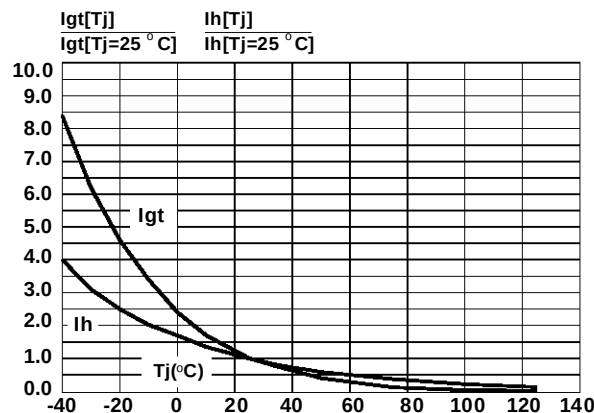


Fig.6 : Non repetitive surge peak on-state current versus number of cycles.

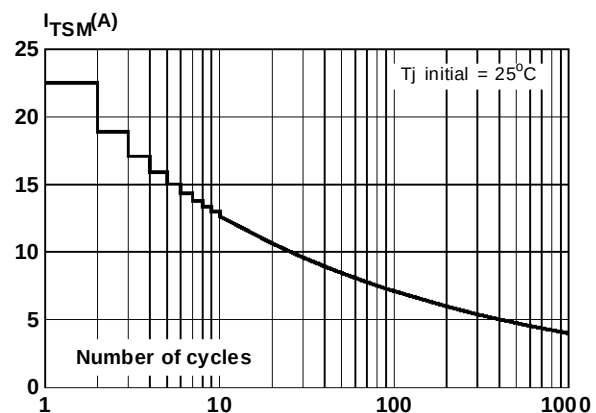


Fig.7 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : $t_p \leq 10\text{ms}$, and corresponding value of I^2t .

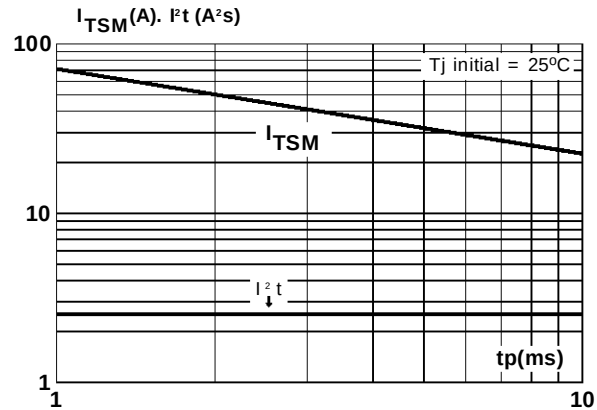
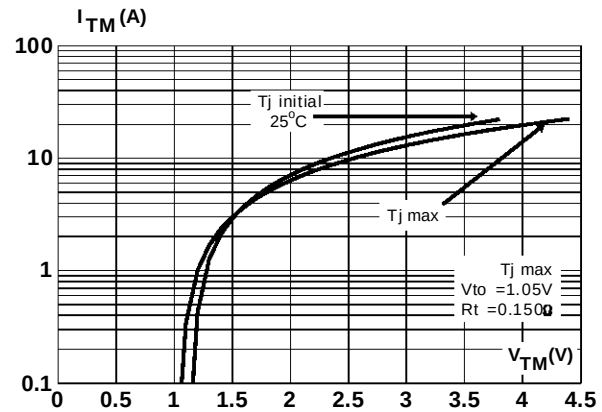


Fig.8 : On-state characteristics (maximum values).



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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