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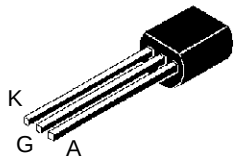
SGS-THOMSON MICROELECTRONICS

X02xxxA

SENSITIVE GATE SCR

FEATURES

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



TO92
(Plastic)

DESCRIPTION

The X02xxxA series of SCRs uses a high performance TOP GLASS PNPN 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)	Tl= 60°C	1.25	A
$I_{T(AV)}$	Mean on-state current (180° conduction angle)	Tl= 60°C	0.8	A
I_{TSM}	Non repetitive surge peak on-state current (T_j initial = 25°C)	tp = 8.3 ms	25	A
		tp = 10 ms	22.5	
I^2t	I^2t Value for fusing	tp = 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	°C
Tl	Maximum lead temperature for soldering during 10s at 2mm from case		260	°C

Symbol	Parameter	Voltage				Unit
		B	D	M	N	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage T_j = 125°C R_{GK} = 1KΩ	200	400	600	800	V

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 W P_{GM} = 3 W (tp = 20 µs) I_{GM} = 1.2 A (tp = 20 µs)

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions			Sensitivity			Unit
				02	03	05	
I_{GT}	V_D=12V (DC) R_L=140Ω	Tj= 25°C	MIN		20	20	µA
			MAX	200	200	50	
V_{GT}	V_D=12V (DC) R_L=140Ω	Tj= 25°C	MAX	0.8			V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ R_{GK} = 1 KΩ	Tj= 125°C	MIN	0.1			V
V_{RGM}	I_{RG} =10µA	Tj= 25°C	MIN	8			V
tgd	V_D=V_{DRM} I_{TM}= 3 x $I_{T(AV)}$ dI_G/dt = 0.1A/µs I_G = 10mA	Tj= 25°C	TYP	0.5			µs
I_H	I_T= 50mA R_{GK} = 1 KΩ	Tj= 25°C	MAX	5			mA
I_L	I_G=1mA R_{GK} = 1 KΩ	Tj= 25°C	MAX	6			mA
V_{TM}	I_{TM}= 2.5A tp= 380µs	Tj= 25°C	MAX	1.45			V
I_{DRM} I_{RRM}	V_D = V_{DRM} R_{GK} = 1 KΩ V_R = V_{RRM}	Tj= 25°C	MAX	5			µA
		Tj= 110°C	MAX	200			µA
dV/dt	V_D=67%V_{DRM} R_{GK} = 1 KΩ	Tj= 110°C	TYP	15	20	15	V/µs
tq	I_{TM}= 3 x $I_{T(AV)}$ V_R=35V dI/dt=10A/µs tp=100µs dV/dt=2V/µs V_D= 67%V_{DRM} R_{GK} = 1 KΩ	Tj= 110°C	MAX	100			µs

ORDERING INFORMATION

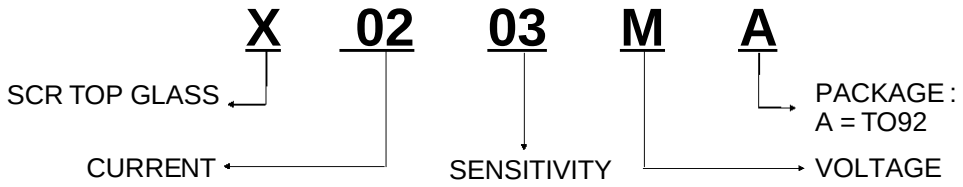


Fig.1 : Maximum average power dissipation versus average on-state current.

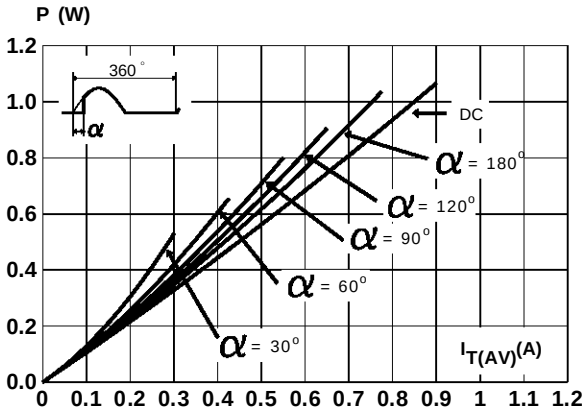


Fig.2 : Correlation between maximum average power dissipation and maximum allowable temperature (Tamb and Tlead).

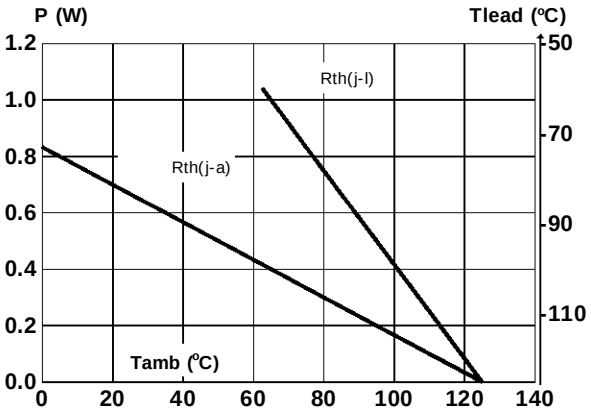


Fig.3 : Average on-state current versus lead temperature.

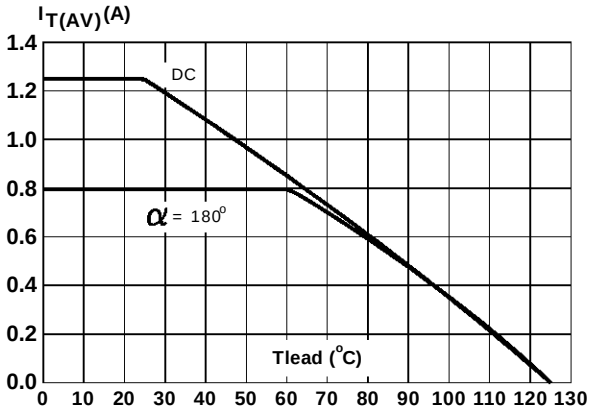


Fig.4 : Relative variation of thermal impedance junction to ambient versus pulse duration.

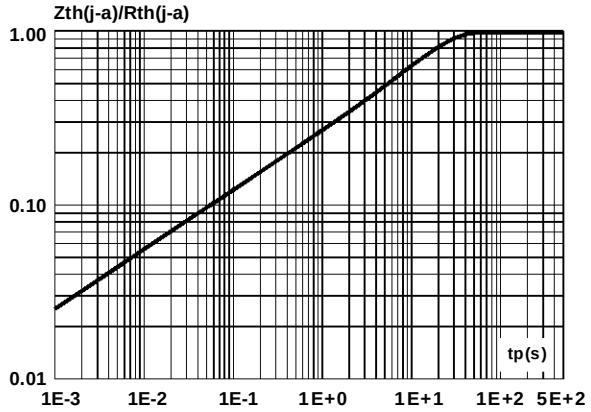


Fig.5 : Relative variation of gate trigger current and holding current versus junction temperature.

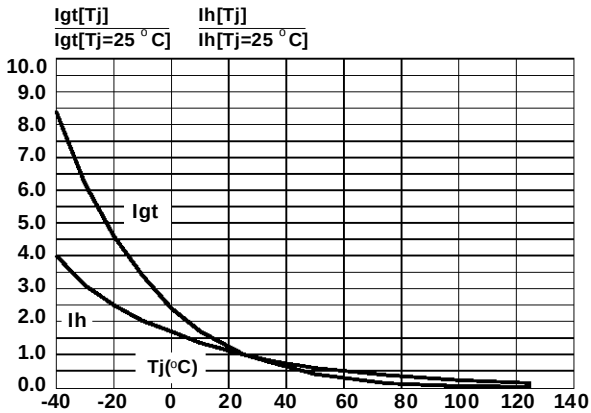


Fig.6 : Non repetitive surge peak on-state current versus number of cycles.

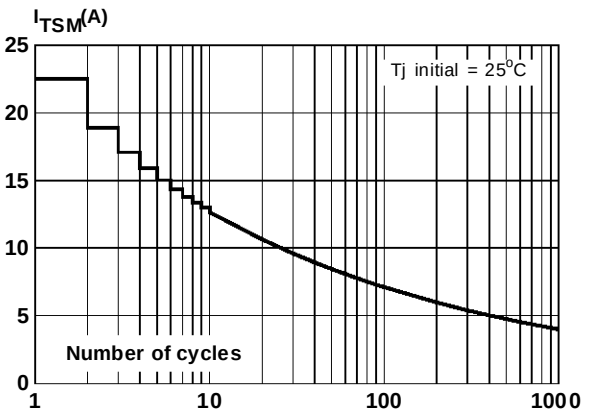


Fig.7 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : tp ≤ 10ms, and corresponding value of I^2t.

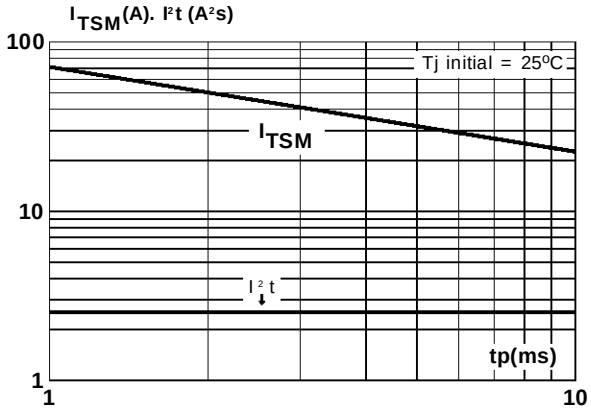
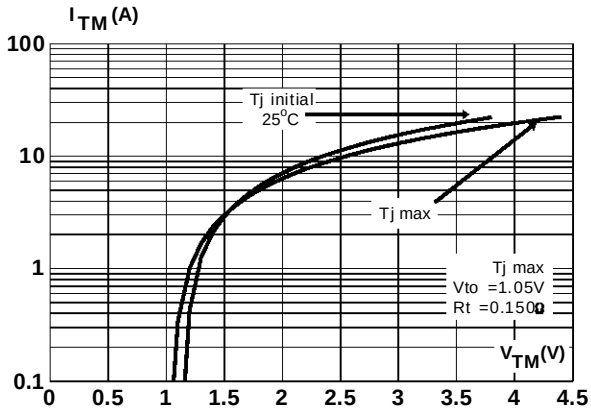
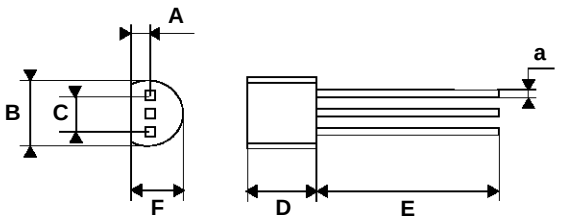


Fig.8 : On-state characteristics (maximum values).



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