

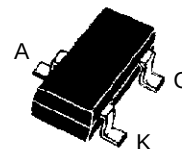
SENSITIVE GATE SCR

FEATURES

- $I_{T(RMS)} = 0.2A$
- $V_{DRM} = 100V$ to $400V$
- Low $I_{GT} < 1\mu A$ max to $< 200\mu A$

DESCRIPTION

The P01xxxL series of SCRs uses a high performance planar PNP technology. These parts are intended for general purpose high volume applications using surface mount technology.



SOT23
(Plastic)

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$ *	RMS on-state current (180° conduction angle)	$T_a = 25^\circ C$	0.26	A
$I_{T(AV)}$ *	Mean on-state current (180° conduction angle)	$T_a = 25^\circ C$	0.17	A
I_{TSM}	Non repetitive surge peak on-state current (T_j initial = $25^\circ C$)	$t_p = 8.3$ ms	7.5	A
		$t_p = 10$ ms	7	
I_t^2	I_t^2 Value for fusing	$t_p = 10$ ms	0.24	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	$^\circ C$

* : Mounted on a ceramic substrate of $8 \times 10 \times 0.7$ mm.

Symbol	Parameter	Voltage				Unit
		A	B	C	D	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage $T_j = 125^\circ C$ $R_{GK} = 1K\Omega$	100	200	300	400	V

P01xxxL

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
Rth(j-a)	Junction to ambient *	500	°C/W

* : Mounted on a ceramic substrate of 8 x 10 x 0.7mm.

GATE CHARACTERISTICS (maximum values)

P_G (AV) = 0.02 W P_{GM} = 1 W (tp = 20 μs) I_{GM} = 0.5 A (tp = 20 μs)

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions			Sensitivity				Unit
				02	09	11	15	
I_{GT}	$V_D=12V$ (DC) $R_L=140\Omega$	$T_j=25^\circ C$	MIN	-	-	4	15	μA
			MAX	200	1	25	50	
V_{GT}	$V_D=12V$ (DC) $R_L=140\Omega$	$T_j=25^\circ C$	MAX	0.8				V
V_{GD}	$V_D=V_{DRM}$ $R_L=3.3k\Omega$ $R_{GK}=1K\Omega$	$T_j=125^\circ C$	MIN	0.1				V
V_{RGM}	$I_{RG}=10\mu A$	$T_j=25^\circ C$	MIN	8				V
tgδ	$V_D=V_{DRM}$ $I_{TM}=3 \times I_{T(AV)}$ $dI_G/dt=0.1A/\mu s$ $I_G=10mA$	$T_j=25^\circ C$	TYP	0.5				μs
I_H	$I_T=50mA$ $R_{GK}=1K\Omega$	$T_j=25^\circ C$	MAX	5				mA
I_L	$I_G=1mA$ $R_{GK}=1K\Omega$	$T_j=25^\circ C$	MAX	6				mA
V_{TM}	$I_{TM}=0.4A$ tp = 380 μs	$T_j=25^\circ C$	MAX	1.3				V
I_{DRM} I_{RRM}	$V_D=V_{DRM}$ $R_{GK}=1K\Omega$ $V_R=V_{RRM}$	$T_j=25^\circ C$	MAX	1				μA
		$T_j=125^\circ C$	MAX	100				μA
dV/dt	$V_D=67\%V_{DRM}$ $R_{GK}=1K\Omega$	$T_j=125^\circ C$	MIN	25	25	50	100	V/μs
tq	$I_{TM}=3 \times I_{T(AV)}$ $V_R=35V$ $dI/dt=10A/\mu s$ tp = 100 μs $dV/dt=10V/\mu s$ $V_D=67\%V_{DRM}$ $R_{GK}=1K\Omega$	$T_j=125^\circ C$	MAX	200				μs

ORDERING INFORMATION

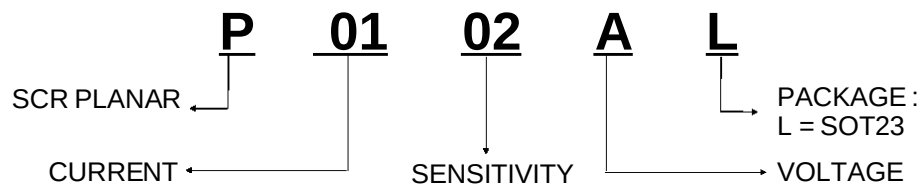


Fig.1 : Maximum average power dissipation versus average on-state current.

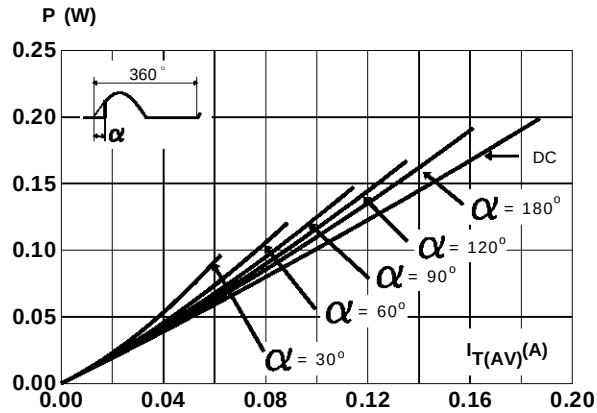


Fig.2 : Correlation between maximum average power dissipation and maximum allowable temperature (T_{amb}).

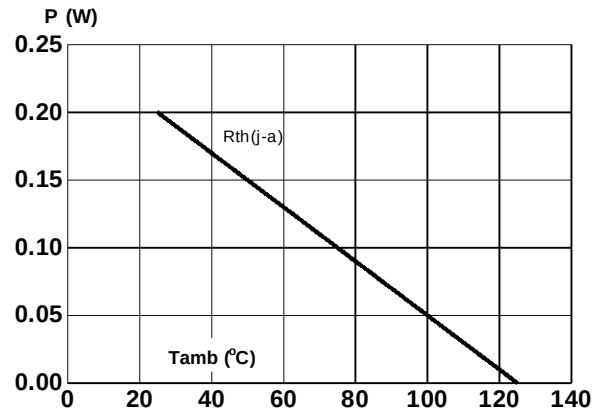


Fig.3 : Average on-state current versus tab temperature.

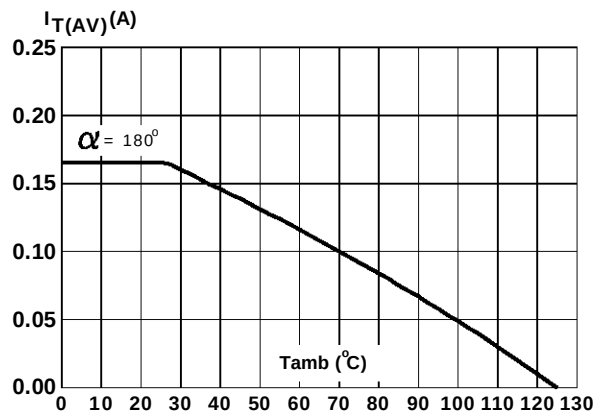


Fig.4 : Relative variation of thermal impedance junction to ambient versus pulse duration.

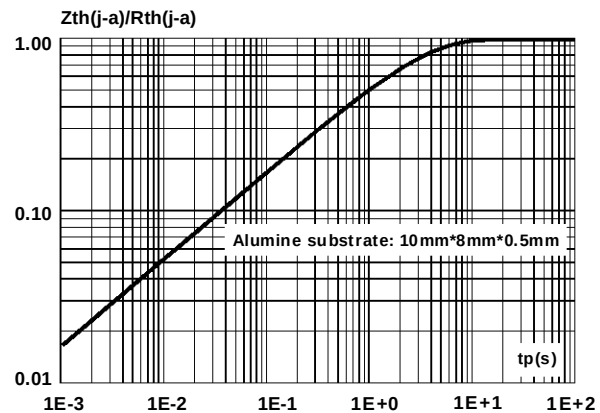


Fig.5 : Relative variation of gate trigger current and holding current versus junction temperature.

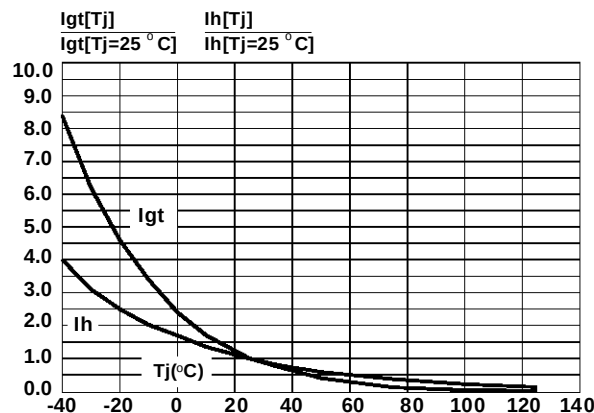


Fig.6 : Non repetitive surge peak on-state current versus number of cycles.

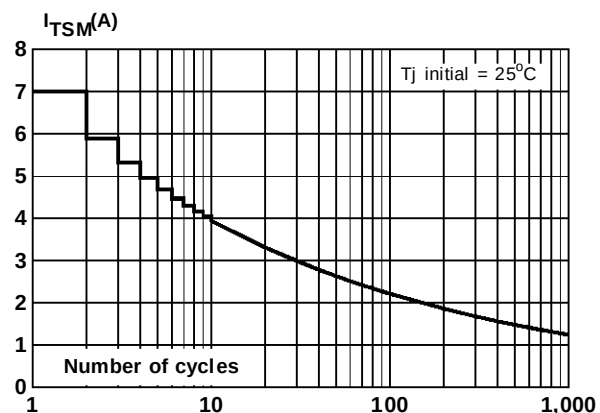


Fig.7 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : $t_p \leq 10\text{ms}$, and corresponding value of I^2t .

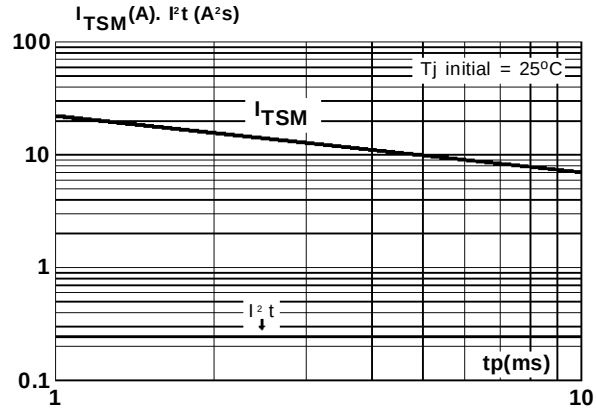


Fig.8 : On-state characteristics (maximum values).

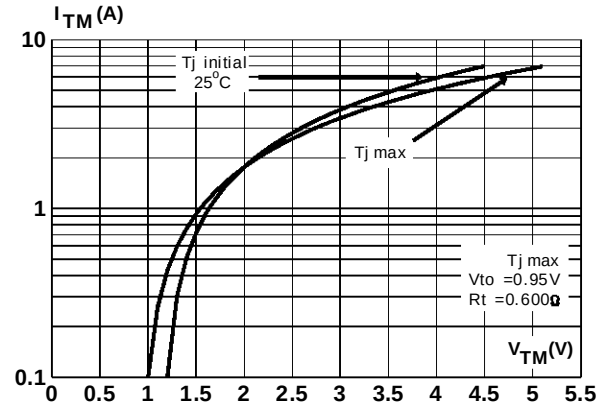
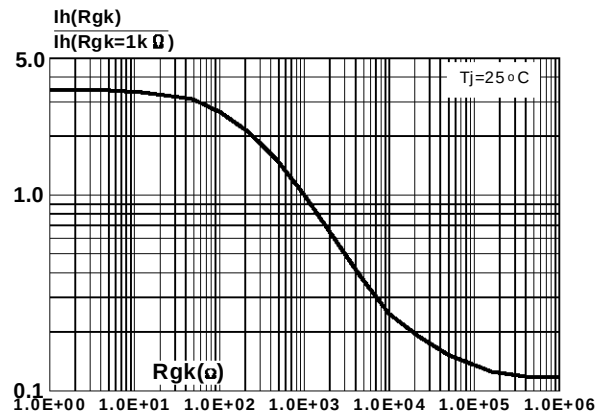


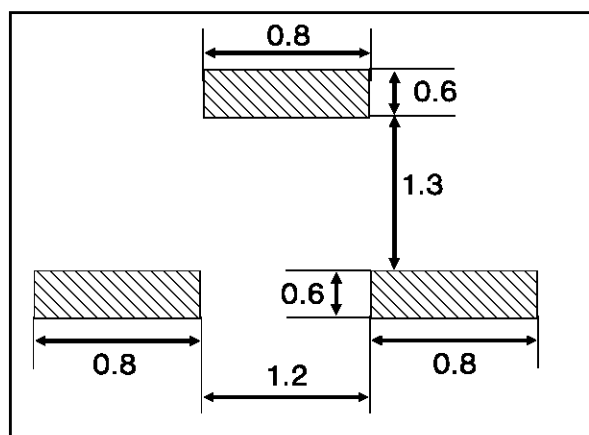
Fig.9 : Relative variation of holding current versus gate-cathode resistance (typical values).



PACKAGE MECHANICAL DATA
 SOT23 (Plastic)

REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	0.93	1.04	0.036	0.041
B	1.20	1.40	0.047	0.055
C	0.15		0.006	
D	0.085	0.115	0.003	0.005
E	0.45	0.60	0.018	0.024
F	0.08		0.003	
G	0.013	0.10	0.0005	0.004
H	1.90	2.05	0.075	0.081
I	0.95	1.05	0.037	0.041
J	0.95	1.05	0.037	0.041
K	2.10	2.50	0.083	0.098
L	0.45	0.60	0.018	0.024
M	0.37	0.46	0.015	0.018
N	2.80	3.00	0.110	0.118

Weight : 0.007 g

FOOT PRINT

MARKING

Type	Marking
P0102AL	P2A
P0102BL	P2B
P0102CL	P2C
P0102DL	P2D
P0109AL	P9A
P0109BL	P9B
P0109CL	P9C
P0109DL	P9D
P0111AL	P1A
P0111BL	P1B
P0111CL	P1C
P0111DL	P1D
P0115AL	P5A
P0115BL	P5B
P0115CL	P5C
P0115DL	P5D

Information furnished is believed to be accurate and reliable. However, SGS-THOMSON Microelectronics assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of SGS-THOMSON Microelectronics. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. SGS-THOMSON Microelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of SGS-THOMSON Microelectronics.

© 1995 SGS-THOMSON Microelectronics - All rights reserved.

SGS-THOMSON Microelectronics GROUP OF COMPANIES

Australia - Brazil - France - Germany - Hong Kong - Italy - Japan - Korea - Malaysia - Malta - Morocco - The Netherlands
Singapore - Spain - Sweden - Switzerland - Taiwan - Thailand - United Kingdom - U.S.A.