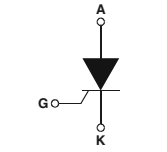
P01xxxL

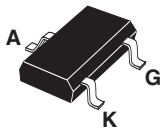
SENSITIVE

0.25A SCRs

Table 1: Main Features

Symbol	Value	Unit
$I_{T(RMS)}$	0.25	A
V_{DRM}/V_{RRM}	100 and 200	V
I_{GT}	1 and 200	µA





SOT23-3L

DESCRIPTION

Thanks to highly sensitive triggering levels, the **P01xxxL** SCR series is suitable for all applications where the available gate current is limited such as stand-by mode power supplies, smoke and alarm detectors...

Available in SOT23-3L, it provides optimized space saving on high density printed circuit boards.

Table 2: Order Codes

Part Numbers	Marking
P0102AL 5AA4	P2A
P0102BL 5AA4	P2B
P0109AL 5AA4	P9A

Table 3: Absolute Ratings (limiting values)

Symbol	Parameter			Value	Unit
$I_{T(RMS)}$	RMS on-state current (180° conduction angle)		T_{amb} = 36°C	0.25	A
$IT_{(AV)}$	Average on-state current (180° conduction angle)		T_{amb} = 36°C	0.16	A
I_{TSM}	Non repetitive surge peak on-state current	t_p = 8.3 ms	T_j = 25°C	7	A
		t_p = 10 ms		6	
I^2t	I^2t Value for fusing	t_p = 10 ms	T_j = 25°C	0.18	A^2S
dI/dt	Critical rate of rise of on-state current I_G = 2 x I_{GT} , $t_r \leq$ 100 ns	F = 60 Hz	T_j = 125°C	50	A/µs
I_{GM}	Peak gate current	t_p = 20 µs	T_j = 125°C	0.5	A
$P_{G(AV)}$	Average gate power dissipation		T_j = 125°C	0.02	W
T_{stg} T_j	Storage junction temperature range Operating junction temperature range			- 40 to + 150 - 40 to + 125	°C

Tables 4: Electrical Characteristics (T_j = 25°C, unless otherwise specified)

Symbol	Test Conditions			P0102xL	P0109AL	Unit
I_{GT}	V_D = 12 V R_L = 140 Ω		MAX.	200	1	µA
V_{GT}			MAX.	0.8		V
V_{GD}	$V_D = V_{DRM}$ R_L = 3.3 kΩ R_{GK} = 1 kΩ	T_j = 125°C	MIN.	0.1		V
V_{RG}	I_{RG} = 10 µA		MIN.	8		V
I_H	I_T = 50 mA R_{GK} = 1 kΩ		MAX.	6		mA
I_L	I_G = 1 mA R_{GK} = 1 kΩ		MAX.	7		mA
dV/dt	V_D = 67 % V_{DRM} R_{GK} = 1 kΩ	T_j = 125°C	MIN.	200	100	V/µs
V_{TM}	I_{TM} = 0.4 A tp = 380 µs	T_j = 25°C	MAX.	1.7		V
V_{t0}	Threshold voltage	T_j = 125°C	MAX.	1.0		V
R_d	Dynamic resistance	T_j = 125°C	MAX.	1000		mΩ
I_{DRM} I_{RRM}	$V_{DRM} = V_{RRM}$	T_j = 25°C	MAX.	1		µA
		T_j = 125°C		100		

Table 5: Thermal resistance

Symbol	Parameter	Value	Unit
$R_{th(j-a)}$	Junction to ambient (mounted on FR4 with recommended pad layout)	400	°C/W

Figure 1: Maximum average power dissipation versus average on-state current

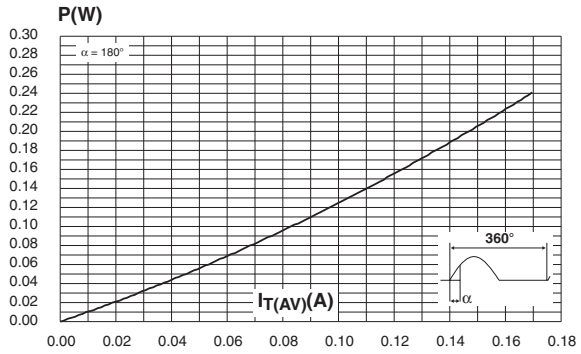


Figure 2: Average and D.C. on-state current versus case temperature

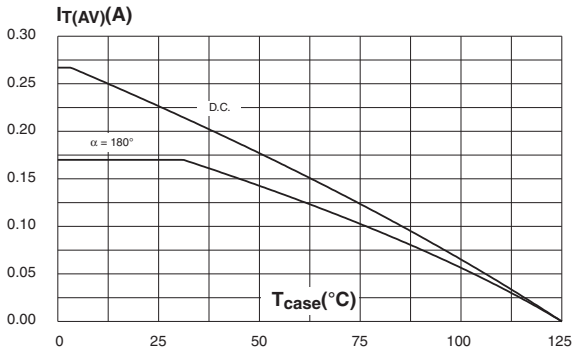


Figure 3: Relative variation of thermal impedance junction to ambient versus pulse duration

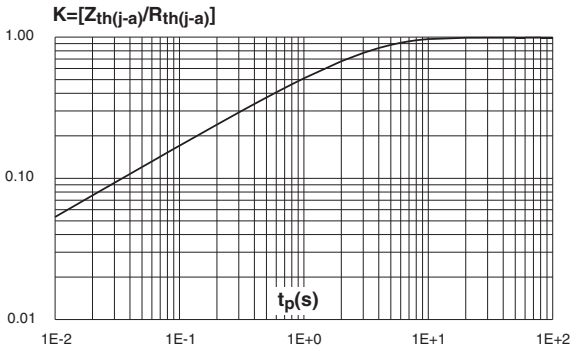


Figure 4: Relative variation of gate trigger current, holding current and latching current versus junction temperature (typical values)

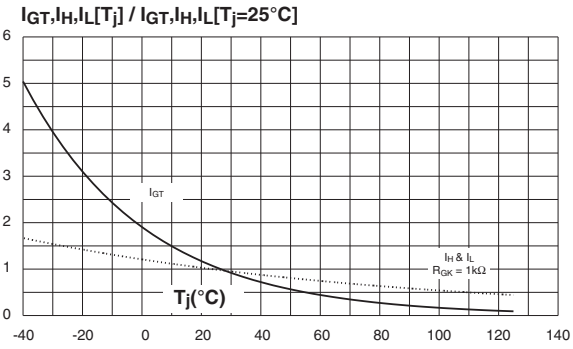


Figure 5: Relative variation of holding current versus gate-cathode resistance (typical values)

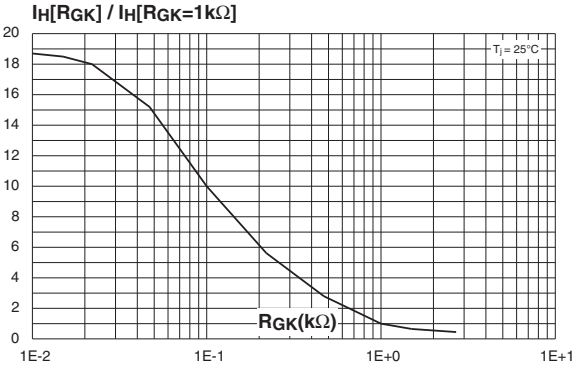


Figure 6: Relative variation of dV/dt immunity versus gate-cathode resistance (typical values)

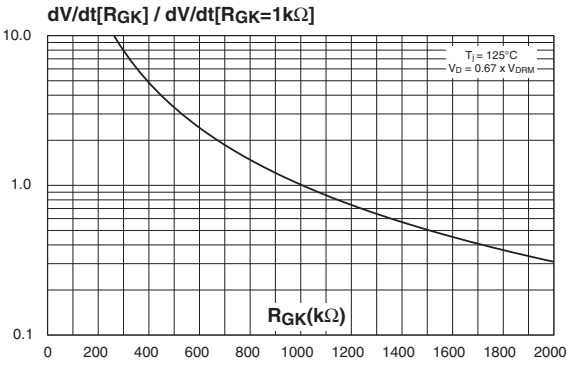


Figure 7: Relative variation of dV/dt immunity versus gate-cathode capacitance (typical values)

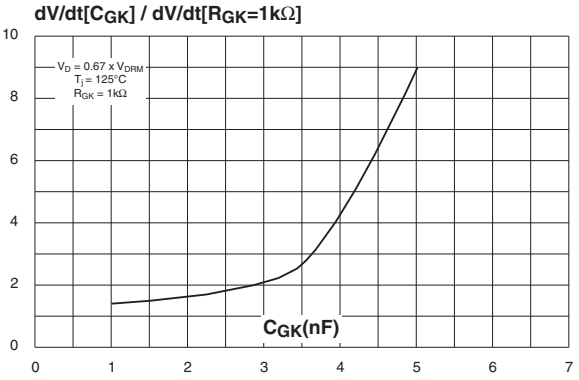


Figure 8: Surge peak on-state current versus number of cycles

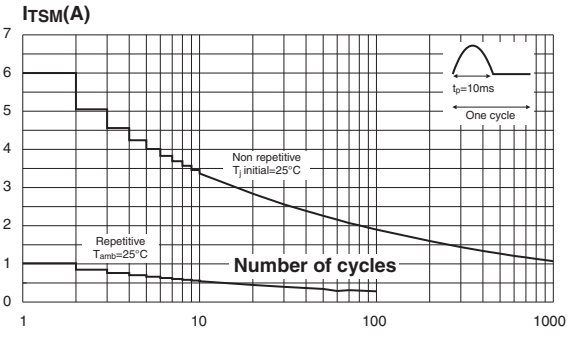


Figure 9: Non-repetitive surge peak on-state current for a sinusoidal pulse with width t_p < 10ms, and corresponding value of I^2t

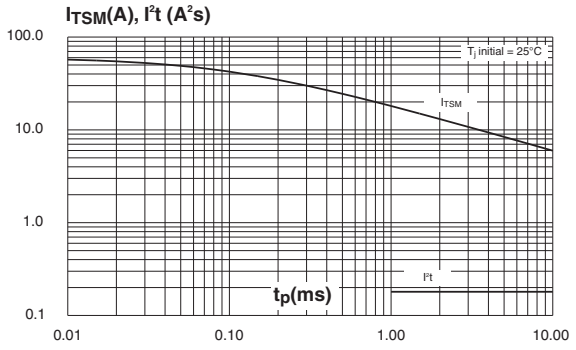


Figure 10: On-state characteristics (maximum values)

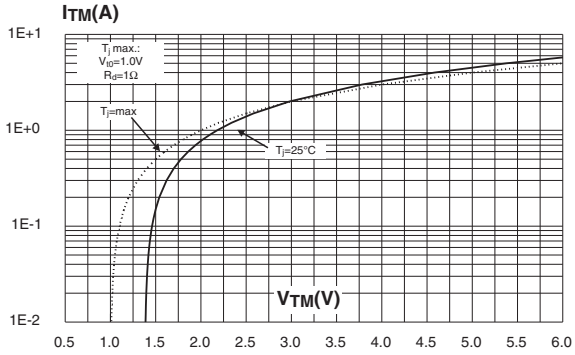


Figure 11: Thermal resistance junction to ambient versus copper surface under tab (Epoxy printed circuit board FR4, copper thickness: 35 mm)

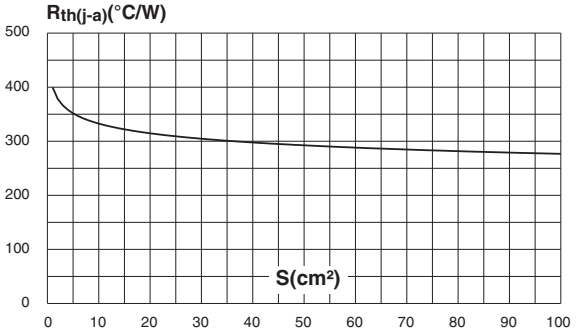


Figure 12: Ordering Information Scheme

P 01 02 A L Blank 5AA4

Sensitive SCR series

Current
01 = 0.25A

Sensitivity
02 = 200µA
09 = 1µA

Voltage
A = 100V
B = 200V

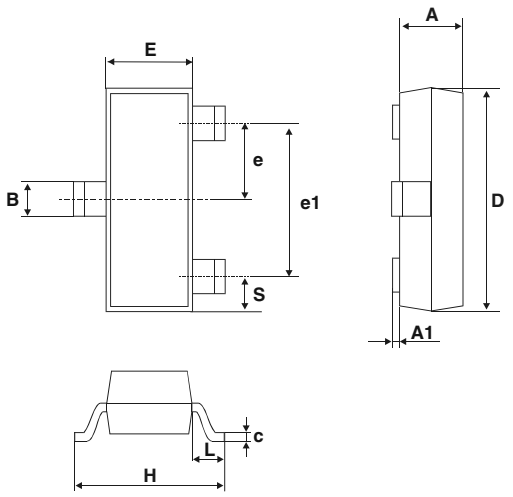
Package
L = SOT23-3L

Packing mode
5AA4 = Tape & Reel

Table 6: Product Selector

Part Number	Voltage	Sensitivity	Package
P0102AL 5AA4	100 V	200 µA	SOT23-3L
P0102BL 5AA4	200 V	200 µA	
P0109AL 5AA4	100 V	1 µA	

Figure 13: SOT23-3L Package Mechanical Data



REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	0.89	1.4	0.035	0.055
A1	0	0.1	0	0.004
B	0.3	0.51	0.012	0.02
c	0.085	0.18	0.003	0.007
D	2.75	3.04	0.108	0.12
e	0.85	1.05	0.033	0.041
e1	1.7	2.1	0.067	0.083
E	1.2	1.6	0.047	0.063
H	2.1	2.75	0.083	0.108
L	0.6 typ.		0.024 typ.	
S	0.35	0.65	0.014	0.026

Figure 14: Foot Print Dimensions (in millimeters)

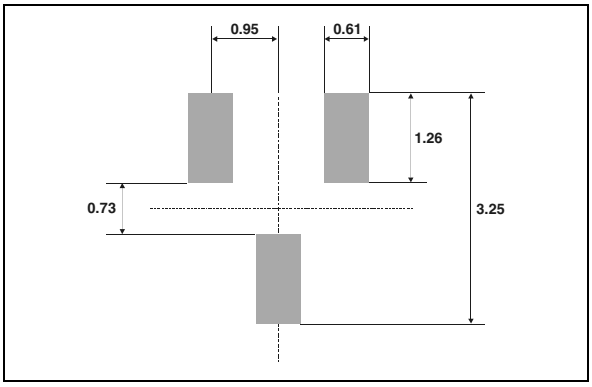


Table 7: Ordering Information

Ordering type	Marking	Package	Weight	Base qty	Delivery mode
P0102AL 5AA4	P2A	SOT23-3L	0.01 g	3000	Tape & reel
P0102BL 5AA4	P2B				
P0109AL 5AA4	P9A				

Table 8: Revision History

Date	Revision	Description of Changes
Sep-2000	3	Last update.
11-Apr-2005	4	P0102AL and P0109AL added.