

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

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.

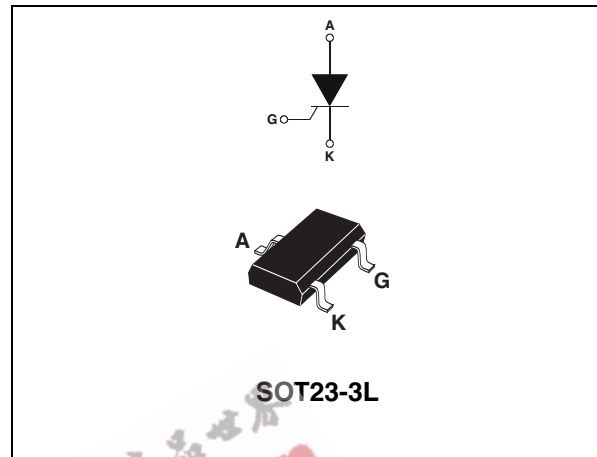


Table 2: Order Codes

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

Tables 4: Electrical Characteristics ($T_j = 25^\circ\text{C}$, 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	$^\circ\text{C/W}$

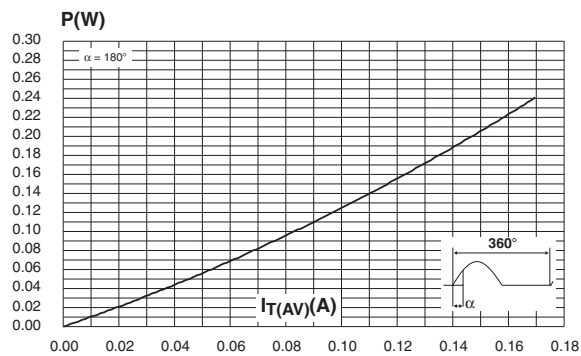
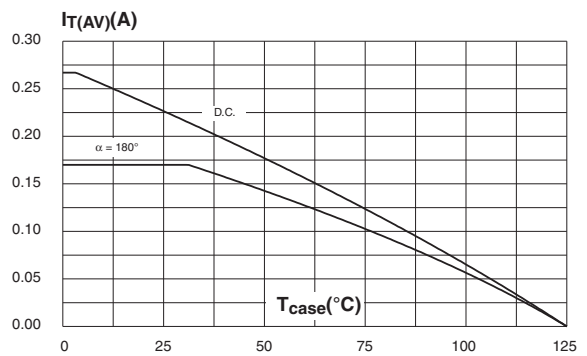
Figure 1: Maximum average power dissipation versus average on-state current**Figure 2: Average and D.C. on-state current versus case temperature**

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

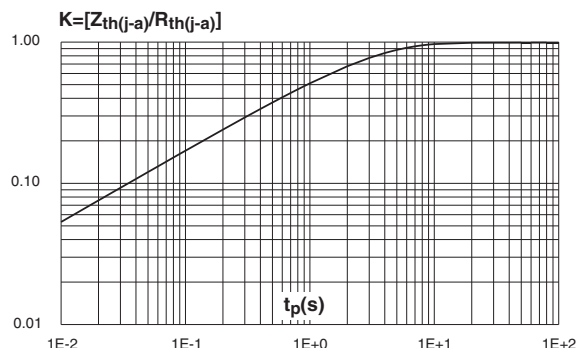


Figure 4: Relative variation of gate trigger current, holding current and latching current versus junction temperature (typical values)

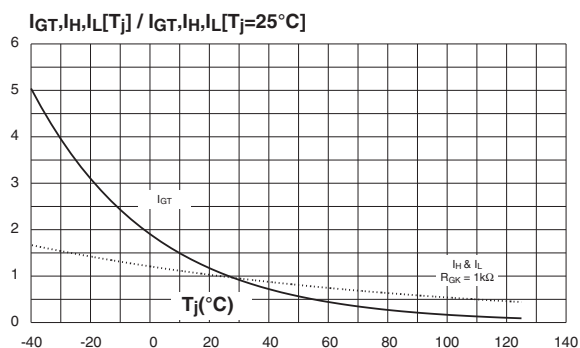


Figure 5: Relative variation of holding current versus gate-cathode resistance (typical values)

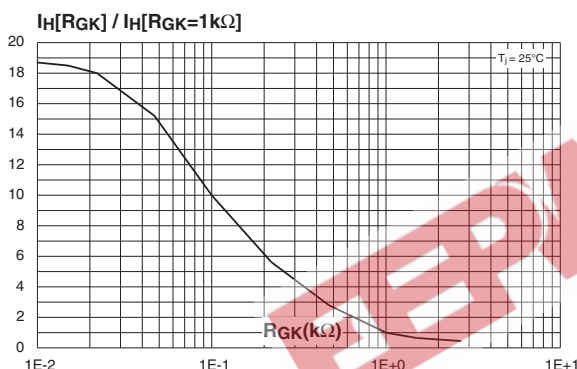


Figure 6: Relative variation of dV/dt immunity versus gate-cathode resistance (typical values)

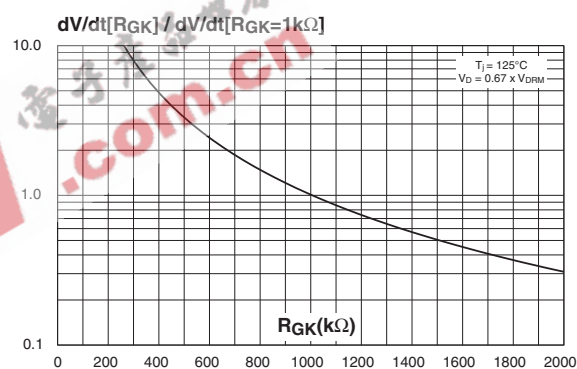


Figure 7: Relative variation of dV/dt immunity versus gate-cathode capacitance (typical values)

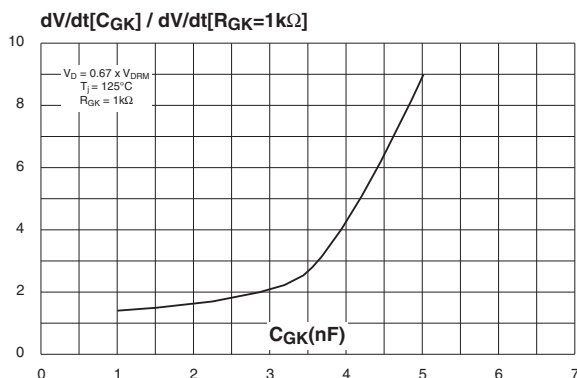


Figure 8: Surge peak on-state current versus number of cycles

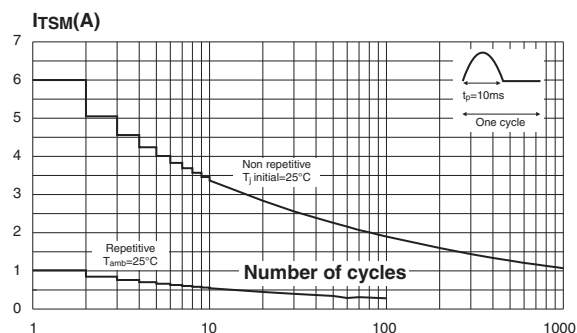


Figure 9: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 10\text{ms}$, and corresponding value of I^2t

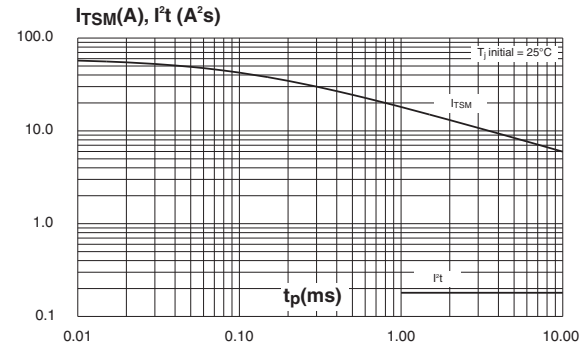


Figure 10: On-state characteristics (maximum values)

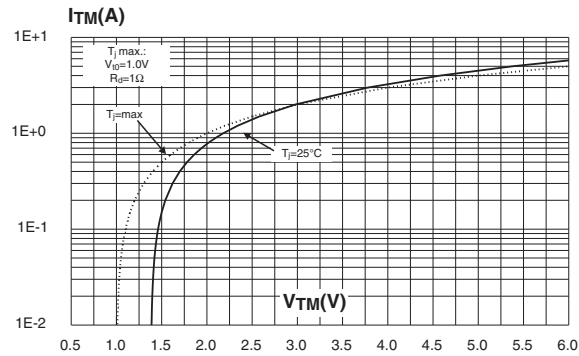


Figure 11: Thermal resistance junction to ambient versus copper surface under tab (Epoxy printed circuit board FR4, copper thickness: 35 mm)

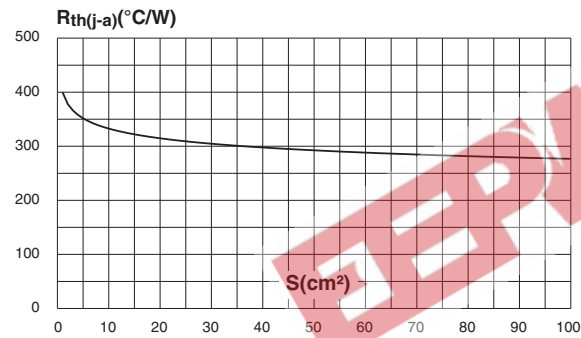


Figure 12: Ordering Information Scheme

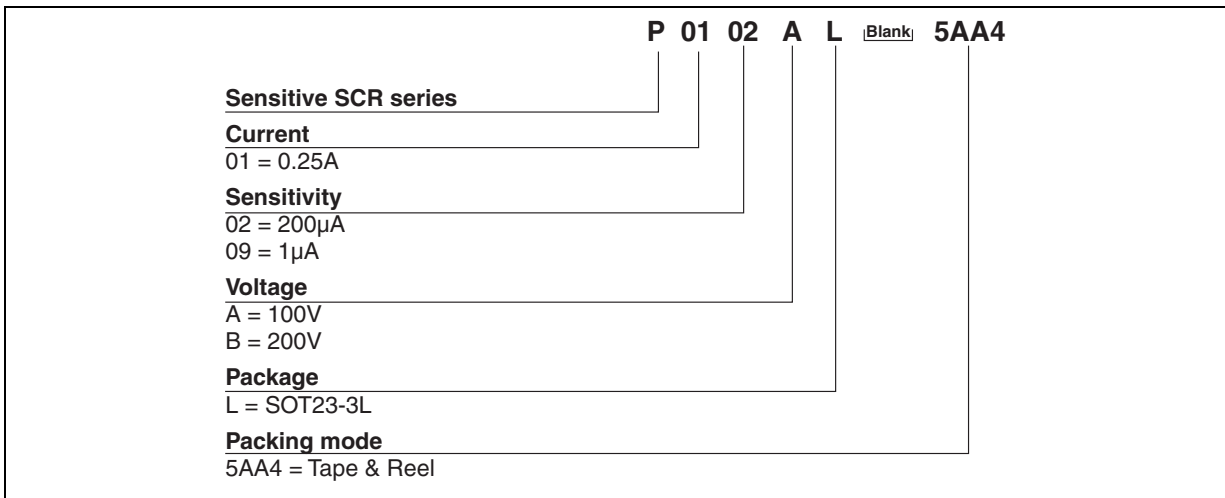


Table 6: Product Selector

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

Figure 13: SOT23-3L Package Mechanical Data

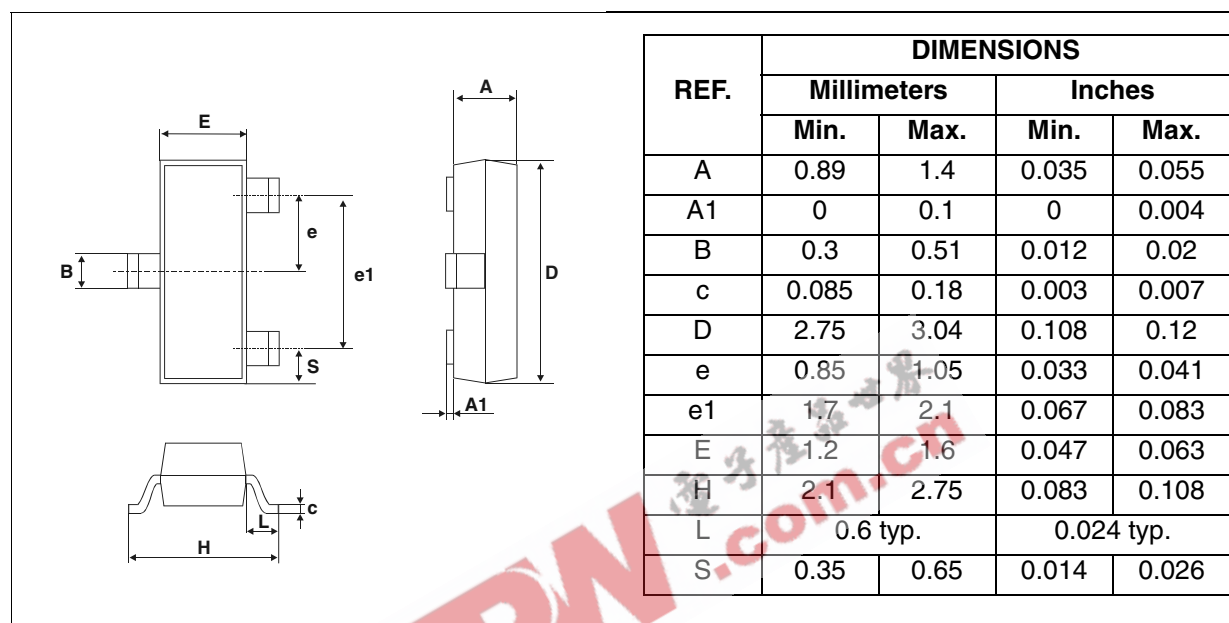
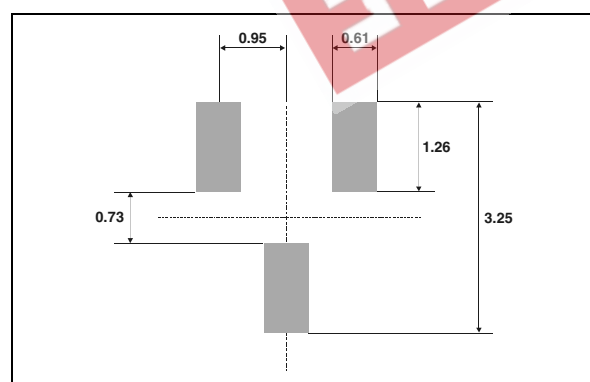


Figure 14: Foot Print Dimensions (in millimeters)



P01xxxL

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.

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