

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.

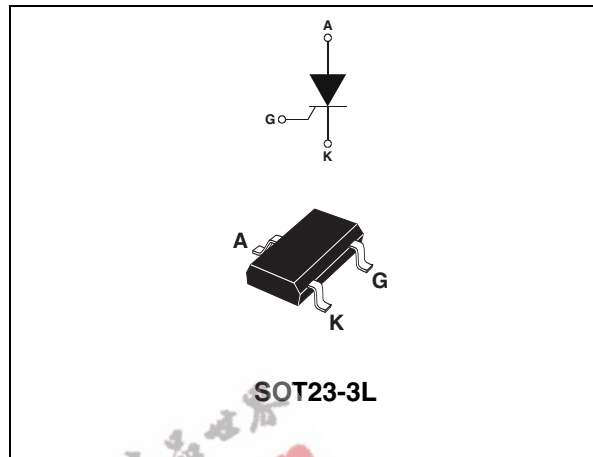


Table 2: Order Codes

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	$t_p = 8.3 \text{ ms}$	$T_j = 25^{\circ}C$	7 A
		$t_p = 10 \text{ ms}$		6 A
I^2t	I^2t Value for fusing	$t_p = 10 \text{ ms}$	$T_j = 25^{\circ}C$	0.18 A ² s
di/dt	Critical rate of rise of on-state current $I_G = 2 \times I_{GT}$, $t_r \leq 100 \text{ ns}$	$F = 60 \text{ Hz}$	$T_j = 125^{\circ}C$	50 A/ μ s
I_{GM}	Peak gate current	$t_p = 20 \mu s$	$T_j = 125^{\circ}C$	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 °C

Tables 4: Electrical Characteristics ($T_j = 25^\circ\text{C}$, unless otherwise specified)

Symbol	Test Conditions			P0102xL	P0109AL	Unit	
I_{GT}	$V_D = 12\text{ V}$ $R_L = 140\ \Omega$		MAX.	200	1	μA	
V_{GT}			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_{RG}	$I_{RG} = 10\ \mu\text{A}$		MIN.	8		V	
I_H	$I_T = 50\ \text{mA}$ $R_{GK} = 1\ \text{k}\Omega$		MAX.	6		mA	
I_L	$I_G = 1\ \text{mA}$ $R_{GK} = 1\ \text{k}\Omega$		MAX.	7		mA	
dV/dt	$V_D = 67\ \% V_{DRM}$ $R_{GK} = 1\ \text{k}\Omega$	$T_j = 125^\circ\text{C}$	MIN.	200	100	V/ μs	
V_{TM}	$I_{TM} = 0.4\ \text{A}$ $t_p = 380\ \mu\text{s}$	$T_j = 25^\circ\text{C}$	MAX.	1.7		V	
V_{t0}	Threshold voltage		$T_j = 125^\circ\text{C}$	MAX.	1.0		V
R_d	Dynamic resistance		$T_j = 125^\circ\text{C}$	MAX.	1000		m Ω
I_{DRM} I_{RRM}	$V_{DRM} = V_{RRM}$	$T_j = 25^\circ\text{C}$	MAX.	1		μA	
		$T_j = 125^\circ\text{C}$		100			

Table 5: Thermal resistance

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

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

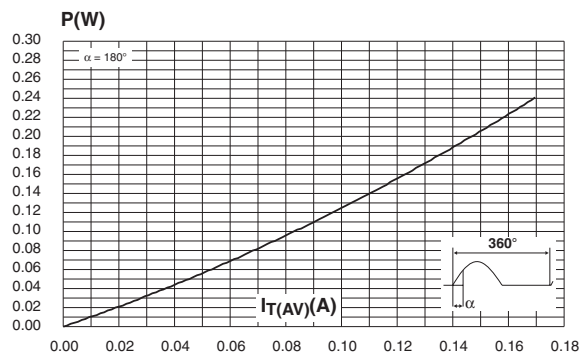


Figure 2: Average and D.C. on-state current versus case temperature

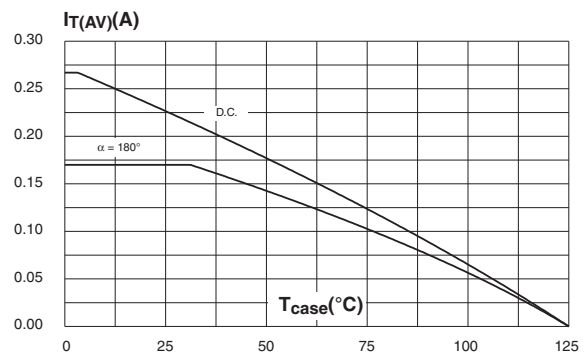


Figure 3: Relative variation of thermal impedance junction to ambient versus pulse duration

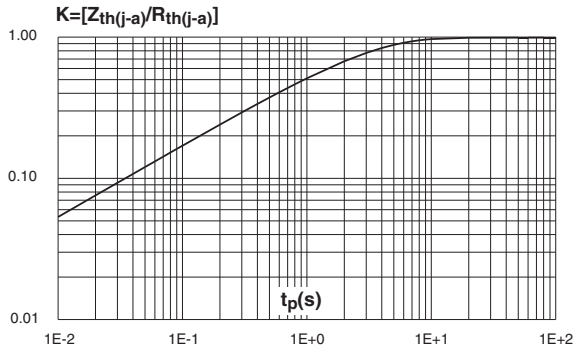


Figure 4: Relative variation of gate trigger current, holding current and latching current versus junction temperature (typical values)

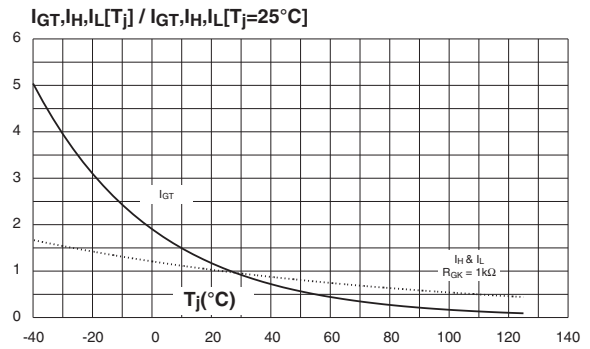


Figure 5: Relative variation of holding current versus gate-cathode resistance (typical values)

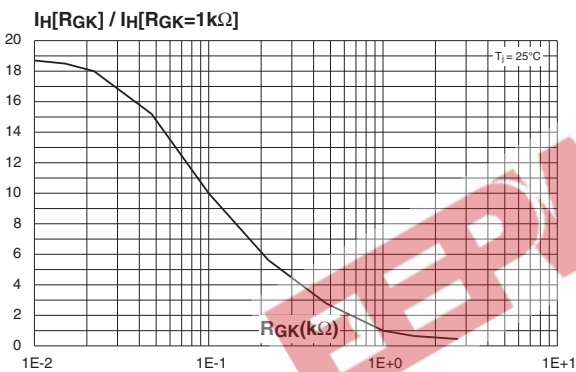


Figure 6: Relative variation of dV/dt immunity versus gate-cathode resistance (typical values)

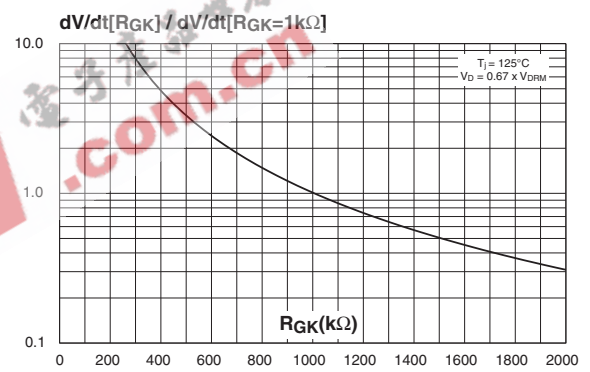


Figure 7: Relative variation of dV/dt immunity versus gate-cathode capacitance (typical values)

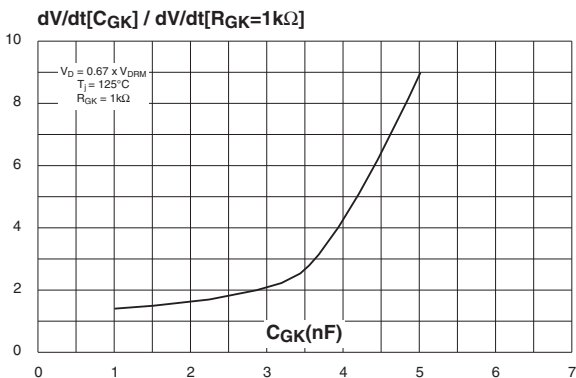


Figure 8: Surge peak on-state current versus number of cycles

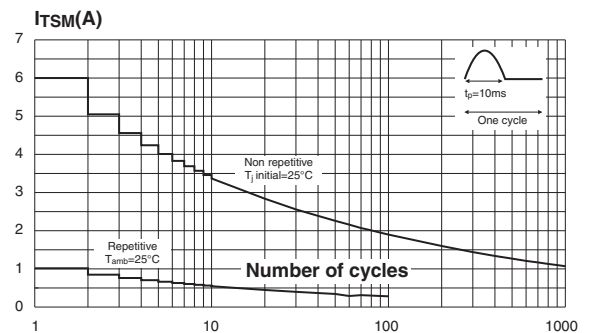


Figure 9: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 10\text{ms}$, and corresponding value of I^2t

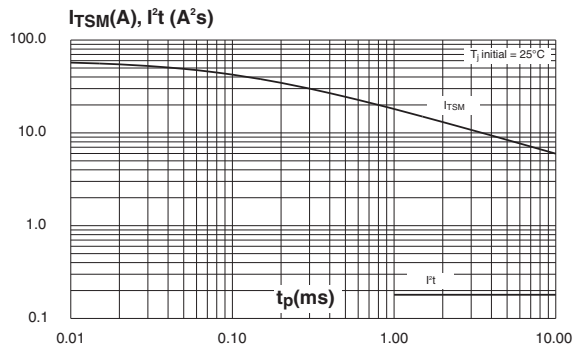


Figure 10: On-state characteristics (maximum values)

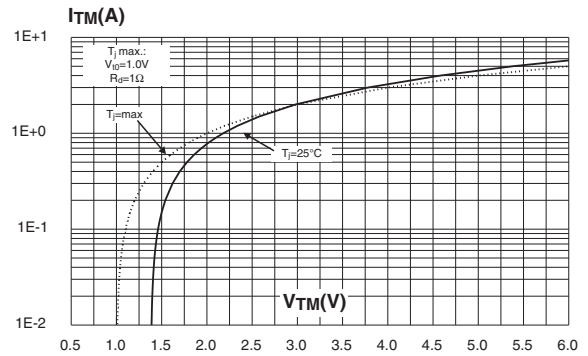


Figure 11: Thermal resistance junction to ambient versus copper surface under tab (Epoxy printed circuit board FR4, copper thickness: 35 mm)

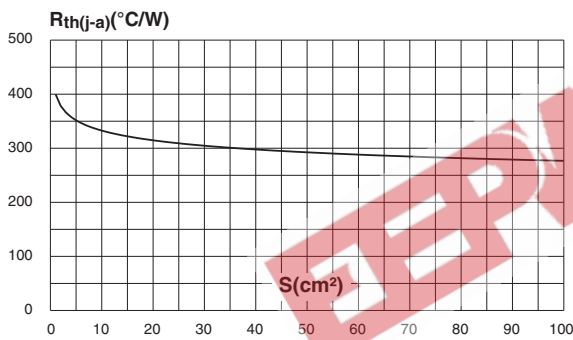


Figure 12: Ordering Information Scheme

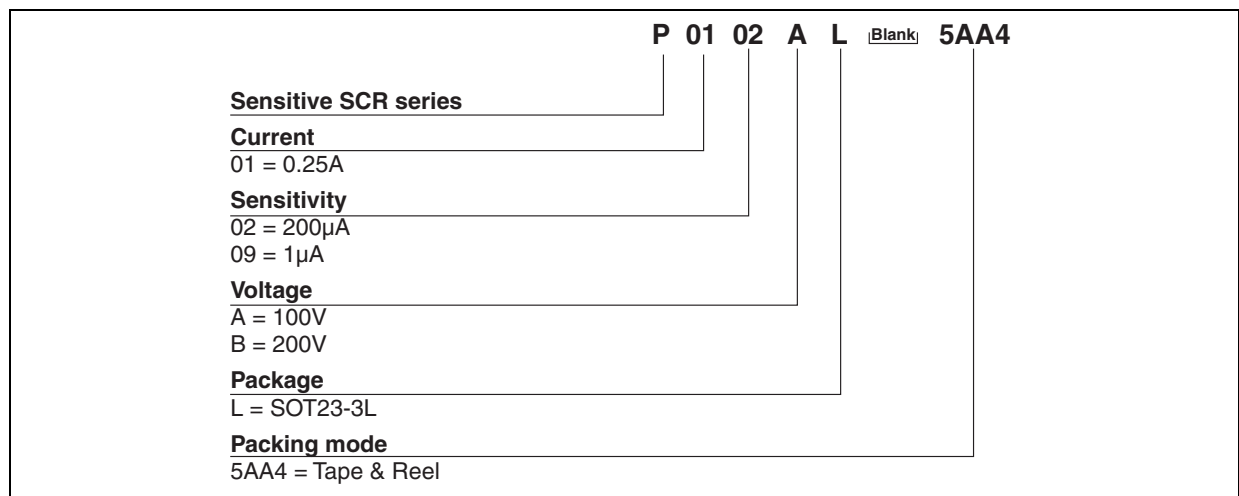


Table 6: Product Selector

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

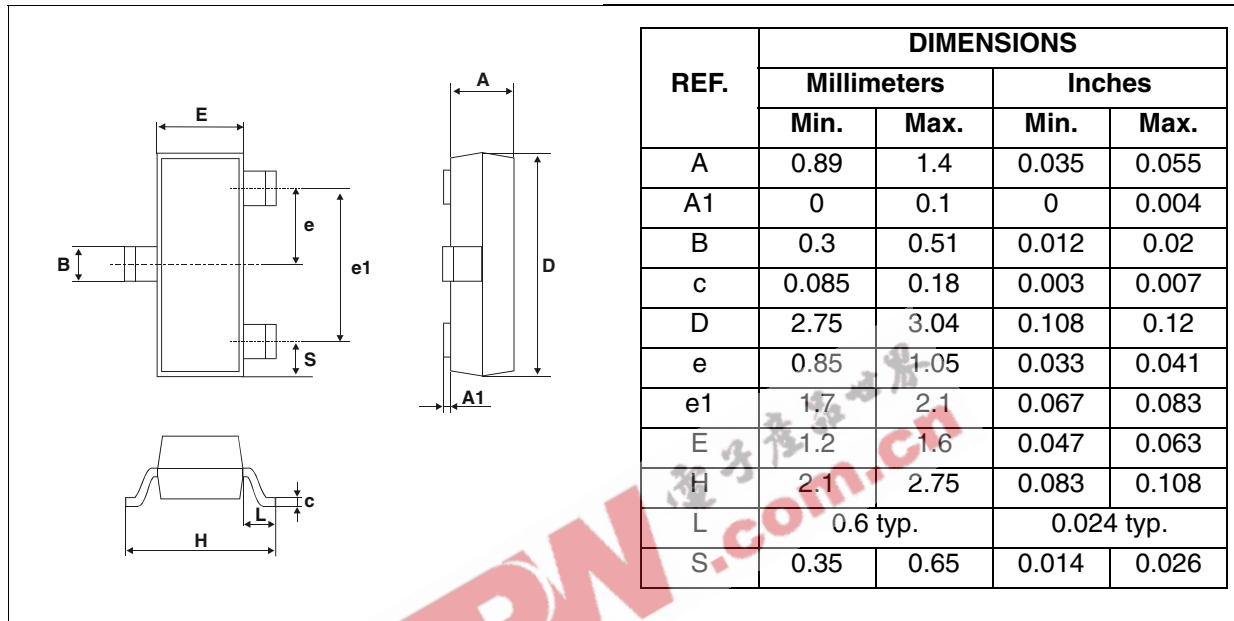
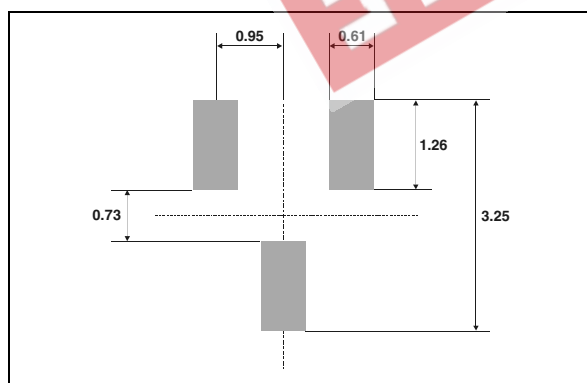


Figure 14: Foot Print Dimensions (in millimeters)



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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