

### Features

- Array of 8 or 12 diodes
- Low input capacitance
- Suitable for digital line protection

### Complies with following standards:

- IEC 61000-4-2 Level 4
  - 15kV (air discharge)
  - 8kV (contact discharge)

### Applications

- Protection of logic side of ISDN S-interface
- Protection of I/O lines of microcontroller
- Signal conditioning

### Description

Array of 8 or 12 diodes configured by cells of 2 diodes, each cell being used to protect signal line from transient overvoltages by clamping action.

As maximum voltage of each diode is 18 V, maximum input voltage range between two I/Os is either 0 V to 18 V (REF1 = 0 V and REF2 = +18 V) or -9 V to +9 V (REF1 = -9 V and REF2 = +9 V)

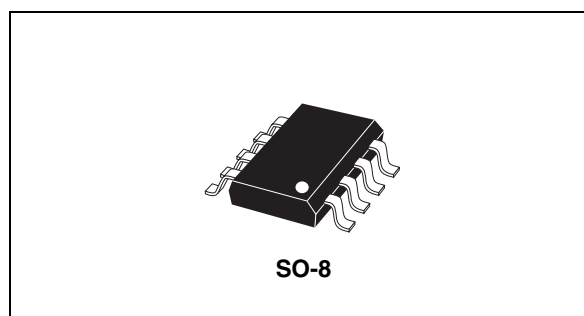


Figure 1. Functional diagram: DA108S1

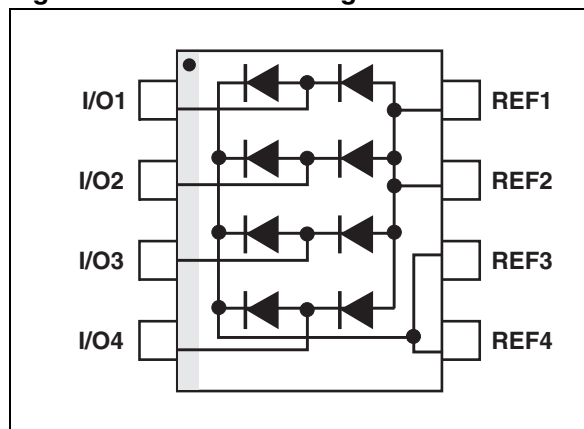
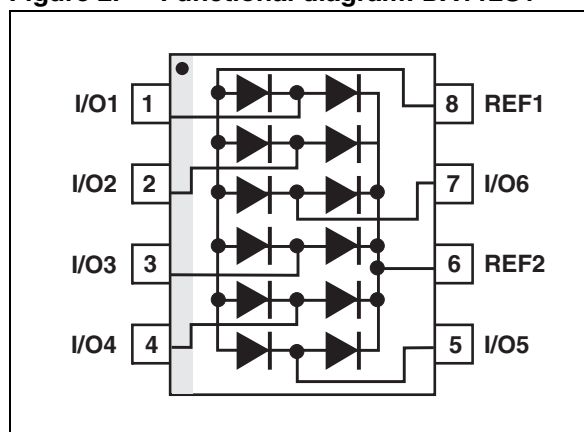


Figure 2. Functional diagram: DA112S1



# 1 Characteristics

**Table 1. Absolute maximum ratings ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ )**

Symbol	Parameter	Value	Unit
$V_{RRM}$	Repetitive peak reverse voltage (for one single diode)	18	V
$I_{PP}$	Repetitive peak forward current <sup>(1)</sup>	$t_p = 8/20\ \mu\text{s}$	A
P	Power dissipation	0.73	W
$T_{stg}$	Storage temperature range	-55 to +150	$^{\circ}\text{C}$
$T_j$	Operating junction temperature range	-55 to +150	$^{\circ}\text{C}$
$T_L$	Maximum lead temperature for soldering during 10 s.	260	$^{\circ}\text{C}$

1. The surge is repeated after the device returns to ambient temperature

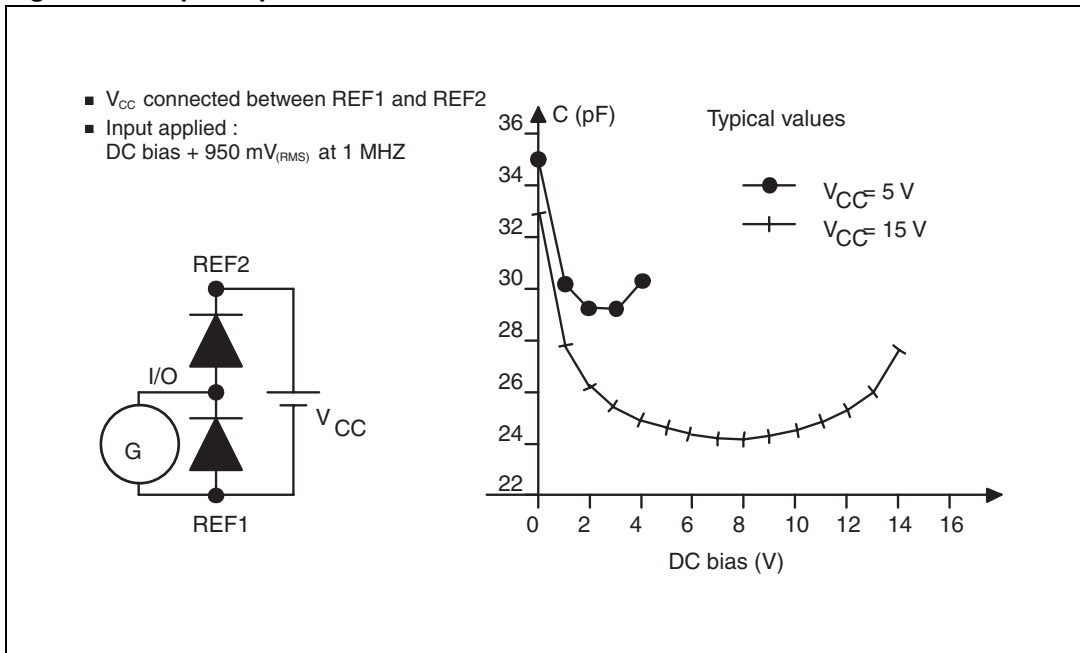
**Table 2. Thermal resistance**

Symbol	Parameter	Value	Unit
$R_{th(j-a)}$	Junction to ambient	170	$^{\circ}\text{C/W}$

**Table 3. Electrical characteristics ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ )**

Symbol	Parameter		Max.	Unit	
$V_{FP}$	Peak forward voltage	$I_{PP} = 12\text{ A}$ , $t_p = 8/20\ \mu\text{s}$	DA108S1	9	V
			DA112S1	12	
$V_F$	Forward voltage	$I_F = 50\text{ mA}$		1.2	V
$I_R$	Reverse leakage current	$V_R = 15\text{ V}$		2	$\mu\text{A}$

**Figure 3. Input capacitance**



**Figure 4. Typical peak forward voltage characteristics (8/20  $\mu\text{s}$  pulse)**

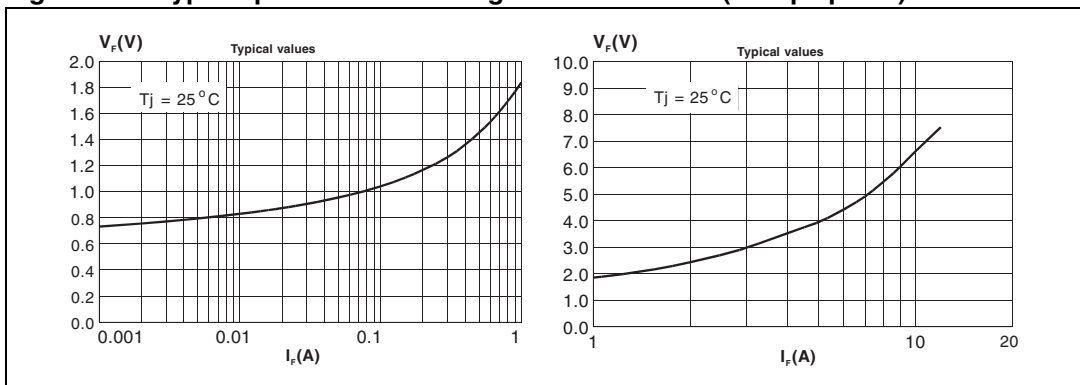


Figure 5. Application 1: ISDN interface protection, residual lightning surges at transformer secondary are suppressed by DA108S1

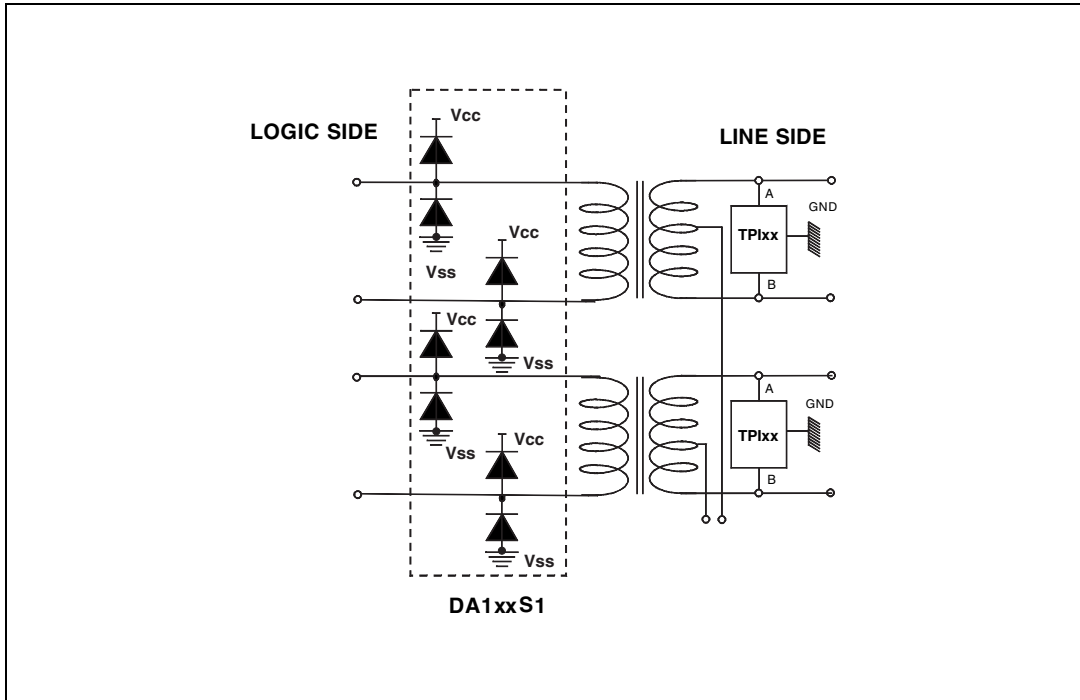
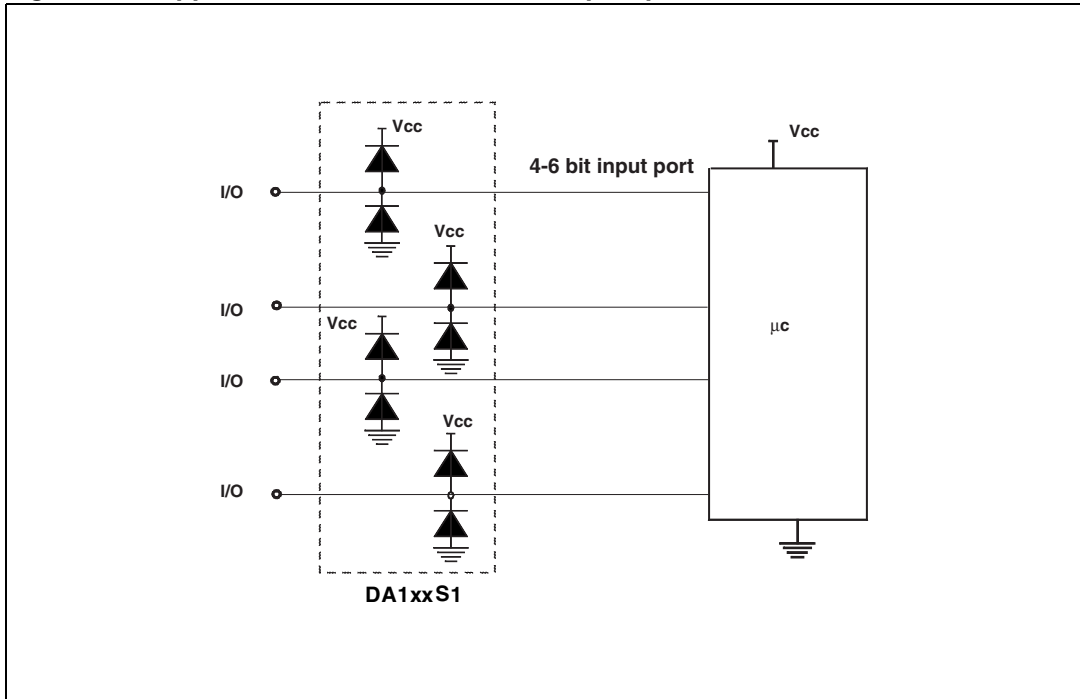


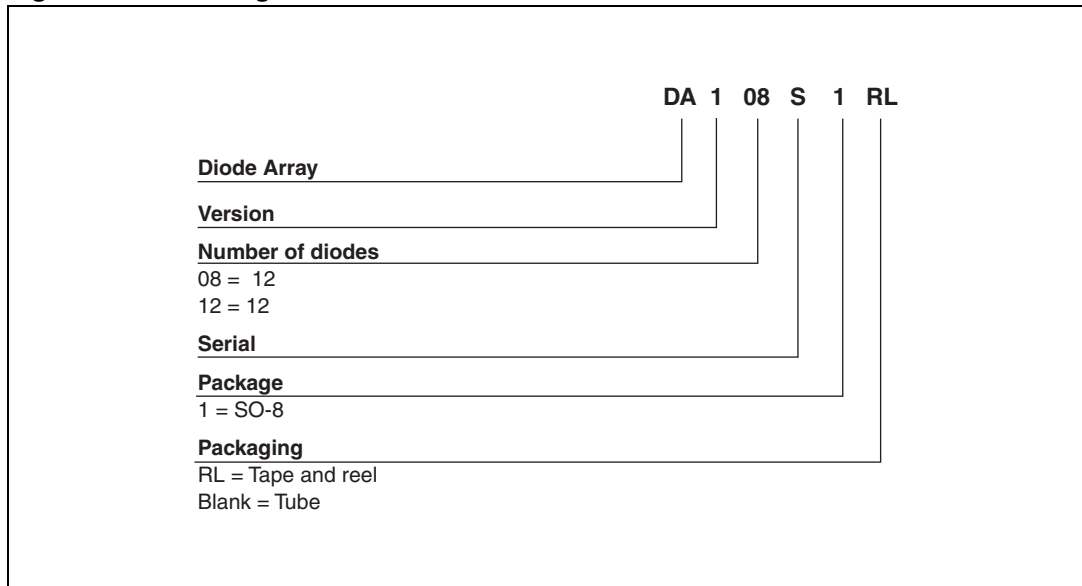
Figure 6. Application 2: microcontroller I/O port protection



Note: **IMPORTANT** : DA108S1 must be connected to the reference voltages through REF1 and REF2.

## 2 Ordering information scheme

Figure 7. Ordering information scheme



### 3 Package mechanical data

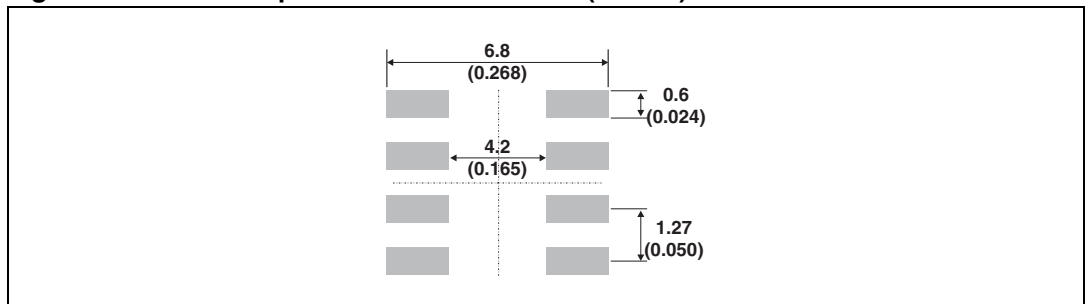
- Epoxy meets UL94, V0

In order to meet environmental requirements, ST offers these devices in ECOPACK® packages. These packages have a lead-free second level interconnect. The category of second level interconnect is marked on the package and on the inner box label, in compliance with JEDEC Standard JESD97. The maximum ratings related to soldering conditions are also marked on the inner box label. ECOPACK is an ST trademark. ECOPACK specifications are available at [www.st.com](http://www.st.com).

**Table 4. SO-8 dimensions**

Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A			1.75			0.069
A1	0.1		0.25	0.004		0.010
A2	1.25			0.049		
b	0.28		0.48	0.011		0.019
C	0.17		0.23	0.007		0.009
D	4.80	4.90	5.00	0.189	0.193	0.197
E	5.80	6.00	6.20	0.228	0.236	0.244
E1	3.80	3.90	4.00	0.150	0.154	0.157
e		1.27			0.050	
h	0.25		0.50	0.010		0.020
L	0.40		1.27	0.016		0.050
L1		1.04			0.041	
k°	0		8	0		8
ccc			0.10			0.004

**Figure 8. SO-8 footprint dimensions in mm (inches)**



## 4 Ordering information

Figure 9. Ordering information

Order codes	Marking	Package	Weight	Base qty	Delivery mode
DA108S1	DA108S	SO-8	0.11 g	100	Tube
DA108S1RL				2500	Tape and reel <sup>(1)</sup>
DA112S1	DA112S			100	Tube
DA112S1RL				2500	Tape and reel <sup>(1)</sup>

1. Preferred packaging is tape and reel

## 5 Revision history

Figure 10. Revision history

Date	Revision	Changes
Aug-2001	4	Previous release.
15-Feb-2007	5	Reformatted to current standard. Standard typing error corrected.
15-Jan-2008	6	Reformatted to current standards. Added paragraph on maximum input voltage range to <a href="#">Description</a> . Parameters updated in <a href="#">Table 1</a> . Added Pin 1 marker to package illustration. Added <a href="#">Figure 8: SO-8 footprint dimensions in mm (inches)</a> .

**Please Read Carefully:**

Information in this document is provided solely in connection with ST products. STMicroelectronics NV and its subsidiaries ("ST") reserve the right to make changes, corrections, modifications or improvements, to this document, and the products and services described herein at any time, without notice.

All ST products are sold pursuant to ST's terms and conditions of sale.

Purchasers are solely responsible for the choice, selection and use of the ST products and services described herein, and ST assumes no liability whatsoever relating to the choice, selection or use of the ST products and services described herein.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted under this document. If any part of this document refers to any third party products or services it shall not be deemed a license grant by ST for the use of such third party products or services, or any intellectual property contained therein or considered as a warranty covering the use in any manner whatsoever of such third party products or services or any intellectual property contained therein.

**UNLESS OTHERWISE SET FORTH IN ST'S TERMS AND CONDITIONS OF SALE ST DISCLAIMS ANY EXPRESS OR IMPLIED WARRANTY WITH RESPECT TO THE USE AND/OR SALE OF ST PRODUCTS INCLUDING WITHOUT LIMITATION IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE (AND THEIR EQUIVALENTS UNDER THE LAWS OF ANY JURISDICTION), OR INFRINGEMENT OF ANY PATENT, COPYRIGHT OR OTHER INTELLECTUAL PROPERTY RIGHT.**

**UNLESS EXPRESSLY APPROVED IN WRITING BY AN AUTHORIZED ST REPRESENTATIVE, ST PRODUCTS ARE NOT RECOMMENDED, AUTHORIZED OR WARRANTED FOR USE IN MILITARY, AIR CRAFT, SPACE, LIFE SAVING, OR LIFE SUSTAINING APPLICATIONS, NOR IN PRODUCTS OR SYSTEMS WHERE FAILURE OR MALFUNCTION MAY RESULT IN PERSONAL INJURY, DEATH, OR SEVERE PROPERTY OR ENVIRONMENTAL DAMAGE. ST PRODUCTS WHICH ARE NOT SPECIFIED AS "AUTOMOTIVE GRADE" MAY ONLY BE USED IN AUTOMOTIVE APPLICATIONS AT USER'S OWN RISK.**

Resale of ST products with provisions different from the statements and/or technical features set forth in this document shall immediately void any warranty granted by ST for the ST product or service described herein and shall not create or extend in any manner whatsoever, any liability of ST.

ST and the ST logo are trademarks or registered trademarks of ST in various countries.

Information in this document supersedes and replaces all information previously supplied.

The ST logo is a registered trademark of STMicroelectronics. All other names are the property of their respective owners.

© 2008 STMicroelectronics - All rights reserved

STMicroelectronics group of companies

Australia - Belgium - Brazil - Canada - China - Czech Republic - Finland - France - Germany - Hong Kong - India - Israel - Italy - Japan - Malaysia - Malta - Morocco - Singapore - Spain - Sweden - Switzerland - United Kingdom - United States of America

[www.st.com](http://www.st.com)





Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



#### Как с нами связаться

**Телефон:** 8 (812) 309 58 32 (многоканальный)

**Факс:** 8 (812) 320-02-42

**Электронная почта:** [org@eplast1.ru](mailto:org@eplast1.ru)

**Адрес:** 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.