



# DA108S1 DA112S1

Application Specific Discretes  
A.S.D.<sup>TM</sup>

DIODE ARRAY

## APPLICATION

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

## FEATURES

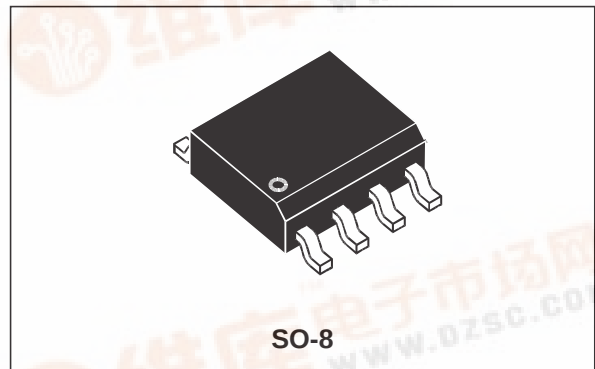
- ARRAY OF 8 OR 12 DIODES
- LOW INPUT CAPACITANCE
- SUITABLE FOR DIGITAL LINE PROTECTION

## DESCRIPTION

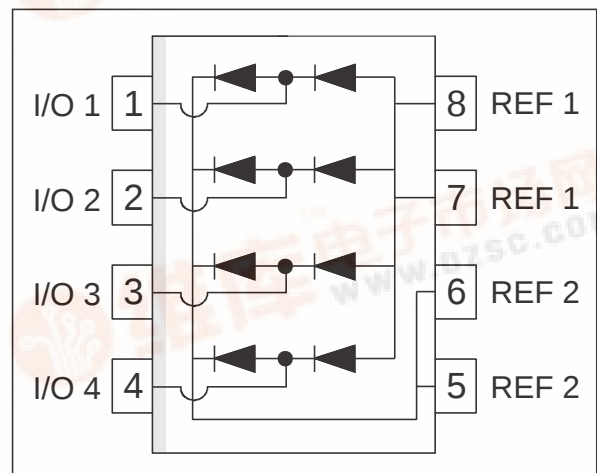
ARRAY of 8 or 12 diodes configured by cells of 2 diodes, each cell being used to protect signal line from transient overvoltages by clamping action.

## COMPLIES WITH FOLLOWING STANDARDS :

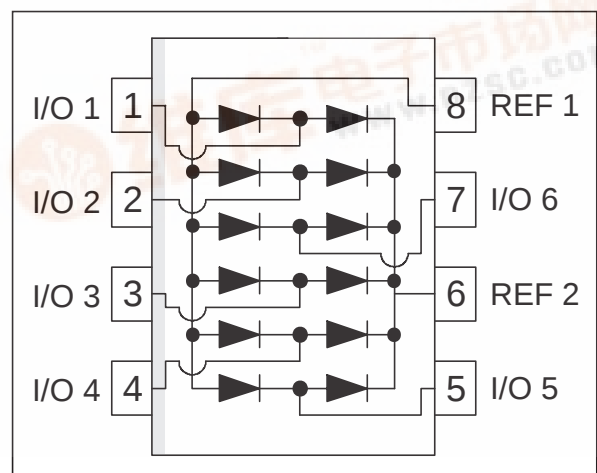
IEC1000-4-22 level 4: 15kV (air discharge)  
8kV (contact discharge)



## FUNCTIONAL DIAGRAM : DA108S1



## FUNCTIONAL DIAGRAM : DA112S1



## DA108S1 / DA112S1

### ABSOLUTE MAXIMUM RATINGS ( $T_{amb} = 25^{\circ}\text{C}$ )

| Symbol             | Parameter                                                           |                    | Value                | Unit               |
|--------------------|---------------------------------------------------------------------|--------------------|----------------------|--------------------|
| $V_{RRM}$          | Repetitive peak reverse voltage (for one single diode)              |                    | 18                   | V                  |
| $I_{PP}$           | Repetitive peak forward current *                                   | 8/20 $\mu\text{s}$ | 12                   | A                  |
| P                  | Power dissipation                                                   |                    | 0.73                 | W                  |
| $T_{stg}$<br>$T_j$ | Storage temperature range<br>Maximum operating junction temperature |                    | - 55 to + 150<br>150 | $^{\circ}\text{C}$ |
| $T_L$              | Maximum lead temperature for soldering during 10s.                  |                    | 260                  | $^{\circ}\text{C}$ |

\* The surge is repeated after the device returns to ambient temperature

### THERMAL RESISTANCES

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

### ELECTRICAL CHARACTERISTICS ( $T_{amb} = 25^{\circ}\text{C}$ )

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

Fig.1 : Input capacitance

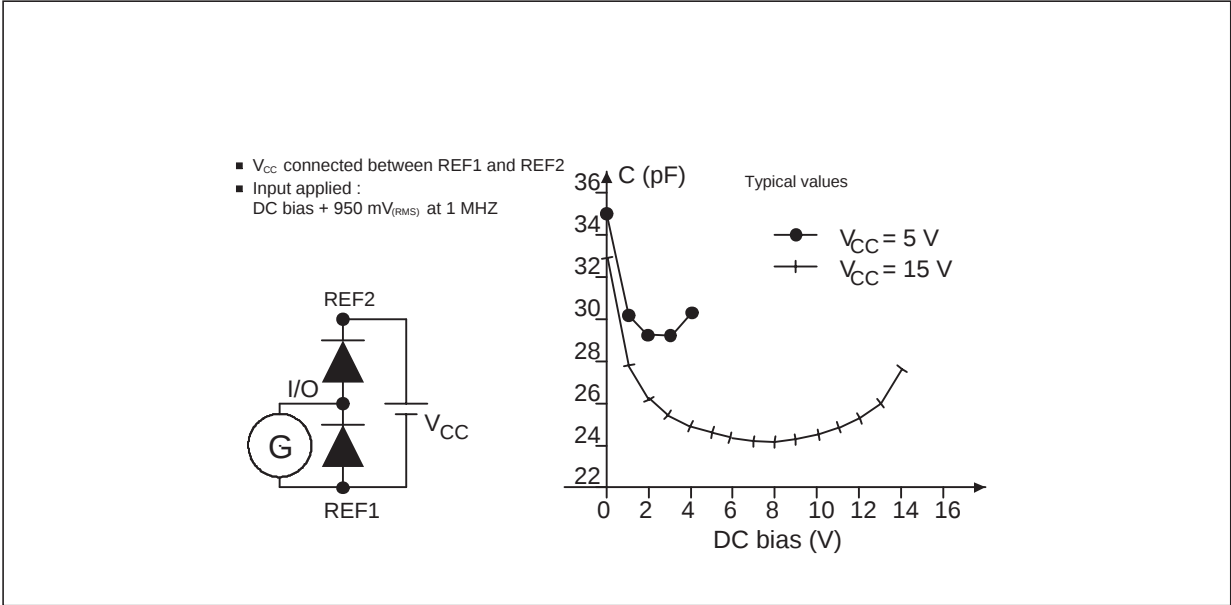
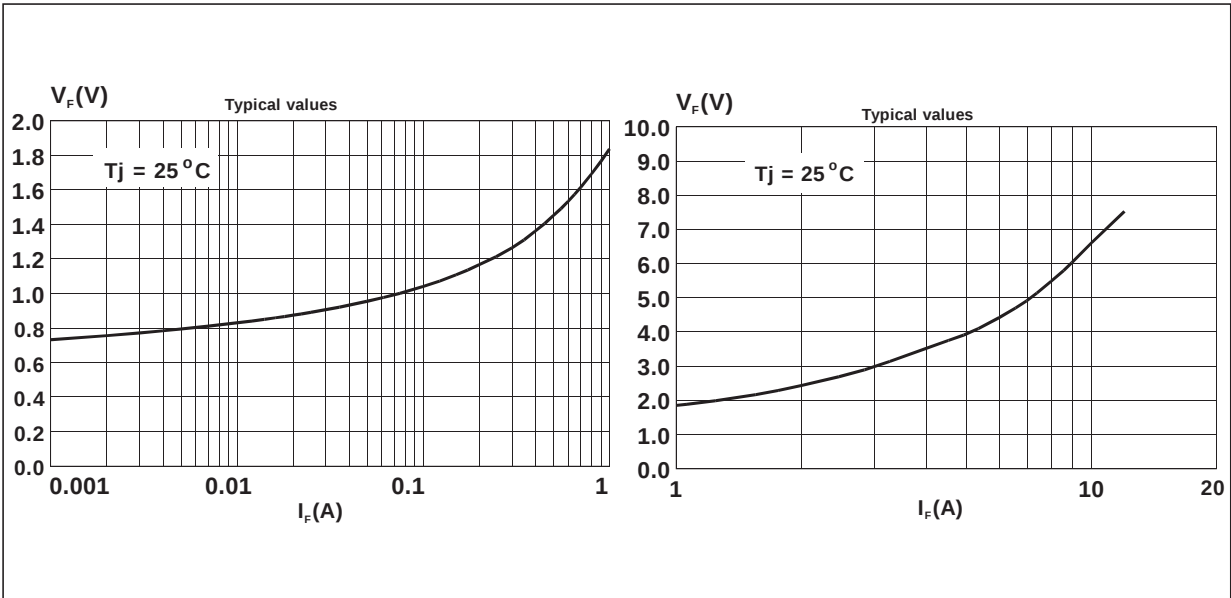


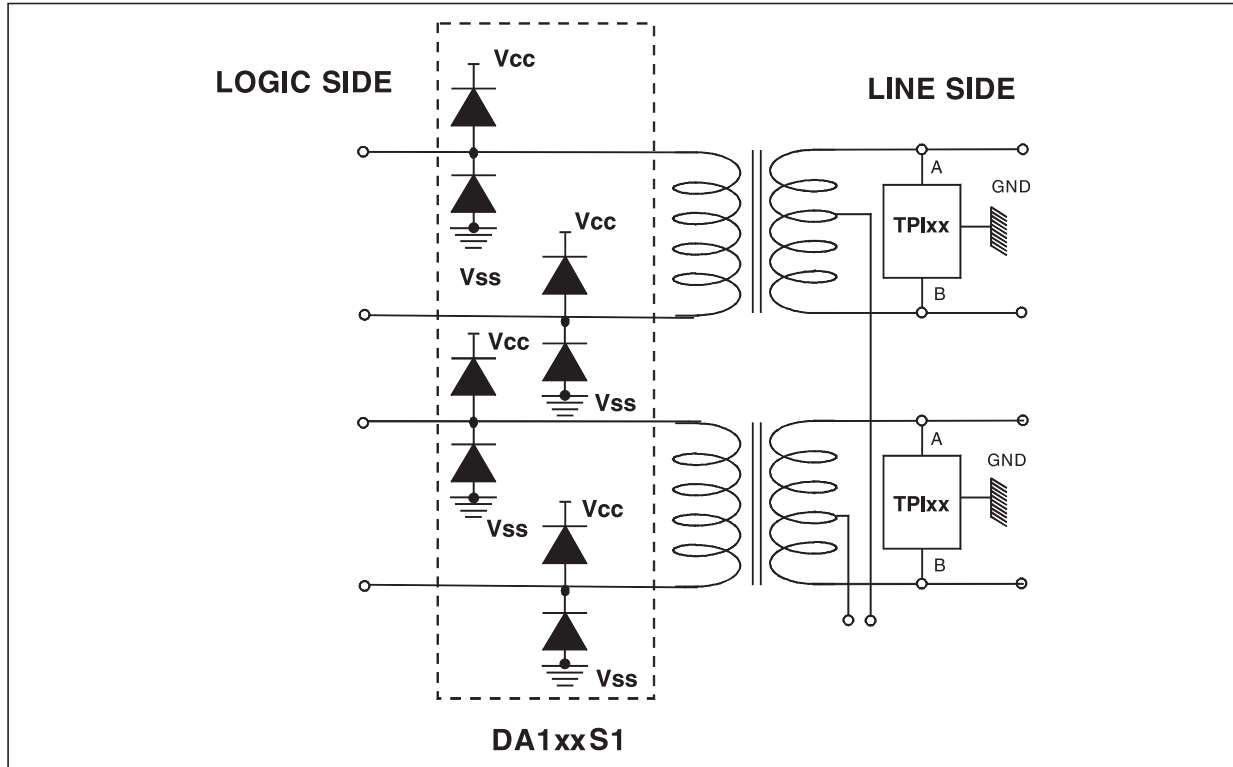
Fig.2 : Typical peak forward voltage characteristics (8/20 $\mu$ s pulse)



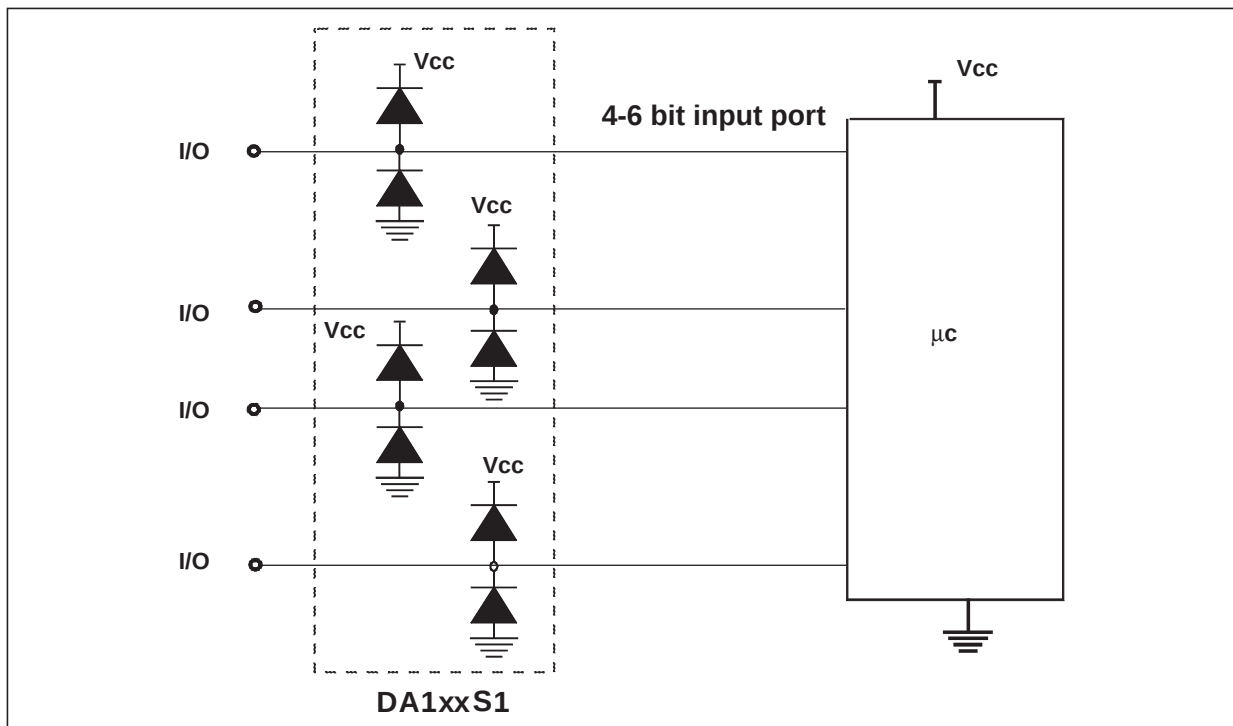
## DA108S1 / DA112S1

### APPLICATION 1 : ISDN Interface Protection

Residual lightning surges at transformer secondary are suppressed by DA108S1



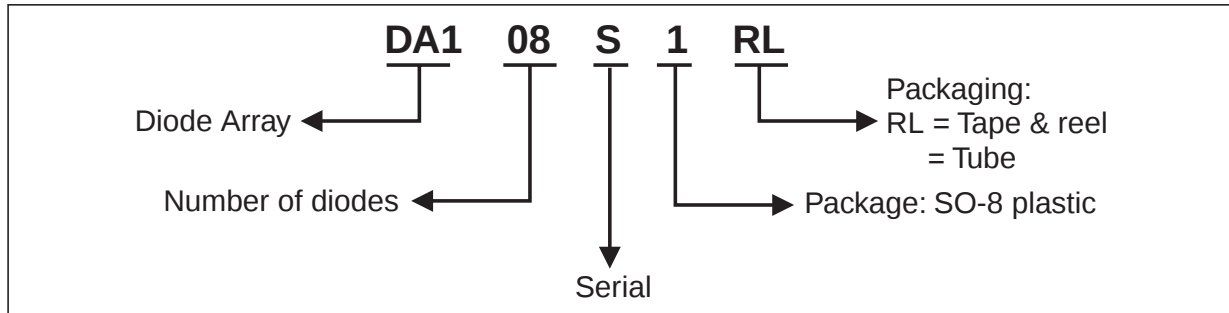
### APPLICATION 2 : Microcontroller I/O port protection



**IMPORTANT :** DA108S1 must imperatively be connected to the reference voltages by REF1 and REF2.

## DA108S1 / DA112S1

### ORDER CODE



**MARKING** : Logo, Data Code,

|         |        |
|---------|--------|
| DA108S1 | DA108S |
| DA112S1 | DA112S |

**Packaging** : Preference packaging is tape and reel.

### PACKAGE MECHANICAL DATA

SO-8 (Plastic)

| REF. | DIMENSIONS  |      |      |        |       |       |
|------|-------------|------|------|--------|-------|-------|
|      | Millimetres |      |      | Inches |       |       |
|      | Min.        | Typ. | Max. | Min.   | Typ.  | Max.  |
| A    |             |      | 1.75 |        |       | 0.069 |
| a1   | 0.1         |      | 0.25 | 0.004  |       | 0.010 |
| a2   |             |      | 1.65 |        |       | 0.065 |
| b    | 0.35        |      | 0.48 | 0.014  |       | 0.019 |
| b1   | 0.19        |      | 0.25 | 0.007  |       | 0.010 |
| C    |             | 0.50 |      |        | 0.020 |       |
| c1   | 45° (typ)   |      |      |        |       |       |
| D    | 4.8         |      | 5.0  | 0.189  |       | 0.197 |
| E    | 5.8         |      | 6.2  | 0.228  |       | 0.244 |
| e    |             | 1.27 |      |        | 0.050 |       |
| e3   |             | 3.81 |      |        | 0.150 |       |
| F    | 3.8         |      | 4.0  | 0.15   |       | 0.157 |
| L    | 0.4         |      | 1.27 | 0.016  |       | 0.050 |
| M    |             |      | 0.6  |        |       | 0.024 |
| S    | 8° (max)    |      |      |        |       |       |

Information furnished is believed to be accurate and reliable. However, STMicroelectronics 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 STMicroelectronics. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. STMicroelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of STMicroelectronics.

The ST logo is a registered trademark of STMicroelectronics

© 2001 STMicroelectronics - Printed in Italy - All rights reserved.

STMicroelectronics GROUP OF COMPANIES

Australia - Brazil - China - Finland - France - Germany - Hong Kong - India - Italy - Japan - Malaysia  
Malta - Morocco - Singapore - Spain - Sweden - Switzerland - United Kingdom - U.S.A.

<http://www.st.com>

