



DA108S1 DA112S1

ASD (Application Specific Devices)

Diode Array

Main applications

- 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

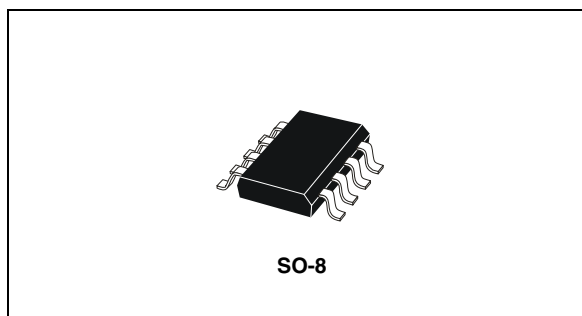
Description

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.

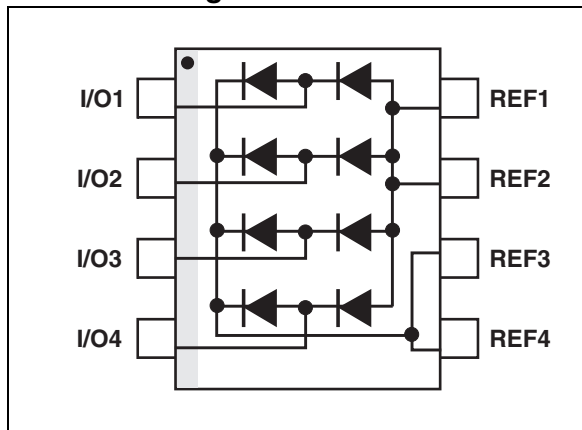
COMPLIES WITH FOLLOWING STANDARDS :

IEC 61000-4-2 Level 4:

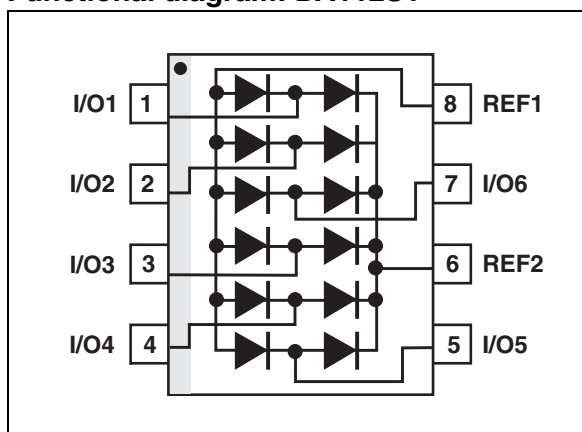
- 15kV (air discharge)
- 8kV (contact discharge)



Functional diagram: DA108S1



Functional diagram: DA112S1



1 Characteristics

Table 1. Absolute maximum ratings (T_{amb} = 25 °C)

| Symbol | Parameter | Value | Unit |
|------------------|---|--------------|------|
| V _{RRM} | Repetitive peak reverse voltage (for one single diode) | 200 | V |
| I _{PP} | Repetitive peak forward current (see Note 1) | 8/20 μs | A |
| P | Power dissipation | 0.73 | W |
| T _{stg} | Storage temperature range | -55 to + 150 | °C |
| T _j | Maximum operating junction temperature | 150 | °C |
| T _L | Maximum lead temperature for soldering during 10 s. | 260 | °C |

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

Table 2. Thermal resistances

| Symbol | Parameter | Value | Unit |
|----------------------|---------------------|-------|------|
| R _{th(j-a)} | Junction to ambient | 170 | °C/W |

Table 3. Electrical characteristics(T_{amb} = 25 °C)

| Symbol | Parameter | | Max. | Unit |
|----------------|-------------------------|---------------------------------|-------------------------------|------|
| I _R | Peak forward voltage | I _{PP} = 12 A, 8/20 μS | DA108S1 9 DA112S1 12 | V |
| V _F | Forward voltage | I _F = 50 mA | 1.2 | V |
| I _R | Reverse leakage current | V _R = 15 V | 2 | μA |

Figure 1. Input capacitance

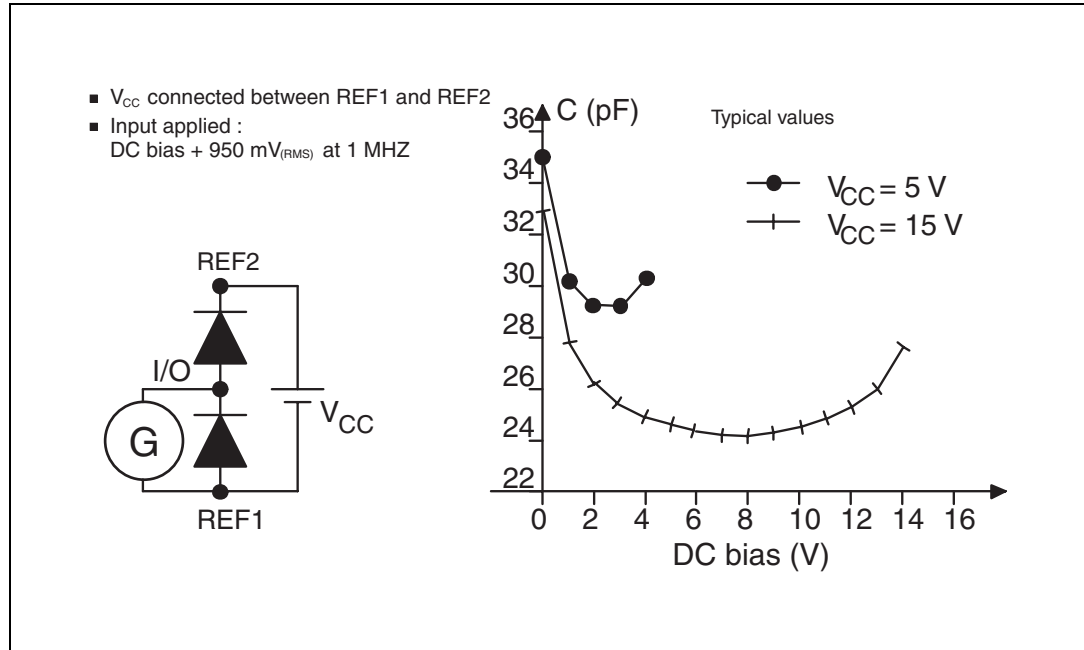


Figure 2. Typical peak forward voltage characteristics (8/20 μs pulse)

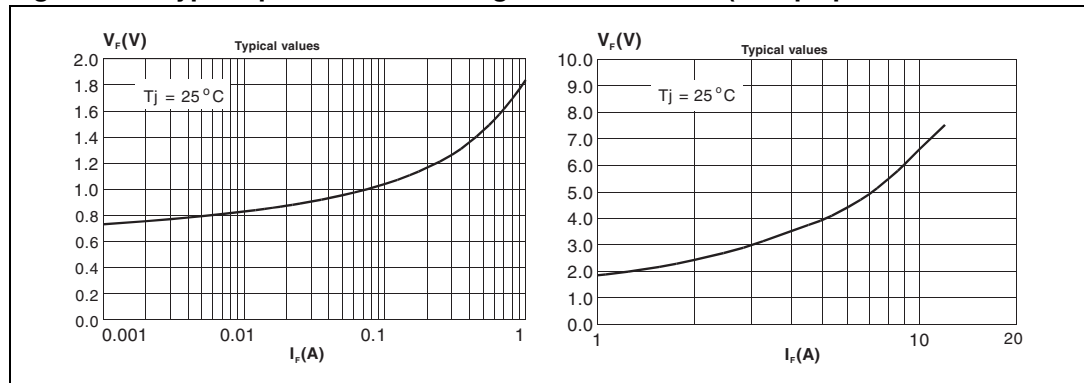


Figure 3. APPLICATION 1: ISDN Interface Protection Residual lightning surges at transformer secondary are suppressed by DA108S1

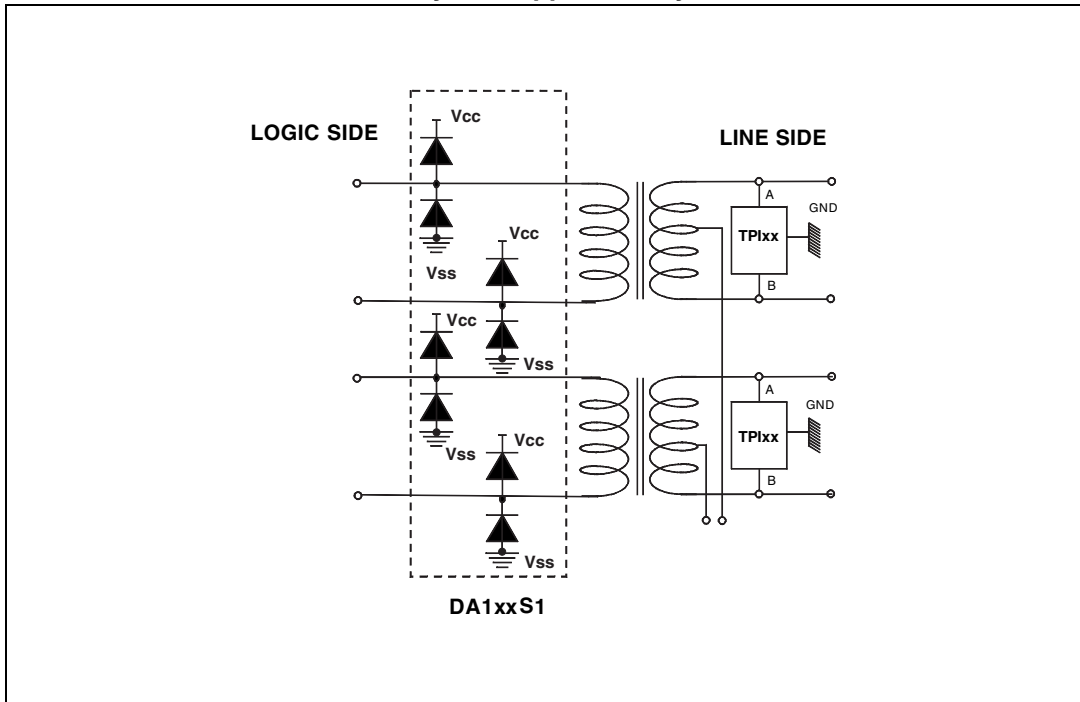
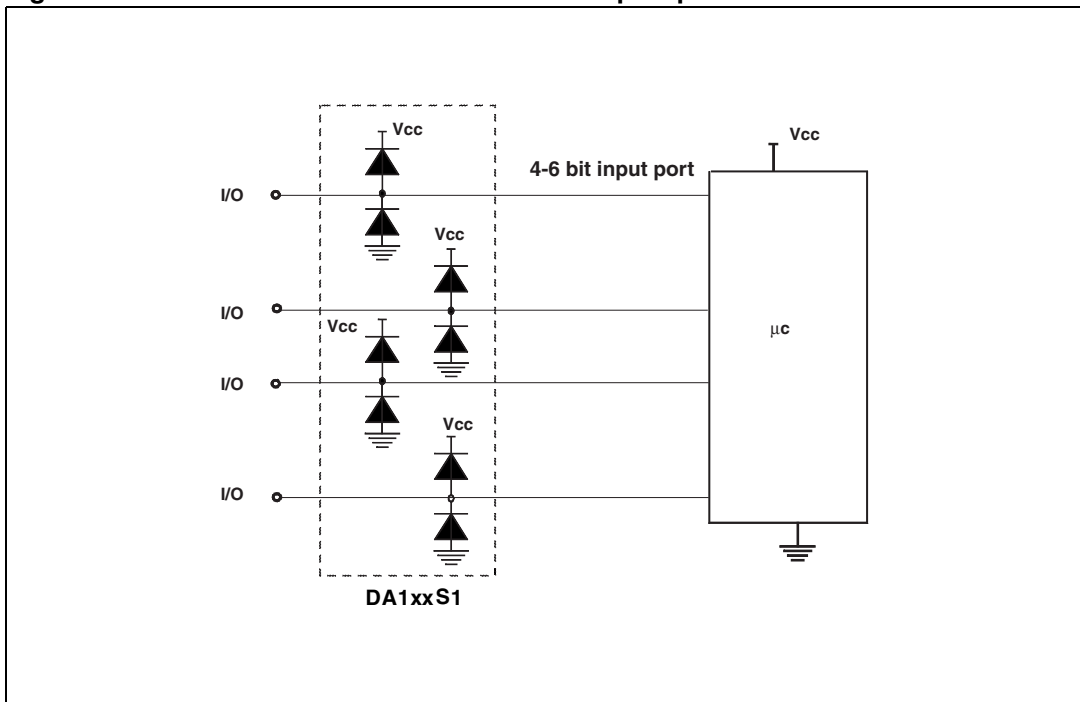
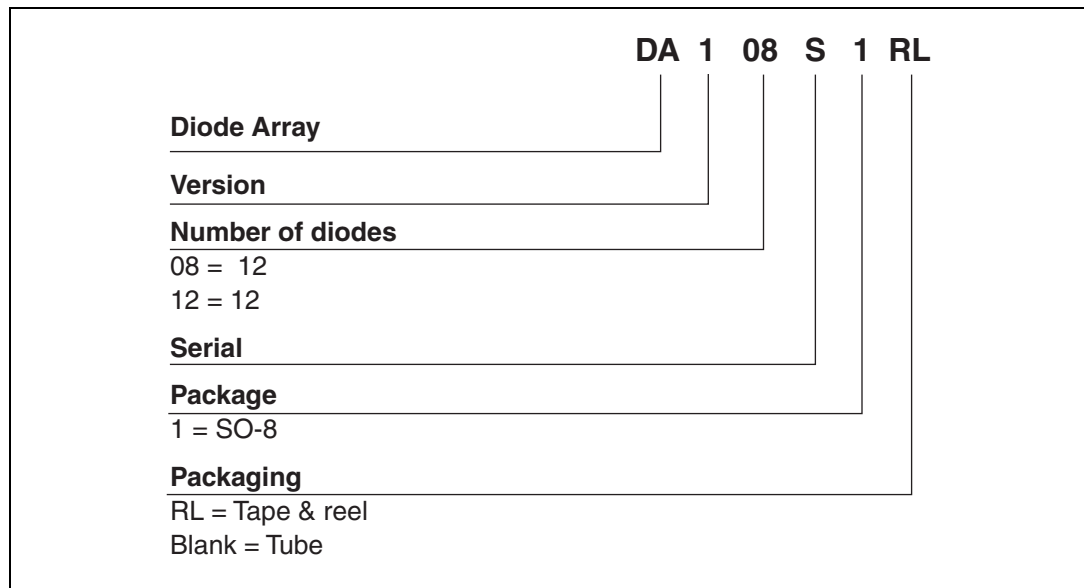


Figure 4. APPLICATION 2: Microcontroller I/O port protection



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

2 Ordering information scheme



3 Package mechanical data

- Epoxy meets UL94, V0

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 |

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.

4 Ordering information

| Part number | Marking | Package | Weight | Base qty | Delivery mode |
|-------------|---------|---------|--------|----------|------------------------------|
| DA108S1 | DA108S | SO-8 | 0.11 g | 100 | Tube |
| DA108S1RL | | | | 2500 | Tape and reel ⁽¹⁾ |
| DA112S1 | DA112S | | | 100 | Tube |
| DA112S1RL | | | | 2500 | Tape and reel ⁽¹⁾ |

1. Preference packaging is tape and reel

5 Revision history

| Date | Revision | Changes |
|-------------|----------|--|
| Aug-2001 | 4 | Last release. |
| 15-Feb-2007 | 5 | Reformatted to current standard. Standard typing error corrected. |

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