DA108S1
DA112S1

Diode array

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)

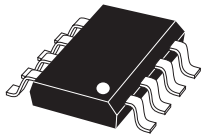
Applications

- 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)



SO-8

Figure 1. Functional diagram: DA108S1

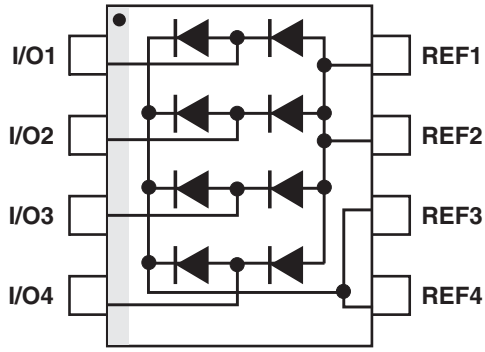
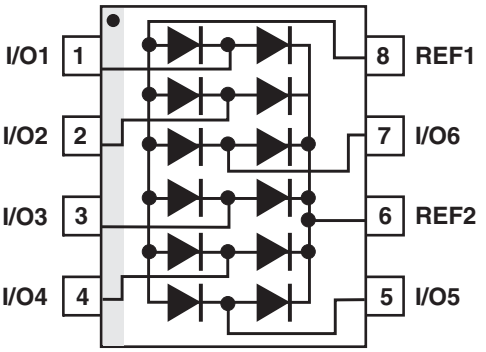


Figure 2. Functional diagram: DA112S1



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)		18	V
I_{PP}	Repetitive peak forward current (1)	t_p = 8/20 µs	12	A
P	Power dissipation		0.73	W
T_{stg}	Storage temperature range		-55 to +150	°C
T_j	Operating junction temperature range		-55 to +150	°C
T_L	Maximum lead temperature for soldering during 10 s.		260	°C

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

Table 2. Thermal resistance

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

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

Symbol	Parameter			Max.	Unit
V_{FP}	Peak forward voltage	I_{PP} = 12 A, t_p = 8/20 µs	DA108S1 DA112S1	9 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 3. Input capacitance

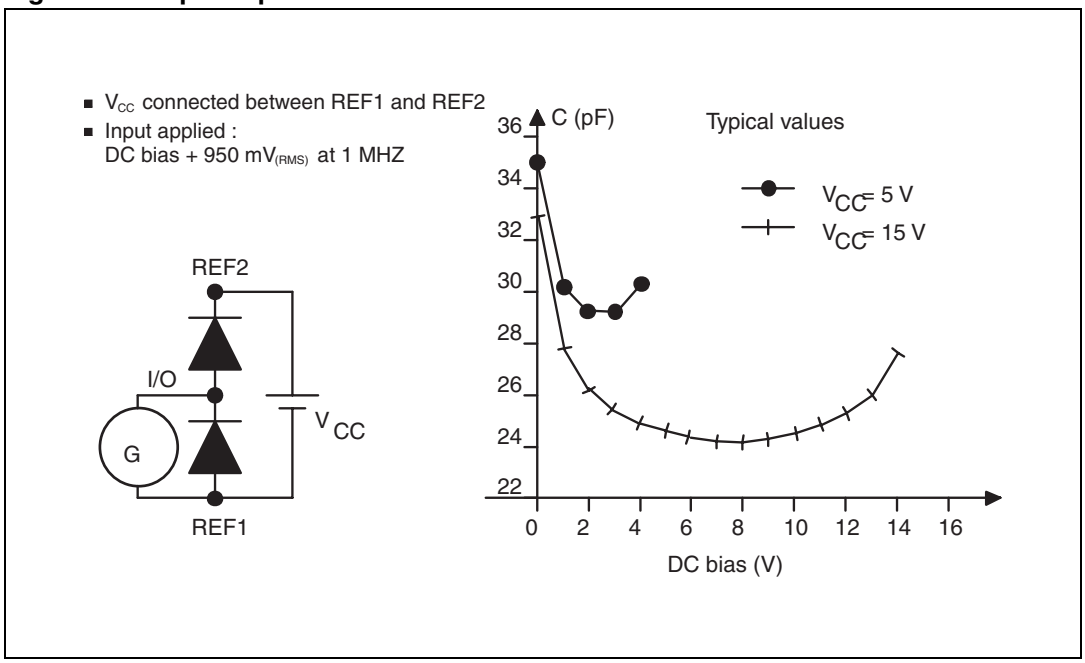


Figure 4. Typical peak forward voltage characteristics (8/20 µs pulse)

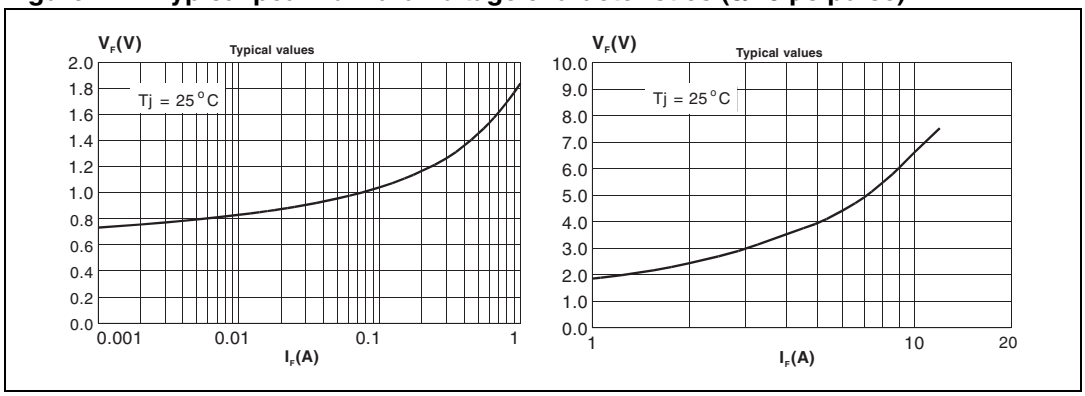


Figure 5. Application 1: ISDN interface protection, residual lightning surges at transformer secondary are suppressed by DA108S1

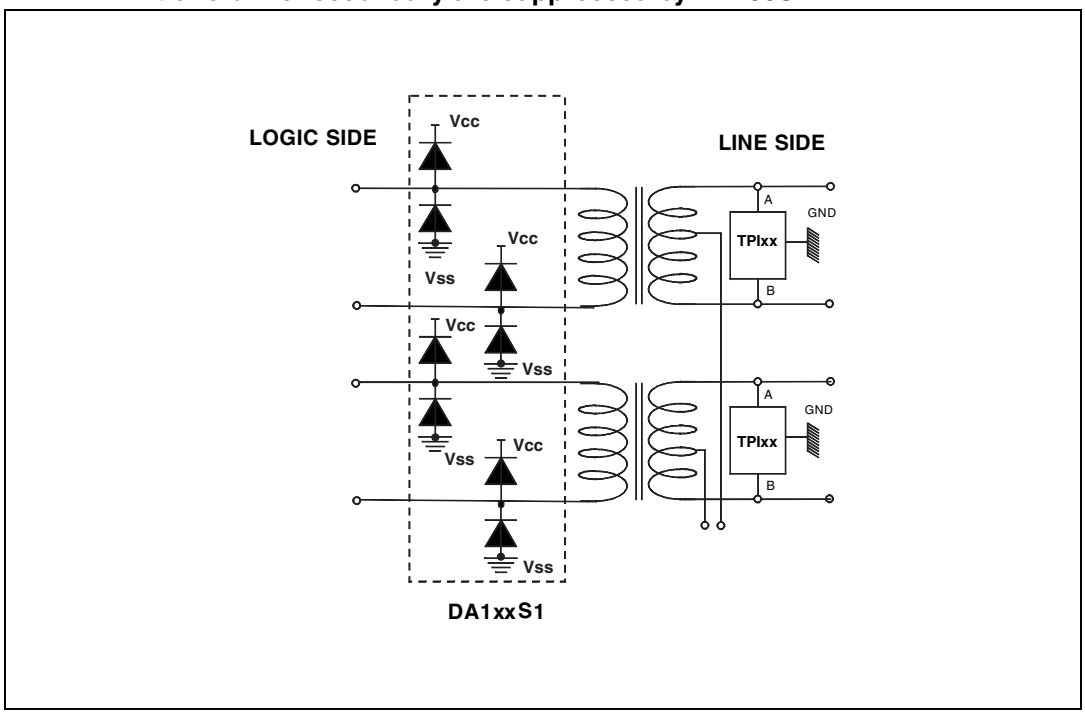
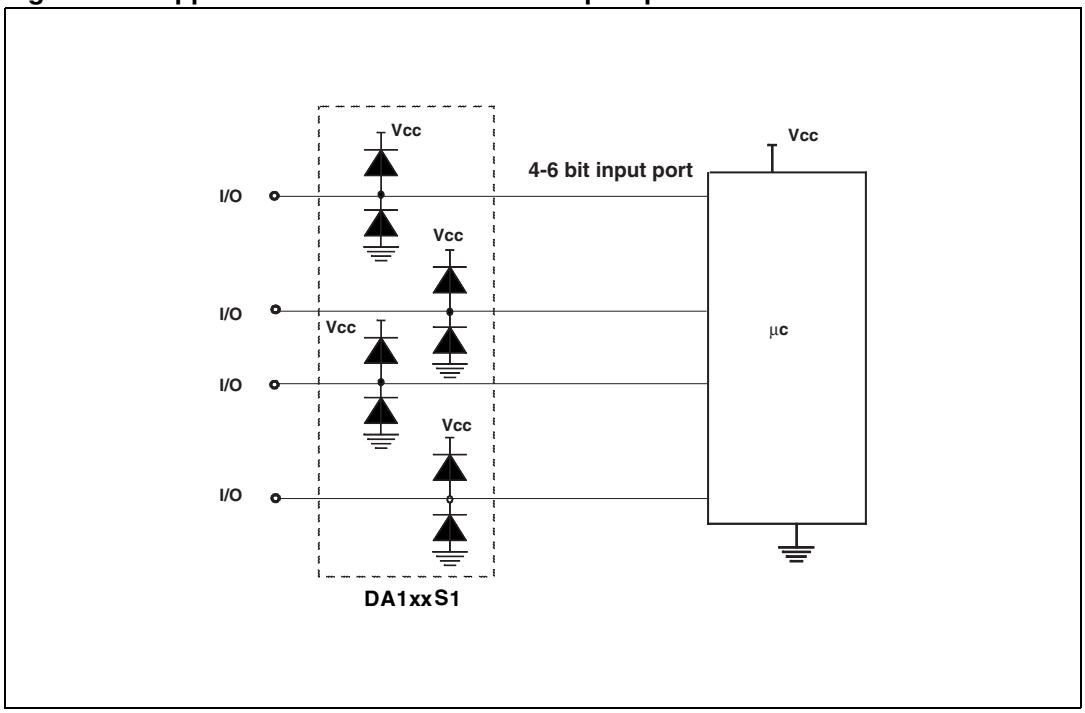


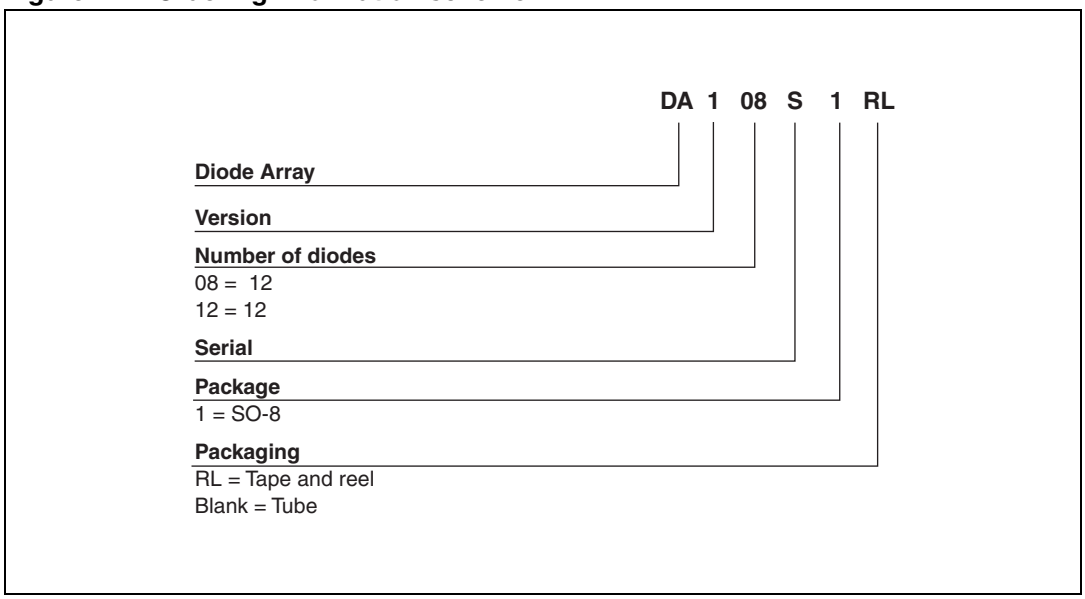
Figure 6. Application 2: microcontroller I/O port protection



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

2 Ordering information scheme

Figure 7. Ordering information scheme

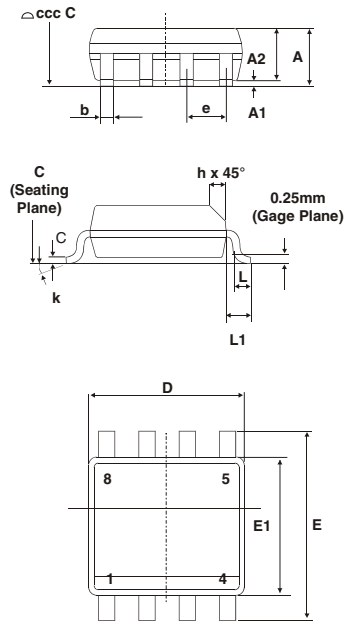


3 Package mechanical data

- Epoxy meets UL94, V0

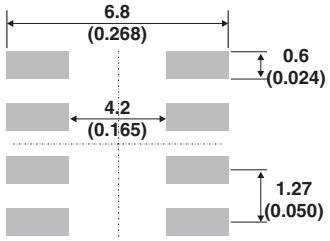
In order to meet environmental requirements, ST offers these devices in ECOPACK® packages. These packages have a lead-free second level interconnect. The category of second level interconnect is marked on the package and on the inner box label, in compliance with JEDEC Standard JESD97. The maximum ratings 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*.

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(1)
DA112S1	DA112S			100	Tube
DA112S1RL				2500	Tape and reel(1)

1. Prefered 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 *Description*. Parameters updated in *Table 1.* Added Pin 1 marker to package illustration. Added *Figure 8: SO-8 footprint dimensions in mm (inches)*.

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