

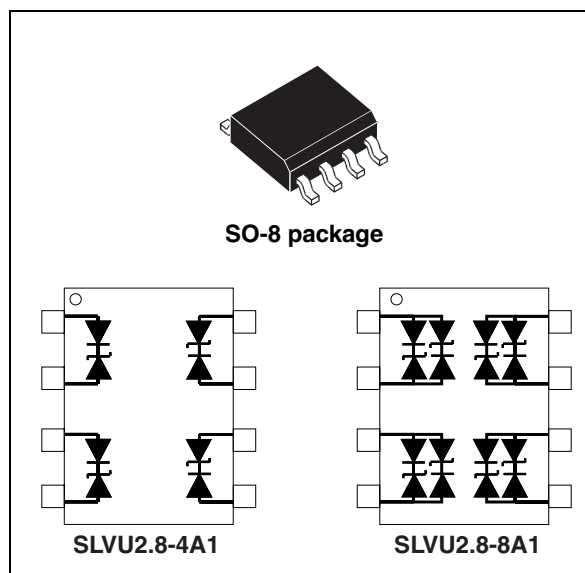
## Low voltage unit for Gigabit Ethernet protection

### Features

- Peak pulse current :  $I_{PP} = 30 \text{ A } 8/20 \mu\text{s}$
- Low capacitance :  $C_{typ} = 1.5 \text{ pF}$
- Stand-off voltage :  $V_R = 2.8 \text{ V}$
- Low leakage current :  $I_{Rmax} = 0.2 \mu\text{A}$
- ECOPACK®2 compliant component
- IEC 61000-4-5 (1kV 42  $\Omega$  24 A) compliant at  $T_j = 150^\circ\text{C}$

### Complies with the following standards

- IEC 61000-4-2 level 4
  - 15 kV (air discharge)
  - 8 kV (contact discharge)
- IEC 61000-4-4 level 4
  - $\pm 2 \text{ kV} - 40 \text{ A } (5/50 \text{ ns})$
- IEC 61000-4-5 level 2
  - $\pm 1 \text{ kV} - 42 \Omega$
- IEEE 802.3ab and 802.3at compatible on both receiver (4 Vmax ) and driver side ( 3.6 Vmax)
- MIL STD 883G - Method 3015-7
  - 25 kV (human body model)



### Description

The SLVU2.8 series has been designed to protect Ethernet line. Its low capacitance makes it compatible with Gigabit Ethernet.

SLVU2.8-4A1 is designed to be compatible with Gigabit Ethernet and Gigabit PoE by using two SO-8 packages and can be used on 10/100 Mbps Ethernet by using a single device.

SLVU2.8-8A1 is designed to be compatible with Gigabit Ethernet and Gigabit PoE by using a single SO-8 package.

Surge capability is compatible with IEC 61000-4-5 class 2 (1 kV, 42  $\Omega$ , 24 A).

Packaged in SO-8, the SLVU2.8 is a flow-through design in order to minimize trace inductances. Footprint is in accordance with IPC 7531 standard.

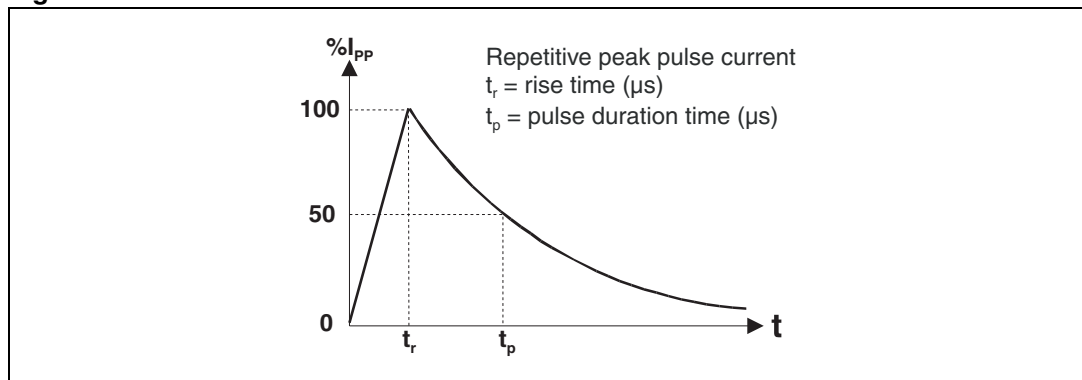
# 1 Characteristics

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

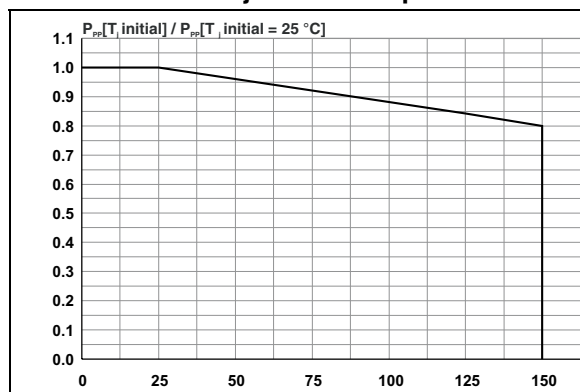
| Symbol    | Parameter                                           | Value        | Unit               |
|-----------|-----------------------------------------------------|--------------|--------------------|
| $P_{PP}$  | Peak pulse power (8/20 $\mu\text{s}$ )              | 600          | W                  |
| $I_{PP}$  | Peak pulse current (8/20 $\mu\text{s}$ )            | 30           | A                  |
| $T_{stg}$ | Storage temperature range                           | -65 to + 150 | $^{\circ}\text{C}$ |
| $T_j$     | Maximum junction temperature                        | -55 to + 150 | $^{\circ}\text{C}$ |
| $T_L$     | Maximum lead temperature for soldering during 10 s. | 260          | $^{\circ}\text{C}$ |

**Table 2. Electrical characteristics values ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ )**

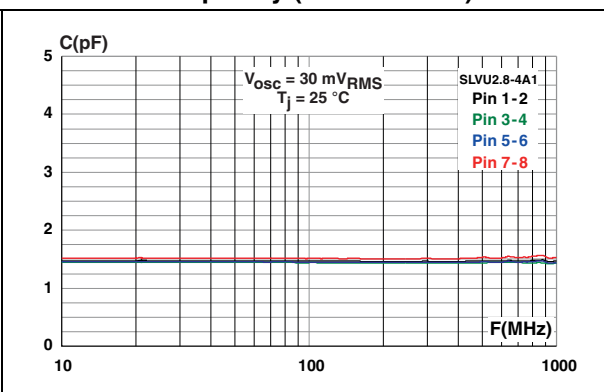
| Order code  | $I_{RM} @ V_{RM}$ |               |                               |     | $V_{CL} @ I_{PP}$<br>8/20 $\mu\text{s}$ |    | $V_{CL} @ I_{PP}$<br>8/20 $\mu\text{s}$ |    | C<br>I/O to I/O |      |
|-------------|-------------------|---------------|-------------------------------|-----|-----------------------------------------|----|-----------------------------------------|----|-----------------|------|
|             | typ.              | max.          | max.<br>85 $^{\circ}\text{C}$ |     | max.                                    |    | max.                                    |    | typ.            | max. |
|             | nA                | $\mu\text{A}$ | $\mu\text{A}$                 | V   | V                                       | A  | V                                       | A  | pF              | pF   |
| SLVU2.8-4A1 | 2                 | 0.2           | 1                             | 2.8 | 15                                      | 24 | 12                                      | 12 | 1.5             | 2.5  |
| SLVU2.8-8A1 | 2                 | 0.2           | 1                             | 2.8 | 15                                      | 24 | 12                                      | 12 | 3               | 5    |

**Figure 1. Pulse waveform**


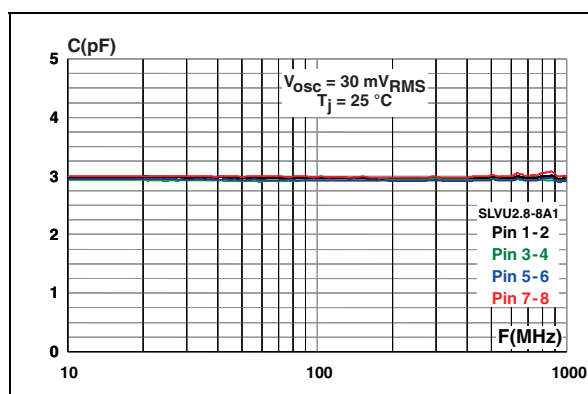
**Figure 2. Relative peak pulse power versus initial junction temperature**



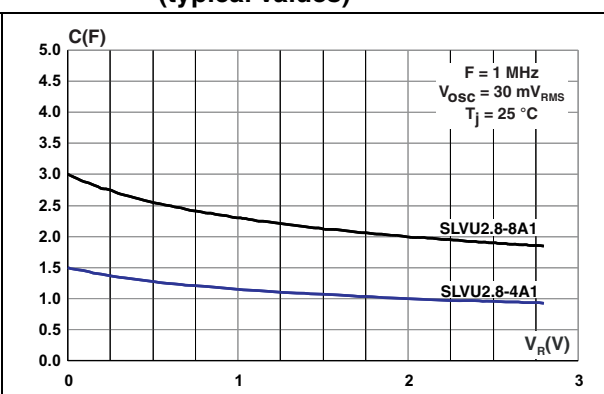
**Figure 3. Junction capacitance versus frequency (SLVU2.8-4A1)**



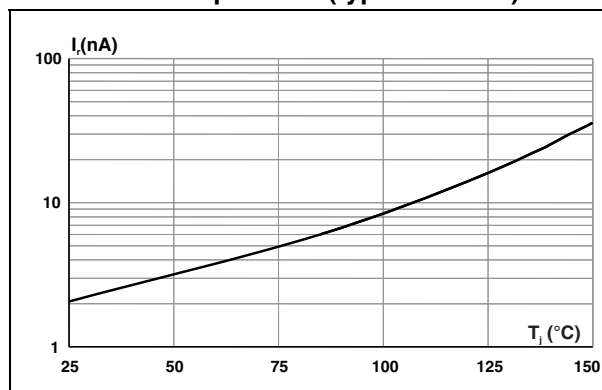
**Figure 4. Junction capacitance versus frequency (SLVU2.8-8A1)**



**Figure 5. Junction capacitance versus reverse applied voltage (typical values)**



**Figure 6. Leakage current versus junction temperature (typical values)**



**Figure 7. S21 attenuation (typical value)**

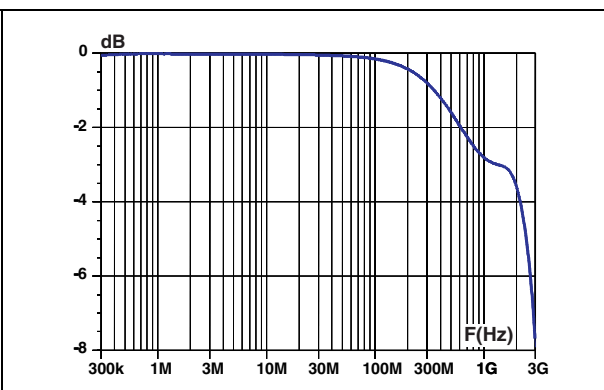


Figure 8. Connection for 10/100 Mbps Ethernet with SLVU2.8-4A1

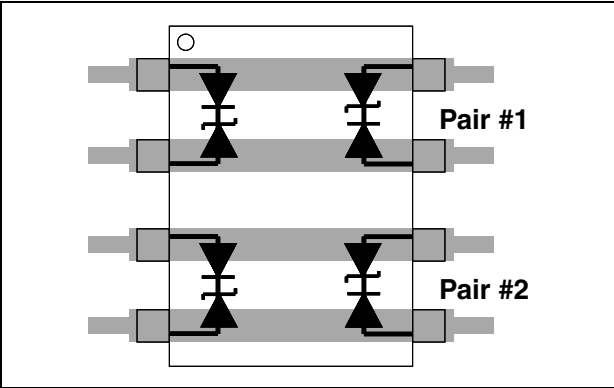


Figure 9. Connection for 1G Ethernet with SLVU2.8-8A1

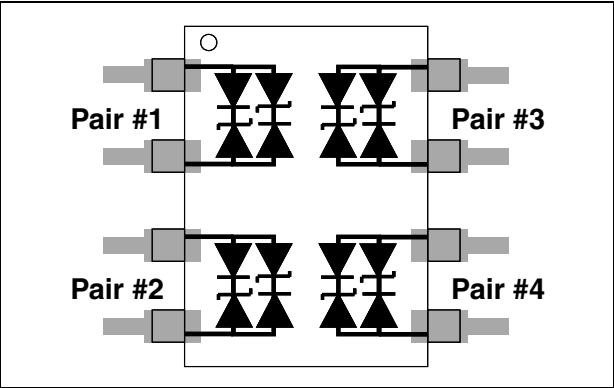


Figure 10. Schematic for 10/100 Mbps Ethernet

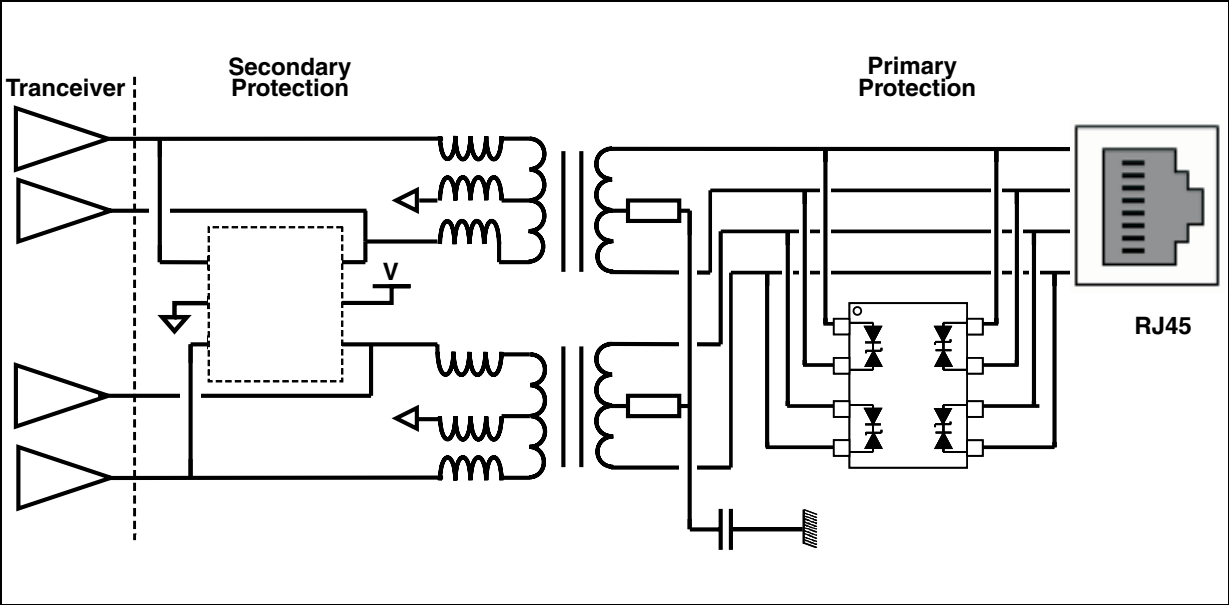
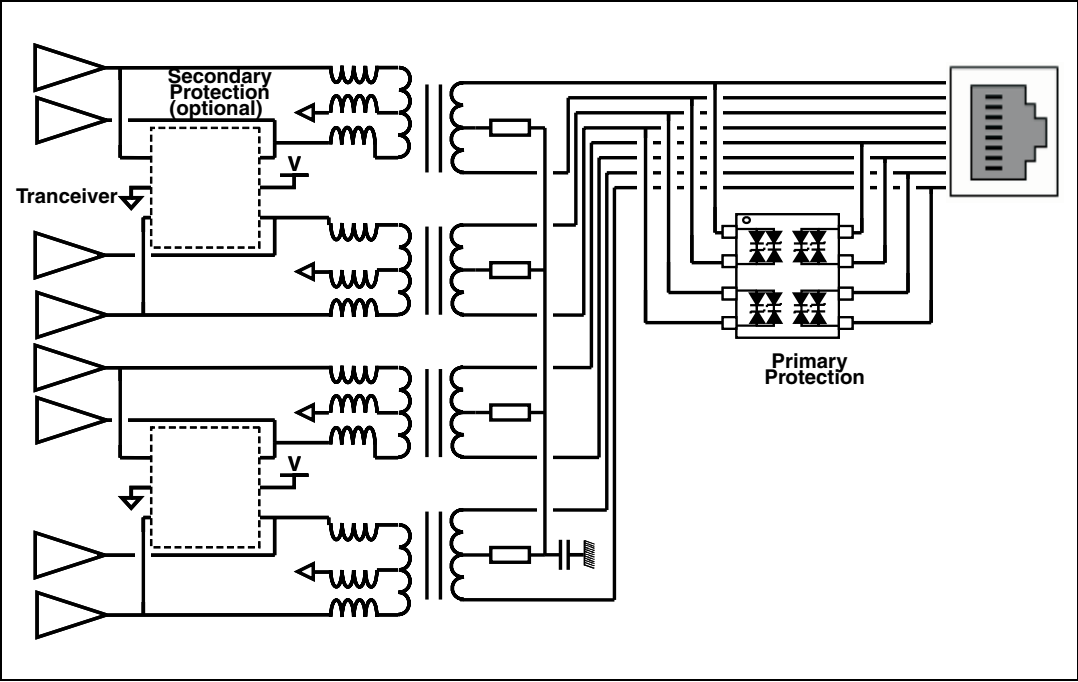


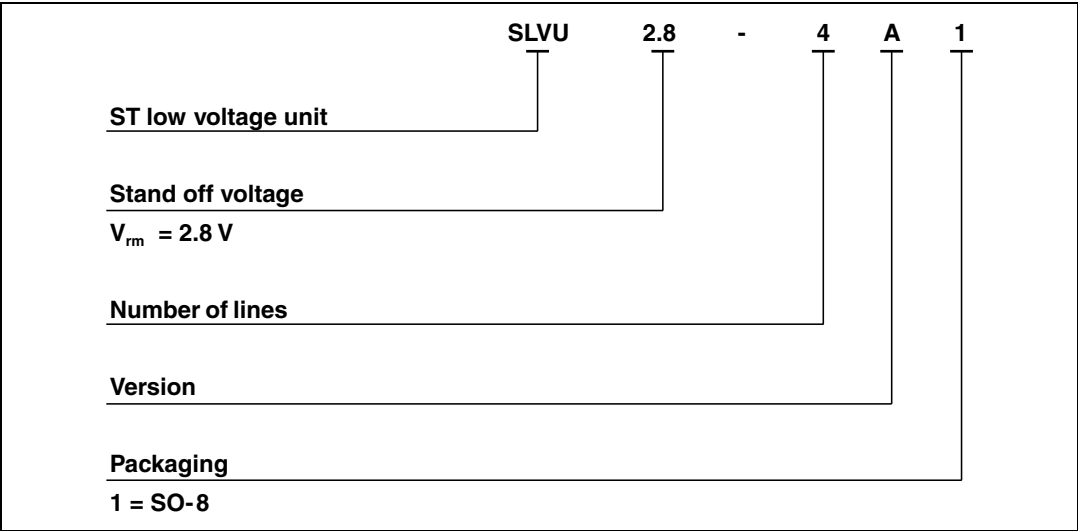
Figure 11. Schematic for 1 Gbps Ethernet



1. For further information, refer to application note : AN3007

2      **Ordering information scheme**

Figure 12. Ordering information scheme



### 3 Package information

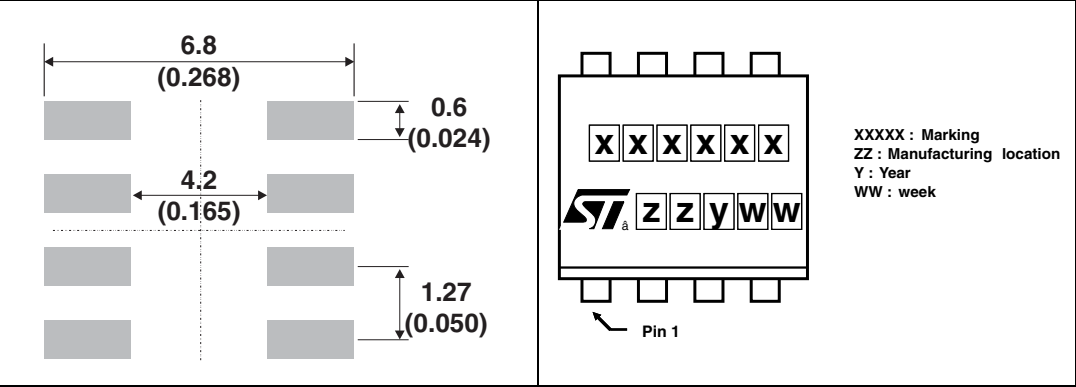
- Case: JEDEC SO-8 molded plastic over planar junction
- Terminals: Solder plated, solderable per MIL-STD-750, Method 2026
- Flammability: Epoxy is rated UL94V-0
- RoHS package

In order to meet environmental requirements, ST offers these devices in different grades of ECOPACK® packages, depending on their level of environmental compliance. ECOPACK® specifications, grade definitions and product status are available at: [www.st.com](http://www.st.com). ECOPACK® is an ST trademark.

Table 3. 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°    |
| ppp  |             |      | 0.10 |        |       | 0.004 |

Figure 13. Foot print recommendations      Figure 14. Marking



## 4 Ordering information

**Table 4. Ordering information**

| Order code  | Marking | Package | Weight | Base qty | Delivery mode |
|-------------|---------|---------|--------|----------|---------------|
| SLVU2.8-4A1 | SLVU284 | SO-8    | 78 mg  | 2500     | Tape and reel |
| SLVU2.8-8A1 | SLVU288 | SO-8    | 78 mg  | 2500     | Tape and reel |

## 5 Revision history

**Table 5. Document revision history**

| Date        | Revision | Changes                                                    |
|-------------|----------|------------------------------------------------------------|
| 01-Sep-2009 | 1        | Initial release.                                           |
| 31-May-2011 | 2        | Updated Ethernet standard compatibility on the cover page. |

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