

## Protection for Ethernet lines

### Features

- Differential and common mode protection
- Telcordia GR1089 Intrabuilding: 100 A, 2/10  $\mu$ s
- ITU-T K20/21: 37.5 A, 5/310  $\mu$ s
- Low capacitance: 13 pF max at 0 V
- UL94 V0 approved resin
- SO8 package is JEDEC registered

### Benefits

- Trisil™ technology is not subject to ageing and provides a fail safe mode in short circuit for a better protection.
- This series is used to help equipment to meet main standards such as UL61950, IEC950 / CSA C22.2 and UL1459.

### Complies with the following standards

- IEC 61000-4-2: Level 4
  - 15 kV (air discharge)
  - 8 kV (contact discharge)
- MIL STD 883E-Method 3015-7: class3:
  - 25 kV (Human body model)
- TELCORDIA GR-1089 Core: 100 A, 2/10  $\mu$ s
- ITU-T K20/21: 37.5 A, 5/310  $\mu$ s
- IEC 61000-4-5: 2 kV, 42  $\Omega$ , 48 A, 8/20  $\mu$ s

### Applications

This series can meet subscriber and central office requirements.

- Protection against telecommunications surge standards on:
  - 10/100 Mbps Ethernet
  - Ethernet Gigabit
  - T1 / E1 line cards

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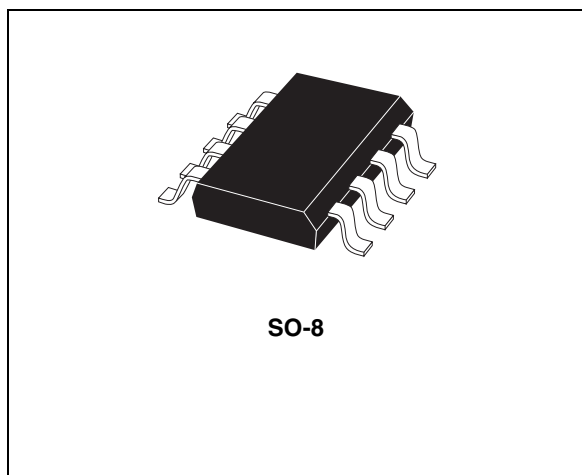
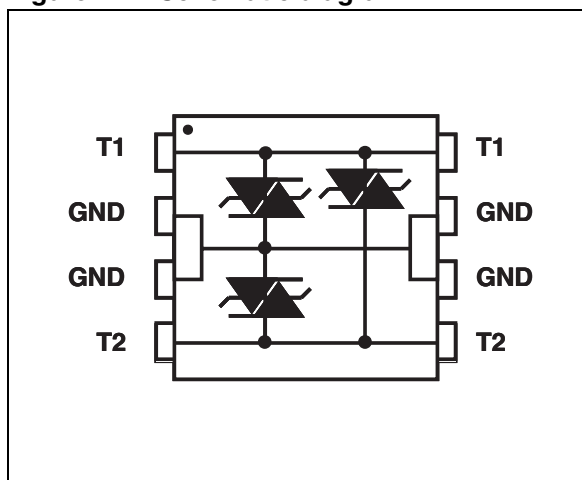


Figure 1. Schematic diagram



### Description

The ETP01 series is a low capacitance transient surge arrester designed for protection of high debit rate communication network. Planar technology used combines a high surge capability to comply with Telcordia GR1089 Intrabuilding and ITU-T K20/21, and low capacitance to avoid distortion of high speed signals such as Ethernet.

# 1 Characteristics

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

Symbol	Parameter		Value	Unit
$I_{pp}$	Peak pulse current <sup>(1)</sup>	5/310 $\mu\text{s}$	37.5	A
		8/20 $\mu\text{s}$	48	A
		2/10 $\mu\text{s}$	100	A
$I_{TSM}$	Non repetitive surge peak on state current	t = 20 ms	8	A
$T_{stg}$ $T_j$	Storage temperature range Operating junction temperature range		-55 to 150 -40 to 150	$^{\circ}\text{C}$
$T_L$	Maximum temperature for soldering during 10 s		260	$^{\circ}\text{C}$

1. Surge capability tested according to ITU-T K20/21 and Telcordia GR1089 Intrabuilding connections (Metallic and Longitudinal tests).

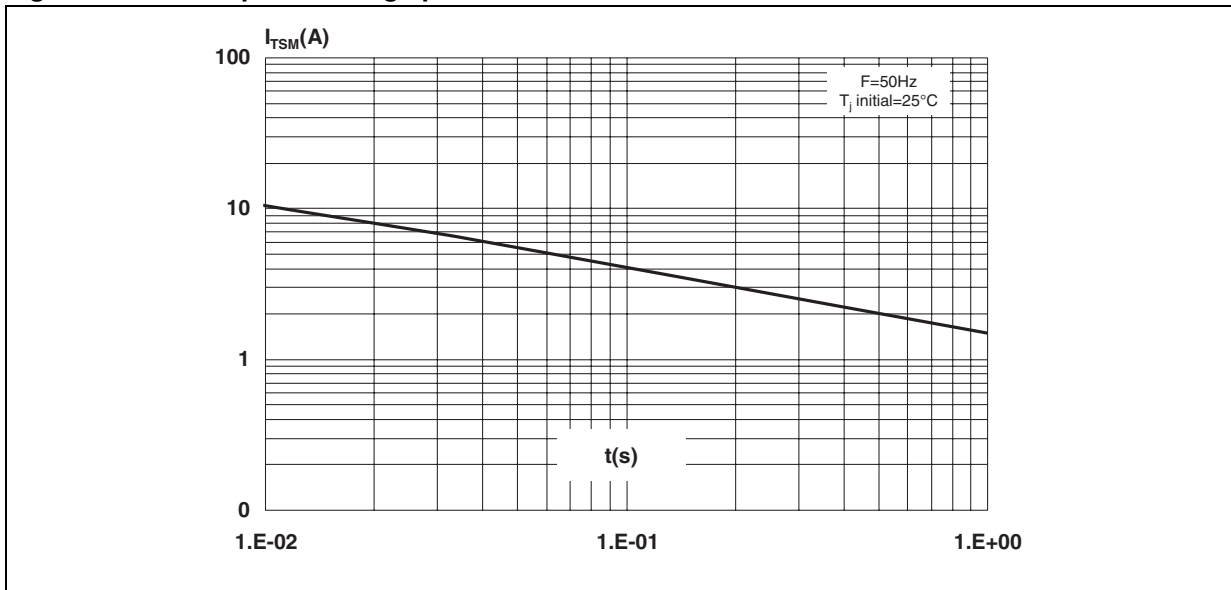
**Table 2. Electrical characteristics ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ )**

Order code	$I_{RM} @ V_{RM}$		$I_{RM} @ V_{RM}$		$V_{bo}$	$I_H$	C	C
	$\mu\text{A typ.}$	V	$\mu\text{A max.}$	V	V max.	mA min.	pF max. <sup>(1)</sup>	pF max. <sup>(2)</sup>
ETP01-1621	0.01	3.3	1	16	25	30	16	13
ETP01-2821	0.01	3.3	1	28	36	30	16	13

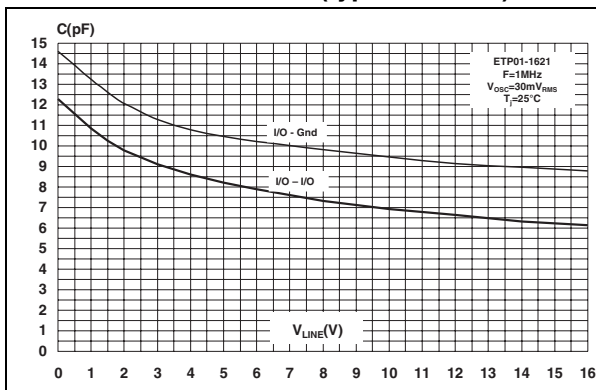
1. Test conditions: Capacitance between I/O and GND,  $V_R = 0\text{ V}$  bias,  $V_{RMS} = 1\text{ V}$ ,  $F = 1\text{ MHz}$

2. Test conditions: Capacitance between I/O and I/O,  $V_R = 0\text{ V}$  bias,  $V_{RMS} = 1\text{ V}$ ,  $F = 1\text{ MHz}$

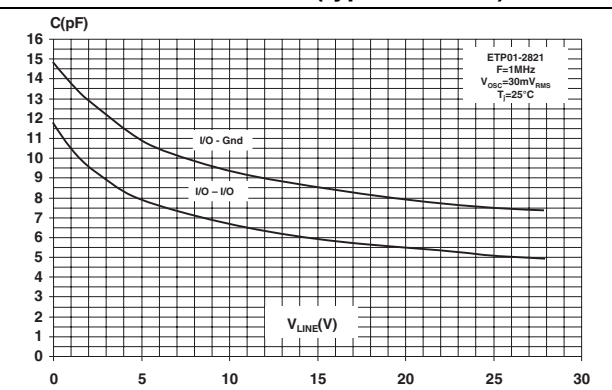
**Figure 2. Non repetitive surge peak on-state current versus overload duration**



**Figure 3. Junction capacitance versus reverse voltage applied for ETP01-1621 (typical values)**



**Figure 4. Junction capacitance versus reverse voltage applied for ETP01-2821 (typical values)**



## 2 Application information

Figure 5. Application schematic for Ethernet 10/100 Mbps

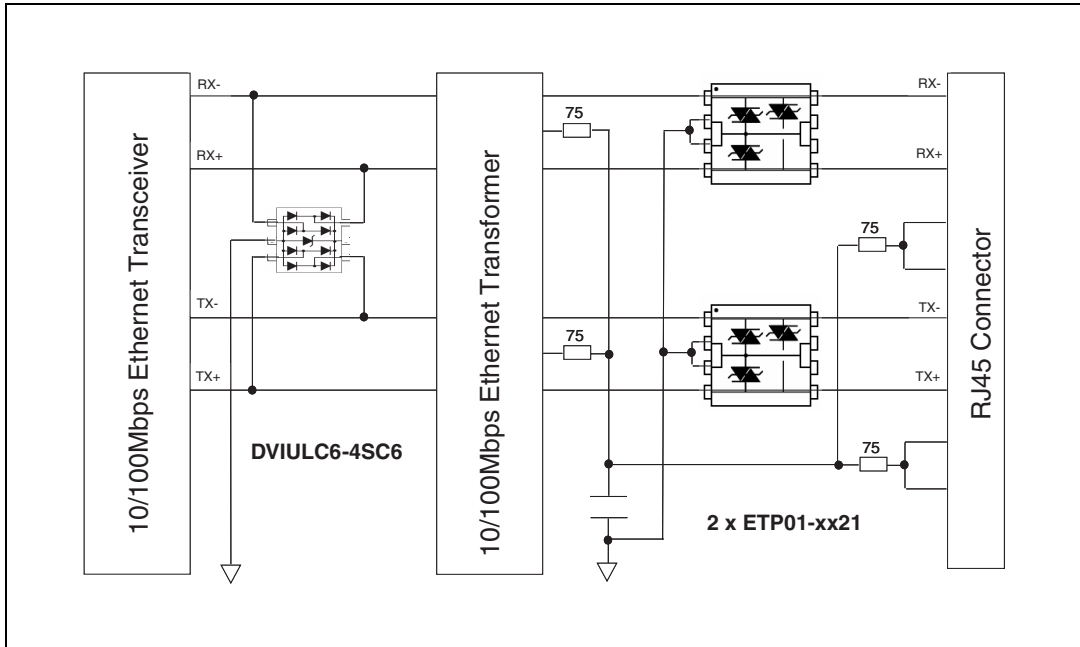
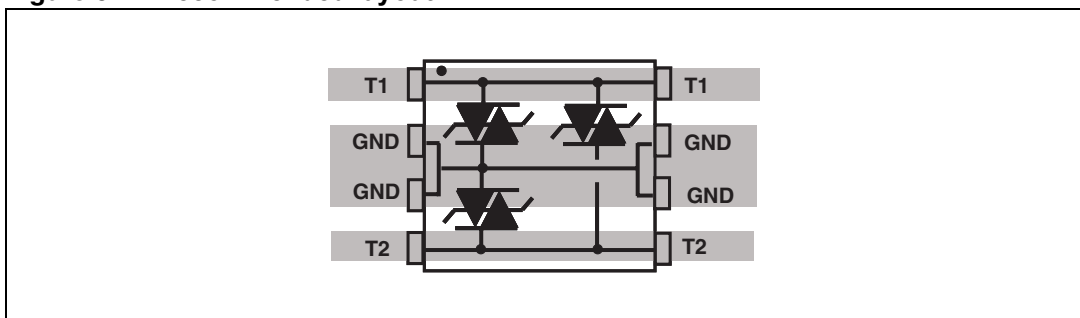


Figure 6. Recommended layout



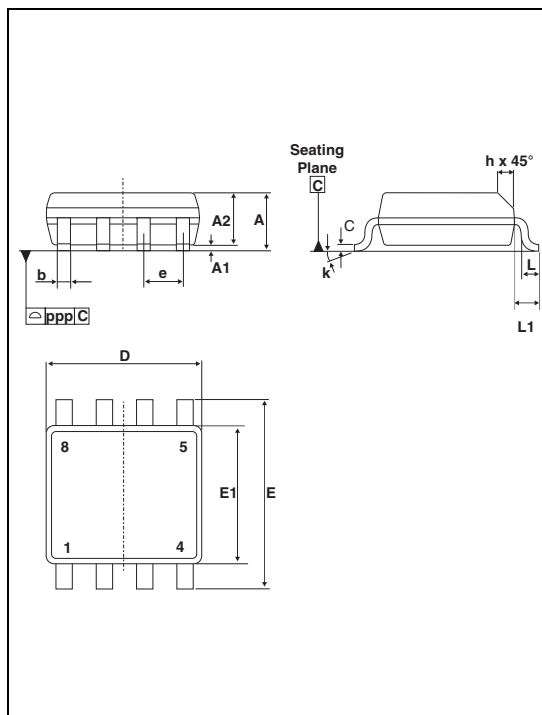
### 3 Package information

- 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 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).

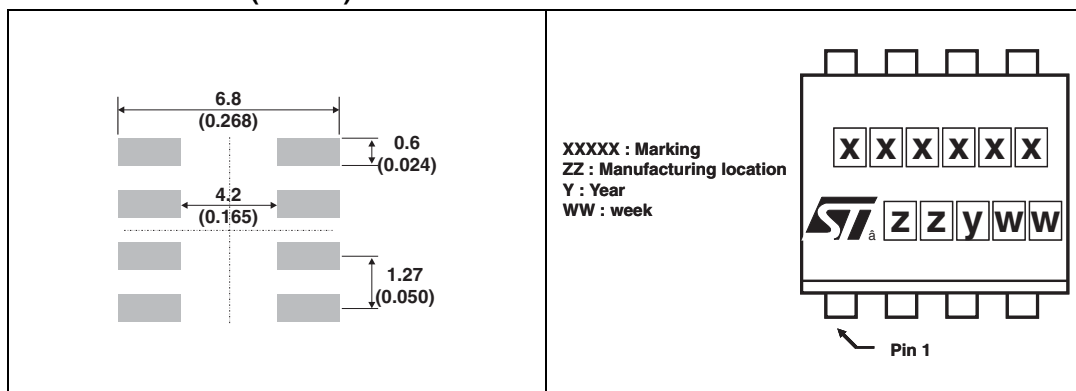
**Table 3. SO-8 dimensions**

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 7. Footprint dimensions in mm (inches)**

**Figure 8. Marking**



## 4 Ordering information

Table 4. Ordering information

Order code	Marking	Weight	Base qty	Delivery mode
ETP01-162RL	ETP162	0.08 g	2500	Tape and reel
ETP01-282RL	ETP282	0.08 g	2500	Tape and reel

## 5 Revision history

Table 5. Document revision history

Date	Revision	Changes
04-Mar-2008	1	Initial release.

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