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Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China



Protection for Ethernet lines

Features

- Differential and common mode protection
- Telcordia GR1089 Intrabuilding: 150 A, 2/10 μ s
- ITU-T K20/21: 40 A, 5/310 μ s
- Low capacitance: 13 pF max at 0 V
- UL94 V0 approved resin
- SO-8 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, IEC 950 / 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 μ s
- ITU-T K20/21: 37.5 A, 5/310 μ s
- IEC 61000-4-5: 4 kV, 42 Ω , 96 A, 8/20 μ s
- IEC 61000-4-4 EFT : 40A (5/50ns)

Applications

This series can meet subscriber and central office requirements.

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

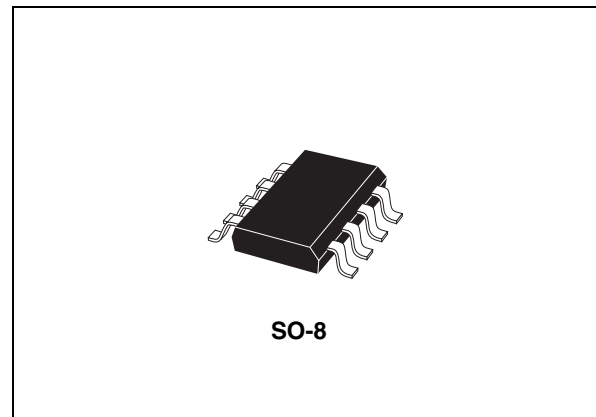
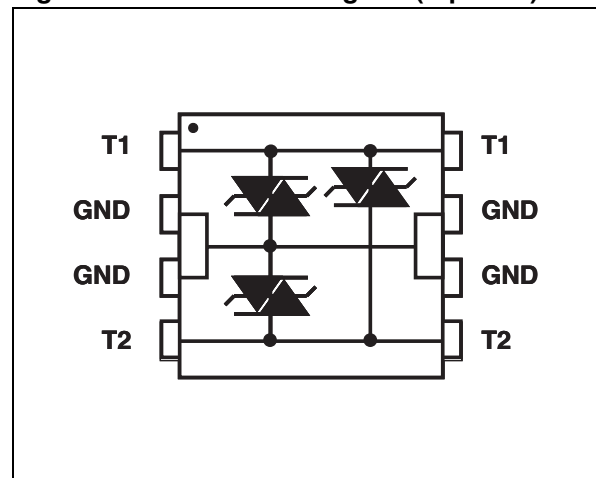


Figure 1. Schematic diagram (top view)



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.

TM: Trisil is a trademark of STMicroelectronics

1 Characteristics

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

Symbol	Parameter		Value	Unit
I_{pp}	Peak pulse current ⁽¹⁾	5/310 μs	40	A
		8/20 μs	100	A
		2/10 μs	150	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 ($T_{amb} = 25\text{ °C}$)

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. ⁽¹⁾	pF max. ⁽²⁾
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

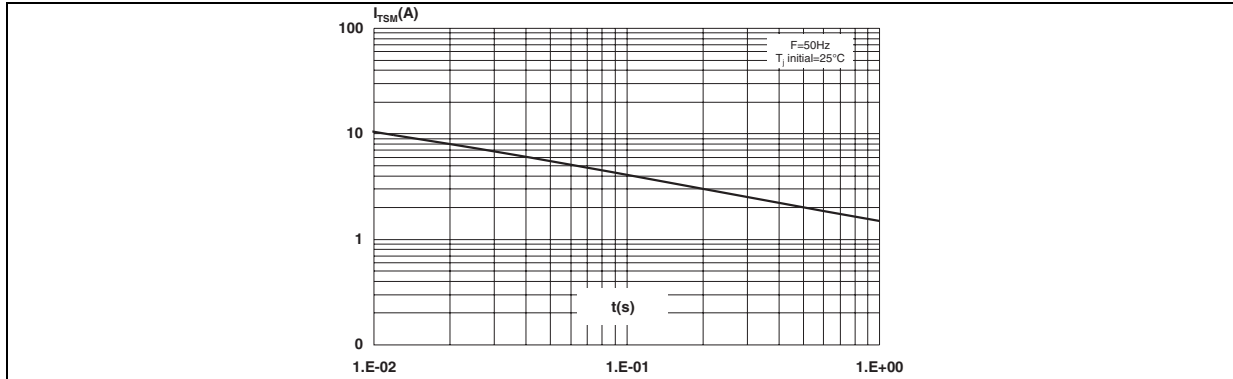


Figure 3. Junction capacitance versus reverse voltage applied for ETP01-1621 (typical values)

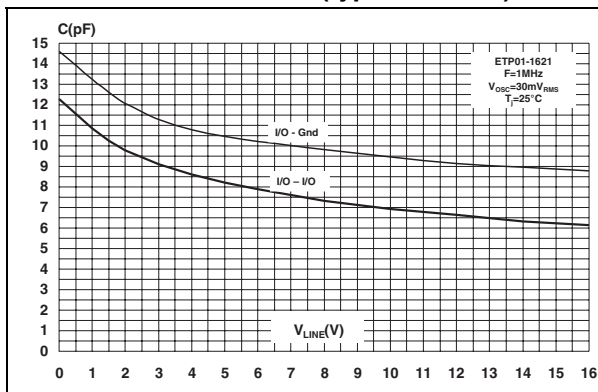
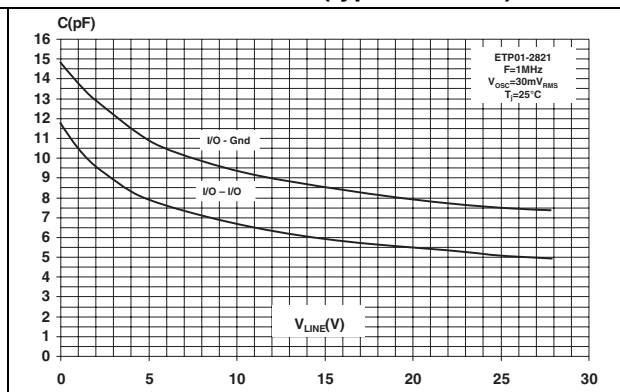


Figure 4. Junction capacitance versus reverse voltage applied for ETP01-2821 (typical values)



2 Application information

Figure 5. Application schematic for Ethernet 10/100 Mbps

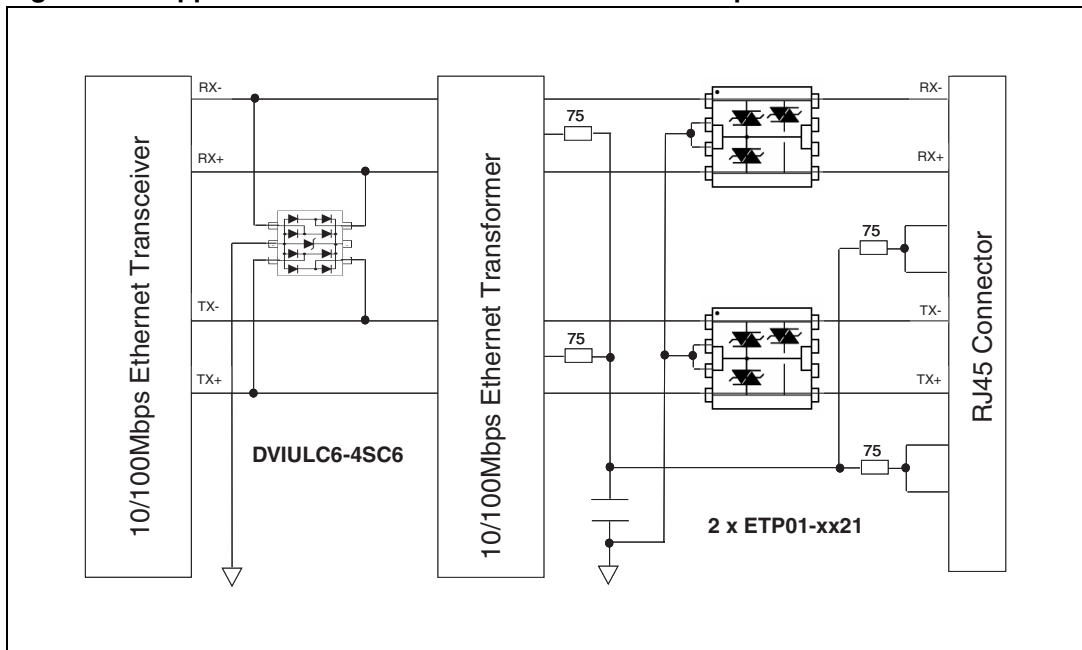
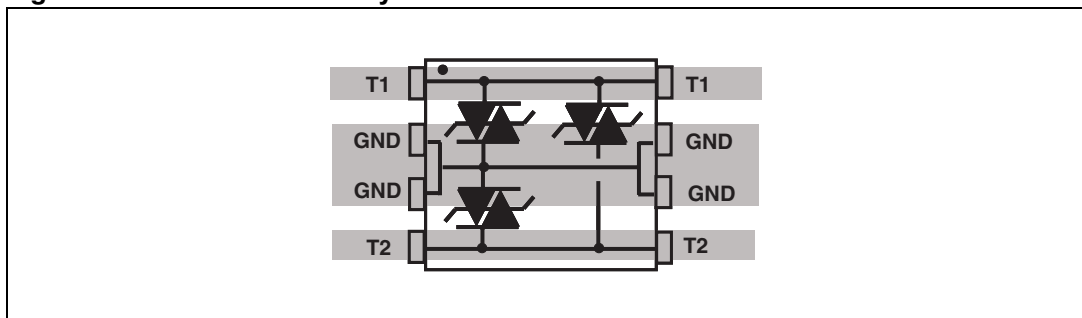


Figure 6. Recommended layout



3 Package information

- Epoxy meets UL94, V0
- Lead-free package

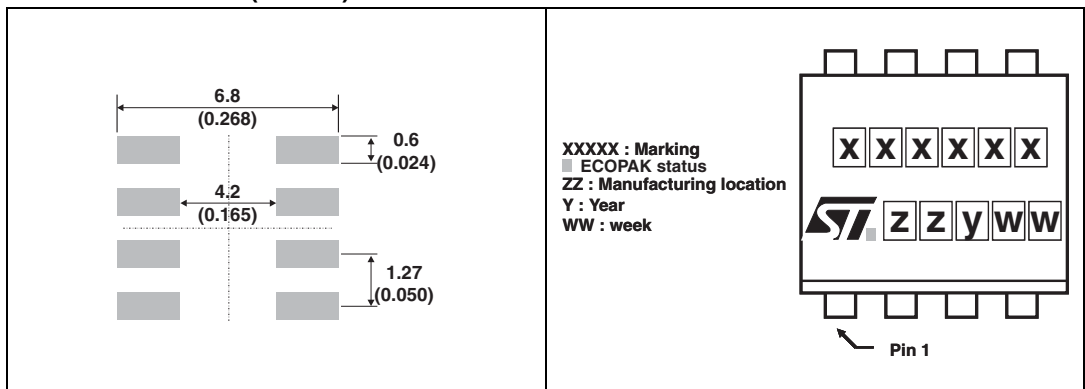
In order to meet environmental requirements, ST offers these devices in different grades of ECOPACK® packages, depending on their level of environmental compliance. ECOPACK® specifications, grade definitions and product status are available at: www.st.com. ECOPACK® is an ST trademark.

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 7. Footprint dimensions in mm (inches)

Figure 8. Marking



4 Ordering information

Table 4. Ordering information

Order code	Marking	Weight	Base qty	Delivery mode
ETP01-1621RL	ETP162	0.08 g	2500	Tape and reel
ETP01-2821RL	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.
24-Sep-2009	2	Updated order code in Table 4 and surge values.
19-Feb-2010	3	Updated Figure 1 caption to indicate top view. Updated graphic in Table 3 to facilitate pin 1 identification. Updated Figure 8 to show ECOPACK status marking.
10-May-2011	4	Updated: Applications on page 1 .

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