ETP01-xx21

Protection for Ethernet lines

Features

- Differential and common mode protection
- Telcordia GR1089 Intrabuilding: 150 A, 2/10 µs
- ITU-T K20/21: 40 A, 5/310 µs
- 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.

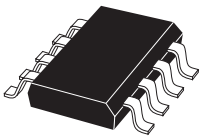
Complies with the following standards

- 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 µs
- ITU-T K20/21: 37.5 A, 5/310 µs
- IEC 61000-4-5: 4 kV, 42 Ω, 96 A, 8/20 µs
- IEC 61000-4-4 EFT : 40A (5/50ns)

Applications

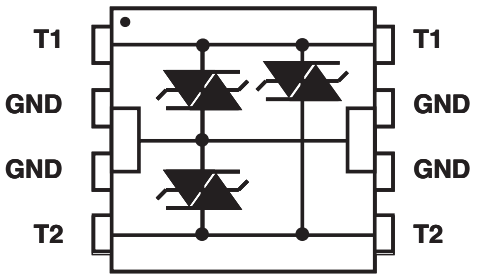
This series can meet subscriber and central office requirements.

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



SO-8

Figure 1. Schematic diagram (top view)



Description

The ETP01 series is a low capacitance transient surge arrestor 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 °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	°C
T_L	Maximum temperature for soldering during 10 s		260	°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 °C)

Order code	I_{RM} @ V_{RM}		I_{RM} @ V_{RM}		V_{bo}	I_H	C	C
	µA typ.	V	µA 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 V bias, V_{RMS} = 1 V, F = 1 MHz
2. Test conditions: Capacitance between I/O and I/O, V_R = 0 V bias, V_{RMS} = 1 V, F = 1 MHz

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

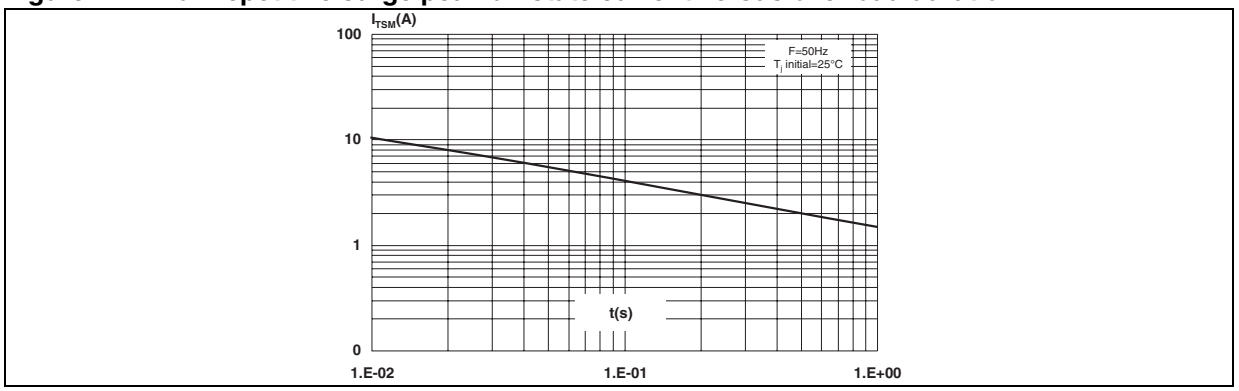


Figure 3. Junction capacitance versus reverse voltage applied for ETP01-1621 (typical values)

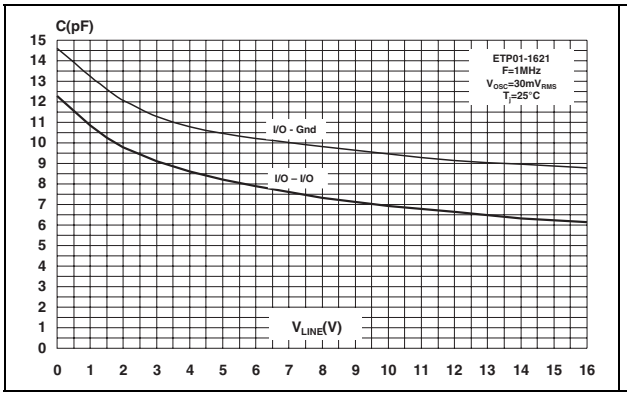
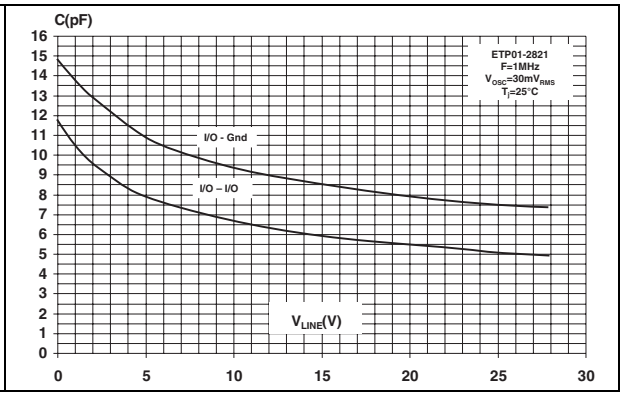


Figure 4. Junction capacitance versus reverse voltage applied for ETP01-2821 (typical values)



2 Application information

Figure 5. Application schematic for Ethernet 10/100 Mbps

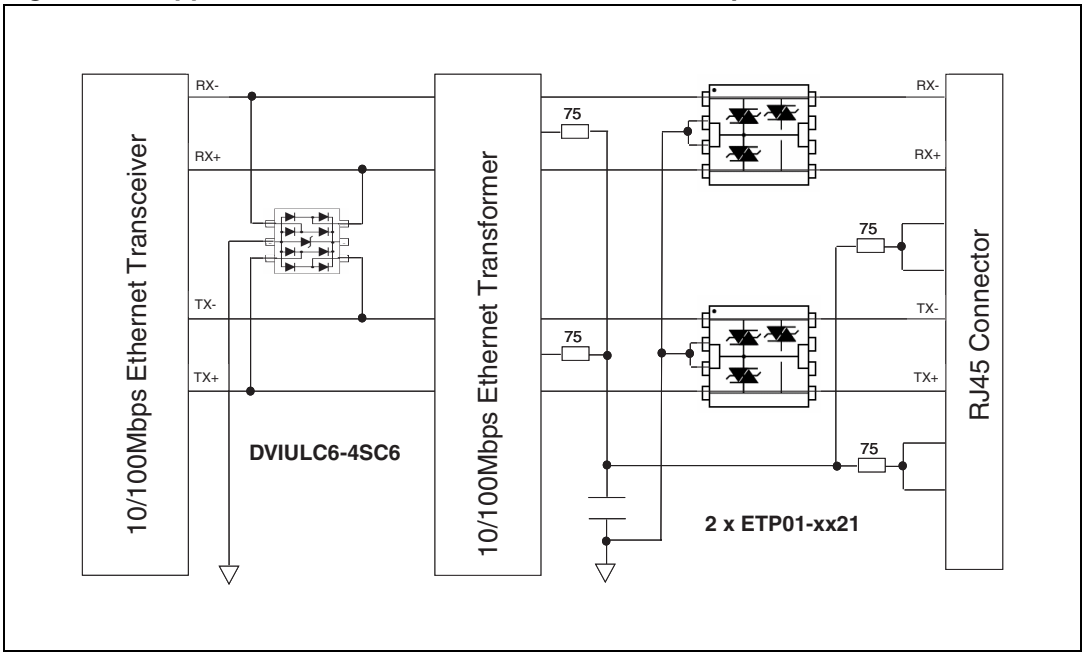
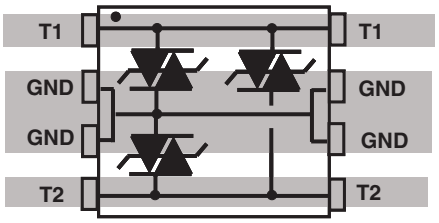


Figure 6. Recommended layout

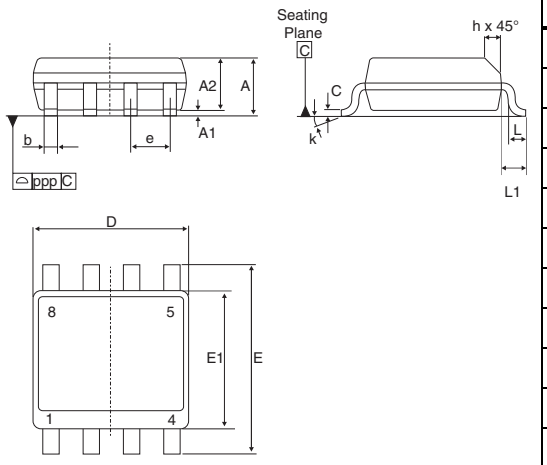


3 Package information

- 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)

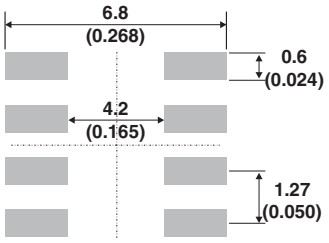
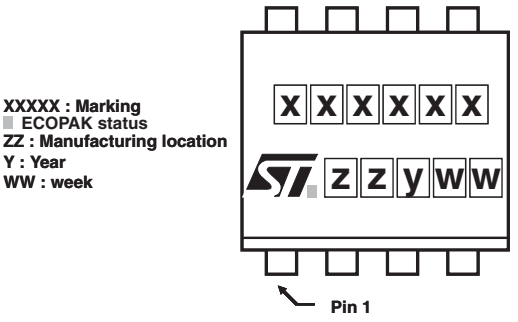


Figure 8. Marking



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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