1. Description

The SP3222-02ETG(ES) is a low capacitance TVS designed to protect high speed data interface. It has been specifically designed to protect sensitive electronic components which are connected to data and transmission lines from over-stress caused by ESD. The SP3222-02ETG(ES) incorporates one pair of steering diodes of low capacitance plus a TVS diode.

2. Features

- IEC 61000-4-2 Level 4 ESD Protection
  - ±10kV Contact Discharge
  - ±15kV Air Discharge
- 60W Peak pulse Power (8/20us)
- Low clamping voltage
- Working voltage: 5V
- Low leakage current
- RoHS compliant
- Protecting two Uni-directional lines
- Junction capacitance: 0.60pF Typ.

3. Applications

- USB 2.0 and USB 3.0
- SATA and eSATA
- DVI
- IEEE 1394
- PCI Express
- Notebooks
- HDMI 1.3 and HDMI 1.4

4. Ordering Information

Part Number	Package	Marking	Material	Packing	Quantity per reel	Flammability Rating	Reel Size
SP3222-02ETG(ES)	DFN1006-3L	|L05	Halogen free	Tape & Reel	10,000 PCS	UL 94V-0	7 inches

Table-1 Ordering information

5. Pin Configuration and Functions

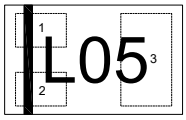
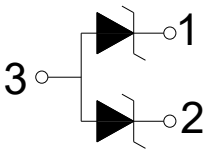
Pin	Name	Description	Outline	Circuit Diagram
1	IO	Connect to IO		
2	IO	Connect to IO		
3	GND	Connect to GND		

Table-2 Pin configuration

6. Specification

6.1. Absolute Maximum rating

Over operating free-air temperature range (unless otherwise noted)

Parameters	Symbol	Min.	Max.	Unit
Peak pulse power (tp=8/20us)@25℃	P_{pk}	-	60	W
Peak pulse current (tp=8/20us)@25℃	I_{PP}		4	A
ESD (IEC61000-4-2 air discharge) @25℃	V_{ESD}	-	±15	kV
ESD (IEC61000-4-2 contact discharge) @25℃	V_{ESD}	-	±10	kV
Junction temperature	T_J	-	150	℃
Operating temperature	T_{OP}	-40	125	℃
Storage temperature	T_{STG}	-55	150	℃
Lead temperature	T_L	-	260	℃

Table-3 Absolute Maximum rating

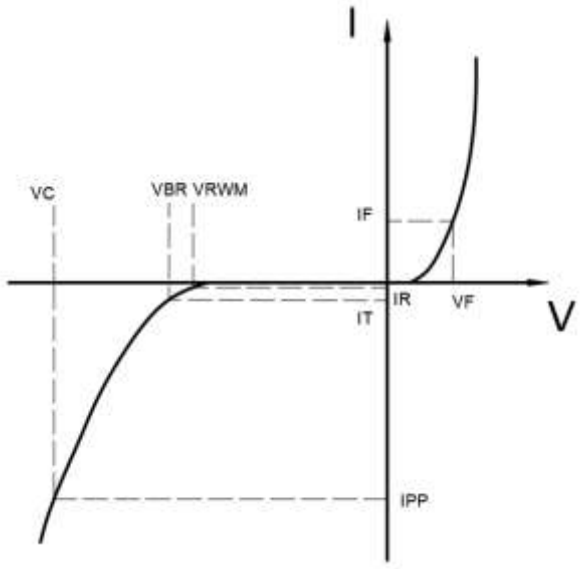
6.2. Electrical Characteristics

At TA = 25℃ unless otherwise noted

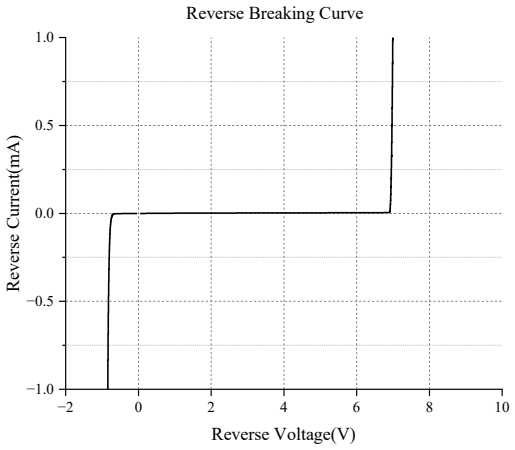
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Reverse Stand-off Voltage	V_{RWM}				5.0	V
Reverse Breakdown Voltage	V_{BR}	IT=1mA	6.0			V
Reverse Leakage Current	I_R	V_{RWM}=5V			1.0.	uA
Clamping Voltage	V_C	I_{PP}=1A; tp=8/20us		8.0	10.0	V
Clamping Voltage	V_C	I_{PP}=4A; tp=8/20us		10.0	13.0	V
Junction Capacitance	C_J	I/O to GND; VR=0V; f=1MHz		0.6	0.8	pF

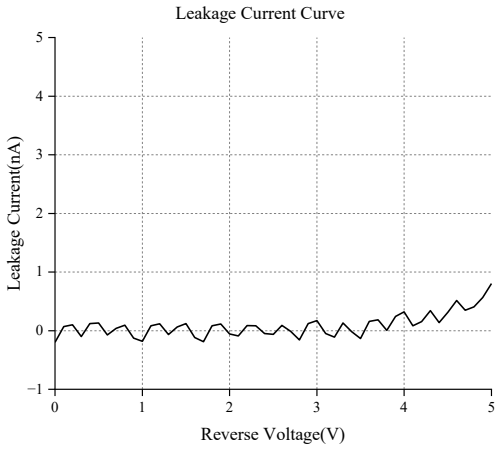
Table-4 Electrical Characteristics

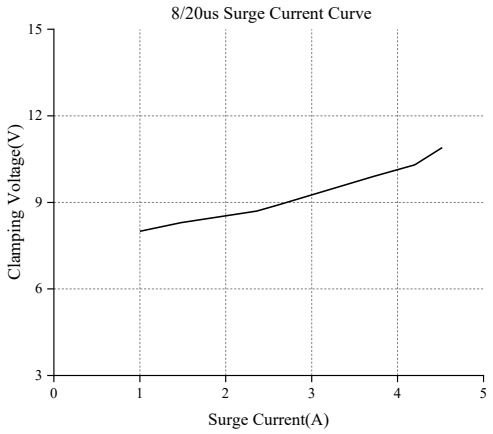
Symbol	Parameters
V_{RWM}	Peak Reverse Working Voltage
I_R	Reverse Leakage Current @ V_{RWM}
V_{BR}	Breakdown Voltage @ I_T
I_T	Test Current
I_{PP}	Maximum Reverse Peak Pulse Current
V_C	Clamping Voltage @ I_{PP}
I_F	Forward Current
V_F	Forward Voltage @ I_F

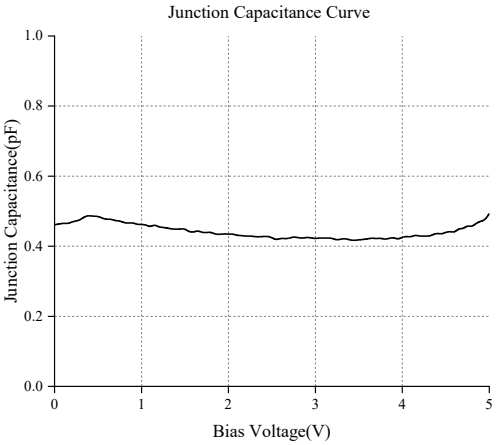


7. Typical Characteristic

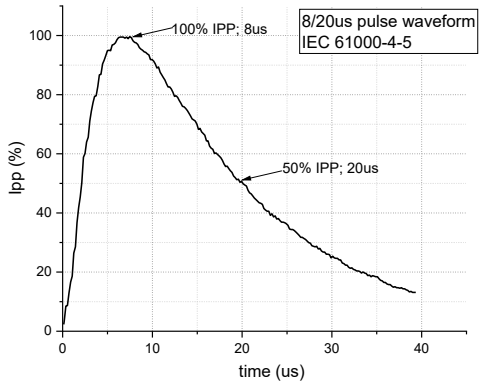


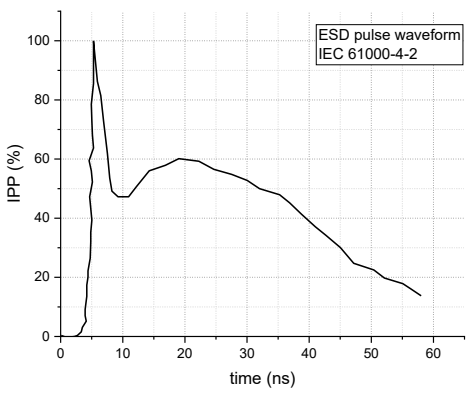




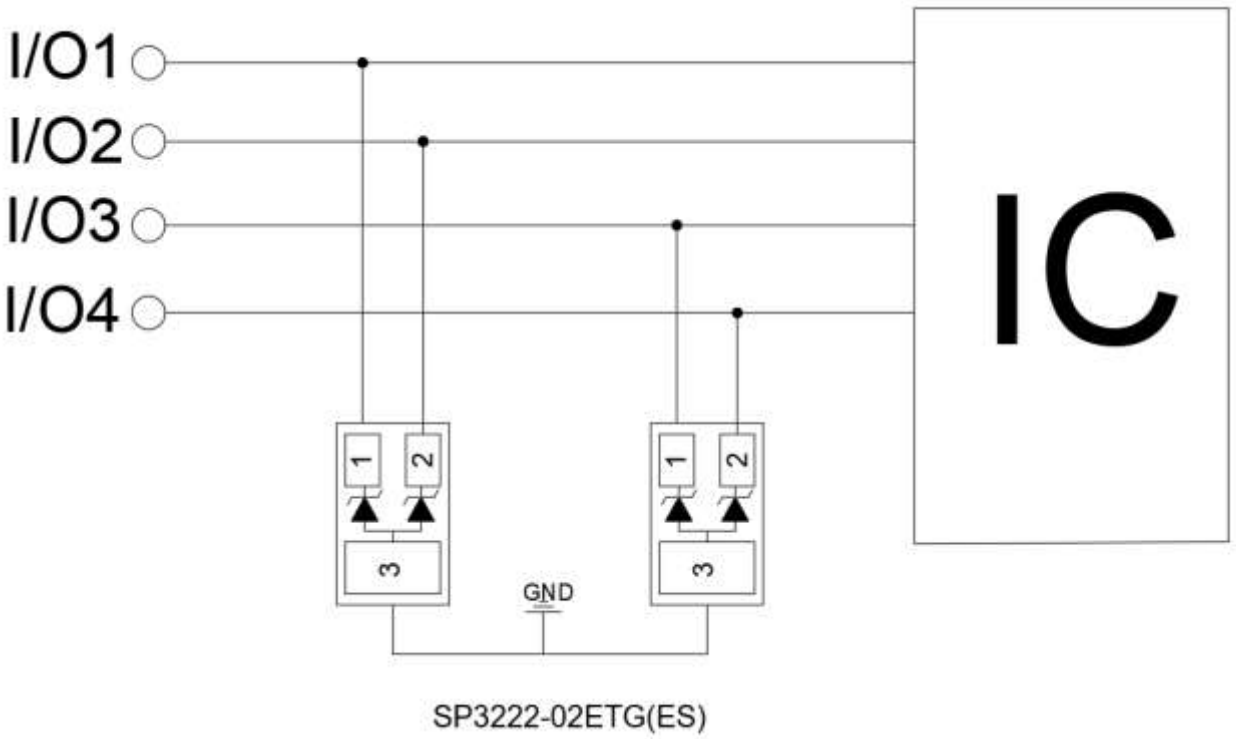


Measurement Wave According to IEC Standard





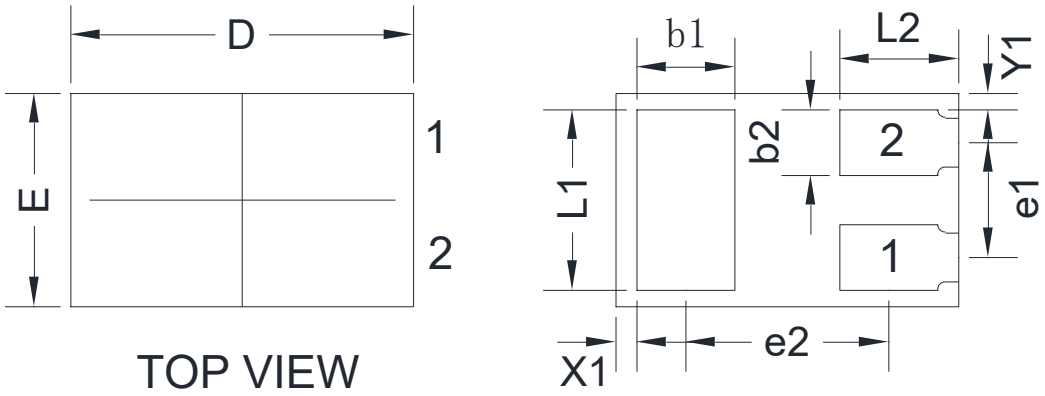
8. Typical Application

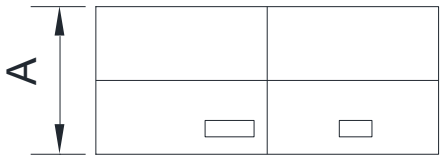


Typical Interface Application

9. Dimension (DFN1006-3L)

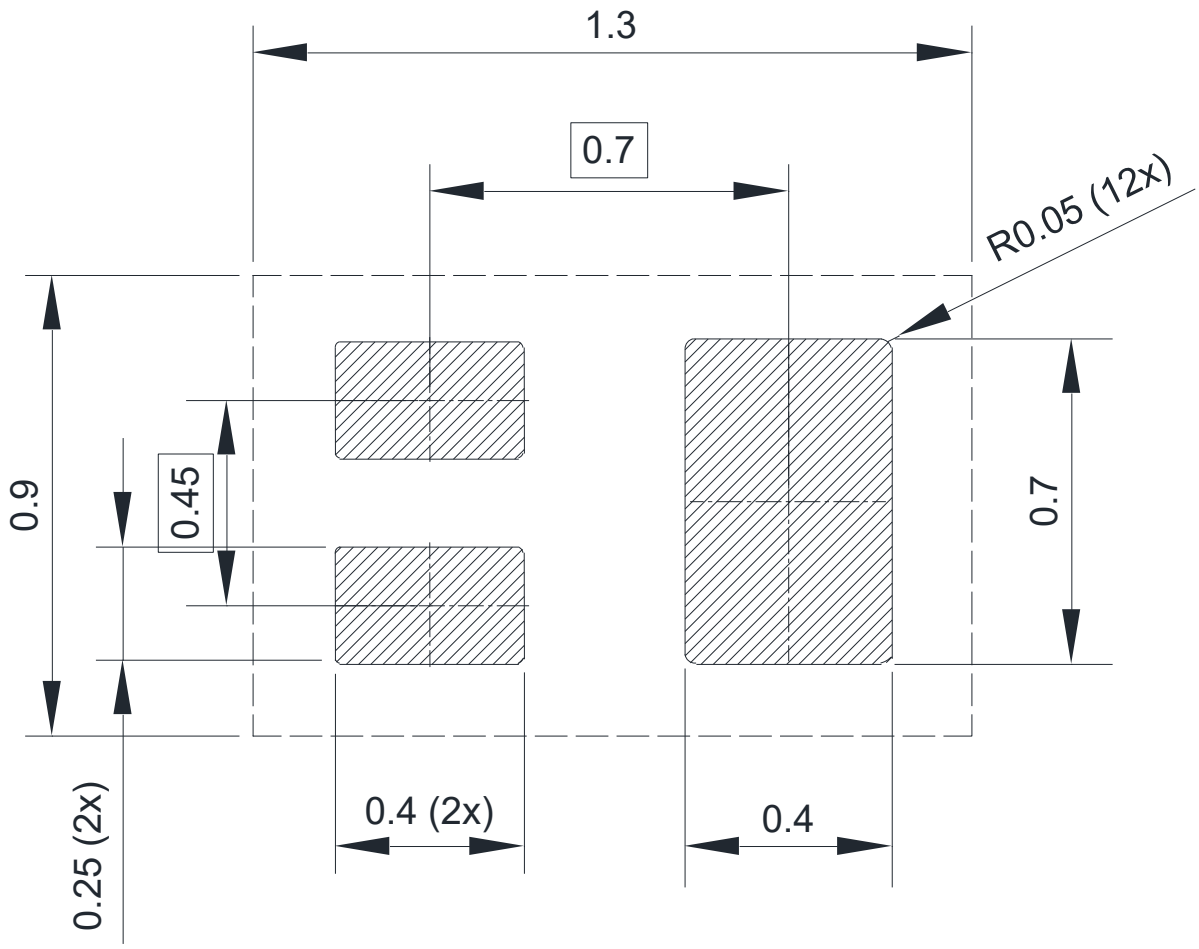
POD (H)





Symbol	Millimeters		
	Min	Nom	Max
A	0.45	0.50	0.55
D	0.95	1.00	1.05
E	0.55	0.60	0.65
b1	0.20	0.25	0.30
b2	0.10	0.15	0.20
L1	0.45	0.50	0.55
L2	0.25	0.30	0.35
X1	0.025		0.065
Y1	0.025		0.065
e1	0.350 BSC		
e2	0.675 BSC		

10. Recommended Soldering Footprint



DIMENSIONS: MILLIMETERS

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