

1. Description

The SP3031-01ETG(ES) is designed to protect voltage sensitive components from ESD and transient voltage events. Excellent clamping capability, low leakage, and fast response time, make these parts ideal for ESD protection on designs where board space is at a premium.

2. Features

- IEC 61000-4-2 Level 4 ESD Protection
 - $\pm 20\text{kV}$ Contact Discharge
 - $\pm 20\text{kV}$ Air Discharge
- 60W Peak pulse Power (8/20us)
- Low clamping voltage
- Working voltage: 5V
- Low leakage current
- RoHS compliant
- Protecting one Uni-directional line
- Junction capacitance: 0.50pF Typ.

3. Applications

- Cellular handsets and accessories
- Portable Digital Assistants
- Notebooks & Handhelds
- Digital Cameras
- MP3 Players
- Peripherals

4. Ordering Information

Part Number	Package	Marking	Material	Packing	Quantity per reel	Flammability Rating	Reel Size
SP3031-01ETG(ES)	DFN1006-2L	5L	Halogen free	Tape & Reel	10,000 PCS	UL 94V-0	7 inches

Table-1 Ordering information

5. Pin Configuration and Functions

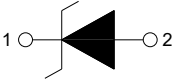
Pin	Name	Description	Outline	Circuit Diagram
1	IO	Connect to IO	Note1 	
2	GND	Connect to GND		

Table-2 Pin configuration

Note1:

This diagram is only an electrical schematic, and the actual pin size is based on POD.

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°C	P _{pk}	-	60	W
Peak pulse current (tp=8/20us)@25°C	I _{PP}		4	A
ESD (IEC61000-4-2 air discharge) @25°C	V _{ESD}	-	±20	kV
ESD (IEC61000-4-2 contact discharge) @25°C	V _{ESD}	-	±20	kV
Junction temperature	T _J	-	150	°C
Operating temperature	T _{OP}	-40	125	°C
Storage temperature	T _{STG}	-55	150	°C
Lead temperature	T _L	-	260	°C

Table-3 Absolute Maximum rating

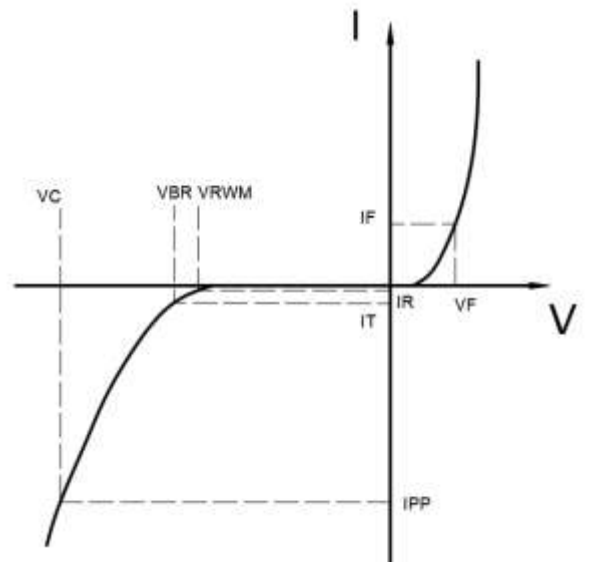
6.2. Electrical Characteristics

At TA = 25°C unless otherwise noted

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Reverse Stand-off Voltage	V_{RWM}				5.0	V
Reverse Breakdown Voltage	V_{BR}	$I_T=1mA$	6.0			V
Reverse Leakage Current	I_R	$V_{RWM}=5V$			1.0	μA
Clamping Voltage	V_C	$I_{PP}=1A$; $t_p=8/20\mu s$		8.0	9.5	V
Clamping Voltage	V_C	$I_{PP}=4A$; $t_p=8/20\mu s$		10.5	13.0	V
Junction Capacitance	C_J	I/O to GND; $V_R=0V$; $f=1MHz$		0.5	0.6	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

Figure1: Clamping Voltage vs. Peak Pulse Current

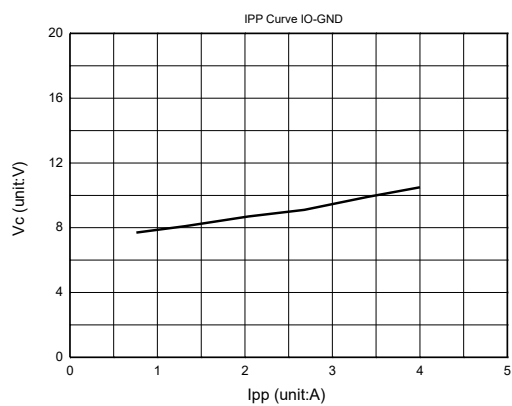


Figure2: Junction Capacitance vs. Reverse Voltage

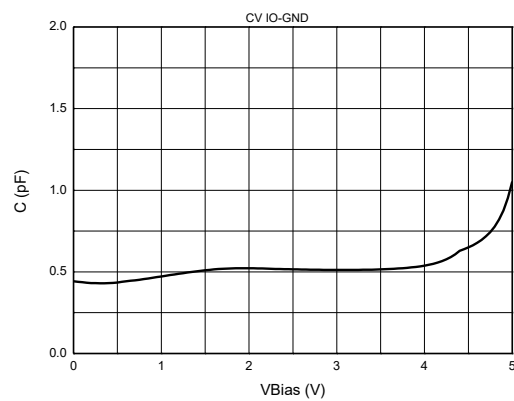
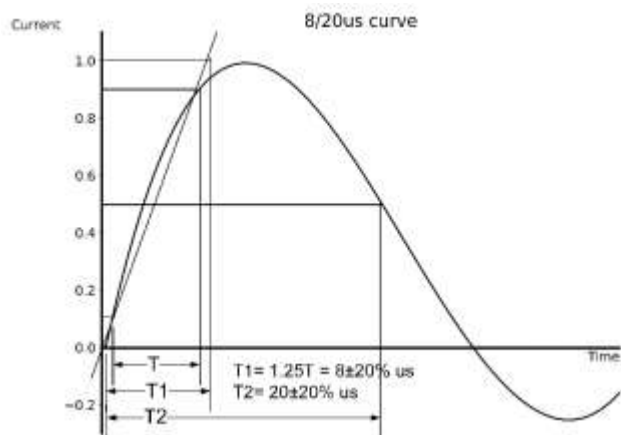
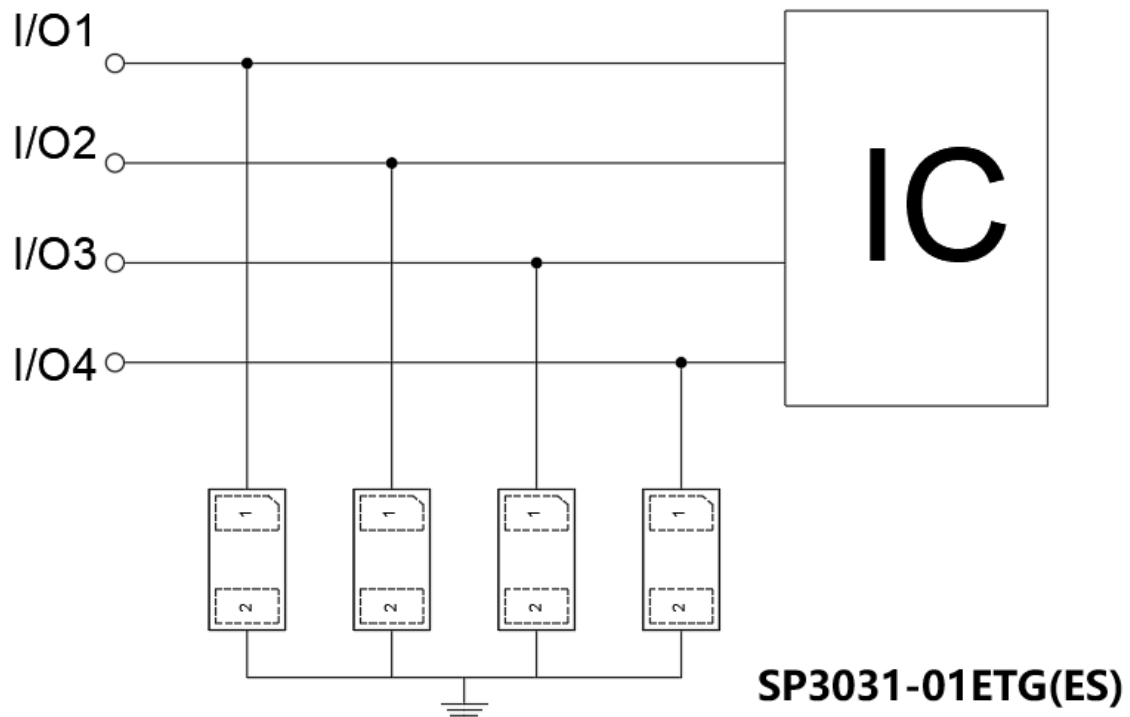


Figure3: 8 X 20us Pulse Waveform



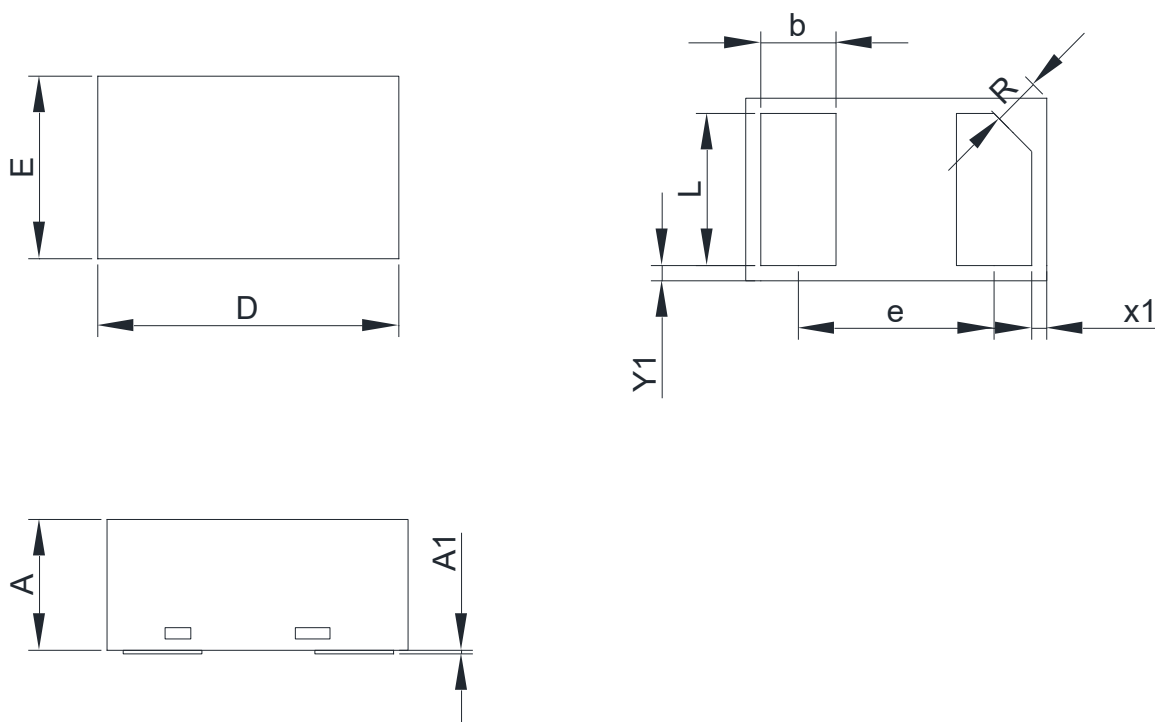
8. Typical Application



Typical Interface Application

9. Dimension (DFN1006-2L)

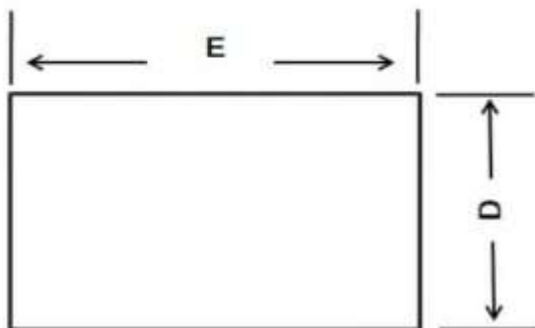
POD A(A)



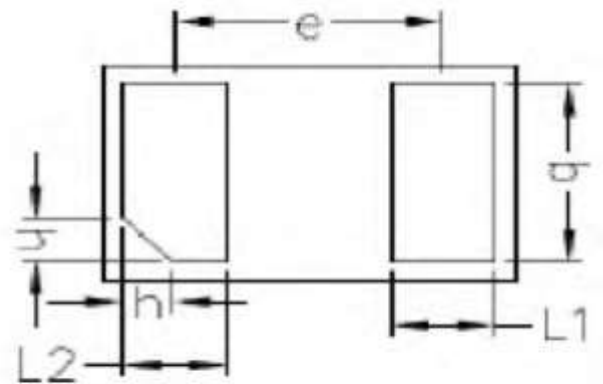
Units in millimeters

Symbol	Min.	Nom.	Max.	Symbol	Min.	Nom.	Max.
A	0.45	0.50	0.55	R	0.07	0.10	0.13
D	0.95	1.00	1.05	X1	0.025		0.065
E	0.55	0.60	0.65	Y1	0.025		0.065
b	0.20	0.25	0.30	A1	0		0.015
L	0.45	0.50	0.55				
e	0.65						

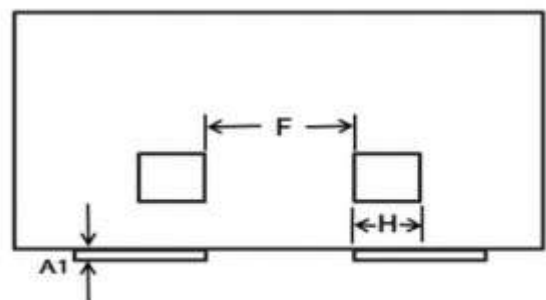
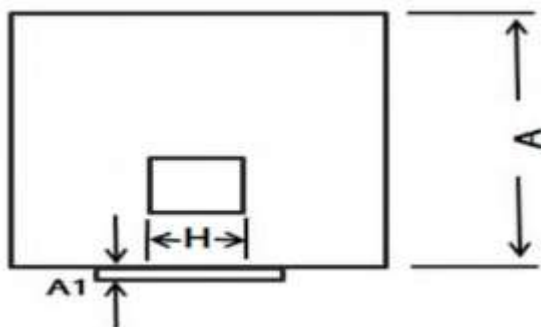
POD B(D)



TOP VIEW

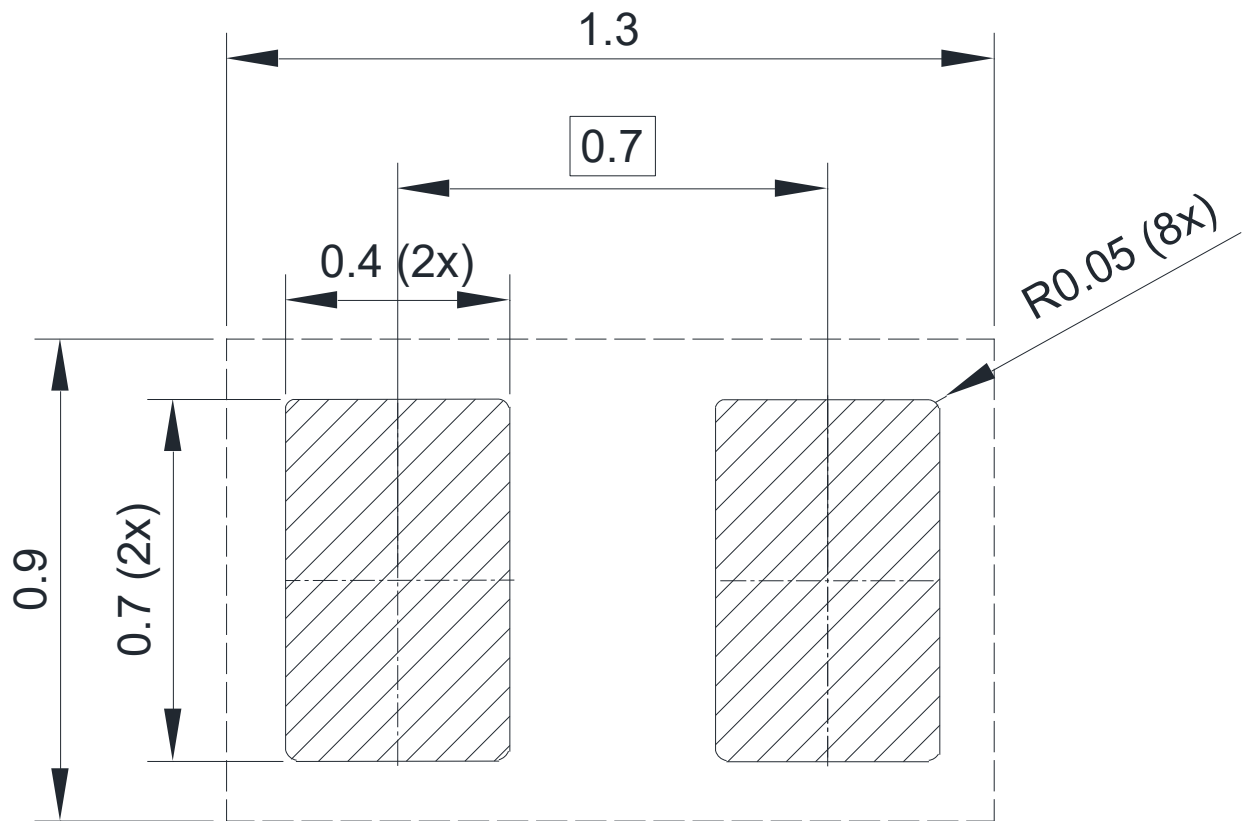


BOTTOM VIEW



Symbol	Millimeters		
	Min	Nom	Max
A	0.45	0.50	0.55
D	0.55	0.60	0.65
E	0.95	1.00	1.05
b	0.40	0.45	0.50
e	0.65		
h	0.10		
L1	0.20	0.25	0.30
L2	0.20	0.25	0.30
H	0.05	0.10	0.15
F	0.15	0.25	0.30
A1	0.00		0.025

10. Recommended Soldering Footprint



DIMENSIONS: MILLIMETERS

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