

### Description

ESD1221 is designed to protect voltage sensitive components from ESD. Excellent clamping capability, low leakage, and fast response time provide best in class protection on designs that are exposed to ESD. Because of its small size, it is suited for use in cellular phones and many other portable applications where board space is at a premium.

ESD1221 is in a 2-pin DFN0603 package with a nominal height of only 0.3mm. It gives the designer the flexibility to protect single lines in applications where arrays are not practical. The combination of small size and high ESD surge capability makes them ideal for use in portable applications.

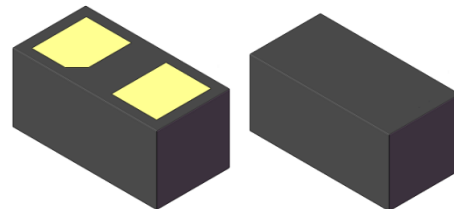
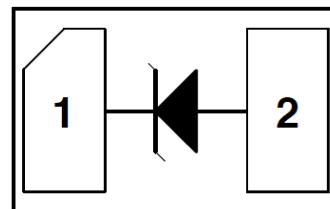
### Features

- Small Body Outline Dimension: 0.60mm x 0.30mm
- Low Body Height
- IEC 61000-4-2 Level 4 ESD Protection
- Low Leakage
- Stand-off Voltage: 12V
- Response Time is Typically <math>< 1.0\text{ns}</math>
- This is a Pb-Free Device

### Application

- Cellular Handsets and Accessories
- Digital cameras
- Mobile telephone
- Portable applications
- GPS

### Circuit Diagram/Pin Configuration



DFN0603(Bottom view)

## **Absolute Maximum Ratings (TA=25°C unless otherwise specified)**

Parameter	Symbol	Value	Unit
ESD per IEC61000-4-2 (Air)	V <sub>ESD</sub>	±15	kV
ESD per IEC61000-4-2 (Contact)		±8	
Peak Pulse Power (t <sub>p</sub> =8/20μs)	P <sub>pk</sub>	72	W
Peak Pulse Current (t <sub>p</sub> =8/20μs)	I <sub>pp</sub>	4	A
Operating Temperature Range	T <sub>J</sub>	-55 to +125	°C
Lead Solder Temperature –Maximum	T <sub>L</sub>	260	°C
Storage Temperature Range	T <sub>stg</sub>	-55 to +150	°C

## **Electrical Characteristics (TA=25°C unless otherwise specified)**

Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	V <sub>RWM</sub>			12	V	Pin 1 to Pin 2
Breakdown Voltage	V <sub>BR</sub>	13.3			V	I <sub>BV</sub> =1mA
Leakage Current	I <sub>Leak</sub>			1	μA	V <sub>RWM</sub> =12V
Clamping Voltage	V <sub>C</sub>			14.5	V	I <sub>PP</sub> =1A , t <sub>p</sub> =8/20μs
Clamping Voltage	V <sub>C</sub>			18	V	I <sub>PP</sub> =4A , t <sub>p</sub> =8/20μs
Junction Capacitance	C <sub>J</sub>			30	pF	V <sub>R</sub> =0V, f=1MHz,

**Typical Performance Characteristics (TA=25°C unless otherwise specified)**

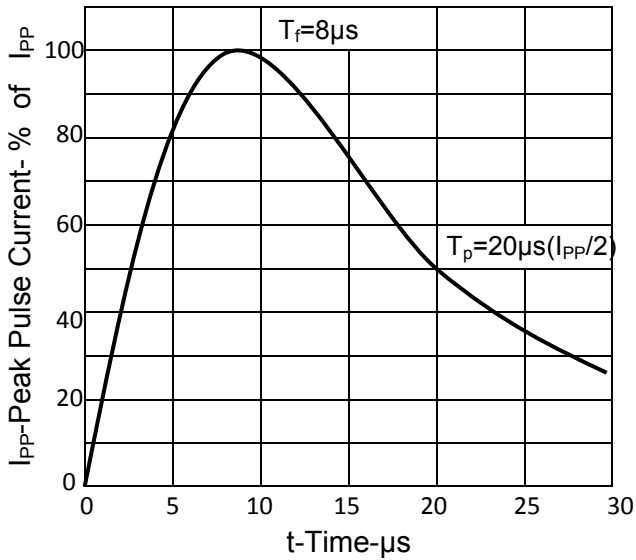


Fig 1. Pulse Waveform

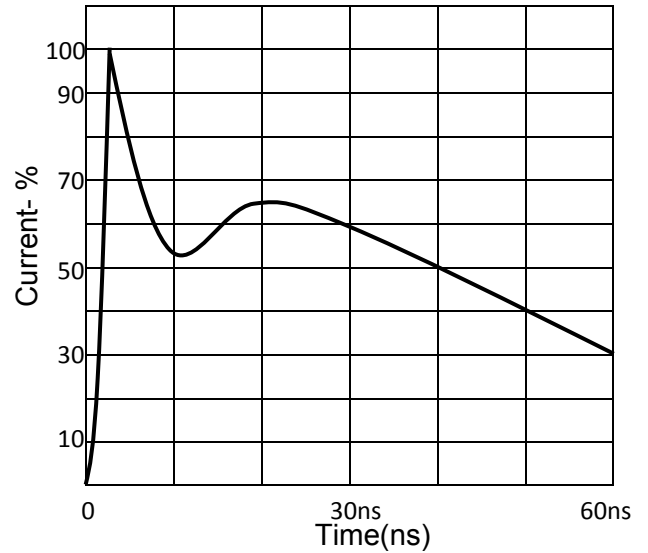


Fig 2. Contact Discharge Current Waveform Per IEC61000-4-2

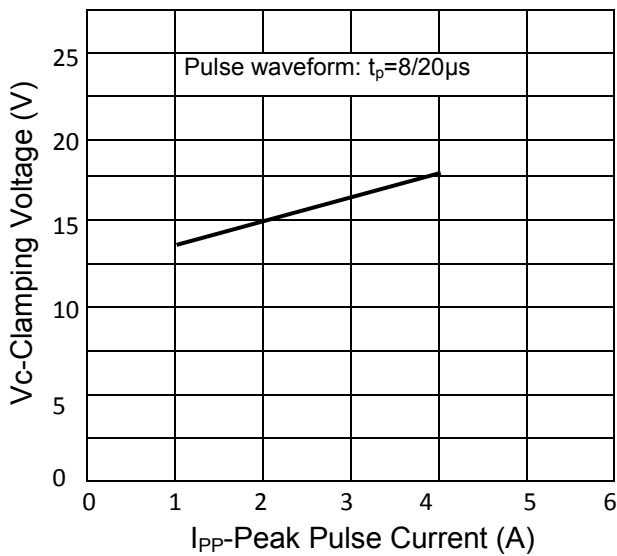


Fig 3. Clamping Voltage vs. Peak Pulse Current

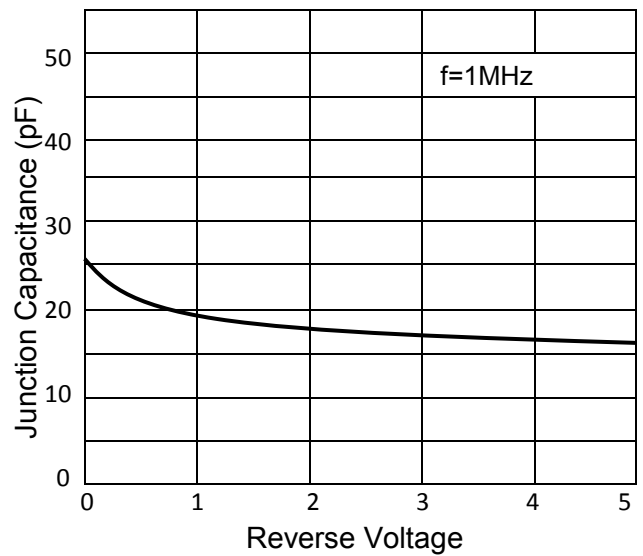
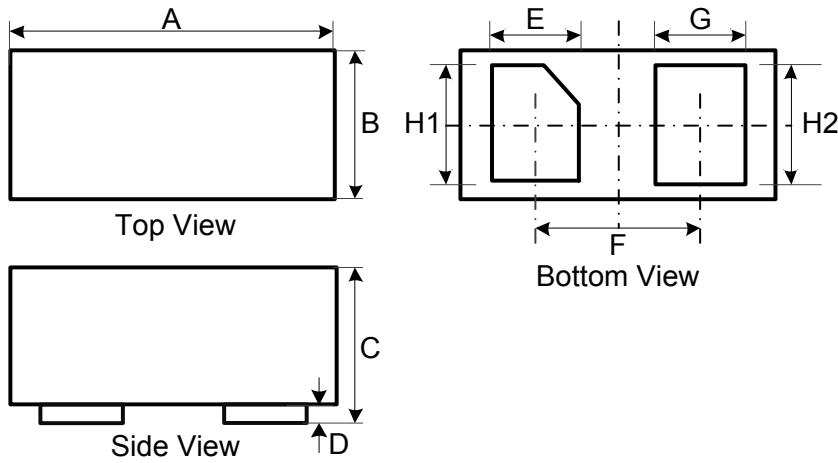


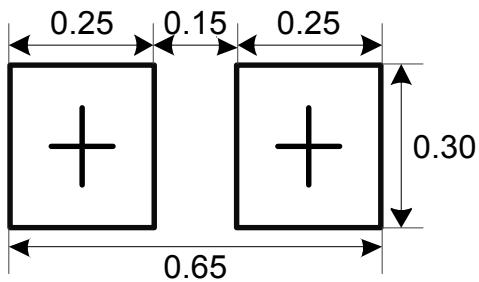
Fig 4. Junction Capacitance VS. Reverse Voltage

**DFN0603 Package Outline Drawing**



DIMENSIONS			
DIM	MILLIMETERS		
	MIN	NOM	MAX
A	0.55	0.60	0.65
B	0.25	0.30	0.35
C	0.28	0.30	0.32
D	0.00	0.02	0.05
E	0.13	0.18	0.23
G	0.14	0.19	0.24
H1/H2	0.20	0.25	0.30
F	0.35		

**Suggested Land Pattern**



Unit: mm