

**Features**

- Ultra small package: 1.0x0.6x0.5mm
- Protects one data or power line
- Very low capacitance: 2.5pF typical
- Ultra low leakage: nA level
- Low operating voltage: 5V
- Low clamping voltage
- 2-pin leadless package
- Complies with following standards:
  - IEC 61000-4-2 (ESD) immunity test  
Air discharge: ±15kV  
Contact discharge: ±8kV
  - IEC61000-4-4 (EFT) 40A (5/50ns)
- RoHS compliant

**Applications**

- Cellular Handsets and Accessories
- Personal Digital Assistants
- Notebooks and Handhelds
- Portable Instrumentation
- Digital Cameras
- Peripherals
- Audio Players
- Keypads, Side Keys, USB 2.0, LCD Displays

**Mechanical Characteristics**

- Package: DFN1006-2 (1.0×0.6×0.5mm)
- Lead Finish: NiPdAu
- Case Material: “Green” Molding Compound.
- UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 3 per J-STD-020
- Terminal Connections: See Diagram

**Part Number Code**

<b>E</b>	<b>S</b>	<b>D</b>	<b>0</b>	<b>5</b>	<b>1</b>	<b>1</b>	<b>L</b>	<b>1</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>

Product Type	
ESD	TSK Electrostatic suppressor ESD Type

Reverse Working Voltage (V)	
3V3	3.3V
05	5V
16	16V

Line	
1	1-Line
2	2-Line
3	3-Line

Capacitance Type	
L	Low
X	Normal

directional	
0	Bi
1	Uni

Size	
1	0201
2	0402
3	DFN0603
4	DFN1006

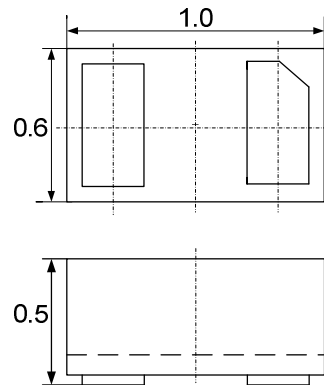
★ Code 4 to 9 is optional

**Description**

The ESD0510X43 is a bi-directional TVS diode, utilizing leading monolithic silicon technology to provide fast response time, very low capacitance and low ESD clamping voltage, making this device an ideal solution for protecting voltage sensitive data and power line. The ESD0510X43 complies with the IEC 61000-4-2 (ESD) standard with ±15kV air and ±8kV contact discharge. It is assembled into an ultra-small 1.0x0.6x0.5mm lead-free DFN package. The small size and very low capacitance make ESD0510X43 an ideal choice to protect cell phone, digital cameras, audio players, data interface and many other portable applications.



**Dimensions and Pin Configuration**



Package Dimensions (mm)

Circuit and Pin Schematic

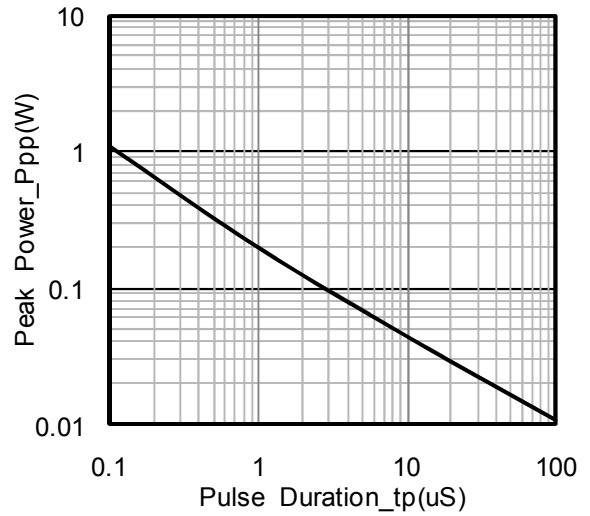
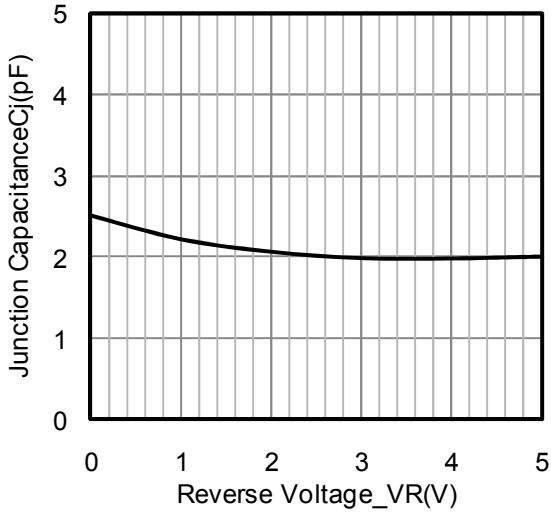
### Absolute Maximum Ratings ( $T_A=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Value	Unit
ESD per IEC 61000-4-2 (Air)	VESD	$\pm 15$	kV
ESD per IEC 61000-4-2 (Contact)		$\pm 8$	
Operating Temperature Range	TJ	-55 to +125	$^{\circ}\text{C}$
Storage Temperature Range	Tstg	-55 to +150	$^{\circ}\text{C}$

### Electrical Characteristics ( $T_A=25^{\circ}\text{C}$ unless otherwise specified)

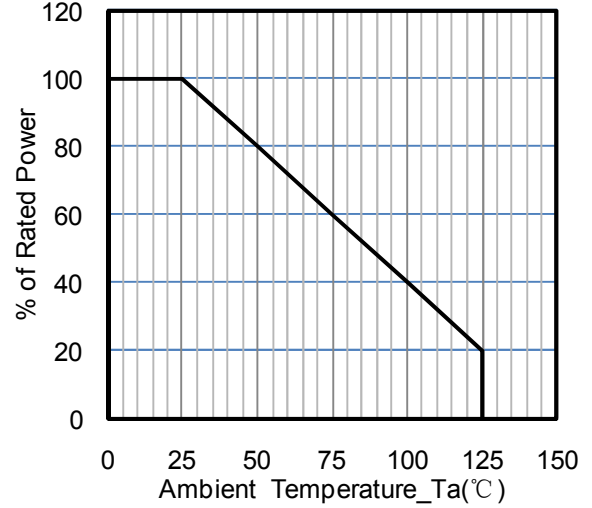
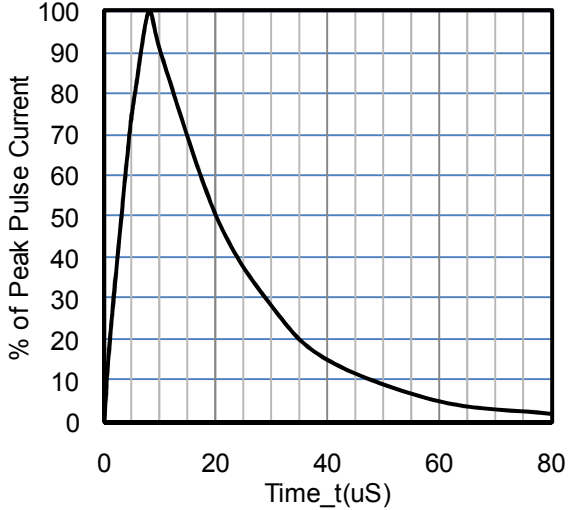
Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	VRWM			5	V	Pin 1 to Pin 2 or Pin 2 to Pin 1
Breakdown Voltage	VBR	6			V	$I_T = 1\text{mA}$ , Pin 1 to Pin 2 or Pin 1 to Pin 2
Reverse Leakage Current	$I_R$			200	nA	VRWM = 5V, Pin 1 to Pin 2 or Pin 1 to Pin 2
Clamping Voltage	VC			11	V	$I_{PP} = 1\text{A}$ (8 x 20 $\mu\text{s}$ pulse), Pin 1 to Pin 2 or Pin 1 to Pin 2
Junction Capacitance	CJ		2.5		pF	VR = 0V, f = 1MHz

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



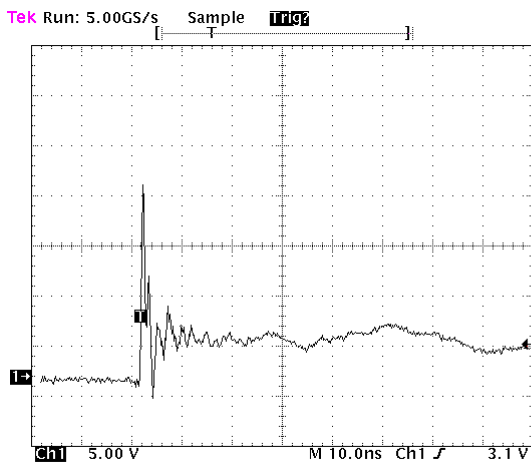
Junction Capacitance vs. Reverse Voltage

Peak Pulse Power vs. Pulse Time



8 X 20uS Pulse Waveform

Power Derating Curve

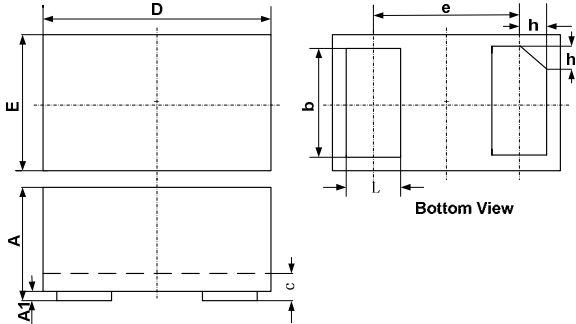


C1 Max  
19.2 V

ESD Clamping Voltage

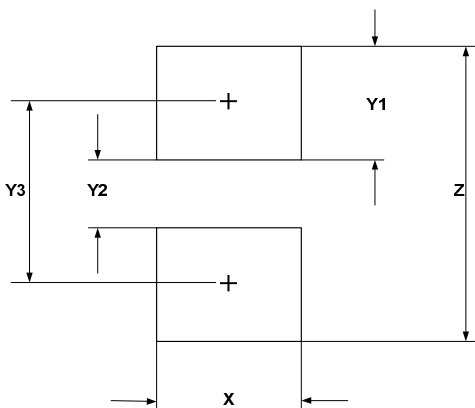
8 kV Contact per IEC61000-4-2

DFN1006-2 Package Outline Drawing



SYM	DIMENSIONS					
	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.45	0.50	0.55	0.018	0.020	0.022
A1	0.00	0.02	0.05	0.000	0.001	0.002
b	0.45	0.50	0.55	0.018	0.020	0.022
c	0.12	0.15	0.18	0.005	0.006	0.007
D	0.95	1.00	1.05	0.037	0.039	0.041
e	0.65 BSC			0.026 BSC		
E	0.55	0.60	0.65	0.022	0.024	0.026
L	0.20	0.25	0.30	0.008	0.010	0.012
h	0.07	0.12	0.17	0.003	0.005	0.007

Suggested Land Pattern



SYM	DIMENSIONS	
	MILLIMETERS	INCHES
X	0.60	0.024
Y1	0.50	0.020
Y2	0.30	0.012
Y3	0.80	0.032
Z	1.30	0.052

Ordering Information

Part Number	Packaging	Reel Size
ESD0510X43	10000/Tape & Reel	7 inch