

### Features

- Low capacitance: 3.5pF typical (I/O to I/O)
- Ultra low leakage: nA level
- Low operating voltage: 5V
- Low clamping voltage
- Up to 4 lines protects
- JEDEC SOT-553 package
- Complies with following standards:
  - IEC 61000-4-2 (ESD) immunity test  
Air discharge:  $\pm 15kV$   
Contact discharge:  $\pm 12kV$
  - IEC61000-4-4 (EFT) 40A (5/50ns)
- RoHS Compliant

### Mechanical Characteristics

- Package: SOT-553
- Lead Finish: Matte Tin
- Case Material: "Green" Molding Compound.
- UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 3 per J-STD-020
- Terminal Connections: See Diagram

### Applications

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

### 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

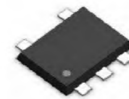
  

Size	
1	0201
2	0402
3	DFN0603
4	DFN1006

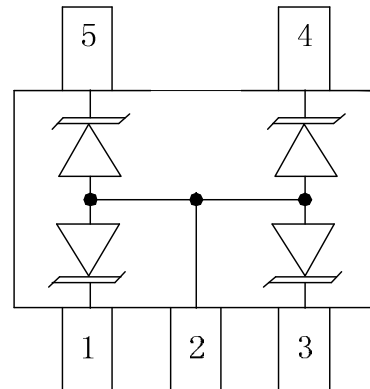
★ Code 4 to 9 is optional

### Description

The ESD0541XN is a low capacitance TVS array,utilizing leading monolithic silicon technology to provide fast response time and low ESD clamping voltage, making this device an ideal solution for protecting voltage sensitive high-speed data lines.The ESD0541XN has low capacitance with a typical value at 3.5pF, and complies with the IEC 61000-4-2 (ESD) standard with  $\pm 15kV$  air and  $\pm 8kV$  contact discharge. It is assembled into a 5-pin lead-free SOT-553 package. The combination of small size, low capacitance and high level of ESD protection makes it ideal for cellular, notebooks, desktops, and other portable application.



### Dimensions and Pin Configuration



Circuit and Pin Schematic

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

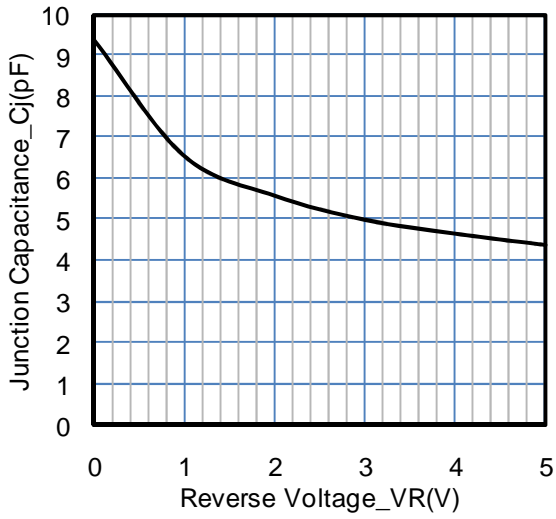
Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20 $\mu\text{s}$ )	Ppk	24	W
Peak Pulse Current (8/20 $\mu\text{s}$ )	I <sub>PP</sub>	2	A
ESD per IEC 61000-4-2 (Air)	VESD	$\pm 15$	kV
ESD per IEC 61000-4-2 (Contact)		$\pm 12$	
Operating Temperature Range	T <sub>J</sub>	-55 to +125	$^{\circ}\text{C}$
Storage Temperature Range	T <sub>stg</sub>	-55 to +150	$^{\circ}\text{C}$

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

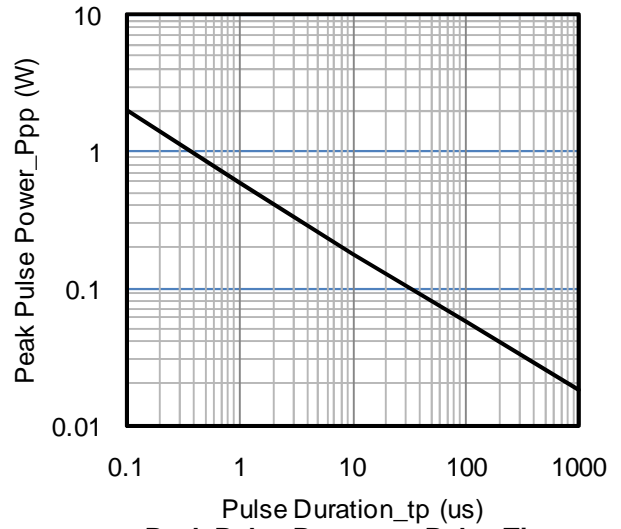
Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	V <sub>RWM</sub>			5	V	
Breakdown Voltage	V <sub>BR</sub>	6			V	I <sub>T</sub> = 1mA, any I/O to pin 2
Reverse Leakage Current	I <sub>R</sub>			0.1	$\mu\text{A}$	V <sub>RWM</sub> = 5V
Clamping Voltage	V <sub>C</sub>			10.5	V	I <sub>PP</sub> = 1A (8 x 20 $\mu\text{s}$ pulse)
Clamping Voltage	V <sub>C</sub>			12.0	V	I <sub>PP</sub> = 2A (8 x 20 $\mu\text{s}$ pulse)
Junction Capacitance	C <sub>J</sub>		3.5		pF	V <sub>R</sub> = 0V, f = 1MHz, between I/O pins
Junction Capacitance	C <sub>J</sub>		8.0		pF	V <sub>R</sub> = 0V, f = 1MHz, any I/O to pin 2

Note 1: I/O pins are Pin 1, 3, 4 and 5

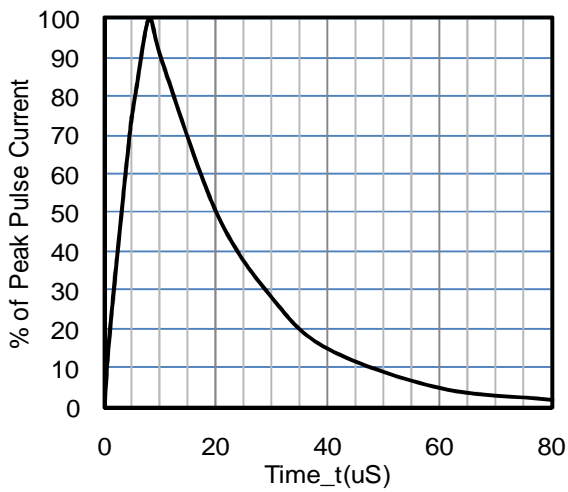
Typical Performance Characteristics (TA=25°C unless otherwise Specified)



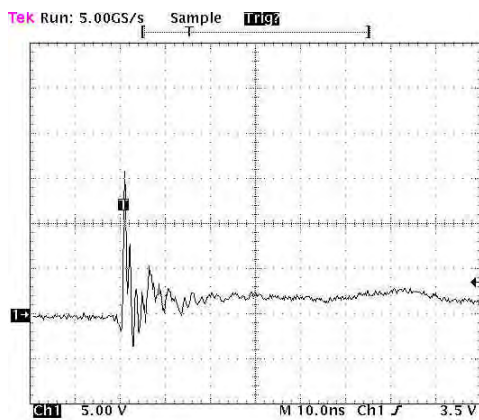
Junction Capacitance vs. Reverse Voltage



Peak Pulse Power vs. Pulse Time

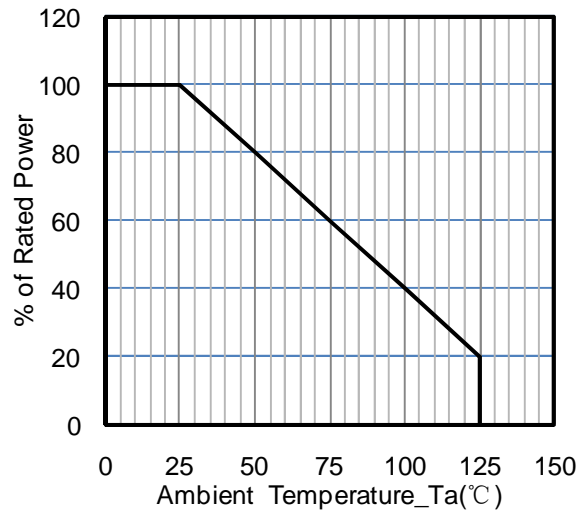


8 X 20µs Pulse Waveform



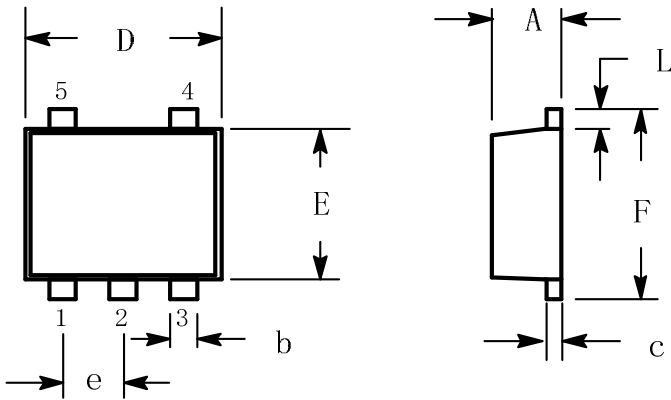
ESD Clamping Voltage

8 kV Contact per IEC61000-4-2



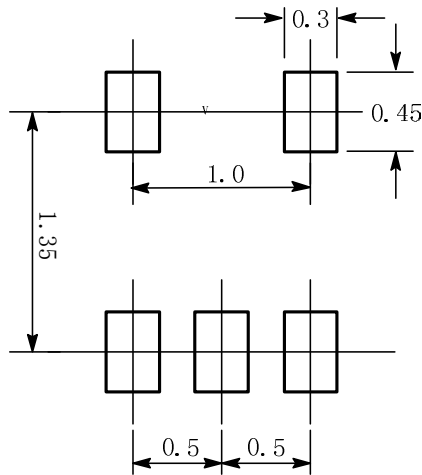
Power Derating Curve

SOT-553 Package Outline Drawing



DIM	DIMENSIONS					
	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.50	0.55	0.60	0.020	0.022	0.024
b	0.17	0.22	0.27	0.007	0.009	0.011
c	0.08	0.13	0.18	0.003	0.005	0.007
D	1.50	1.60	1.70	0.059	0.063	0.067
e	0.50 BSC			0.020 BSC		
E	1.10	1.20	1.30	0.043	0.047	0.051
L	0.10	0.20	0.30	0.004	0.008	0.012
F	1.50	1.80	1.70	0.059	0.063	0.067

Suggested Land Pattern



NOTE: CONTROLLING DIMENSION: MILLIMETERS

Ordering Information

Part Number	Packaging	Reel Size
ESD0541XN	3000/Tape & Reel	7 inch