Features

- Low capacitance: 4pF @ 3V
- Ultra low leakage: nA level
- Low operating voltage: 5V
- Low clamping voltage
- Up to 3 data lines and one Vbus protects
- JEDEC SOT-563 package
- Complies with following standards:
  - – IEC 61000-4-2 (ESD) immunity test
    - Air discharge: ±15kV
    - Contact discharge: ±12kV
  - – IEC61000-4-4 (EFT) 40A (5/50ns)
- RoHS Compliant

Mechanical Characteristics

- Package: SOT-563
- 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

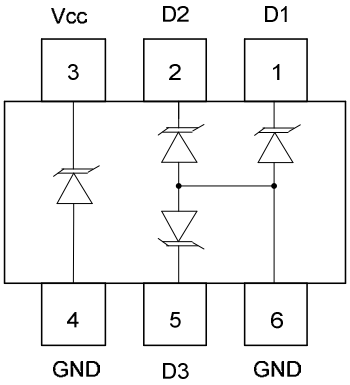
Applications

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

Description

The ESD0541XO 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 ESD0541XO has low capacitance with a typical value at 4pF, and complies with the IEC 61000-4-2 (ESD) standard with ±15kV air and ±8kV contact discharge. It is assembled into a 6-pin lead-free SOT-563 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

Part Number Code

E	S	D	0	5	1	1	L	1
1	2	3	4	5	6	7	8	9

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

directional	
0	Bi
1	Uni

Capacitance Type	
L	Low
X	Normal

Size	
1	0201
2	0402
3	DFN0603
4	DFN1006

★ Code 4 to 9 is optional

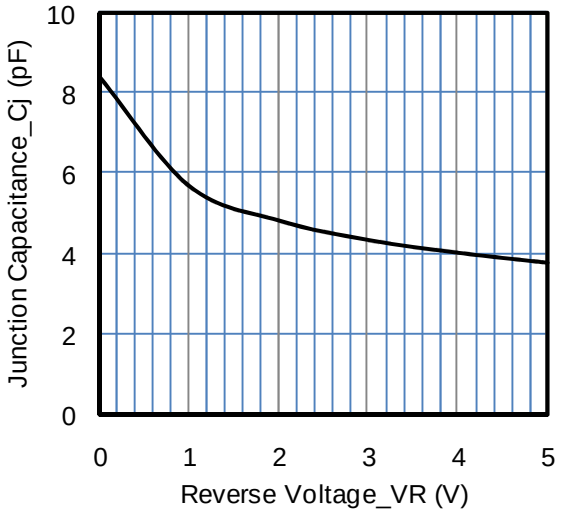
Absolute Maximum Ratings (T_A=25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20μs) _ Vcc Diode	Ppk	300	W
Peak Pulse Power (8/20μs) _ D1, D2, D3		25	
Peak Pulse Power (8/20μs) _ Vcc Diode	IPP	12	A
Peak Pulse Power (8/20μs) _ D1, D2, D3		2	
ESD per IEC 61000−4−2 (Air) ESD per IEC 61000−4−2 (Contact)	VESD	±15 ±12	kV
Operating Temperature Range	TJ	−55 to +125	°C
Storage Temperature Range	Tstg	−55 to +150	°C

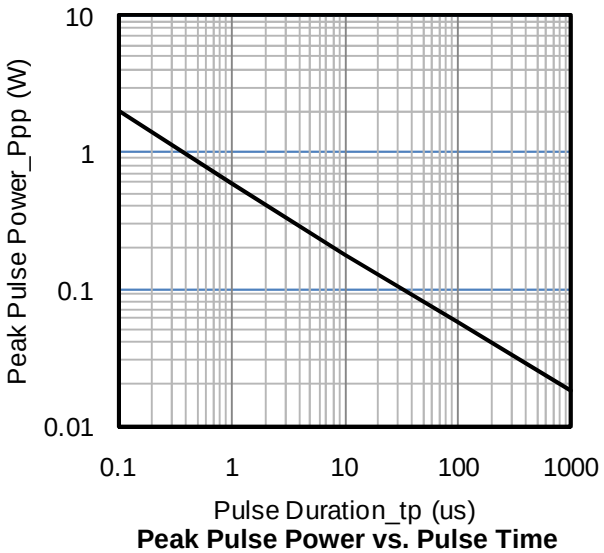
Electrical Characteristics (T_A=25°C unless otherwise specified)

Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage (D1, D2, D3)	VRWM			5	V	
Breakdown Voltage (D1, D2, D3)	VBR	6		9.5	V	IT = 1mA
Breakdown Voltage (VCC Diode)	VBR	13.3		17.8	V	IT = 1mA
Reverse Leakage Current (D1, D2, D3)	I_R			0.1	μA	VRWM = 5V
Reverse Leakage Current (VCC Diode)	I_R			0.05	μA	VRWM = 12V
Clamping Voltage (D1, D2, D3)	VC			12.5	V	IPP = 2A (8 x 20μs pulse)
Clamping Voltage (VCC Diode)	VC			25	V	IPP = 12A (8 x 20μs pulse)
Junction Capacitance (D1, D2, D3)	CJ		4	8	pF	VR = 3V, f = 1MHz, line to GND

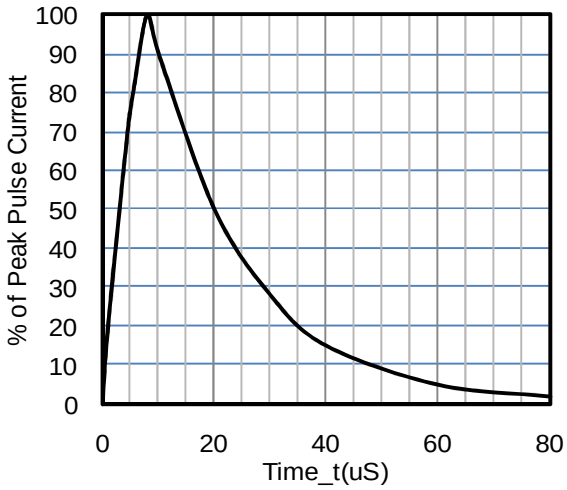
Typical Performance Characteristics (TA=25°C unless otherwise Specified)



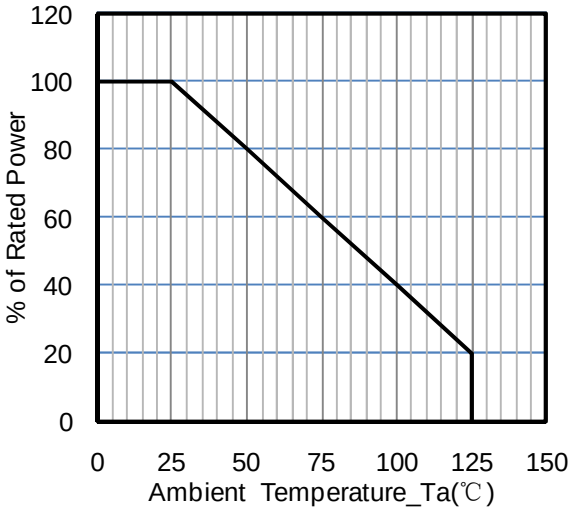
Junction Capacitance vs. Reverse Voltage



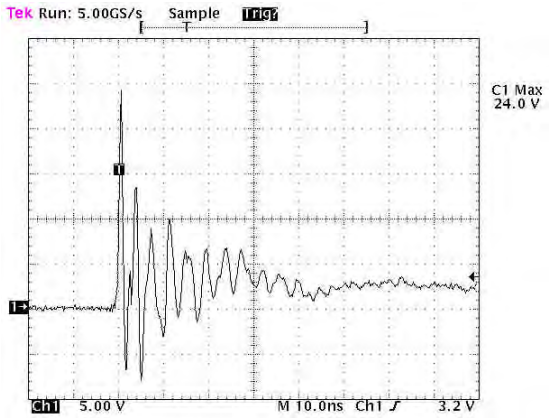
Peak Pulse Power vs. Pulse Time



8 X 20uS Pulse Waveform



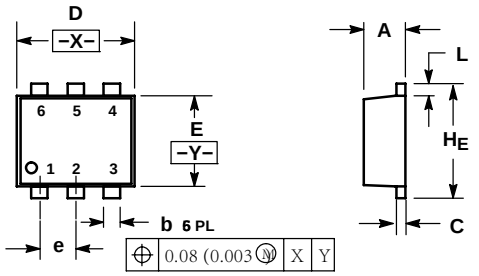
Power Derating Curve



ESD Clamping Voltage

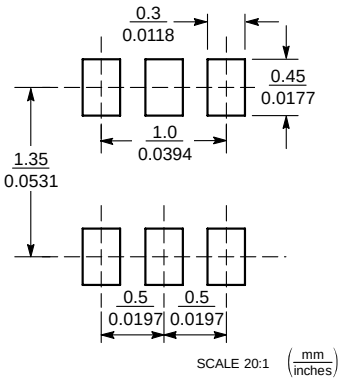
8 kV Contact per IEC61000−4−2

SOT-563 Package Outline Drawing



DIM	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.50	0.55	0.60	0.020	0.021	0.023
b	0.17	0.22	0.27	0.007	0.009	0.011
C	0.08	0.12	0.18	0.003	0.005	0.007
D	1.50	1.60	1.70	0.059	0.062	0.066
E	1.10	1.20	1.30	0.043	0.047	0.051
e	0.5 BSC			0.02 BSC		
L	0.10	0.20	0.30	0.004	0.008	0.012
H_E	1.50	1.60	1.70	0.059	0.062	0.066

Suggested Land Pattern



Ordering Information

Part Number	Packaging	Reel Size
ESD0541XO	3000/Tape & Reel	7 inch