

Features

- Operating voltage: 5V
- Low clamping voltage
- Complies with following standards:
 - IEC 61000-4-2 (ESD) immunity test
Air discharge: ±30kV
Contact discharge: ±30kV
 - IEC61000-4-4 (EFT) 40A (5/50ns)
 - IEC61000-4-5 (Lightning) 6A (8/20μs)
- RoHS Compliant

Description

The ESD0531XJ1 is a TVS diode array,utilizing leading monolithic silicon technology to provide fast response time and low ESD clamping voltage, making this device an ideal solution for protecting sensitive semiconductor components from damage.The ESD0531XJ1 complies with the IEC 61000-4-2 (ESD) standard with ±15kV air and ±8kV contact discharge. It is assembled into a lead-free SOT-143 package. It is designed to protect components which are connected to high speed interfaces and transmission lines from voltage surges.

Applications

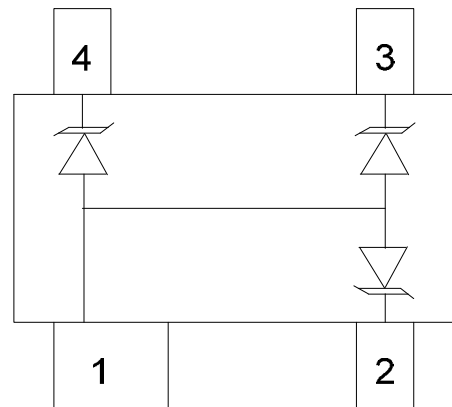
- Video Line Protection
- Wireless Systems
- Portable Instrumentation
- LAN/WAN equipment
- High-Speed Data Lines
- Multi-Protocol Serial Transceivers

Mechanical Characteristics

- Package: SOT-143
- 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 Below



Circuit and Pin Configuration



Circuit Diagram

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

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

Specifications are subject to change without notice

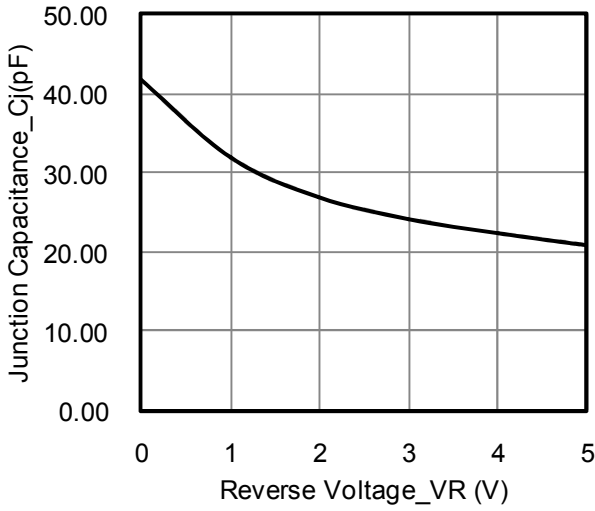
Absolute Maximum Ratings ($T_A=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20 μs)	Ppk	75	W
ESD per IEC 61000-4-2 (Air)	VESD	± 30	kV
ESD per IEC 61000-4-2 (Contact)		± 30	
Operating Temperature Range	TJ	-55 to +125	$^{\circ}\text{C}$
Storage Temperature Range	Tstg	-55 to +150	$^{\circ}\text{C}$

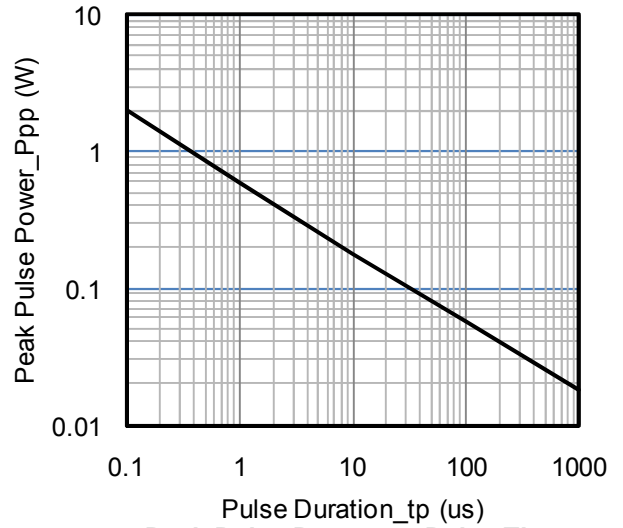
Electrical Characteristics ($T_A=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	VRWM			5	V	
Breakdown Voltage	VBR	6			V	$I_T = 1\text{mA}$
Reverse Leakage Current	I_R			0.5	μA	VRWM = 5V
Clamping Voltage	VC			8	V	$I_{PP} = 1\text{A}$ (8 x 20 μs pulse)
Clamping Voltage	VC			12.5	V	$I_{PP} = 6\text{A}$ (8 x 20 μs pulse)
Junction Capacitance	CJ			45	pF	VR = 0V, f = 1MHz, any I/O pin to GND
Junction Capacitance	CJ			25	pF	VR = 0V, f = 1MHz, between I/O pins

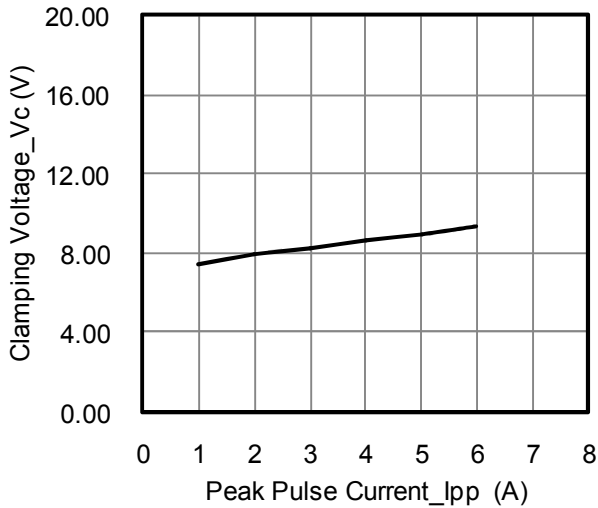
Typical Performance Characteristics (TA=25°C unless otherwise Specified)



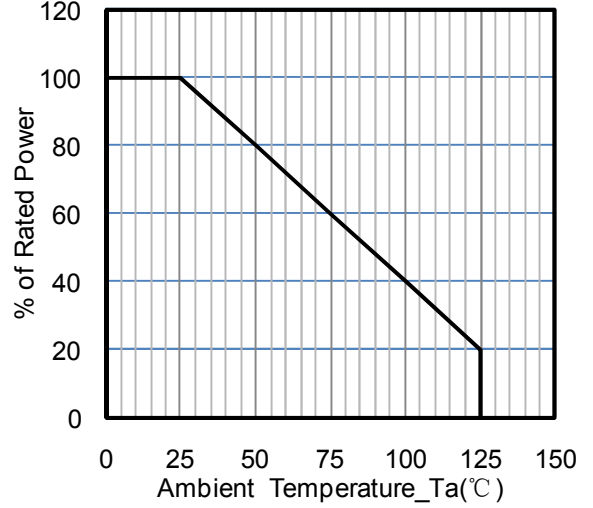
Junction Capacitance vs. Reverse Voltage



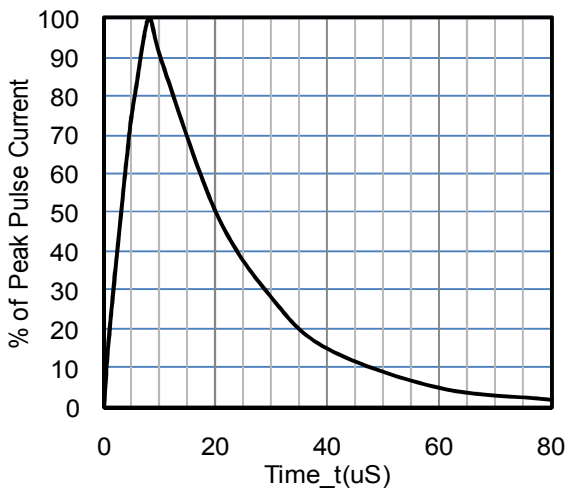
Peak Pulse Power vs. Pulse Time



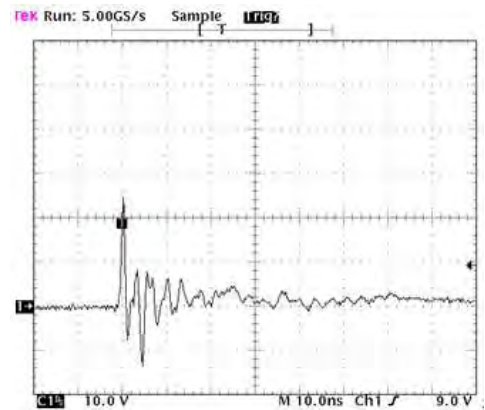
Clamping Voltage vs. Peak Pulse Current



Power Derating Curve



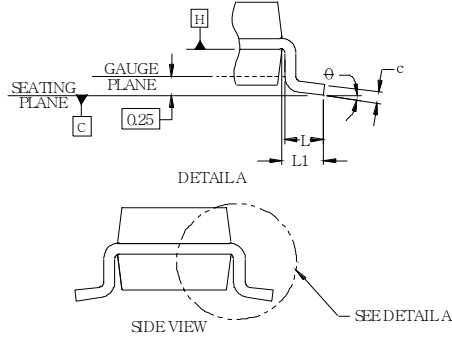
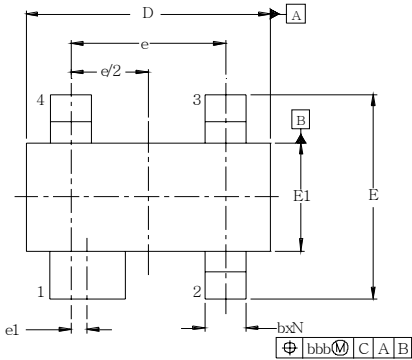
8 X 20uS Pulse Waveform



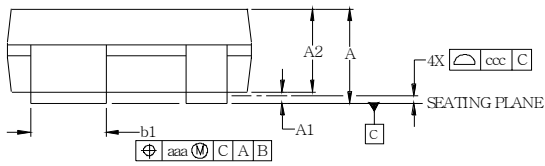
ESD Clamping Voltage

8 kV Contact per IEC61000-4-2

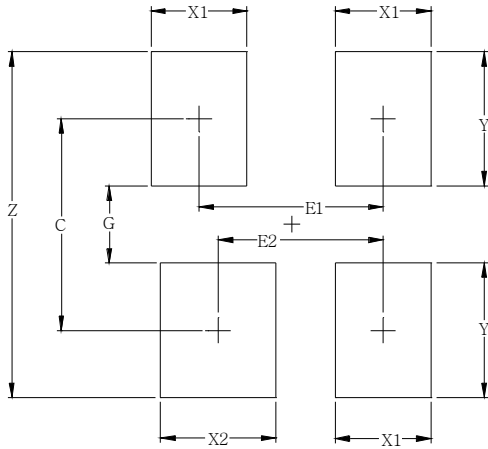
SOT-143 Package Outline Drawing



DIM	INCHES		MILLIMETERS	
	MIN	NOM	MIN	NOM
A	.031	-.048	0.80	1.22
A1	.009	-.006	0.03	-.15
A2	.029	.035	0.42	0.75
b	.011	-.020	0.30	-.51
b1	.029	-.037	0.76	-.94
c	.008	-.008	0.08	-.20
D	.110	.114	1.20	2.90
E	.082	.093	1.04	2.37
E1	.047	.051	1.20	1.30
e	.075		1.92 BSC	
e1	.008		(0.2) BSC	
L	.015	.020	0.40	0.50
L1	(0.2)		(0.5)	
N	4		4	
theta	0°	8°	0°	8°
aaa	.006		0.15	
bbb	.008		0.20	
ccc	.004		0.10	



Suggested Land Pattern



SYM	DIMENSIONS	
	MILLIMETERS	INCHES
C	2.20	0.087
E1	1.92	0.076
E2	1.72	0.068
G	0.80	0.031
X1	1.00	0.039
X2	1.20	0.047
Y	1.40	0.055
Z	3.60	0.141

Ordering Information

Part Number	Packaging	Reel Size
ESD0531XJ1	3000/Tape & Reel	7 inch