

Description

The FTV0533S1 is a 2-line 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 voltage sensitive high-speed data lines. The FTV0533S1 complies with the IEC 61000-4-2 (ESD) with $\pm 30\text{kV}$ air and $\pm 30\text{kV}$ contact discharge. It is assembled into a 4-pin SOT-143 lead-free package. The small size, high ESD surge protection make FTV0533S1 an ideal choice to protect cell phone, digital video interfaces, high speed data ports, and many other portable applications.

Mechanical Characteristics

- ◆ Package: SOT-143
- ◆ Lead Finish: Matte Tin
- ◆ Case Material: "Green" Molding Compound.
- ◆ Moisture Sensitivity: Level 3 per J-STD-020
- ◆ Terminal Connections: See Diagram Below
- ◆ Marking Information: See Below

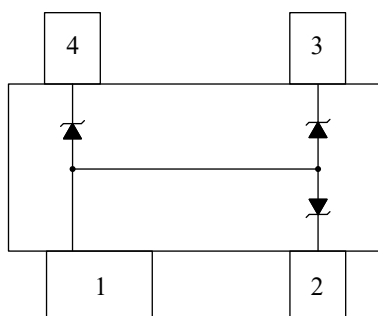
Features

- ◆ Ultra low leakage : nA level
- ◆ Operating voltage : 5V
- ◆ Low clamping voltage
- ◆ 4-pin SOT-143 package
- ◆ Protects two data lines and one power line
- ◆ Complies with following standards:
 - IEC 61000-4-2 (ESD) immunity test
 - Air discharge: $\pm 30\text{kV}$
 - Contact discharge: $\pm 30\text{kV}$
 - IEC61000-4-4 (EFT) 40A (5/50ns)
 - IEC61000-4-5 (Lightning) 8A (8/20 μs)
- ◆ RoHS Compliant

Applications

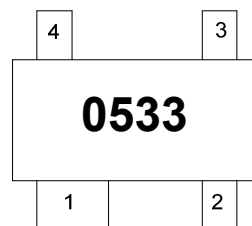
- ◆ Cellular Handsets and Accessories
- ◆ Notebooks and Handhelds
- ◆ Personal Digital Assistants
- ◆ Portable Instrumentation
- ◆ Digital Cameras
- ◆ Peripherals
- ◆ Audio Players, Keypads, Side Keys, LCD
- ◆ USB 2.0

Dimensions and Pin Configuration



Circuit Diagram and Pin Schematic

Marking Information



0533= Device Marking Code

Ordering Information

Part Number	Marking	Packaging	Reel Size
FTV0533S1	0533	3000/Tape & Reel	7 inch

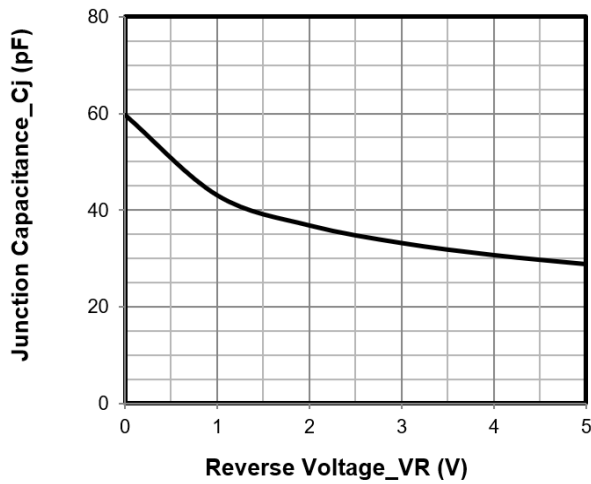
Absolute Maximum Ratings (T_A=25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Peak Pulse Power(8/20μs)	P _{pk}	100	W
Peak Pulse Current(8/20μs)	I _{PP}	8	A
ESD per IEC 61000-4-2 (Air)	V _{ESD}	±30	kV
ESD per IEC 61000-4-2 (Contact)		±30	
Operating Temperature Range	T _J	-55 to +125	°C
Storage Temperature Range	T _{stg}	-55 to +150	°C

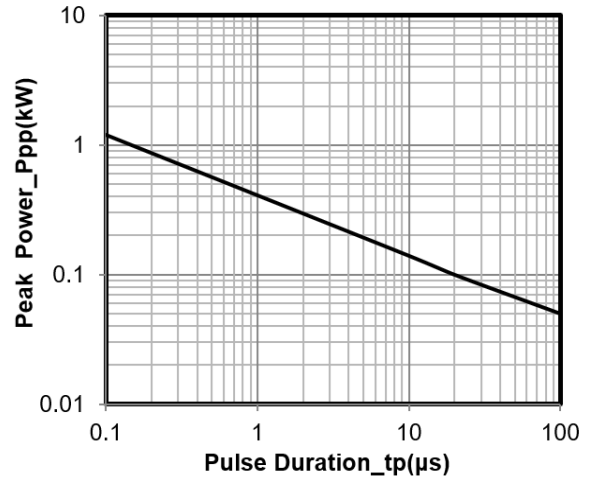
Electrical Characteristics (T_A=25°C unless otherwise specified)

Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	V _{RWM}			5	V	Any I/O pin to ground
Breakdown Voltage	V _{BR}	6			V	I _T = 1mA, any I/O pin to ground
Reverse Leakage Current	I _R			0.2	μA	V _{RWM} = 5V, any I/O pin to ground
Clamping Voltage	V _C			8	V	I _{PP} = 1A (8 x 20μs pulse), any I/O pin to ground
Clamping Voltage	V _C			12.5	V	I _{PP} = 8A (8 x 20μs pulse), any I/O pin to ground
Junction Capacitance	C _J		30		pF	V _R = 0V, f = 1MHz, between I/O pins
Junction Capacitance	C _J		60		pF	V _R = 0V, f = 1MHz, any I/O pin to ground

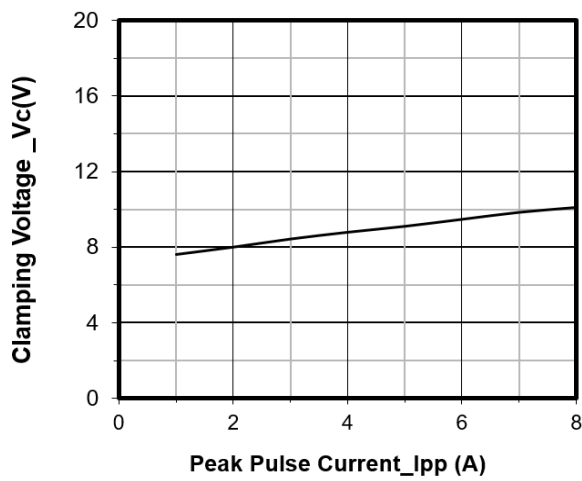
Typical Performance Characteristics (TA=25°C unless otherwise Specified)



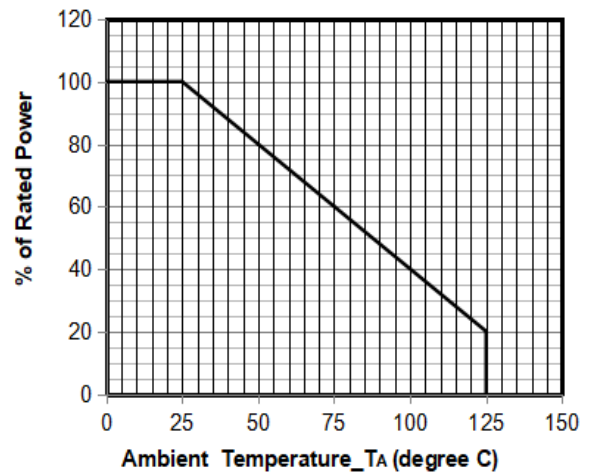
Junction Capacitance vs. Reverse Voltage



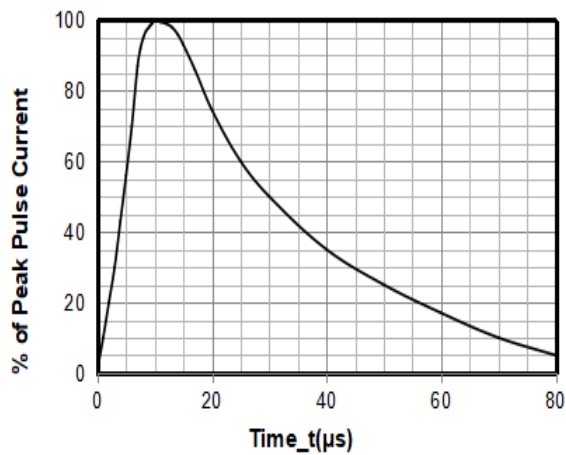
Peak Pulse Power vs. Pulse Time



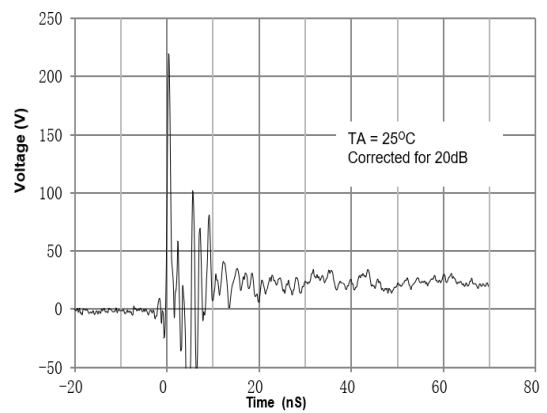
Clamping Voltage vs. Peak Pulse Current



Power Derating Curve



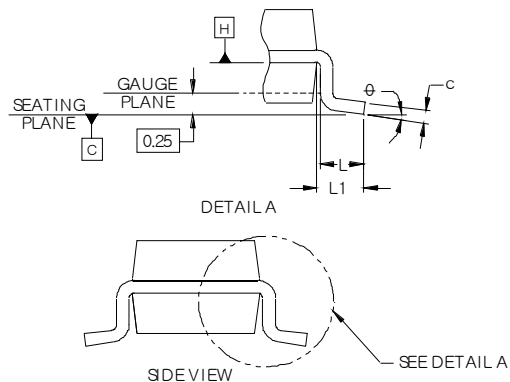
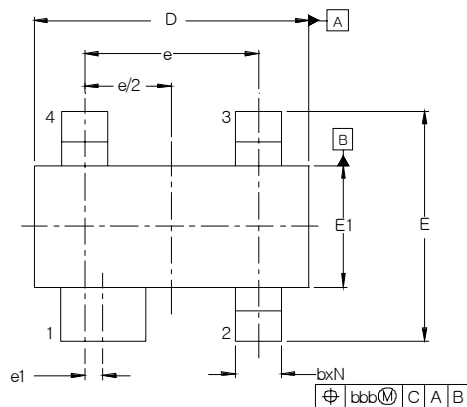
8 X 20μs Pulse Waveform



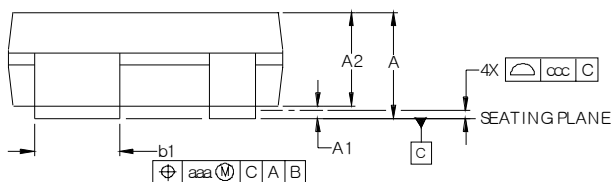
ESD Clamping Voltage

8 kV Contact per IEC61000-4-2

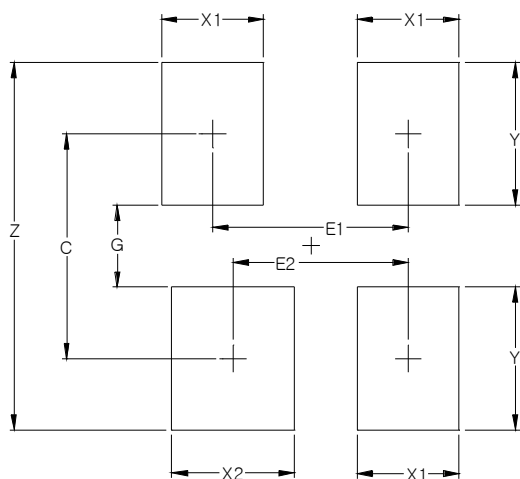
SOT-143 Package Outline Drawing



DIM	DIMENSIONS			
	INCHES		MILLIMETERS	
	MIN	NOM	MAX	
A	.031	—	.048	0.80
A1	.000	—	.006	0.013
A2	.029	.035	.042	0.75
b	.011	—	.020	0.30
b1	.029	—	.037	0.76
c	.003	—	.008	0.08
D	.110	.114	.120	2.80
E	.082	.093	.104	2.10
E1	.047	.051	.055	1.20
e	.075	—	—	1.92 BSC
e1	.008	—	—	0.20 BSC
L	.015	.020	.024	0.40
L1	—	.021	—	0.50
N	4	—	—	(0.54)
phi	0°	4°	8°	0°
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