

2-Line Bi-directional TVS Diode Array

Description

The FTV0522S2 is a 2-line bi-directional low capacitance 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 FTV0522S2 has a very low capacitance with a typical value at 3pF, and complies with the IEC 61000-4-2 (ESD) standard with $\pm 15\text{kV}$ air and $\pm 8\text{kV}$ contact discharge. It is assembled into a 3-pin SOT-23 lead-free package. The small size, very low capacitance and high ESD surge protection make FTV0522S2 an ideal choice to protect cell phone, digital video interfaces, high speed data ports, and many other portable applications.

Features

- Very low capacitance: 3pF typical
- Ultra low leakage: nA level
- Operating voltage: 5V
- Low clamping voltage
- Small SOT-23 package
- Up to 2-line protects
- Complies with following standards:
 - IEC 61000-4-2 (ESD) immunity test
Air discharge: $\pm 15\text{kV}$
 - IEC61000-4-5 (Lightning)
Contact discharge: $\pm 8\text{kV}$ 3.5A (8/20 μs)
- RoHS Compliant

Mechanical Characteristics

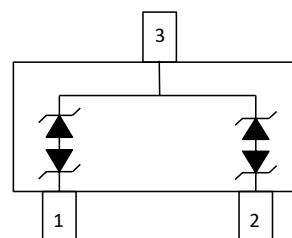
- Package: SOT-23
- Lead Finish: Matte Tin
- Case Material: "Green" Molding Compound.
- Terminal Connections: See Diagram Below
- Marking Information: See Below

Applications

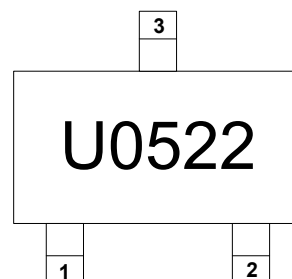
- Cellular Handsets and Accessories
- Notebooks and Handhelds
- Portable Instrumentation
- Set Top Box
- Industrial Controls
- Server and Desktop PC



SOT-23



Circuit diagram



U0522= Device code
Marking (Top View)

Ordering Information

Part Number	Packaging	Reel Size
FTV0522S2	3000/Tape & Reel	7 inch



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

Parameter	Symbol	Value	Unit
ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact)	VESD	± 15 ± 8	kV
Peak Pulse Power (8/20 μs)	PPK	35	W
Peak Pulse Current	I _{PP}	3.5	A
Operating Temperature Range	T _J	-55 to +125	$^{\circ}\text{C}$
Storage Temperature Range	T _{stg}	-55 to +150	$^{\circ}\text{C}$

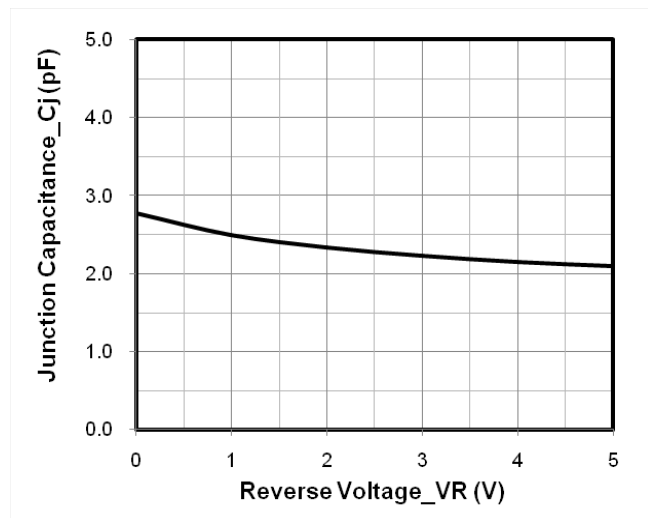
Electrical Characteristics ($T_A=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	V _{RWM}			5	V	
Breakdown Voltage	V _{BR}	5.6			V	I _T = 1mA
Reverse Leakage Current	I _R			0.1	μA	V _{RWM} = 5V
Clamping Voltage	V _C		7.5	9	V	I _{PP} = 1A (8 x 20 μs pulse),
Clamping Voltage	V _C		10.5	12	V	I _{PP} = 3.5A (8 x 20 μs pulse)
Junction Capacitance	C _J		3.0		pF	V _R = 0V, f = 1MHz, any I/O pin to pin 3

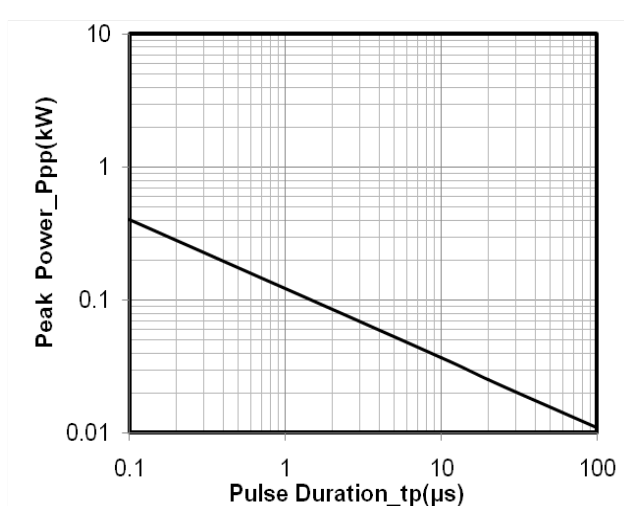
Note 1: I/O pins are Pin 1, 2

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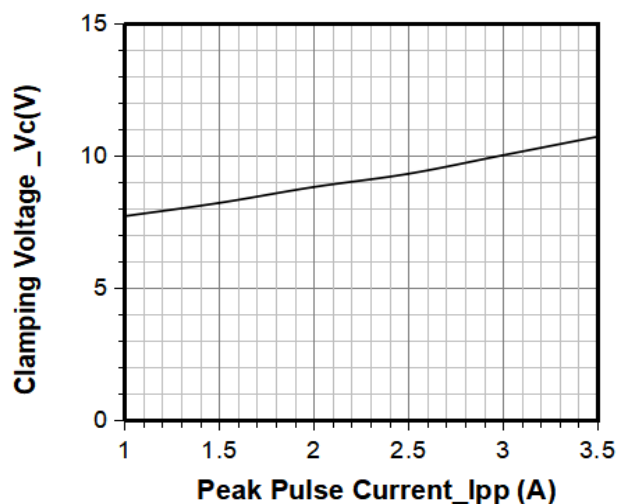
Typical Performance Characteristics (TA=25°C unless otherwise Specified)



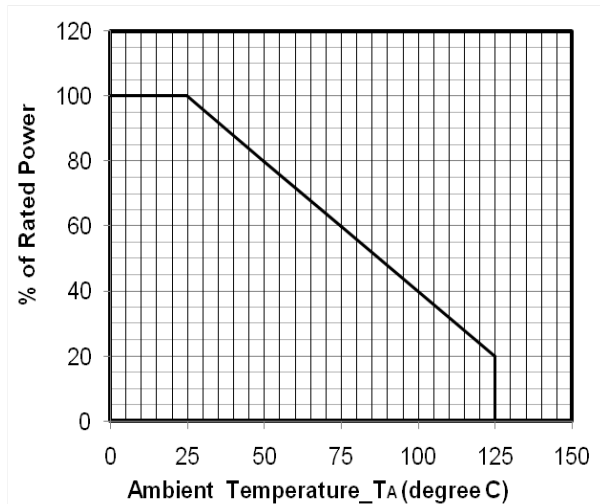
Junction Capacitance vs. Reverse Voltage



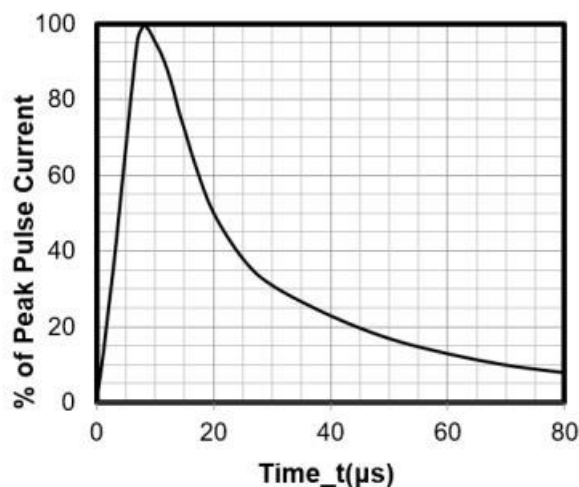
Peak Pulse Power vs. Pulse Time



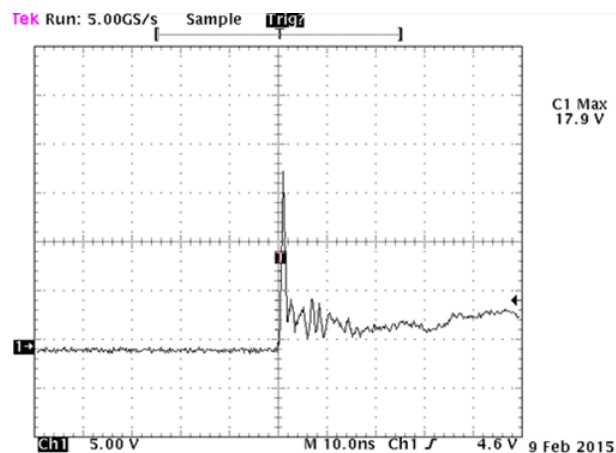
Clamping Voltage vs. Peak Pulse Current (tp = 8/20μs)



Power Derating Curve



8 X 20μs Pulse Waveform

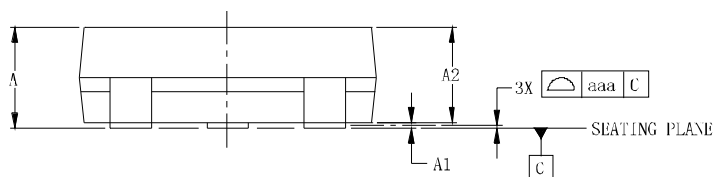
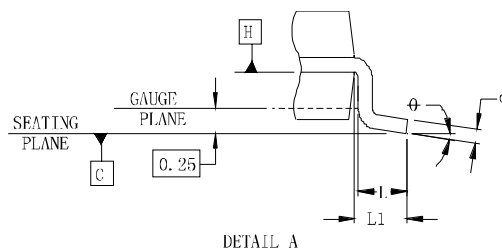
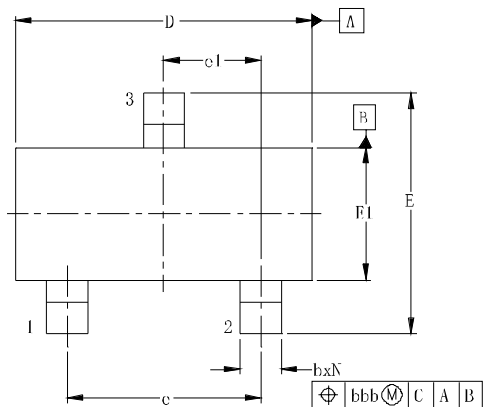


Note: Data is taken with a 10x attenuator

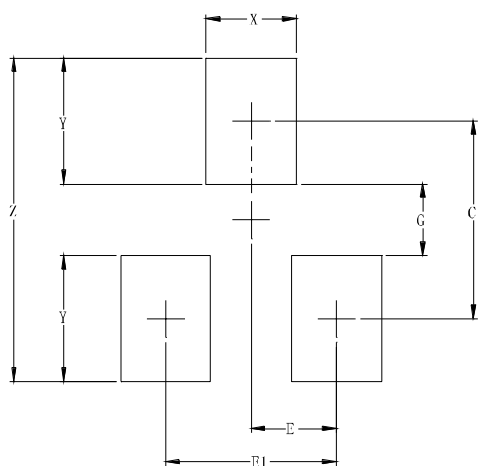
ESD Clamping Voltage

+8 kV Contact per IEC61000-4-2

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Suggested Land Pattern



DIMENSIONS						
SYM	INCHES			MILLIMETERS		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.035	-	0.045	0.89	-	1.15
A1	0.000	-	0.004	0.01	-	0.10
A2	0.035	0.037	0.040	0.88	0.95	1.02
b	0.012	-	0.020	0.30	-	0.51
c	0.003	-	0.007	0.08	-	0.18
D	0.110	0.114	0.120	2.80	2.90	3.04
E	0.082	0.093	0.104	2.10	2.37	2.64
E1	0.047	0.051	0.055	1.20	1.30	1.40
e	0.075			1.90BSC		
e1	0.037			0.95BSC		
L	0.015	0.020	0.024	0.40	0.50	0.60
L1	0.022			0.55		
N	3			3		
$\square$	0°	-	8°	0°	-	8°
aaa	0.004			0.10		
bbb	0.008			0.20		

DIMENSIONS		
SYM	INCHES	MILLIMETERS
C	0.087	2.20
E	0.037	0.95
E1	0.075	1.90
G	0.031	0.80
X	0.039	1.00
Y	0.055	1.40
Z	0.141	3.60