Description

The DL1502S3 is an uni-directional 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 DL1502S3 has an ultra-low capacitance with a typical value at 0.4pF, and complies with the IEC 61000-4-2 (ESD) with ±15kV air and ±8kV contact discharge. It is assembled into a lead-free SOT-323 package. It is designed to protect LVDS, HDMI, USB2.0, USB3.0, and other high speed ports.

Features

- Protects one bi-directional or two uni-directional lines
- Ultra low leakage: nA level
- Operating voltage: 15V
- Low clamping voltage
- Complies with following standards:
  - IEC 61000-4-2 (ESD) immunity test
    - Air discharge: ±15kV
    - Contact discharge: ±8kV
  - IEC61000-4-5 (Lightning) 2.5A (8/20μs)
- RoHS Compliant

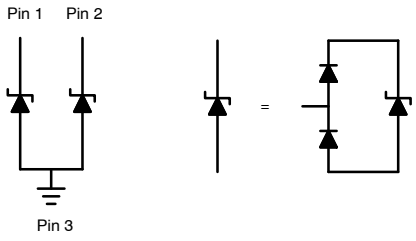
Mechanical Characteristics

- Package: SOT-323
- Case Material: “Green” Molding Compound.
- Moisture Sensitivity: Level 3 per J-STD-020
- Terminal Connections: See Diagram Below
- Marking Information: See Below

Applications

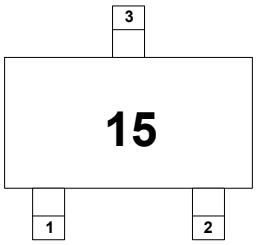
- USB2.0/USB3.0
- LVDS
- HDMI
- High Speed Differential Pairs

Dimensions and Pin Configuration



Circuit and Pin Schematic

Marking Information



15 = Device Marking Code

Ordering Information

Part Number	Marking	Packaging	Reel Size
DL1502S3	15	3000/Tape & Reel	7 inch

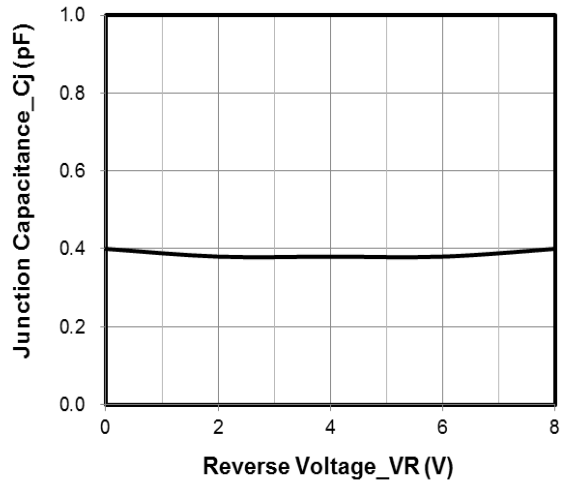
Absolute Maximum Ratings (T_A=25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20μs)	Ppk	80	W
Peak Pulse Current (8/20μs)	I_{PP}	2.5	A
ESD per IEC 61000−4−2 (Air) ESD per IEC 61000−4−2 (Contact)	V_{ESD}	±15 ±8	kV
Operating Temperature Range	T_J	−55 to +125	°C
Storage Temperature Range	Tstg	−55 to +150	°C

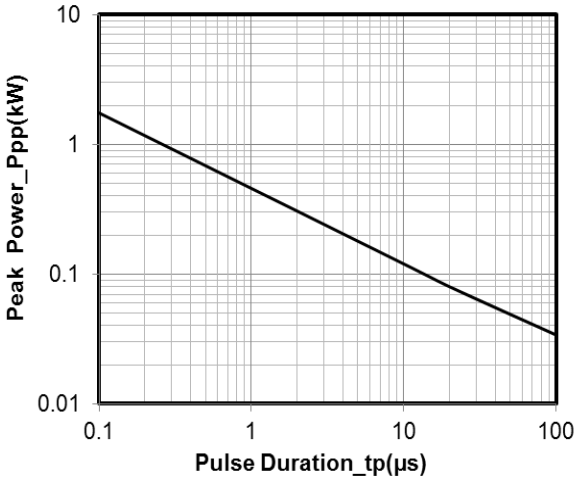
Electrical Characteristics (T_A=25°C unless otherwise specified)

Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	V_{RWM}			15	V	I/O pin to GND
Breakdown Voltage	V_{BR}	16.5			V	I_T = 1mA, I/O pin to GND
Reverse Leakage Current	I_R			0. 5	μA	V_{RWM} = 15V, I/O pin to GND
Clamping Voltage	V_C			21.5	V	I_{PP} = 1A (8 x 20μs pulse), I/O pin to GND
Clamping Voltage	V_C			32	V	I_{PP} = 2.5A (8 x 20μs pulse), I/O pin to GND
Junction Capacitance	C_J		0.4		pF	VR = 0V, f = 1MHz, I/O pin to GND

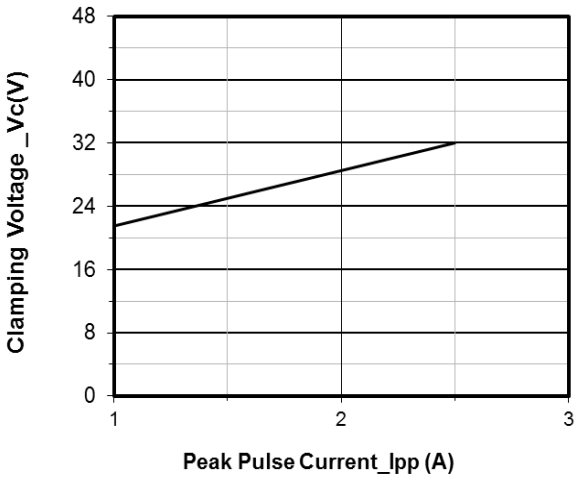
Typical Performance Characteristics (T_A=25℃ unless otherwise Specified)



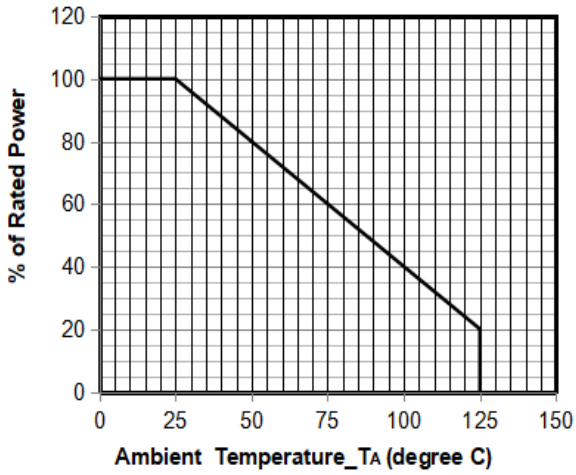
Junction Capacitance vs. Reverse Voltage



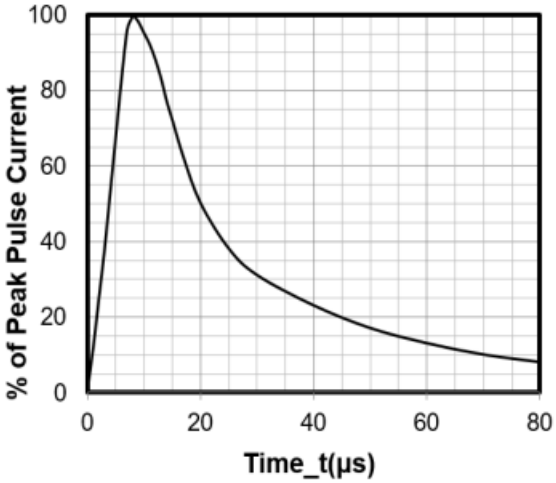
Peak Pulse Power vs. Pulse Time



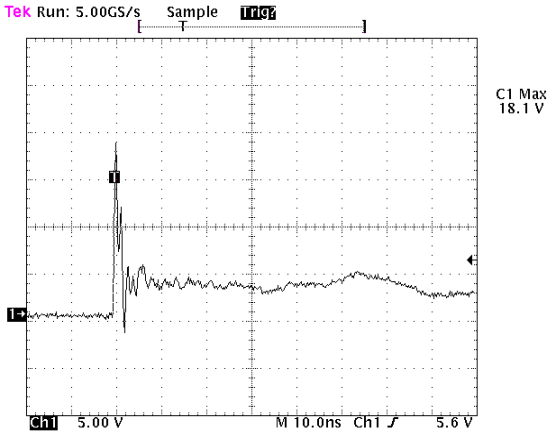
Clamping Voltage vs. Peak Pulse Current



Power Derating Curve



8 X 20μs Pulse Waveform

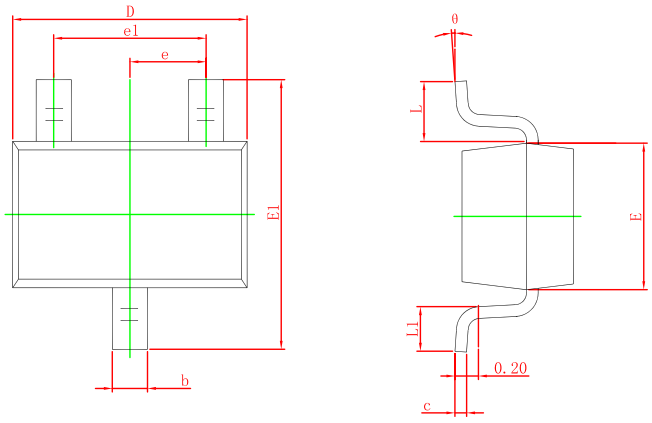


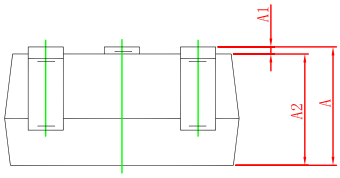
Note：Data is taken with a 10x attenuator

ESD Clamping Voltage

8 kV Contact per IEC61000−4−2

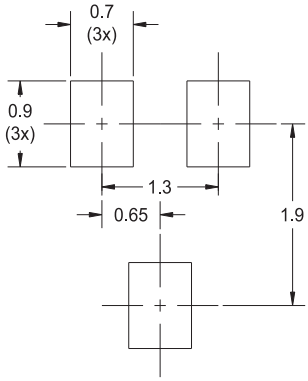
SOT-323 Package Outline Drawing





Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.200	0.400	0.008	0.016
c	0.080	0.150	0.003	0.006
D	2.000	2.200	0.079	0.087
E	1.150	1.350	0.045	0.053
E1	2.150	2.450	0.085	0.096
e	0.650 TYP.		0.026 TYP.	
e1	1.200	1.400	0.047	0.055
L	0.525 REF.		0.021 REF.	
L1	0.260	0.460	0.010	0.018
θ	0°	8°	0°	8°

Suggested Land Pattern



Contact Information

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