

2 CHANNEL LOW CAPACITANCE TVS DIODE ARRAY
Features

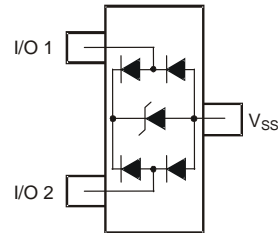
- IEC 61000-4-2 (ESD): Air – ±16kV, Contact – ±16kV
- IEC 61000-4-4 (EFT) Additional Level, 55A (5/50ns)
- IEC 61000-4-5 (Lightning): 12A (8/20µs)
- 2 Channels of ESD protection
- Low Channel Input Capacitance of 1.2pF Typical
- Typically Used at High Speed Ports such as USB 2.0, IEEE1394, Serial ATA, DVI, HDMI, PCI
- **Totally Lead-free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

Mechanical Data

- Case: SOT23
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish Annealed over Alloy 42 Leadframe (Lead-free Plating). Solderable per MIL-STD-202, Method 208 (3)
- Weight: 0.009 grams (Approximate)



Top View

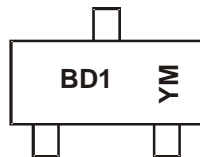


Device Schematic

Ordering Information (Note 4)

Product	Compliance	Marking	Reel Size (inches)	Tape Width (mm)	Quantity per Reel
DT1452-02SO-7	Standard	BD1	7	8	3,000/Tape & Reel

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
 2. See http://www.diodes.com/quality/lead_free.html for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
 3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
 4. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

Marking Information


BD1 = Product Type Marking Code
 YM = Date Code Marking
 Y = Year (ex: A = 2013)
 M = Month (ex: 5 = May)

Date Code Key

Year	2013		2014		2015		2016		2017		2018	
Code	A		B		C		D		E		F	
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit	Conditions
Peak Pulse Current	I _{PP,I/O}	12	A	I/O to V _{SS} , 8/20μs
ESD Protection – Contact Discharge	V _{ESD,I/O_Contact}	±16	kV	I/O to V _{SS} , per IEC 61000-4-2
ESD Protection – Air Discharge	V _{ESD,I/O_Air}	±16	kV	I/O to V _{SS} , per IEC 61000-4-2

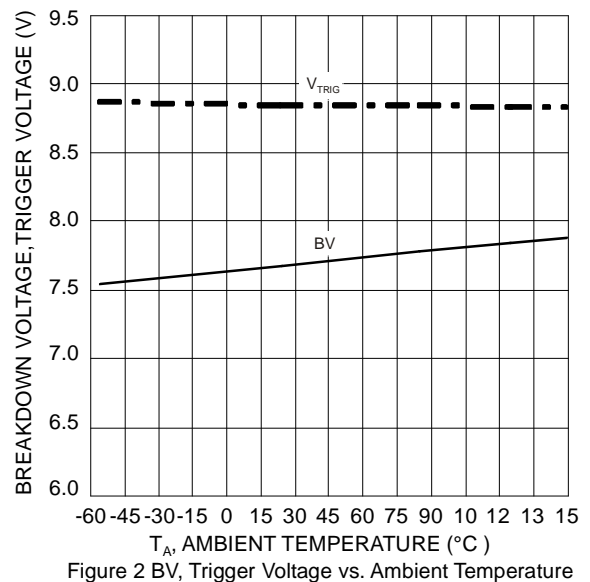
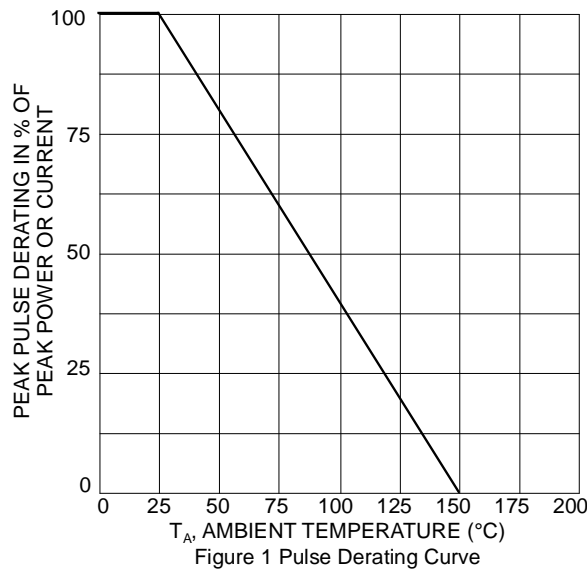
Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P _D	300	mW
Thermal Resistance, Junction to Ambient (Note 5)	R _{θJA}	417	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Conditions
Reverse Working Voltage	V _{RWM}	—	—	5.5	V	—
Reverse Leakage Current (Note 6)	I _R	—	—	1.0	μA	V _R = 5V, I/O to V _{SS}
Reverse Breakdown Voltage	V _{BR}	7	—	10	V	I _R = 1mA, I/O to V _{SS}
Forward Voltage	V _F	—	0.85	1.1	V	I _F = 15mA, V _{SS} to I/O
Reverse Clamping Voltage (Note 7)	V _C	—	7.5	—	V	I _{PP} = 5A, I/O to V _{SS} , 8/20μs
Reverse Clamping Voltage (Note 7)	V _C	—	9.5	—	V	I _{PP} = 12A, I/O to V _{SS} , 8/20μs
ESD Clamping Voltage	V _{ESD}	—	11	—	V	TLP, 20A, tp = 100 ns, I/O to V _{SS} , per Figure 7
Dynamic Resistance	R _{DIF}	—	0.22	—	Ω	TLP, 20A, tp = 100 ns, I/O to V _{SS} , per Figure 7
Channel Input Capacitance	C _{I/O}	—	1.2	1.7	pF	V _R = 2.5V, f = 1MHz
Variation of Channel Input Capacitance	ΔC _{I/O}	—	0.03	—	pF	V _{SS} = 0V, I/O = 2.5V, f = 1MHz, T = +25°C, I/O _x to V _{SS} – I/O _y to V _{SS}

- Notes:
- Device mounted on FR-4 PCB pad layout (2oz copper) as shown on Diodes, Inc. suggested pad layout AP02001, which can be found on our website at <http://www.diodes.com>.
 - Short duration pulse test used to minimize self-heating effect.
 - Clamping voltage value is based on an 8x20μs peak pulse current (I_{pp}) waveform.



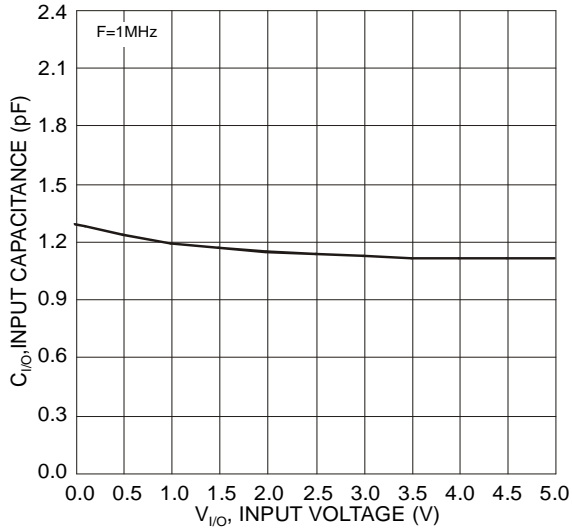


Figure 3 Input Capacitance vs. Input Voltage

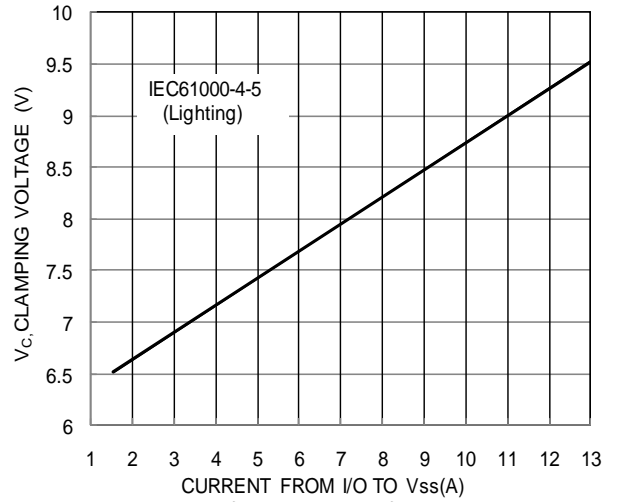


Figure 4. Clamping Voltage Characteristic

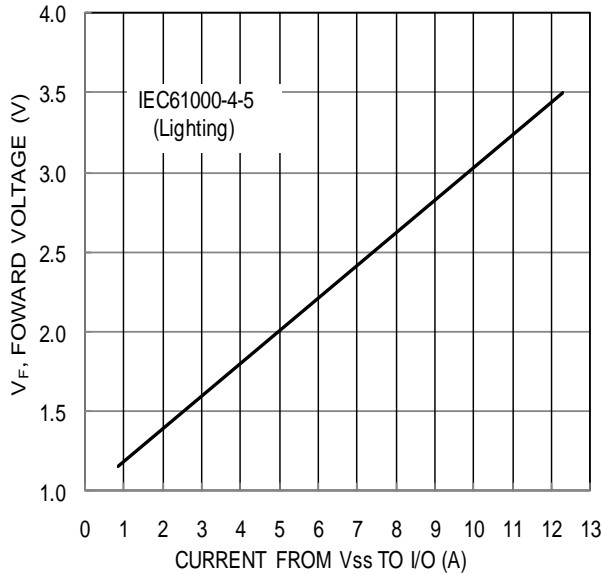


Figure 5. Forward Voltage Characteristic

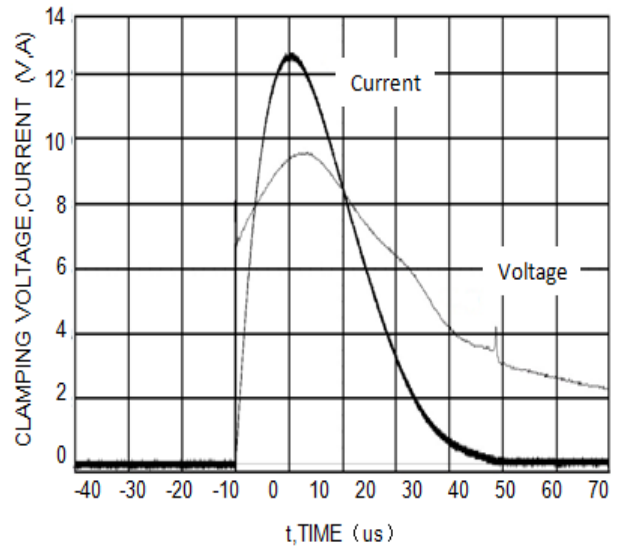


Figure 6. Waveform of Clamping Voltage, Current vs. Time(8/20us, I/O to Vss)

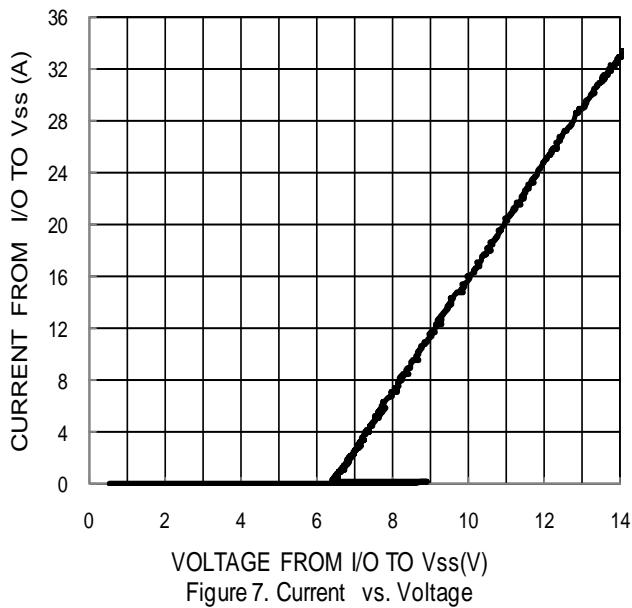
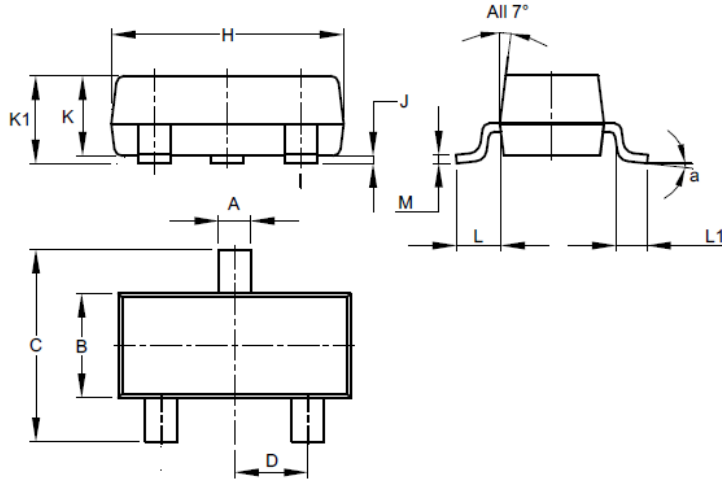


Figure 7. Current vs. Voltage

Package Outline Dimensions

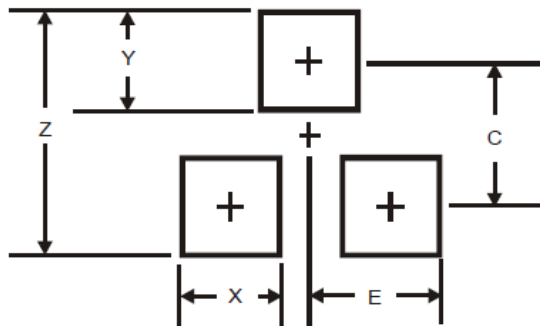
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for latest version.



SOT23			
Dim	Min	Max	Typ
A	0.37	0.51	0.40
B	1.20	1.40	1.30
C	2.30	2.50	2.40
D	0.89	1.03	0.915
F	0.45	0.60	0.535
G	1.78	2.05	1.83
H	2.80	3.00	2.90
J	0.013	0.10	0.05
K	0.890	1.00	0.975
K1	0.903	1.10	1.025
L	0.45	0.61	0.55
L1	0.25	0.55	0.40
M	0.085	0.150	0.110
α	8°		
All Dimensions in mm			

Suggested Pad Layout

Please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for the latest version.



Dimensions	Value (in mm)
Z	2.9
X	0.8
Y	0.9
C	2.0
E	1.35

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