



DT1452-02SO

### 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)

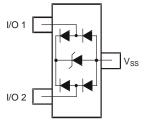


Top View

## 2 CHANNEL LOW CAPACITANCE TVS DIODE ARRAY

## **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)



**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

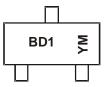
Notes: 1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.

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	20	13	20	14	20	15	20	16	20	17	20	18
Code	ŀ	4	E	3	(	)	[	)	E		F	
Month	Jan	Feb	Mar	Apr	Мау	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	0	Ν	D



### Maximum Ratings (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit	Conditions
Peak Pulse Current	I <sub>PP_I/O</sub>	12	А	I/O to V <sub>SS</sub> , 8/20µs
ESD Protection – Contact Discharge	V <sub>ESD_I/O_Contact</sub>	±16	kV	I/O to V <sub>SS</sub> , per IEC 61000-4-2
ESD Protection – Air Discharge	V <sub>ESD_I/O_Air</sub>	±16	kV	I/O to V <sub>SS</sub> , per IEC 61000-4-2

## **Thermal Characteristics**

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	PD	300	mW
Thermal Resistance, Junction to Ambient (Note 5)	R <sub>0JA</sub>	417	°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

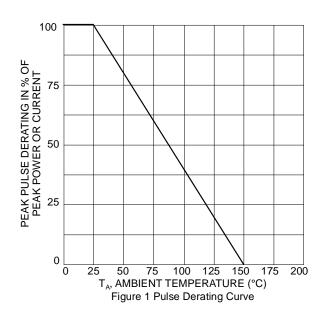
## Electrical Characteristics (@T<sub>A</sub> = +25°C, unless otherwise specified.)

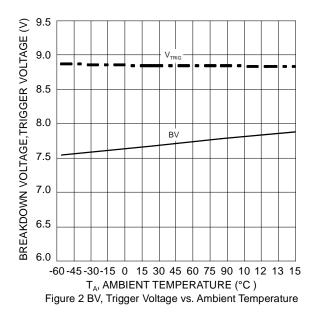
Characteristic	Symbol	Min	Тур	Max	Unit	Test Conditions
Reverse Working Voltage	V <sub>RWM</sub>	_	_	5.5	V	-
Reverse Leakage Current (Note 6)	I <sub>R</sub>	_	_	1.0	μA	$V_R = 5V$ , I/O to $V_{SS}$
Reverse Breakdown Voltage	VBR	7	_	10	V	I <sub>R</sub> = 1mA, I/O to V <sub>SS</sub>
Forward Voltage	VF	-	0.85	1.1	V	I <sub>F</sub> = 15mA, V <sub>SS</sub> to I/O
Reverse Clamping Voltage (Note 7)	Vc	-	7.5	_	V	I <sub>PP</sub> = 5A, I/O to V <sub>SS</sub> , 8/20µs
Reverse Clamping Voltage (Note 7)	Vc	_	9.5	_	V	I <sub>PP</sub> = 12A, I/O to V <sub>SS</sub> , 8/20µs
ESD Clamping Voltage	VESD	_	11	_	V	TLP, 20A, tp = 100 ns, I/O to V <sub>SS</sub> , per Figure 7
Dynamic Resistance	R <sub>DIF</sub>	-	0.22	_	Ω	TLP, 20A, tp = 100 ns, I/O to V <sub>SS</sub> , per Figure 7
Channel Input Capacitance	C <sub>I/O</sub>	-	1.2	1.7	pF	V <sub>R</sub> = 2.5V, f = 1MHz
Variation of Channel Input Capacitance	$\Delta C_{I/O}$		0.03		pF	$\label{eq:VSS} \begin{array}{l} V_{SS} = 0 \text{V}, \ \text{I/O} = 2.5 \text{V}, \ \text{f} = 1 \text{MHz}, \ \text{T} = +25^{\circ}\text{C} \ , \\ \text{I/O}_{X} \text{ to } \ \text{V}_{SS} - \text{I/O}_{Y} \text{ to } \ \text{V}_{SS} \end{array}$

Notes: 5. 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.

6. Short duration pulse test used to minimize self-heating effect.

7. Clamping voltage value is based on an  $8x20\mu s$  peak pulse current (I<sub>pp</sub>) waveform.

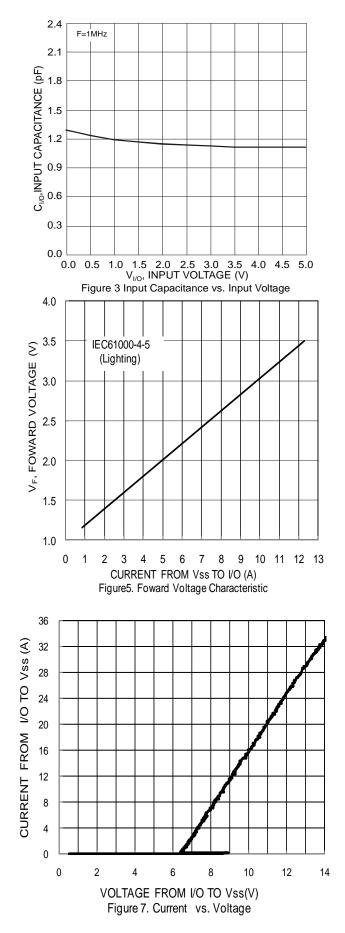


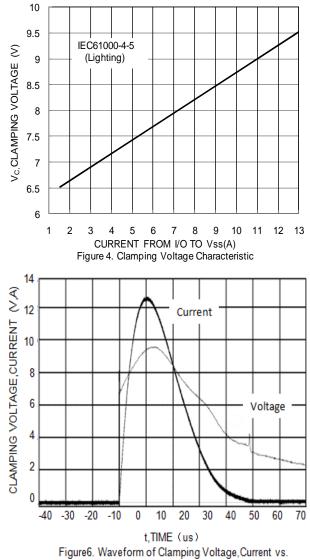


DT1452-02SO Document number: DS36355 Rev. 3 - 2 Downloaded from Arrow.com. 2 of 5 www.diodes.com



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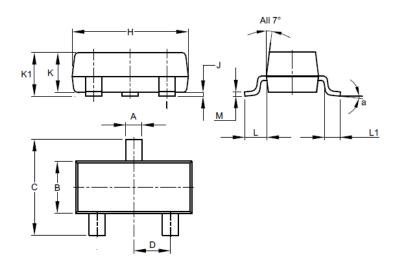


Time(8/20us,I/O to Vss)



## **Package Outline Dimensions**

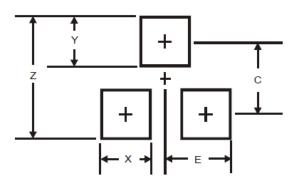
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for latest version.



SOT23							
Dim	Min	Max	Тур				
Α	0.37	0.51	0.40				
В	1.20	1.40	1.30				
С	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				
Н	2.80	3.00	2.90				
J	0.013	0.10	0.05				
κ	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				
М	0.085	0.150	0.110				
α	8°						
All	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
Х	0.8
Y	0.9
С	2.0
E	1.35



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