



**2 CHANNEL LOW CAPACITANCE TVS DIODE ARRAY**

**Product Summary**

<b>V<sub>BR</sub> (min)</b>	<b>I<sub>PP</sub> (max)</b>	<b>C<sub>T</sub> (typ)</b>
6V	7.5A	0.8pF

**Description**

The DUSBULC6-CSP4 is a high-performance device suitable for protecting two high speed I/Os. These devices are assembled in CSP packages and have high ESD surge capability and low capacitance.

**Applications**

Typically used at high-speed ports such as USB 2.0, IEEE1394 (Firewire®, iLink™), Serial ATA, DVI, HDMI, PCI.

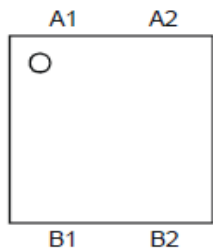
**Features**

- IEC 61000-4-2 (ESD): Air – ±15kV, Contact – ±15kV
- Low Channel Input Capacitance of 1.2pF Max
- 2 Channel of ESD Protection
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. “Green” Device (Note 3)**

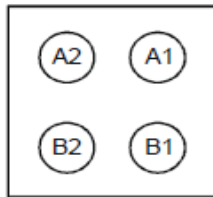
**Mechanical Data**

- Case: W-WLB0808-4
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections: See Diagram
- Weight: 0.001 grams (Approximate)

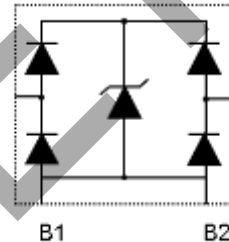
W-WLB0808-4



Top View



Bottom View



Device Schematic

Pin Configuration

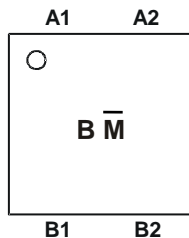
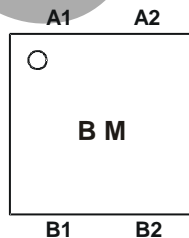
**Ordering Information (Note 4)**

Product	Compliance	Marking	Reel Size (inches)	Tape Width (mm)	Quantity per Reel
DUSBULC6-CSP4-7	Standard	BM	7	8	3,000/Tape & Reel
DUSBULC6-CSP4-7B	Standard	BM	7	8	10,000/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](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**

W-WLB0808-4



B = Product Type Marking Code  
M = Month Marking Code (ex: 9 = September)  
Note: "—" Represents Internal Code

Month Code Key

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

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

Characteristic	Symbol	Value	Unit	Conditions
Peak Pulse Power Dissipation	PPP	70	W	8/20µs (Note 5)
Peak Pulse Current	I <sub>PP</sub>	7.5	A	8/20µs (Note 5)
ESD Protection – Contact Discharge	V <sub>ESD_Contact</sub>	±15	kV	Standard IEC 61000-4-2
ESD Protection – Air Discharge	V <sub>ESD_Air</sub>	±15	kV	Standard IEC 61000-4-2

**Thermal Characteristics**

Characteristic	Symbol	Value	Unit
Thermal Resistance, Junction to Ambient Typical (Note 5)	R <sub>θJA</sub>	+206	°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	Typ	Max	Unit	Test Conditions
Reverse Breakdown Voltage	V <sub>BR</sub>	6	-	9	V	I <sub>R</sub> = 1mA
Reverse Leakage Current (Note 6)	I <sub>R</sub>	-	-	70	nA	V <sub>R</sub> = 3V
Dynamic Impedance	R <sub>d</sub>	-	0.35	-	Ω	I <sub>PP</sub> = 1 to 5A, 8/20µs
Channel Input Capacitance	C <sub>IN</sub>	-	0.8	1.2	pF	V <sub>IN</sub> = 0V, f = 1MHz, V <sub>OSC</sub> = 30mV

- 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.

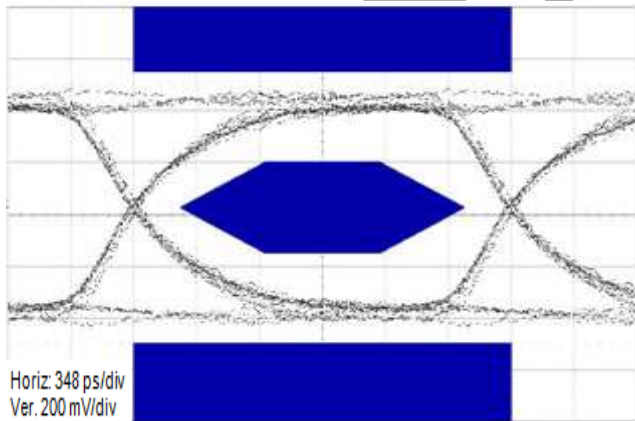


Figure 1. Eye diagram, board only (according to USB2.0 high speed specification)

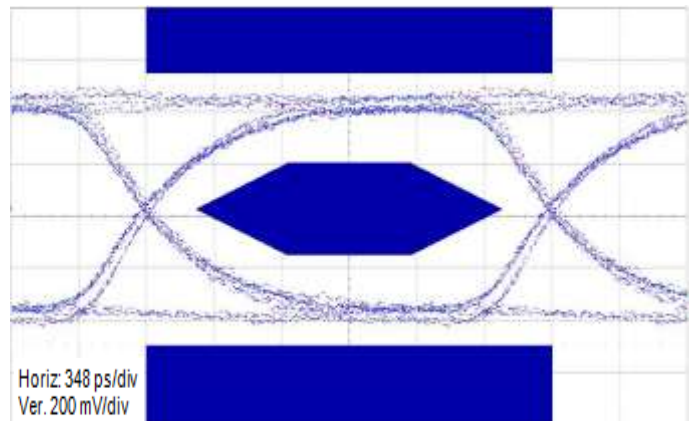


Figure 2. Eye diagram, board with DUSBULC6-CSP4 (according to USB2.0 high speed specification)

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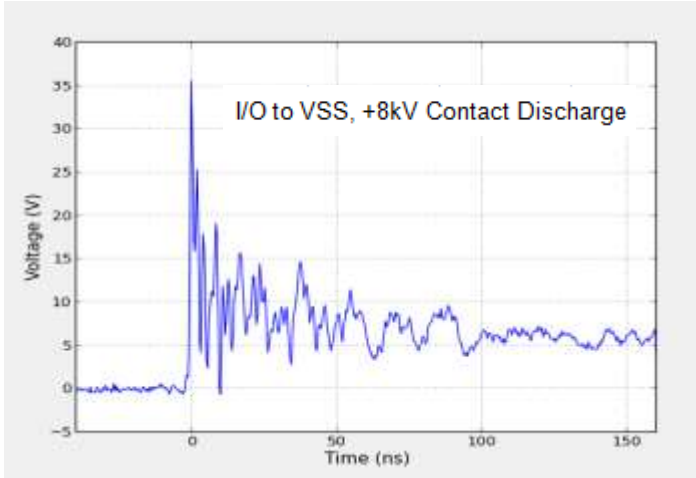


Figure 3. ESD response to IEC 61000-4-2

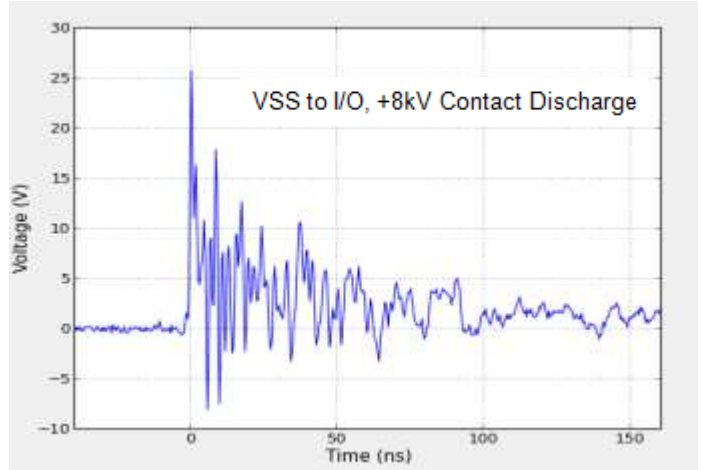


Figure 4. ESD response to IEC 61000-4-2

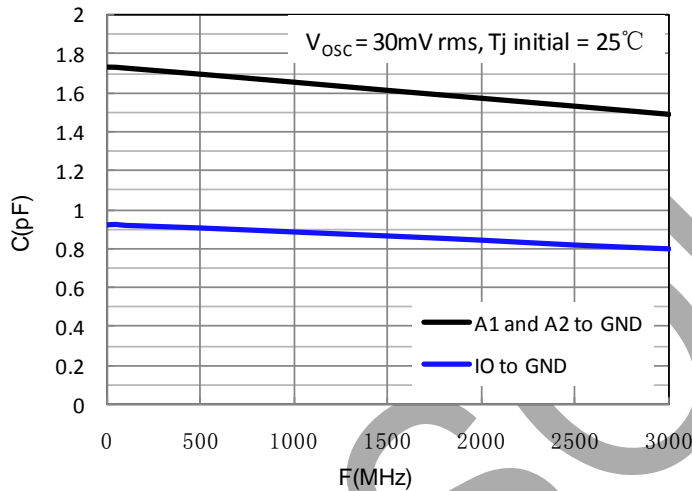


Figure 5. Junction capacitance versus frequency (typical values)

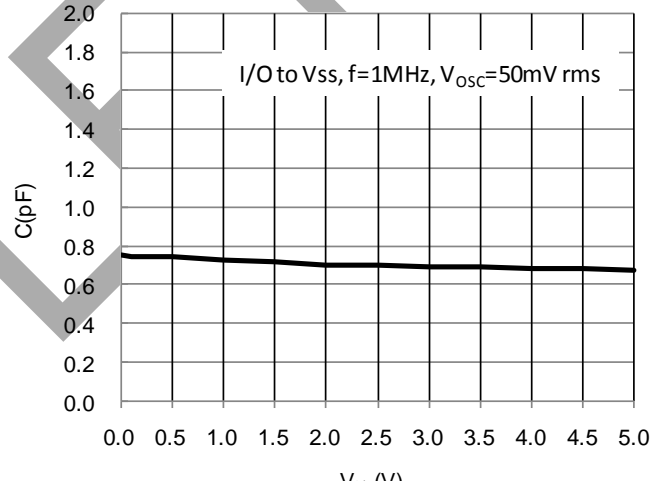


Figure 6. Junction Capacitance versus Input Voltage

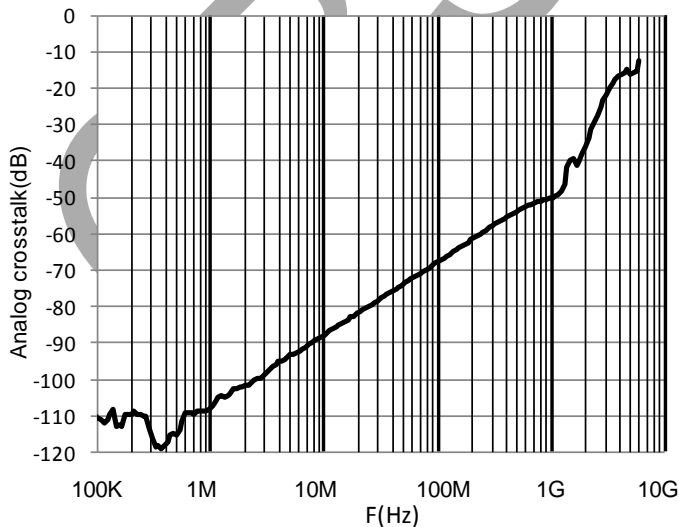


Figure 7. Analog crosstalk measurement

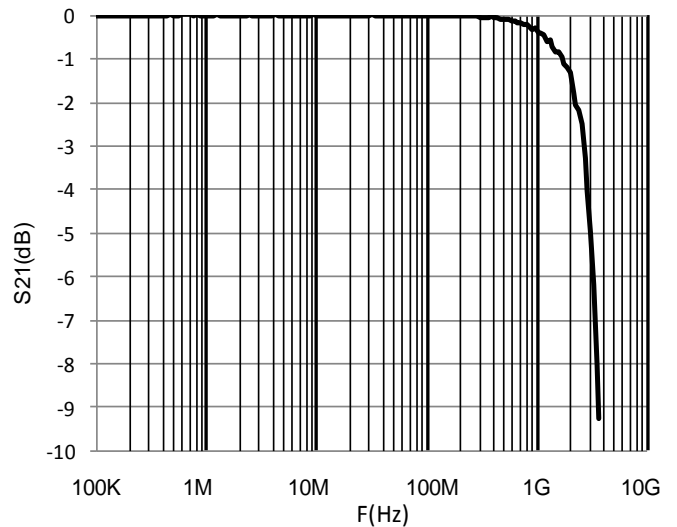


Figure 8. S21(dB) attenuation measurement

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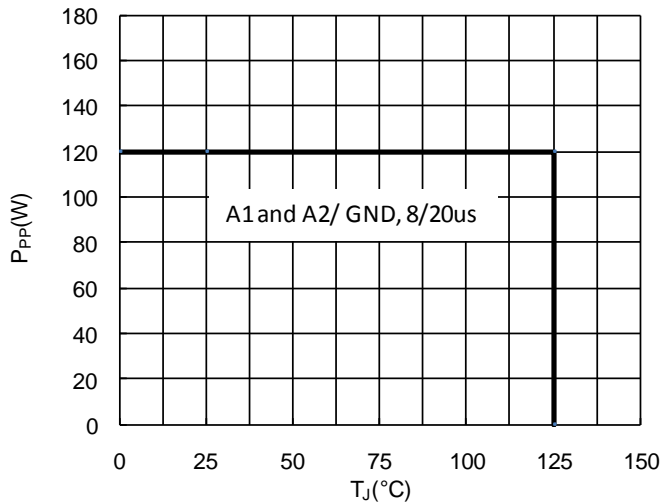


Figure 9. Peak pulse power versus initial junction temperature (maximum values, pulse 8/20us)

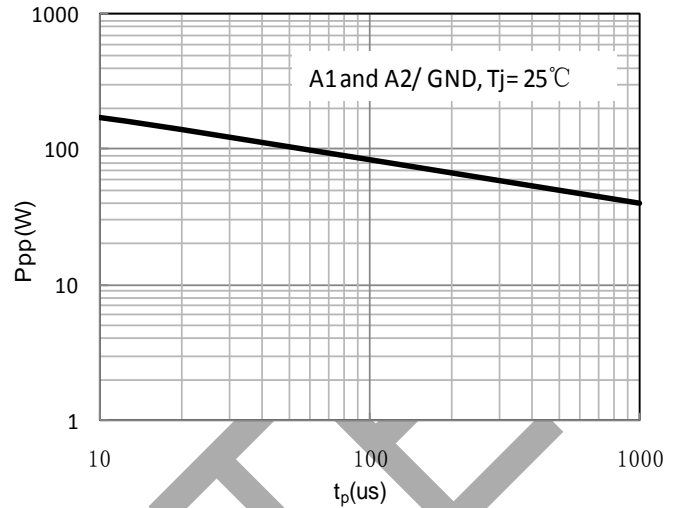


Figure 10. Peak pulse power versus exponential pulse duration (maximum values)

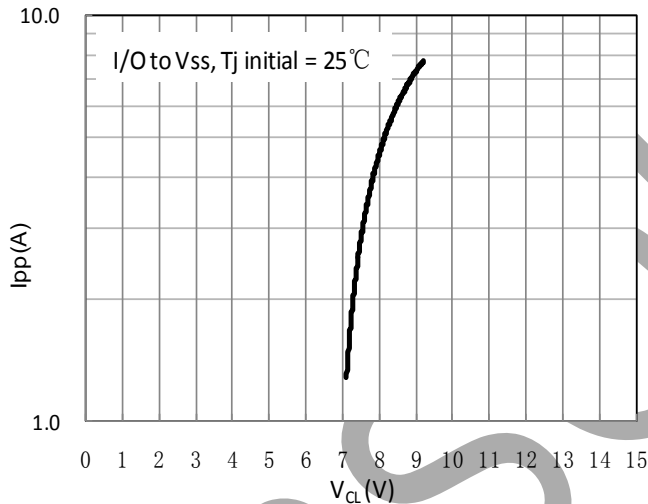


Figure 11. Clamping voltage versus peak pulse current (typical values, pulse 8/20us)

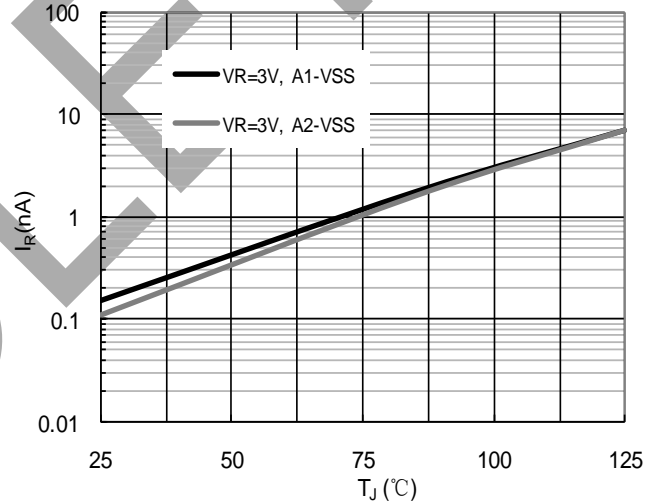


Figure 12. Leakage current versus junction temperature (typical values)

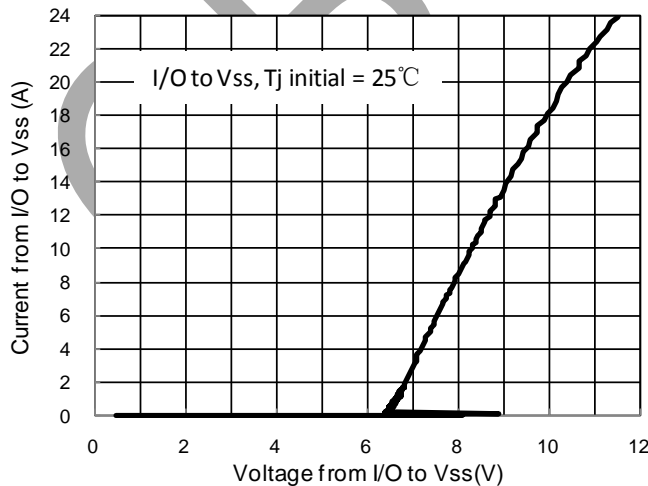


Figure 13. Current vs. Voltage

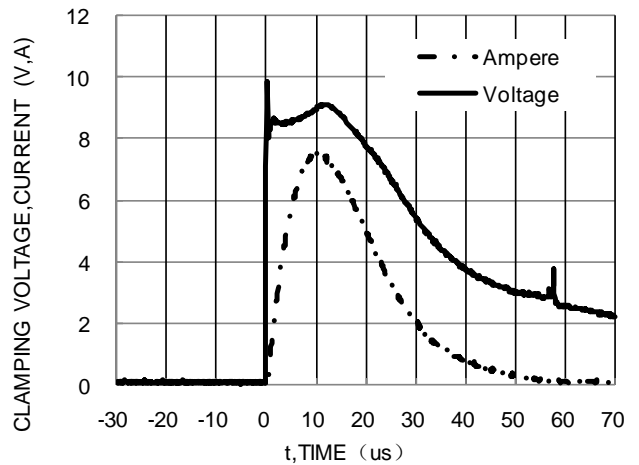
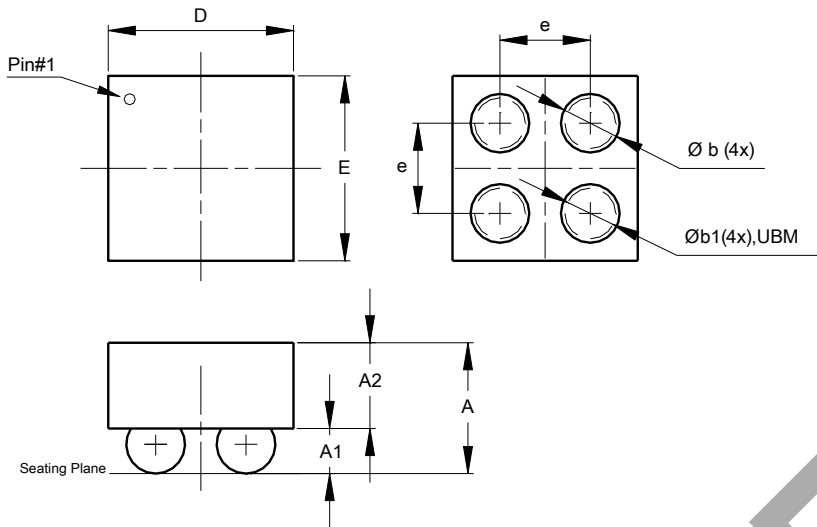


Figure 14. Waveform of Clamping Voltage, Current vs. Time (8/20us, I/O to Vss)

**Package Outline Dimensions**

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

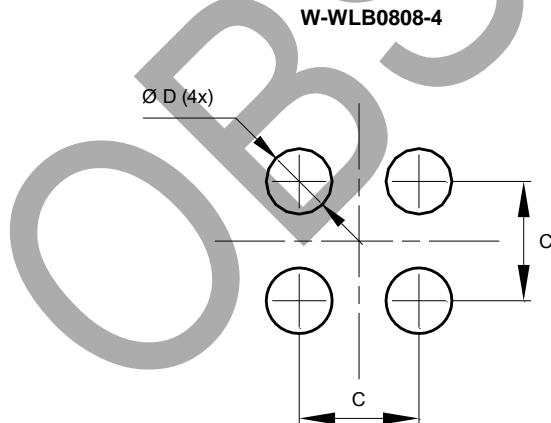


W-WLB0808-4			
Dim	Min	Max	Typ
A	0.545	0.665	0.605
A1	0.170	0.230	0.200
A2	0.375	0.435	0.405
b	0.240	0.280	0.260
b1	0.235	0.245	0.240
D	0.790	0.850	0.820
E	0.790	0.850	0.820
e	0.400 BSC		
All Dimensions in mm			

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**Suggested Pad Layout**

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



Dimensions	Value (in mm)
C	0.400
D	0.220

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