

## 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.

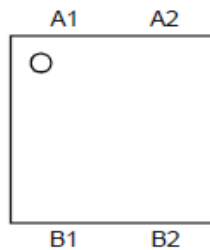
## Features

- 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)**

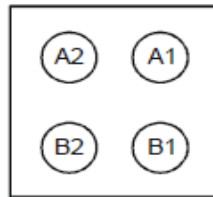
## Mechanical Data

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

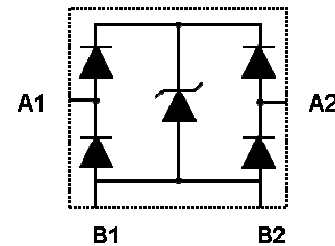
W-WLB0808-4



Top View



Bottom View



Device Schematic

Pin Configuration

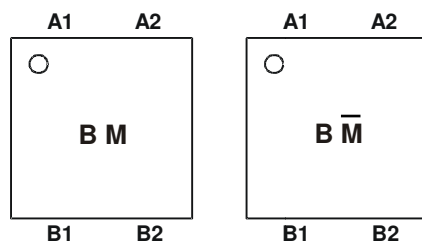
## Ordering Information (Note 4)

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

**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.

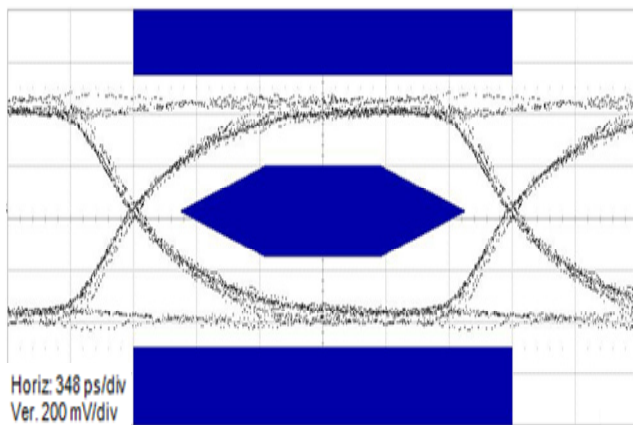


Figure 1. Eye diagram, board only (according to USB2.0 high speed specification)

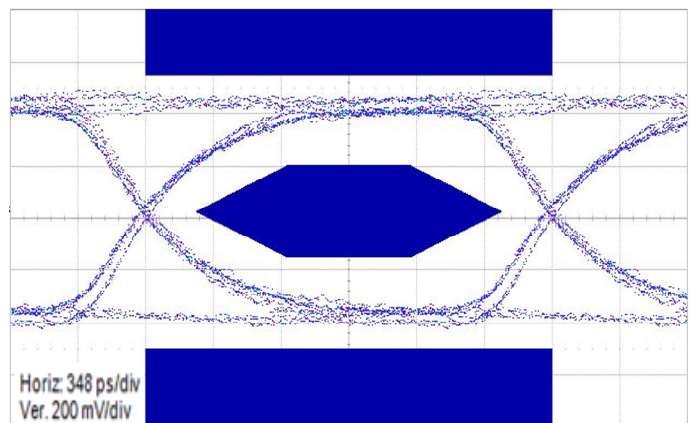


Figure 2. Eye diagram, board with DUSBULC6-CSP4 (according to USB2.0 high speed specification)

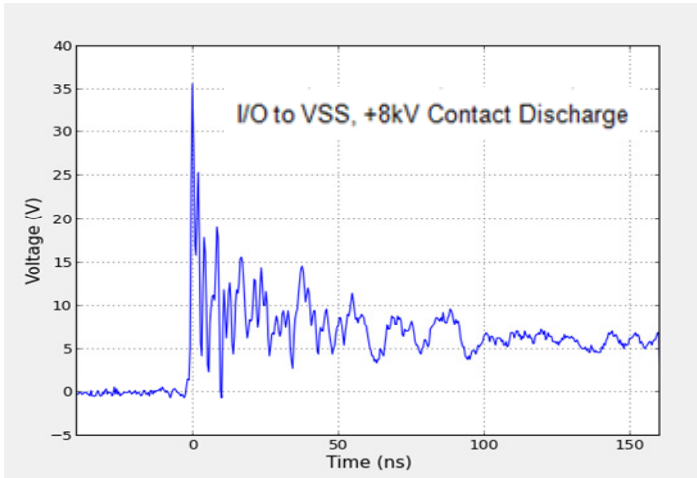


Figure 3. ESD response to IEC 61000-4-2

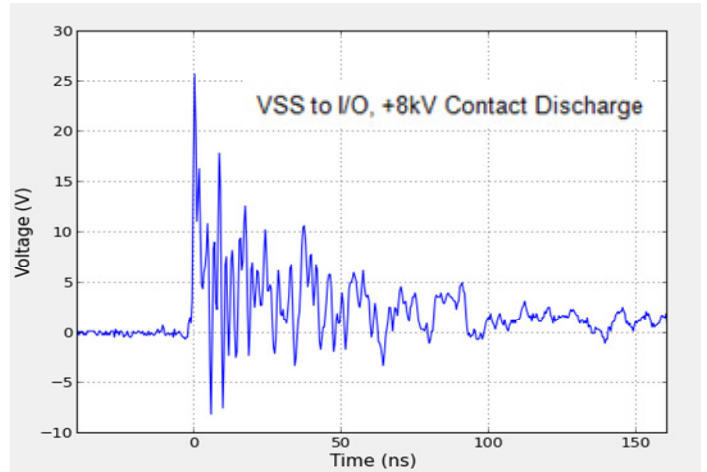


Figure 4. ESD response to IEC 61000-4-2

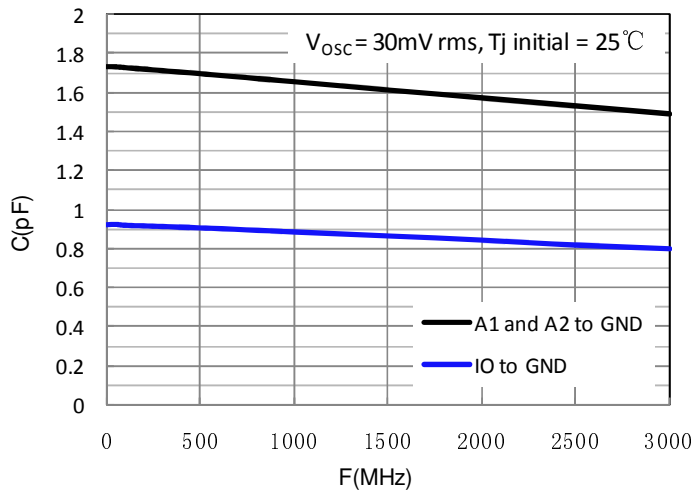


Figure 5. Junction capacitance versus frequency (typical values)

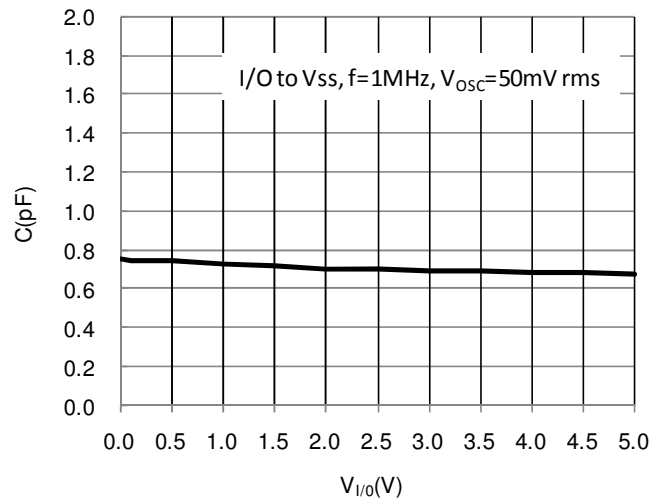


Figure 6. Junction Capacitance versus Input Voltage

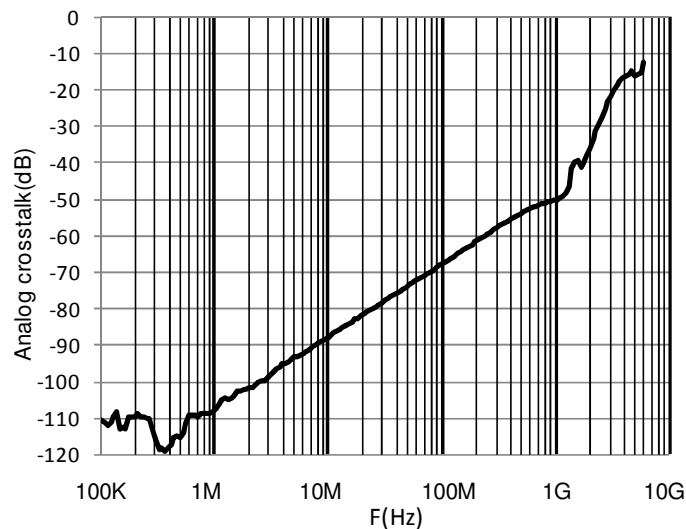


Figure 7. Analog crosstalk measurement

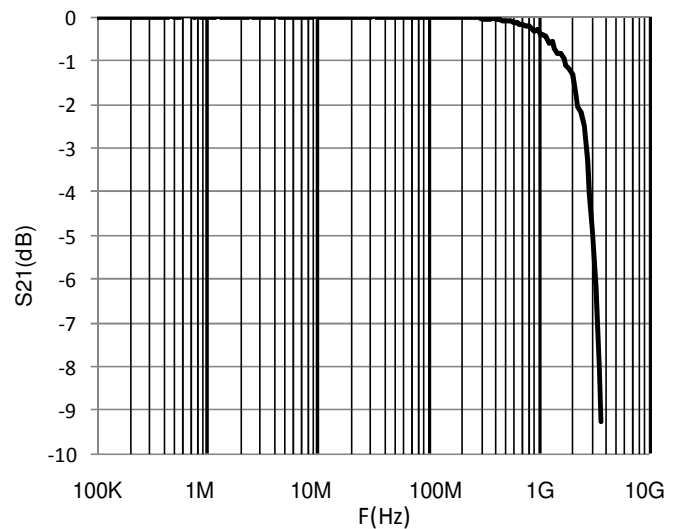


Figure 8. S21(dB) attenuation measurement

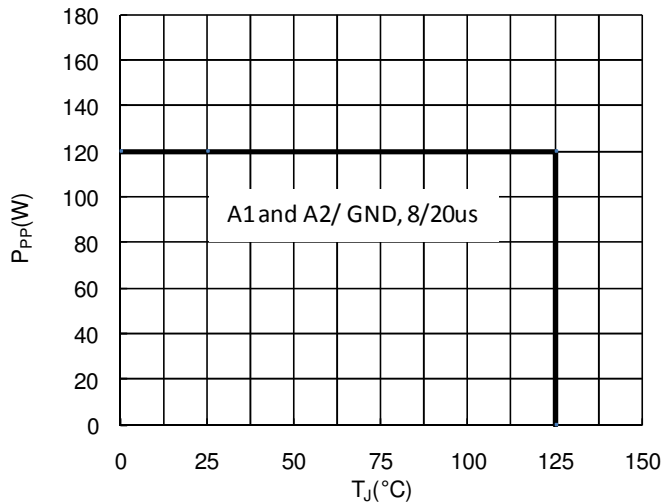


Figure 9. Peak pulse power versus initial junction temperature (maximum values, pulse 8/20us)

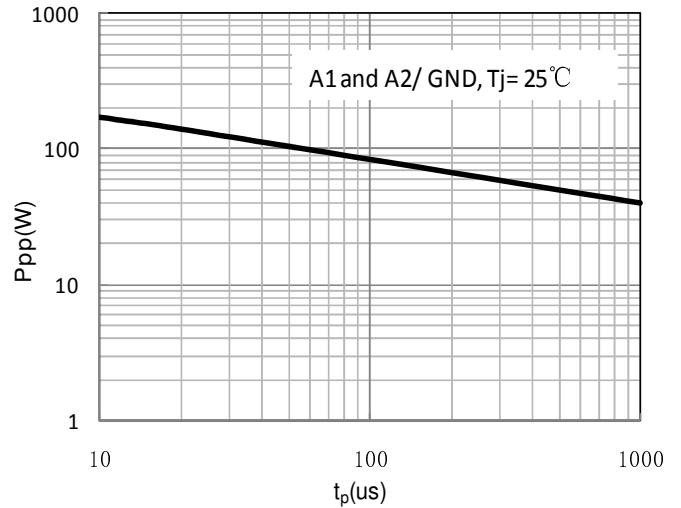


Figure 10. Peak pulse power versus exponential pulse duration (maximum values)

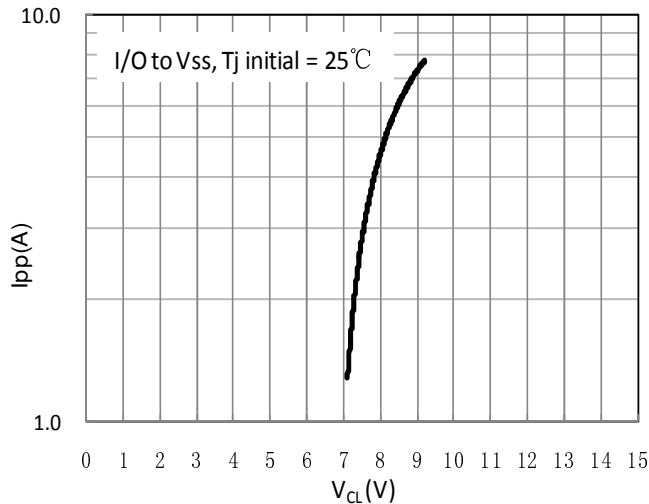


Figure 11. Clamping voltage versus peak pulse current (typical values, pulse 8/20us)

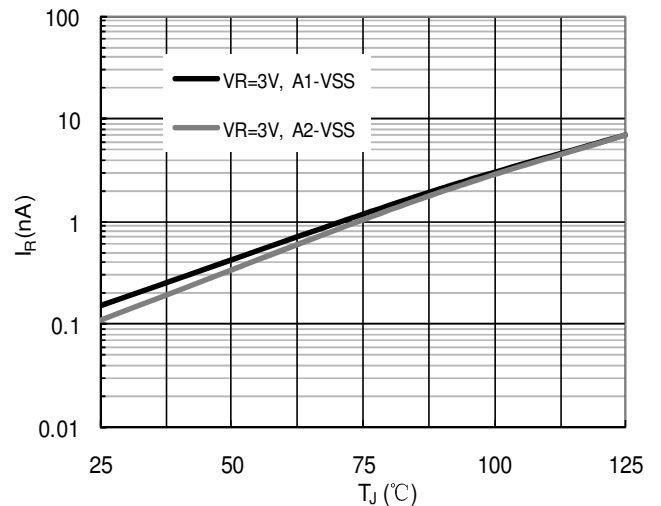


Figure 12. Leakage current versus junction temperature (typical values)

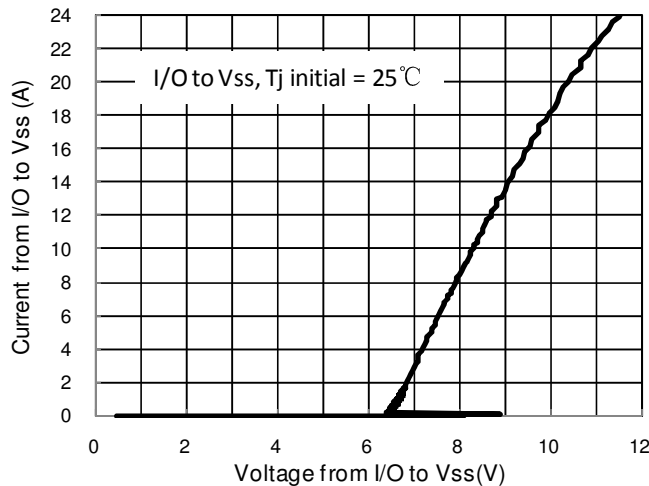


Figure 13. Current vs. Voltage

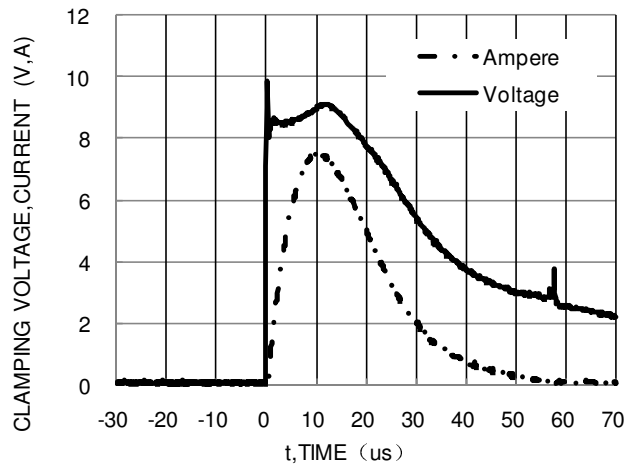
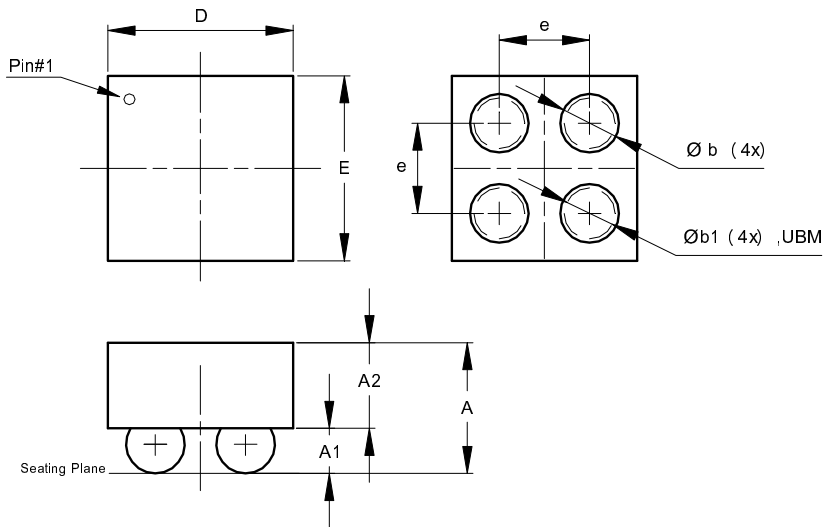


Figure 14. Waveform of Clamping Voltage, Current vs. Time (8/20us, I/O to Vss)

**Package Outline Dimensions**

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

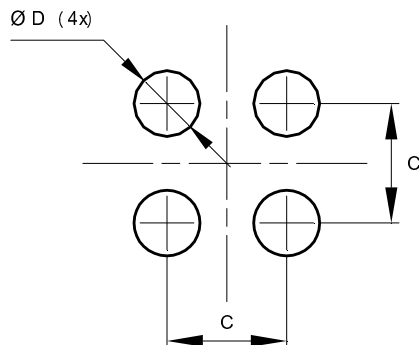


W-WLB0808-4			
Dim	Min	Max	Typ
A	0.545	0.665	0.605
A1	0.170	0.230	0.200
A2	0.375	0.435	0.405
b	0.240	0.280	0.260
b1	0.235	0.245	0.240
D	0.790	0.850	0.820
E	0.790	0.850	0.820
e	0.400 BSC		
All Dimensions in mm			

**Suggested Pad Layout**

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

W-WLB0808-4



Dimensions	Value (in mm)
C	0.400
D	0.220

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