Lead-free Green

DUSBULC6-CSP4

2 CHANNEL LOW CAPACITANCE TVS DIODE ARRAY

Product Summary

$V_{BR\ (min)}$	$I_{PP\ (max)}$	$C_{T\ (typ)}$
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.

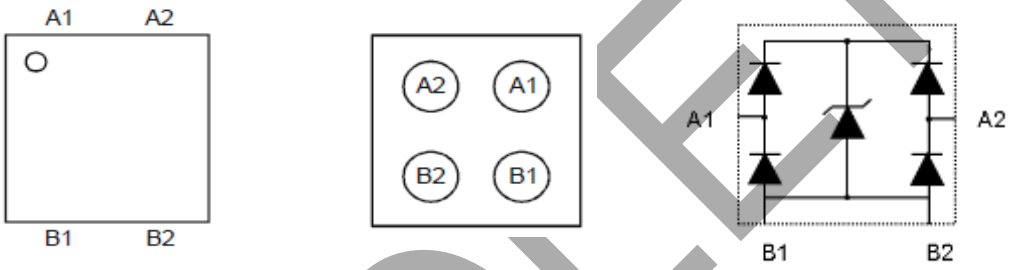
Features

- 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 | Pin Configuration | Device Schematic

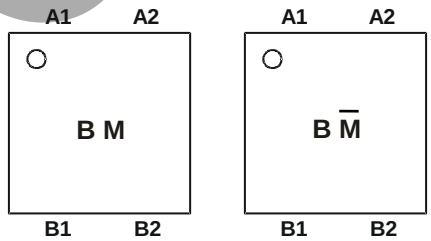
Ordering Information (Note 4)

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 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_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit	Conditions
Peak Pulse Power Dissipation	P_{PP}	70	W	8/20µs (Note 5)
Peak Pulse Current	I_{PP}	7.5	A	8/20µs (Note 5)
ESD Protection – Contact Discharge	$V_{ESD\_Contact}$	±15	kV	Standard IEC 61000-4-2
ESD Protection – Air Discharge	V_{ESD_Air}	±15	kV	Standard IEC 61000-4-2

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Thermal Resistance, Junction to Ambient Typical (Note 5)	$R_{\theta JA}$	+206	°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 Breakdown Voltage	V_{BR}	6	–	9	V	I_R = 1mA
Reverse Leakage Current (Note 6)	I_R	–	–	70	nA	V_R =3V
Dynamic Impedance	R_d	–	0.35	–	Ω	I_{PP} = 1 to 5A, 8/20µs
Channel Input Capacitance	C_{IN}	–	0.8	1.2	pF	V_{IN} = 0V, f = 1MHz, V_{OSC} = 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.

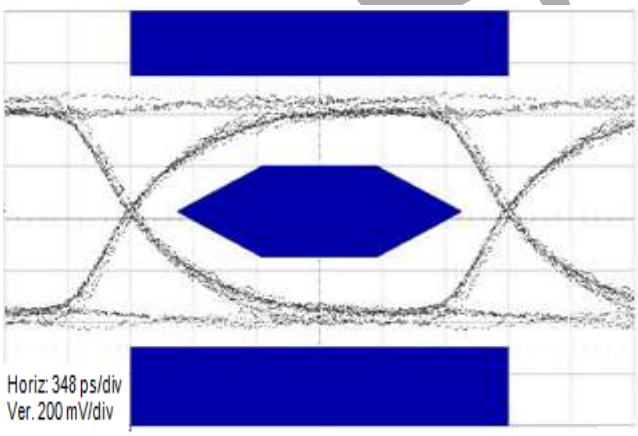


Figure 1. Eye diagram, board only
(according to USB2.0 high speed specification)

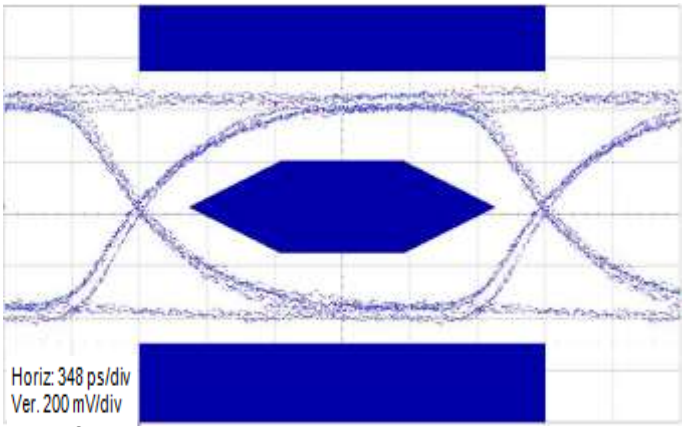


Figure 2. Eye diagram, board with DUSBULC6-CSP4
(according to USB2.0 high speed specification)

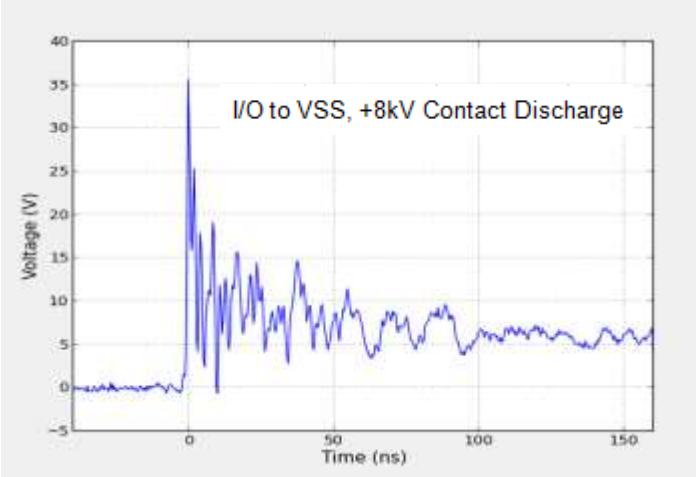


Figure 3. ESD response to IEC 61000-4-2

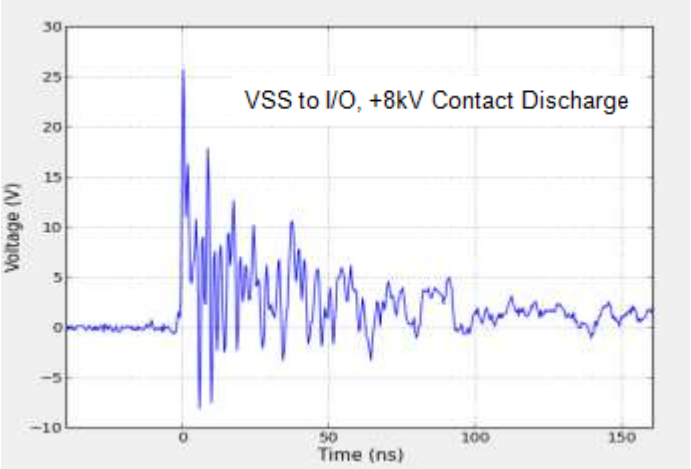


Figure 4. ESD response to IEC 61000-4-2

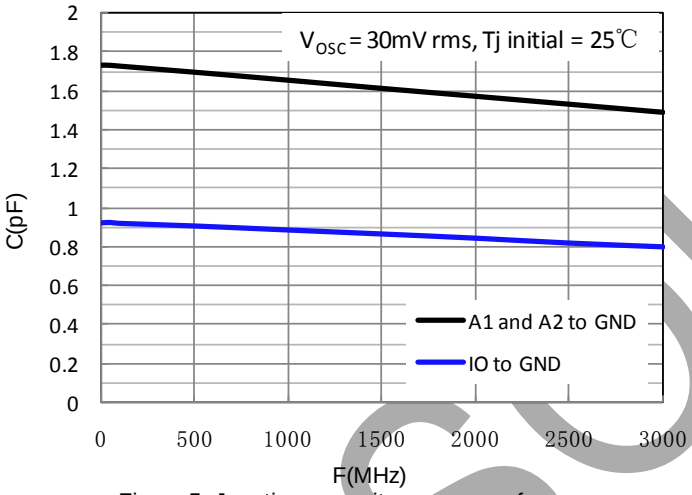


Figure 5. Junction capacitance versus frequency (typical values)

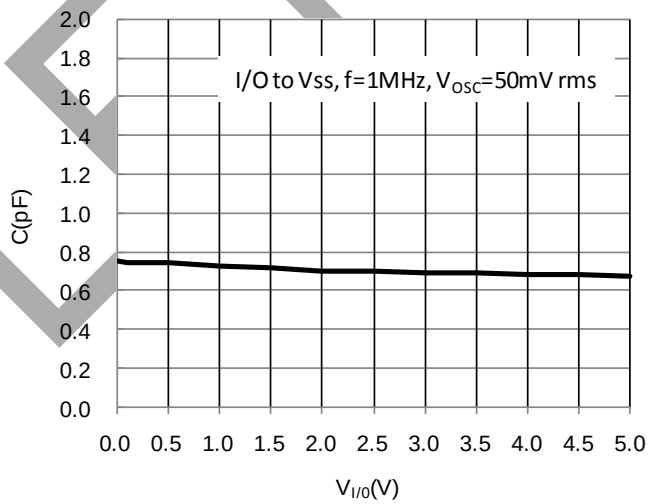


Figure 6. Junction Capacitance versus Input Voltage

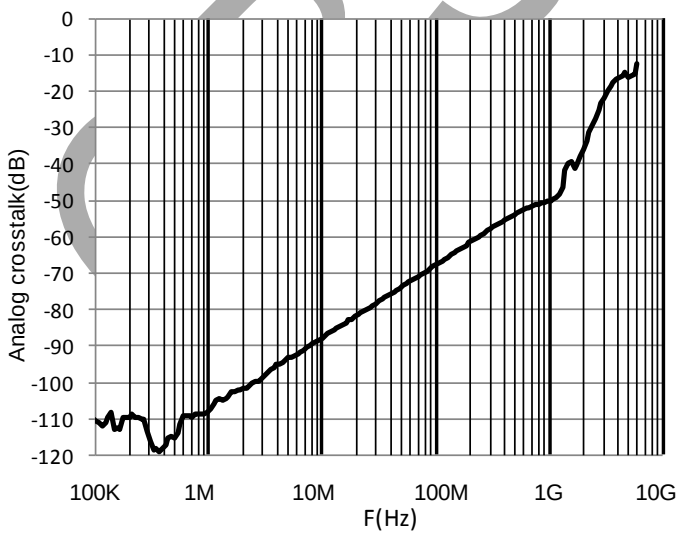


Figure 7, Analog crosstalk measurement

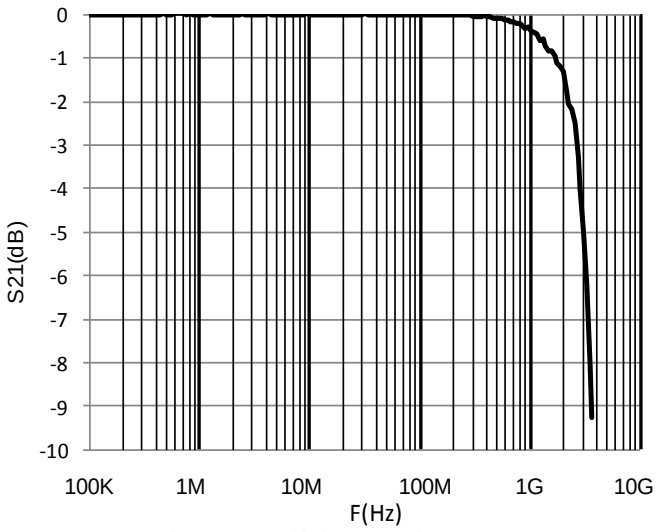


Figure 8, S21(dB) attenuation measurement

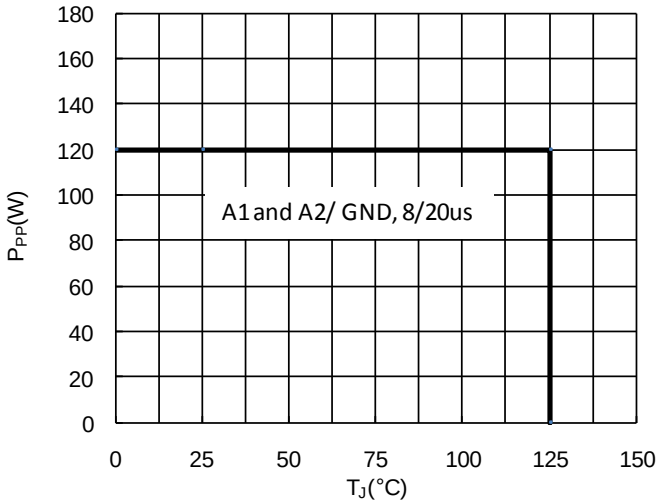


Figure 9. Peak pulse power versus initial junction temperature(maximum values, pulse 8/20us)

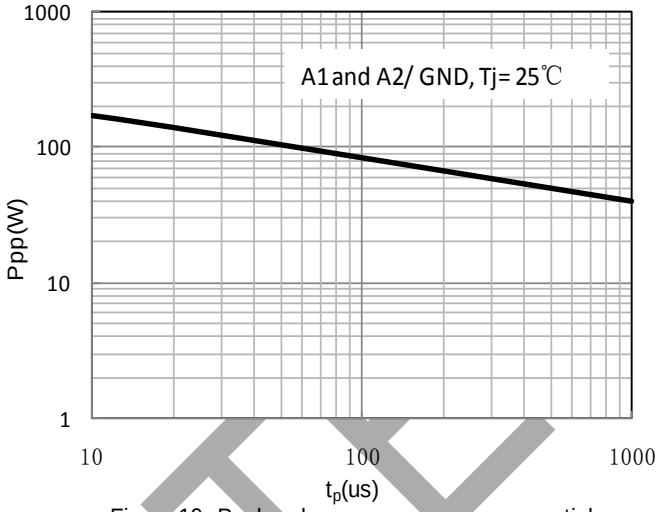


Figure 10. Peak pulse power versus exponential pulse duration(maximum values)

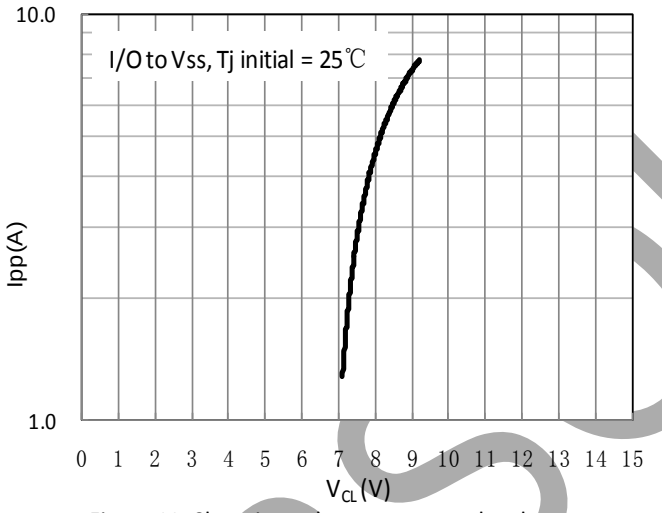


Figure 11. Clamping voltage versus peak pulse current (typical values, pulse 8/20us)

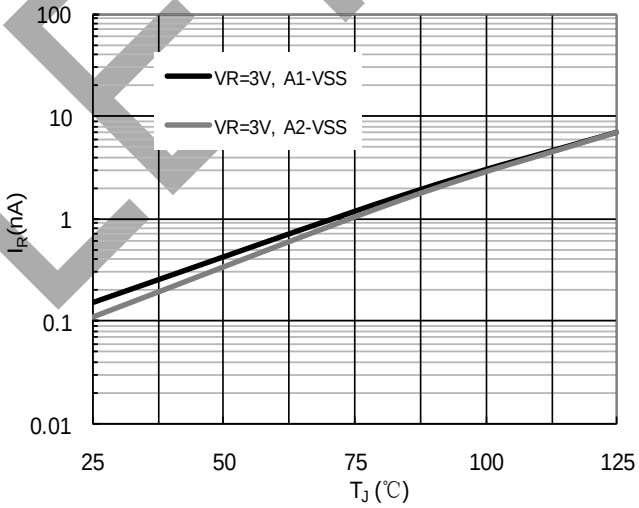


Figure 12. Leakage current versus junction temperature (typical values)

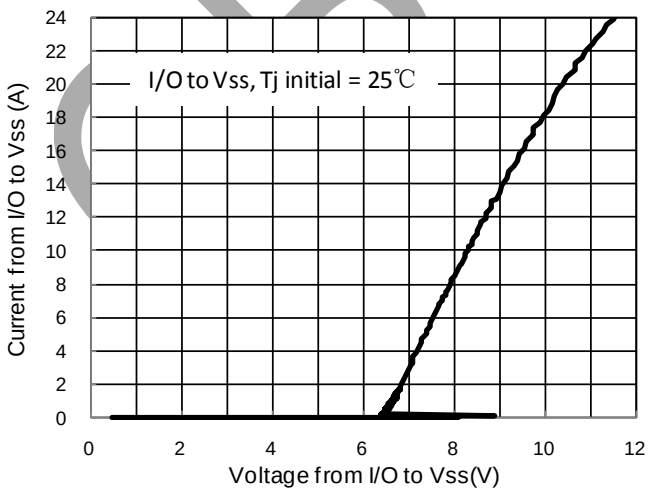


Figure 13. Current vs. Voltage

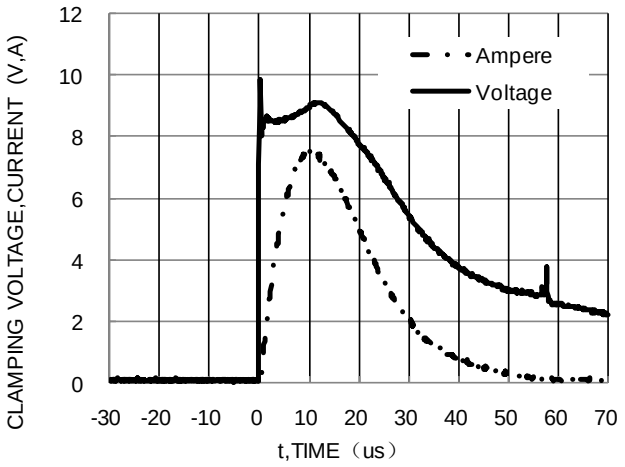
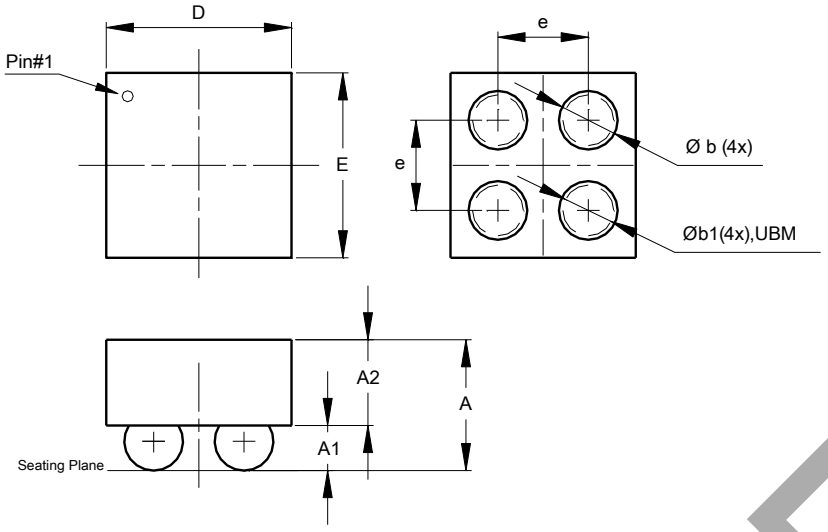


Figure 14. Waveform of Clamping Voltage,Current vs. Time(8/20us,I/O to Vss)

Package Outline Dimensions

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

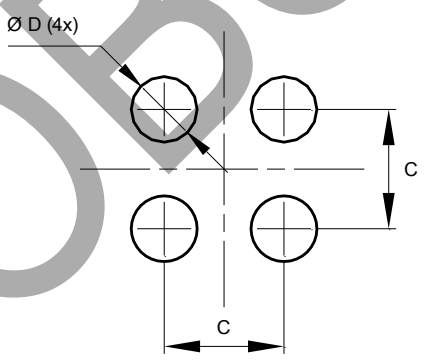


W-WLB0808-4			
Dim	**Min**	**Max**	**Typ**
A	0.545	0.665	0.605
A1	0.170	0.230	0.200
A2	0.375	0.435	0.405
b	0.240	0.280	0.260
b1	0.235	0.245	0.240
D	0.790	0.850	0.820
E	0.790	0.850	0.820
e	0.400 BSC		
All Dimensions in mm			

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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