

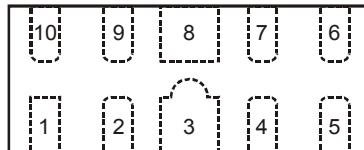
Features

- Clamping Voltage: 9V at 10A 100ns TLP; 9V at 6A 8μs/20μs
- IEC 61000-4-2 (ESD): Air – +20/-18kV, Contact – +20/-16kV
- IEC 61000-4-5 (Lightning): ±6A (8/20μs)
- 4 Channels of ESD protection
- Low Channel Input Capacitance of 0.5pF Typical
- TLP Dynamic Resistance: 0.25Ω
- Typically Used for High Speed Ports such as USB 2.0, DVI, HDMI, Ethernet Port, IEEE, MDDI, PCI Express, SATA/ eSATA
- Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- Halogen and Antimony Free. "Green" Device (Note 3)**

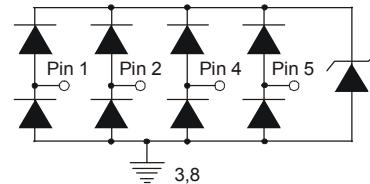
Mechanical Data

- Case: U-DFN2510-10
- Case Material: Molded Plastic, "Green" Molding Compound
- UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: NiPdAu over Copper leadframe (Lead Free Plating)
- Solderable per MIL-STD-202, Method 208 
- Weight: 0.038 grams (approximate)

Pin #	Description
1, 2, 4, 5	I/O
6, 7, 9, 10	No Connection
3, 8	Vss



Pin Description (Top View)



Device Schematic

Ordering Information (Note 4)

Product	Compliance	Marking	Reel Size (inches)	Tape Width (mm)	Quantity per Reel
DT1140-04LP-7	Standard	BC2	7	8	3,000/Tape & Reel

- Notes:
- No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
 - 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.
 - Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
 - For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

Marking Information



BC2 = Product Type Marking Code
 YM = Date Code Marking
 Y = Year (ex: A = 2013)
 M = Month (ex: 9 = September)

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 (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic	Symbol	Value	Unit	Conditions
Peak Pulse Current, per IEC 61000-4-5	I_{PP}	6	A	I/O to V_{SS} , 8/20 μs
Peak Pulse Power, per IEC 61000-4-5	P_{PP}	60	W	I/O to V_{SS} , 8/20 μs
Operating Voltage (DC)	V_{DC}	6	V	I/O to V_{SS}
ESD Protection – Contact Discharge, per IEC 61000-4-2	$V_{ESD_Contact}$	+20/-16	kV	I/O to V_{SS}
ESD Protection – Air Discharge, per IEC 61000-4-2	V_{ESD_Air}	+20/-18	kV	I/O to V_{SS}
Operating Temperature	T_{OP}	-55 to +85	°C	—
Storage Temperature	T_{STG}	-55 to +150	°C	—

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation Typical(Note 5)	P_D	350	mW
Thermal Resistance, Junction to Ambient Typical(Note 5)	R_{0JA}	360	°C/W

Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Conditions
Reverse Working Voltage	V_{RWM}	—	—	5.5	V	$I_R=1\text{mA}$, I/O to V_{SS}
Reverse Current (Note 6)	I_R	—	—	0.5	μA	$V_R = 5\text{V}$, I/O to V_{SS}
Reverse Breakdown Voltage	V_{BR}	6	—	—	V	$I_R = 1\text{mA}$, I/O to V_{SS}
Forward Clamping Voltage	V_F	-1.0	-0.85	—	V	$I_F = -15\text{mA}$, I/O to V_{SS}
Holding Voltage	V_H	5.5	—	—	V	—
Reverse Clamping Voltage (Note 7)	V_C	—	6.4	—	V	$I_{PP} = 1\text{A}$, I/O to V_{SS} , 8/20 μs
Reverse Clamping Voltage (Note 7)	V_C	—	9	10	V	$I_{PP} = 6\text{A}$, I/O to V_{SS} , 8/20 μs
Trigger Voltage	V_{TRIG}	—	—	9.5	V	—
ESD Clamping Voltage	V_{ESD}	—	9	—	V	TLP, 10A, $tp = 100\text{ ns}$, I/O to V_{SS}
Dynamic Reverse Resistance	R_{DIF-R}	—	0.25	—	Ω	TLP, 10A, $tp = 100\text{ ns}$, I/O to V_{SS}
Dynamic Forward Resistance	R_{DIF-F}	—	0.25	—	Ω	TLP, 10A, $tp = 100\text{ ns}$, V_{SS} to I/O
Channel Input Capacitance	$C_{I/O}$	—	0.5	0.65	pF	$V_{I/O} = 2.5\text{V}$, $V_{SS} = 0\text{V}$, $f = 1\text{MHz}$

- 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 μs peak pulse current (I_{PP}) waveform.

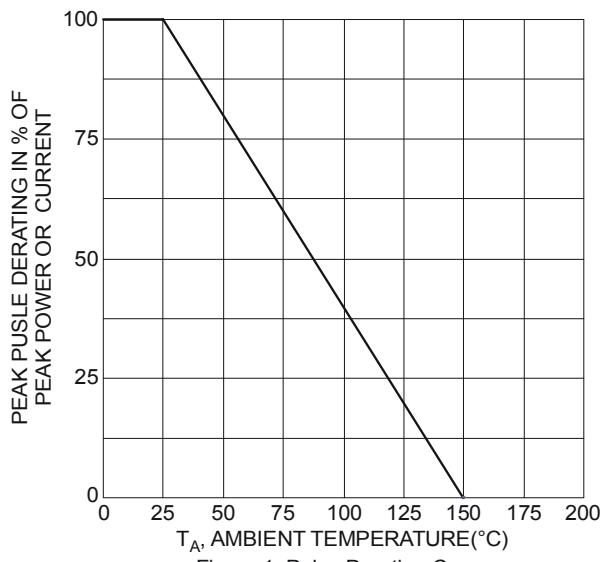


Figure 1 Pulse Derating Curve

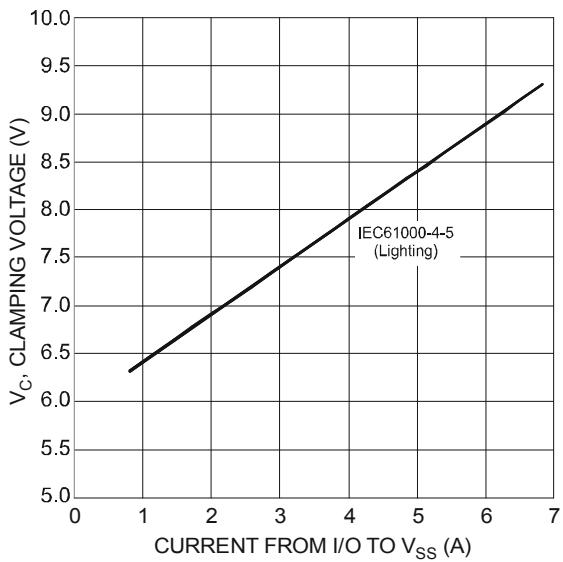


Figure 3 Clamping Voltage Characteristic

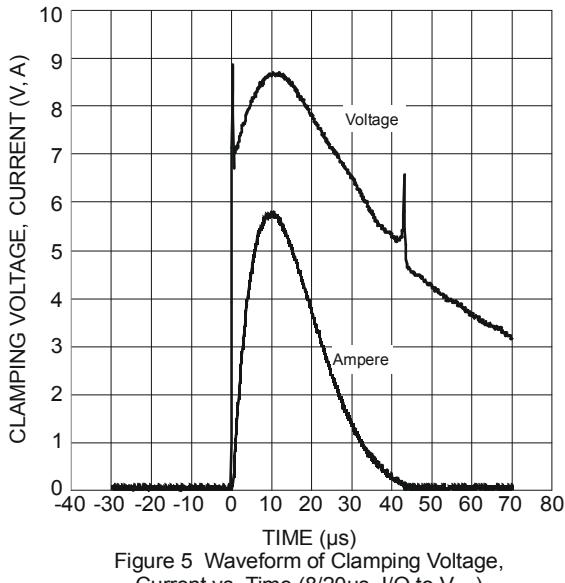


Figure 5 Waveform of Clamping Voltage, Current vs. Time (8/20μs, I/O to V_{SS})

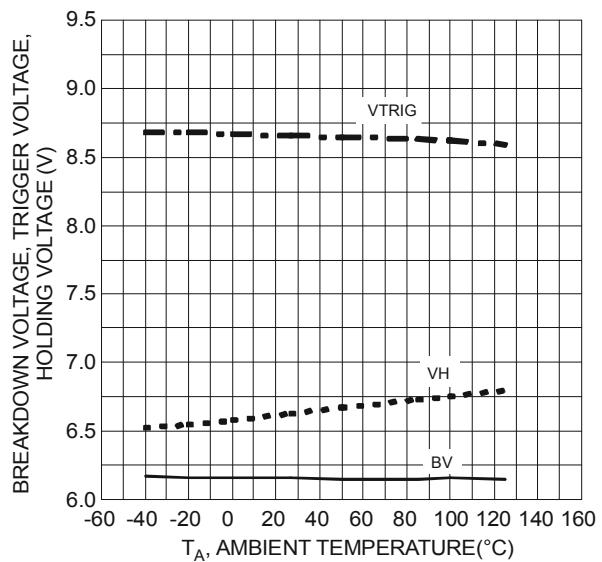


Figure 2 BV, Trigger Voltage, Holding Voltage vs. Ambient Temperature

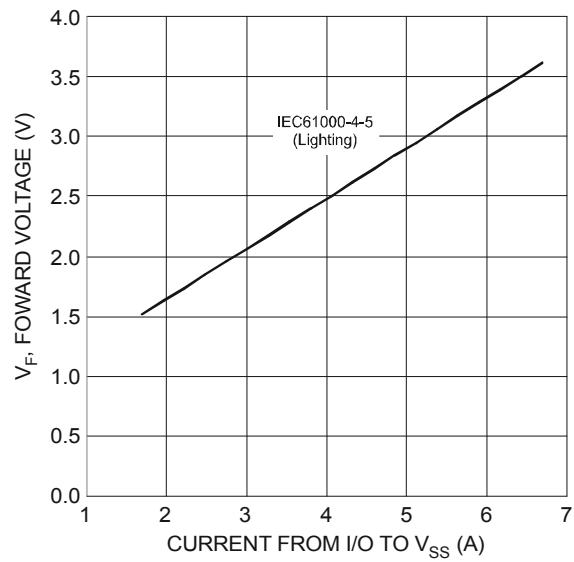


Figure 4 Forward Voltage Characteristic

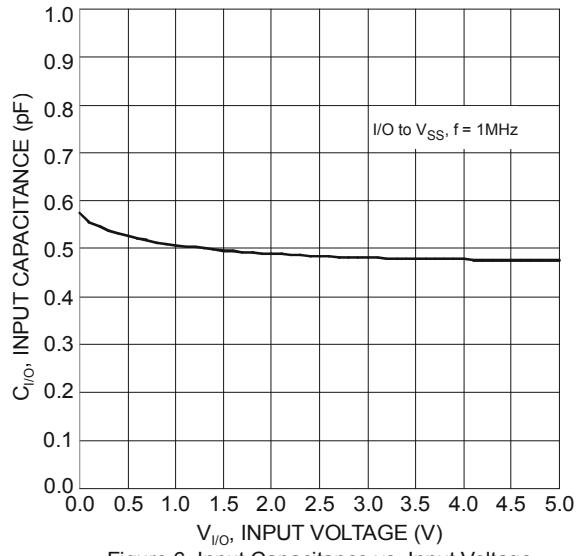
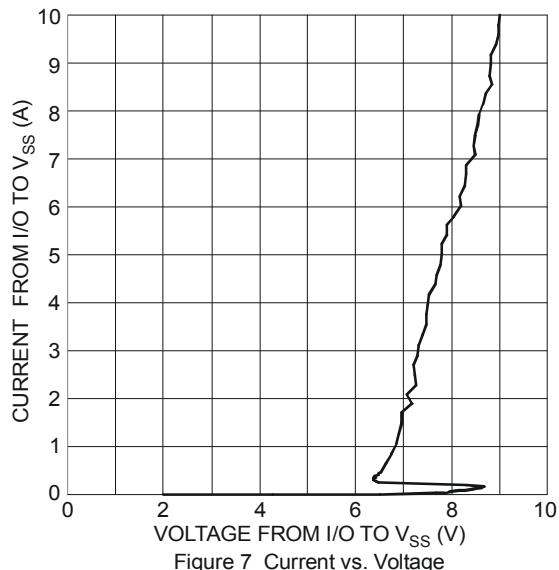
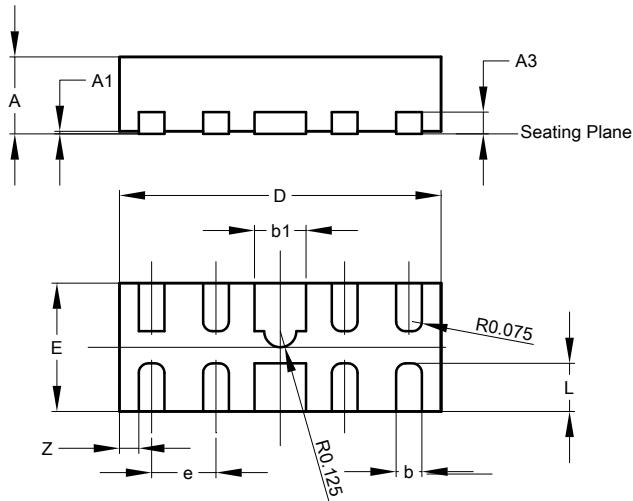


Figure 6 Input Capacitance vs. Input Voltage



Package Outline Dimensions

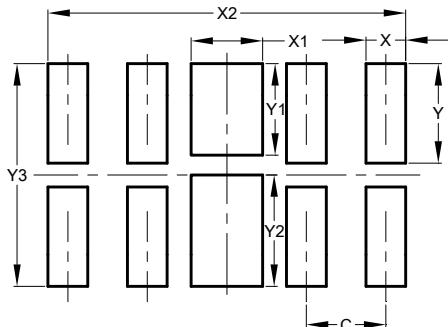
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for latest version.



U-DFN2510-10			
Dim	Min	Max	Typ
A	0.545	0.605	0.575
A1	0	0.05	0.03
A3	—	—	0.13
b	0.15	0.25	0.20
b1	0.35	0.45	0.40
D	2.450	2.575	2.500
e	—	—	0.50
E	0.950	1.075	1.000
L	0.325	0.425	0.375
Z	-	-	0.150
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)
C	0.500
X	0.250
X1	0.450
X2	2.250
Y	0.625
Y1	0.575
Y2	0.700
Y3	1.400

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