

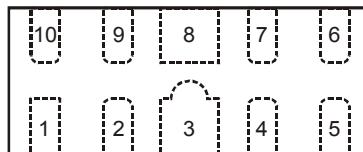
Features & Applications

- Clamping Voltage: 9V at 10A 100ns, TLP 9.4V at 5.5A 8μs/20μs
- IEC 61000-4-2 (ESD): Air — ±16kV, Contact — ±14kV
- IEC 61000-4-5 (Lightning): ±5.5A (8/20μs)
- 4 Channels of ESD protection
- Low Channel Input Capacitance of 0.55pF Typical
- TLP Dynamic Resistance: 0.25Ω
- Typically Used for High Speed Ports such as USB 2.0, USB 3.0
- 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)**

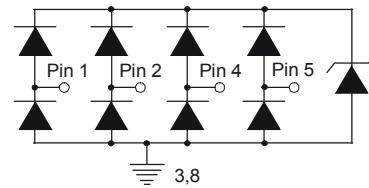
Mechanical Data

- 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
DT1240-04LP-7	Standard	BC7	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



BC7 = 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}	5.5	A	I/O to V_{SS} , 8/20 μs
Peak Pulse Power, per IEC 61000-4-5	PPP	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	$V_{ESD_Contact}$	± 14	kV	I/O to V_{SS}
ESD Protection – Air Discharge, per IEC 61000-4-2	V_{ESD_Air}	± 16	kV	I/O to V_{SS}
Operating Temperature	T_{OP}	-55 to +85	$^\circ\text{C}$	—
Storage Temperature	T_{STG}	-55 to +150	$^\circ\text{C}$	—

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation Typical (Note 5)	P_D	350	mW
Thermal Resistance, Junction to Ambient Typical (Note 5)	$R_{\theta JA}$	360	$^\circ\text{C}/\text{W}$

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	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 6)	V_C	—	9.4	11	V	$I_{PP} = 5.5\text{A}$, 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 (Note 7)	$C_{I/O}$	—	0.55	0.65	pF	$V_{I/O} = 2.5\text{V}$, $V_{SS} = 0\text{V}$, $f = 1\text{MHz}$
Delta $C_{I/O}$	$C_{I/OMAX}-C_{I/OMIN}$	—	0.04	—	pF	$C_{I/OMAX}-C_{I/OMIN}$

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. Clamping voltage value is based on an 8x20 μs peak pulse current (I_{PP}) waveform.

7. $C_{I/O1}=C_{PIN1}+C_{PIN10}$, $C_{I/O2}=C_{PIN2}+C_{PIN9}$, $C_{I/O3}=C_{PIN4}+C_{PIN7}$, $C_{I/O4}=C_{PIN5}+C_{PIN6}$

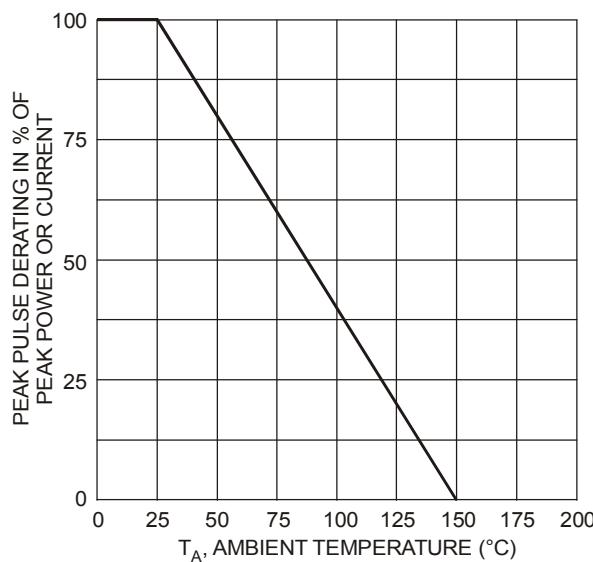


Figure 1 Pulse Derating Curve

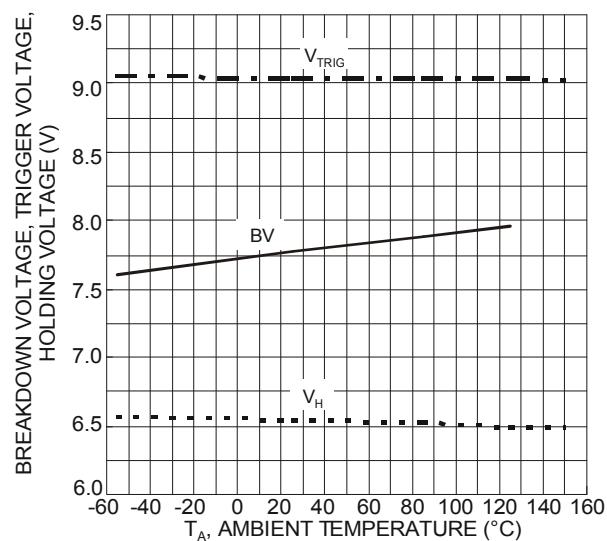


Figure 2 BV, Trigger Voltage, Holding Voltage vs. Ambient Temperature

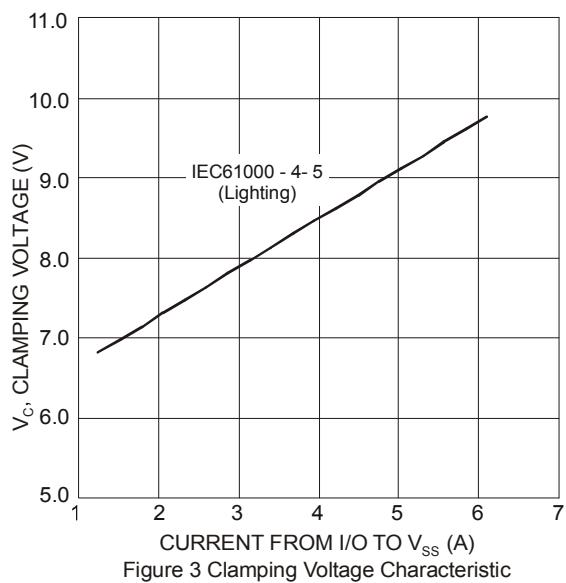


Figure 3 Clamping Voltage Characteristic

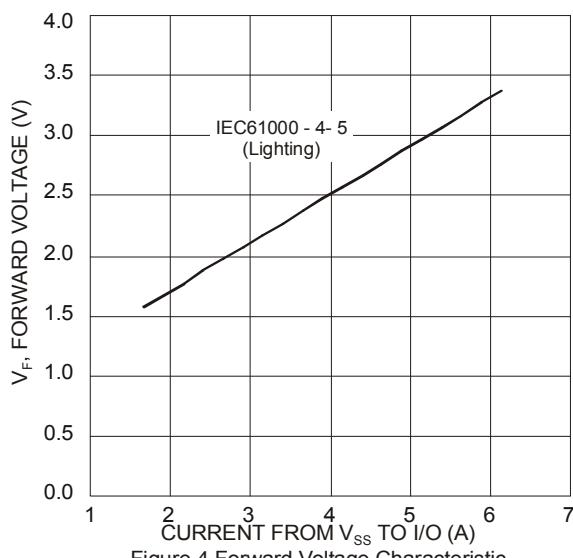


Figure 4 Forward Voltage Characteristic

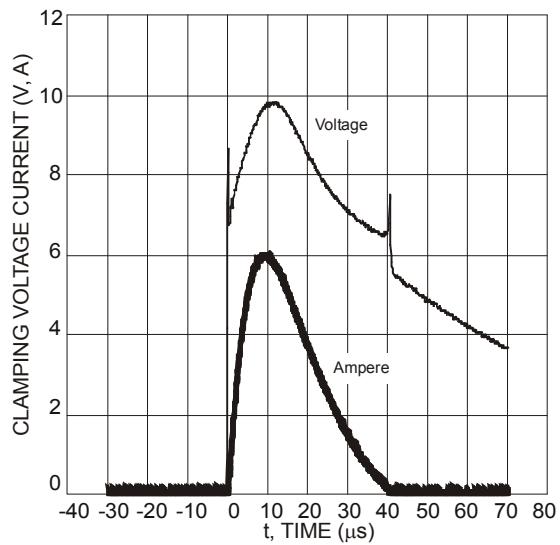


Figure 5 Waveform of Clamping Voltage, Current vs. Time (8/20us, I/O to Vss)

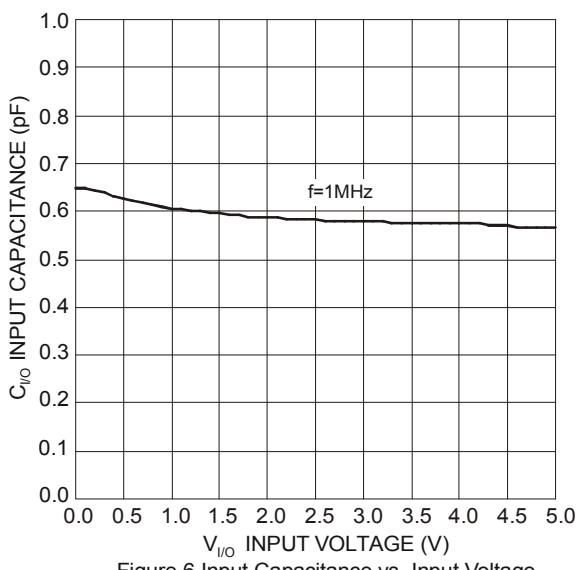


Figure 6 Input Capacitance vs. Input Voltage

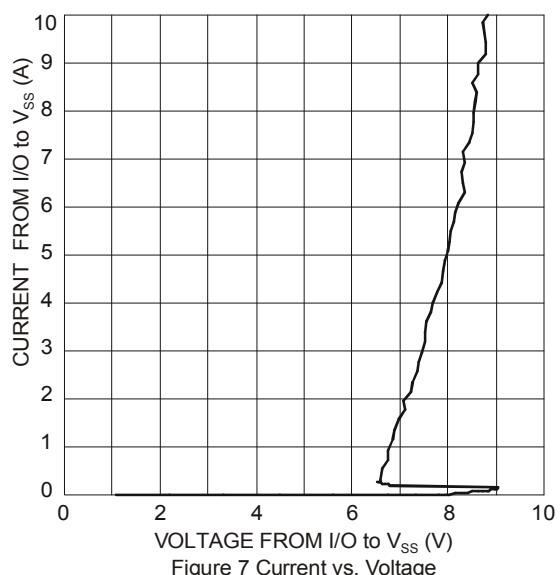
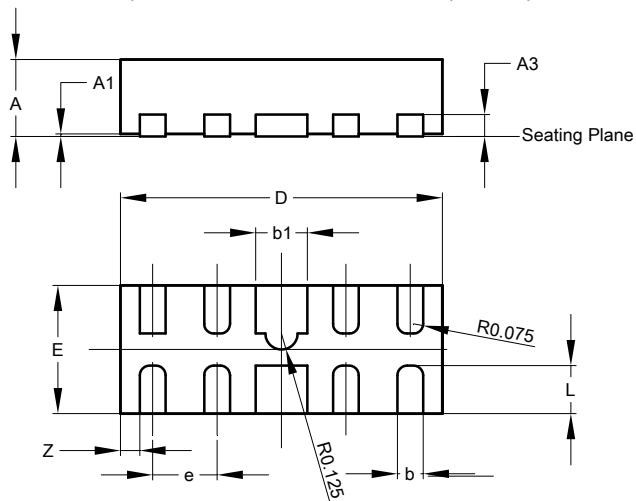


Figure 7 Current vs. Voltage

Package Outline Dimensions

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

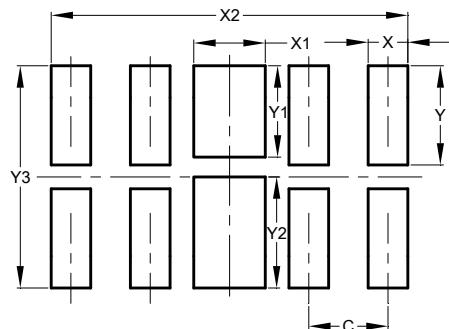


U-DFN2510-10			
Dim	Min	Max	Typ
A	0.545	0.605	0.575
A1	0	0.05	0.03
A3	-	-	0.13
b	0.15	0.25	0.20
b1	0.35	0.45	0.40
D	2.450	2.575	2.500
e	-	-	0.50
E	0.950	1.075	1.000
L	0.325	0.425	0.375
Z	-	-	0.150

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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Как с нами связаться

Телефон: 8 (812) 309 58 32 (многоканальный)

Факс: 8 (812) 320-02-42

Электронная почта: org@eplast1.ru

Адрес: 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литер A.