

Product Summary

| | | |
|-----------------------------|-----------------------------|----------------------------|
| V_{BR} (min) | I_{PP} (max) | C_T (typ) |
| 6V | 5.5A | 0.55pF |

Description

The DT1240V3-04LP-7 is a high-performance device suitable for protecting four high speed I/Os. These devices are assembled in DFN2510-10 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

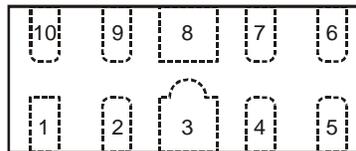
- Clamping Voltage: 8.8V at 10A 100ns, TLP 9V at 5.5A 8μs/20μs
- IEC 61000-4-2 (ESD): Air — ±16kV, Contact — ±14kV
- IEC 61000-4-5 (Lightning): ±5.5A (8/20μs)
- 4 Channels of ESD protection
- Low Channel Input Capacitance of 0.55pF Typical
- TLP Dynamic Resistance: 0.3Ω
- Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- Halogen and Antimony Free. "Green" Device (Note 3)**

Mechanical Data

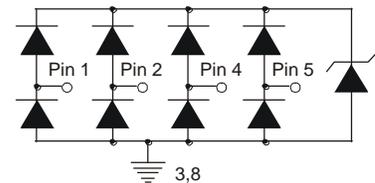
- Case: U-DFN2510-10
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections: See Schematic
- Terminals: Finish – NiPdAu, Solderable per MIL-STD-202, Method 208
- Weight: 0.038 grams (Approximate)

U-DFN2510-10

| Pin # | Description |
|-------------|-----------------|
| 1, 2, 4, 5 | I/O |
| 6, 7, 9, 10 | No Connection |
| 3, 8 | V _{SS} |



Pin Description (Top View)



Device Schematic

Ordering Information (Note 4)

| Product | Compliance | Marking | Reel Size (inches) | Tape Width (mm) | Quantity per Reel |
|-----------------|------------|---------|--------------------|-----------------|-------------------|
| DT1240V3-04LP-7 | Standard | BE7 | 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

U-DFN2510-10



BE7 = 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°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} , 8/20μs |
| Peak Pulse Power, per IEC 61000-4-5 | P _{PP} | 60 | W | I/O to V _{SS} , 8/20μs |
| 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 | °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 _{θJA} | 360 | °C/W |

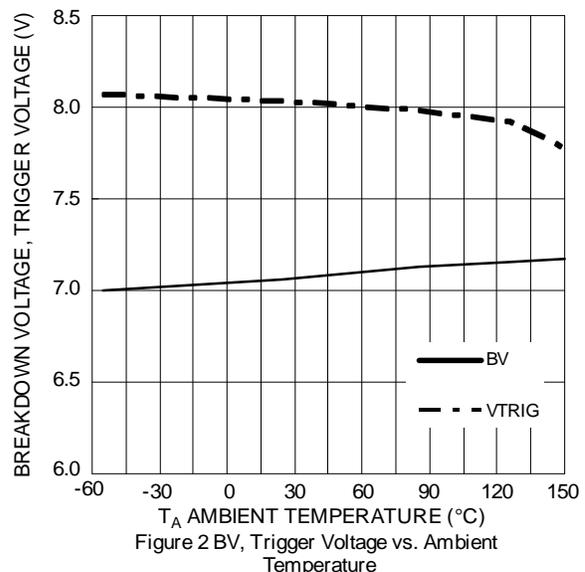
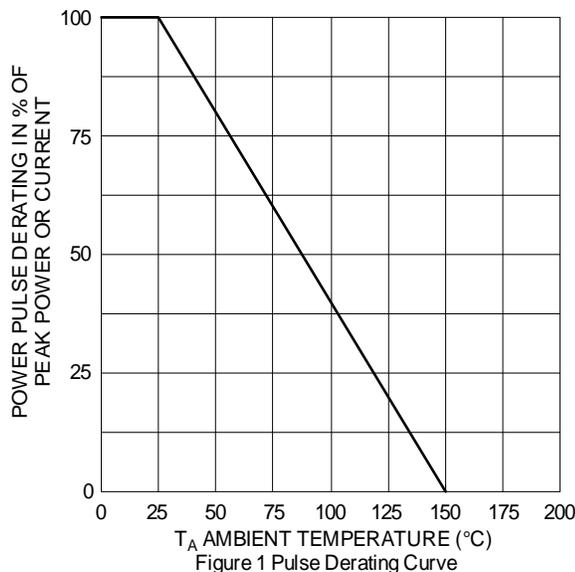
Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

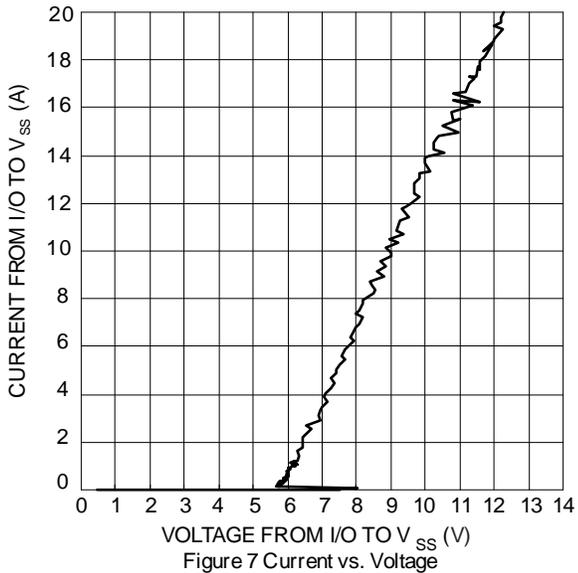
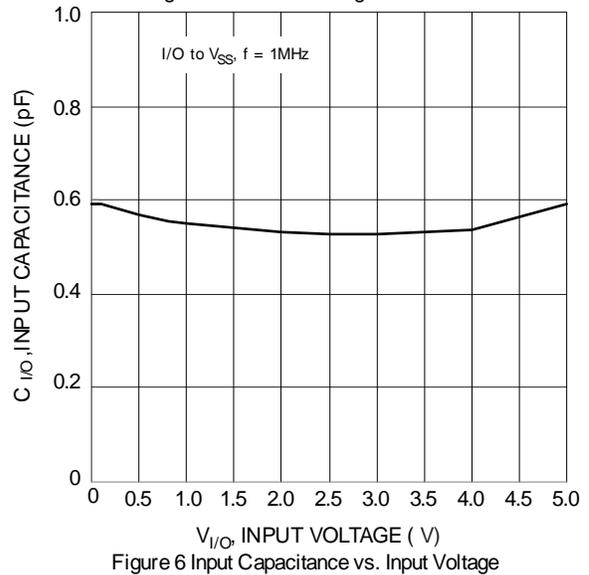
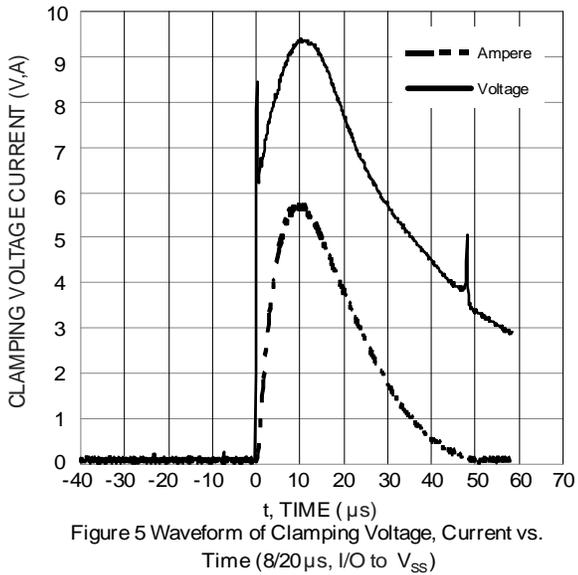
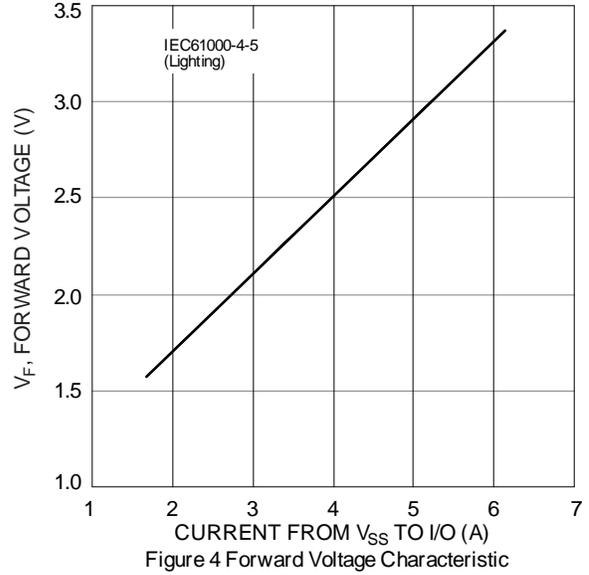
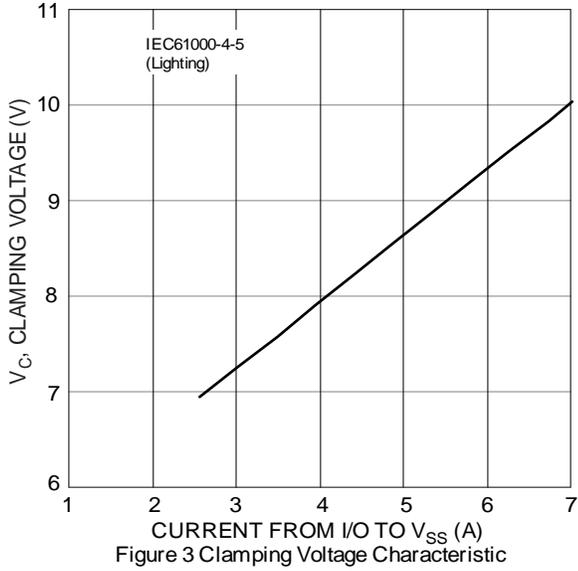
| Characteristic | Symbol | Min | Typ | Max | Unit | Test Conditions |
|-----------------------------------|--|------|-------|------|------|---|
| Reverse Working Voltage | V _{RWM} | — | — | 3.3 | V | I _R =1mA, I/O to V _{SS} |
| Reverse Current | I _R | — | — | 0.5 | μA | V _R = 3.3V, I/O to V _{SS} |
| Reverse Breakdown Voltage | V _{BR} | 6 | — | — | V | I _R = 1mA, I/O to V _{SS} |
| Forward Clamping Voltage | V _F | -1.0 | -0.85 | — | V | I _F = -15mA, I/O to V _{SS} |
| Reverse Clamping Voltage (Note 6) | V _C | — | 9 | 11 | V | I _{PP} = 5.5A, I/O to V _{SS} , 8/20μs |
| Trigger Voltage | V _{TRIG} | — | — | 9.5 | V | — |
| ESD Clamping Voltage | V _{ESD} | — | 8.8 | — | V | TLP, 10A, tp = 100 ns, I/O to V _{SS} |
| Dynamic Reverse Resistance | R _{DIF-R} | — | 0.3 | — | Ω | TLP, 10A, tp = 100 ns, I/O to V _{SS} |
| Dynamic Forward Resistance | R _{DIF-F} | — | 0.25 | — | Ω | TLP, 10A, tp = 100 ns, V _{SS} to I/O |
| Channel Input Capacitance (Note7) | C _{I/O} | — | 0.55 | 0.65 | pF | V _{I/O} = 2.5V, V _{SS} = 0V, f = 1MHz |
| 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 8x20μs peak pulse current (I_{pp}) waveform.

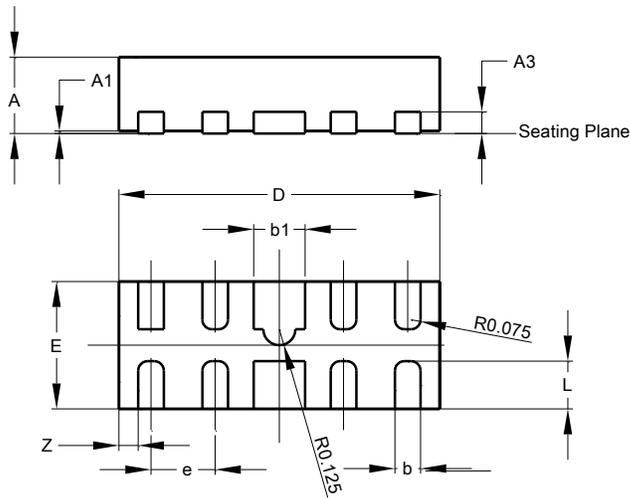
7. C_{I/O1}=C_{PIN1}+C_{PIN10}, C_{I/O2}=C_{PIN2}+C_{PIN9}, C_{I/O3}=C_{PIN4}+C_{PIN7}, C_{I/O4}=C_{PIN5}+C_{PIN6}.





Package Outline Dimensions

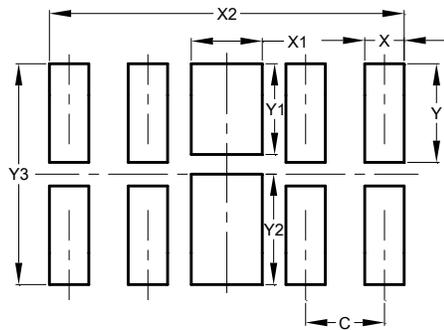
Please see AP02001 at http://www.diodes.com/_files/datasheets/ap02001.pdf for the latest version.



| 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/_files/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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