



**THE DATASHEET OF
D5V0F1U2LPQ-7B**



1 CHANNEL LOW CAPACITANCE TVS DIODE ARRAY
Features

- IEC 61000-4-2 (ESD): Air ± 20 kV, Contact ± 15 kV
- 1 Channel of ESD Protection
- Low Channel Input Capacitance of 0.5pF Typical
- Low Profile Package (0.53mm Max) and Ultra-Small PCB Footprint Area (1.08mm * 0.68mm Max) Suitable for Compact Portable Electronics
- Typically Used at High Speed Ports such as USB 2.0, IEEE1394, Serial ATA, DVI™, HDMI™, PCI
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **The D5V0F1U2LPQ is suitable for automotive applications requiring specific change control; it is AEC-Q101 qualified, PPAP capable, and manufactured in IATF 16949 certified facilities.**
- <https://www.diodes.com/quality/product-definitions/>

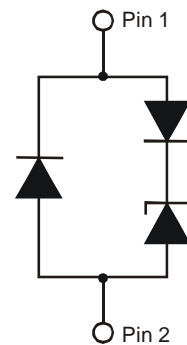
Mechanical Data

- Case: X1-DFN1006-2
- 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. Solderable per MIL-STD-202, Method 208 (g4)
- Weight: 0.001 grams (Approximate)

X1-DFN1006-2



Bottom View



Device Schematic

Ordering Information (Note 4)

| Part Number | Compliance | Marking | Reel Size (inches) | Tape Width (mm) | Quantity per Reel |
|----------------|------------|---------|--------------------|-----------------|--------------------|
| D5V0F1U2LPQ-7B | Automotive | U7 | 7 | 8 | 10,000/Tape & Reel |

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
 2. See <https://www.diodes.com/quality/lead-free/> 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 <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

Marking Information


U7 = Product Type Marking Code
Bar Denotes Pin 1

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

| Characteristic | Symbol | Value | Unit | Conditions |
|------------------------------------|--------------------|----------|------|-----------------------------------|
| Peak Pulse Current | I_{PP} | 1.5 | A | 8/20 μs , Per Figure 3 |
| ESD Protection – Contact Discharge | $V_{ESD_CONTACT}$ | ± 15 | kV | Standard IEC 61000-4-2 |
| ESD Protection – Air Discharge | V_{ESD_AIR} | ± 20 | kV | Standard IEC 61000-4-2 |

Thermal Characteristics

| Characteristic | Symbol | Value | Unit |
|--|-----------------|-------------|--------------------|
| Package Power Dissipation (Note 5) | P_D | 250 | mW |
| Thermal Resistance, Junction to Ambient (Note 5) | $R_{\theta JA}$ | 500 | $^\circ\text{C/W}$ |
| Operating and Storage Temperature Range | T_J, T_{STG} | -65 to +150 | $^\circ\text{C}$ |

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 | — |
| Reverse Current (Note 6) | I_R | — | — | 100 | nA | $V_R = 5.5\text{V}$ |
| Reverse Breakdown Voltage | V_{BR} | 6.0 | — | — | V | $I_R = 1\text{mA}$ |
| Reverse Clamping Voltage, Positive Transients (Note 7) | V_{CL} | — | 10 | 12 | V | $I_{PP} = 1\text{A}, t_P = 8/20\mu\text{s}$ |
| Dynamic Resistance | R_{DYN} | — | 0.9 | — | Ω | $I_R = 1\text{A}, t_P = 8/20\mu\text{s}$ |
| Capacitance (Note 8) | C_T | — | 0.4 | 0.65 | pF | $V_R = 2.5\text{V}, f = 1\text{MHz}$ |
| | | — | 0.5 | — | pF | $V_R = 0\text{V}, f = 1\text{MHz}$ |

- Notes:
- Device mounted on FR-4 PCB pad layout (2oz copper) as shown on Diodes Incorporated's suggested pad layout, which can be found on our website at <http://www.diodes.com/package-outlines.html>.
 - Short duration pulse test used to minimize self-heating effect.
 - Clamping voltage value is based on an 8x20 μs peak pulse current (I_{PP}) waveform.
 - Measured from any I/O to GND.
 - For information on the impact of Diodes Incorporated's USB 2.0 compatible ESD protectors on signal integrity including eye diagram plots, please refer to AN77 at the following URL: http://www.diodes.com/destdools/appnote_dnote.html.

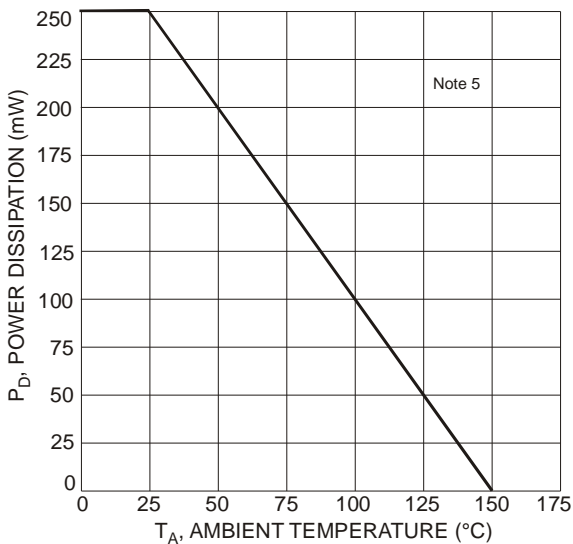


Figure 1 Power Derating Curve

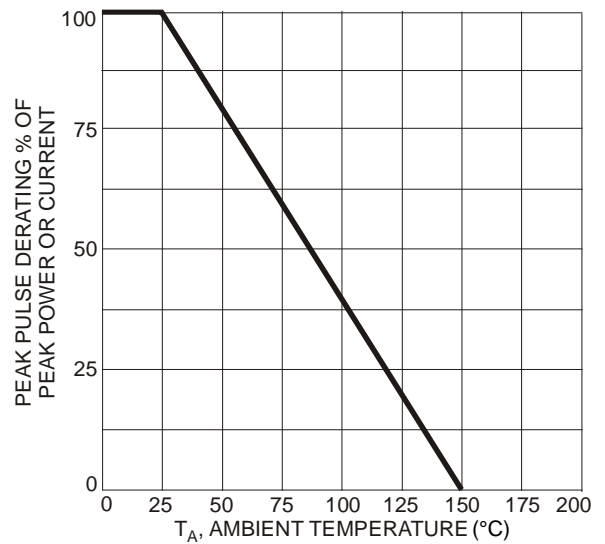


Figure 2 Pulse Derating Curve

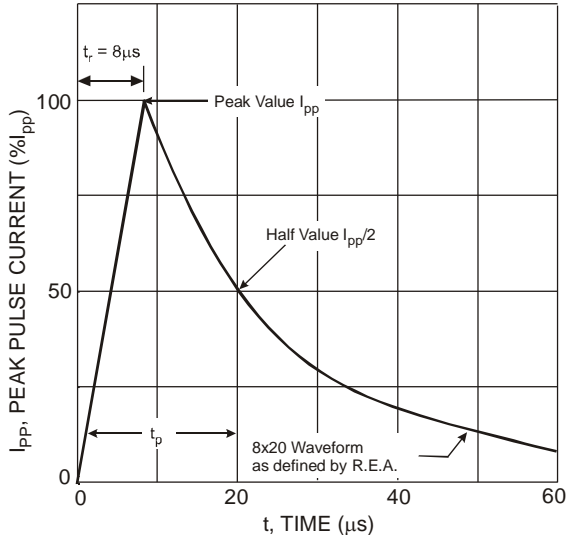


Figure 3 Pulse Waveform

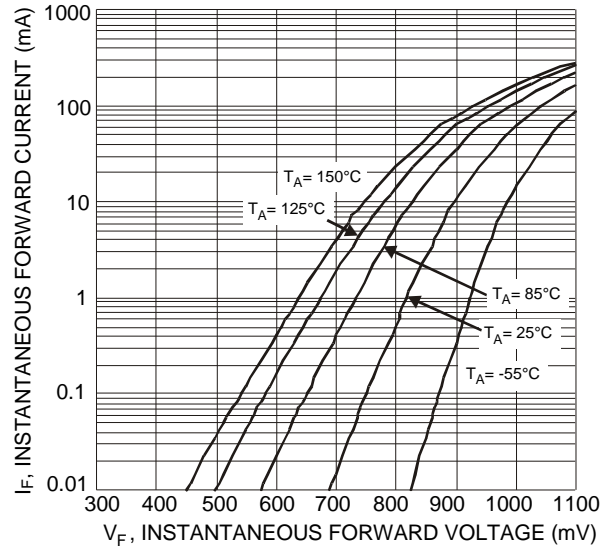


Figure 4 Typical Forward Characteristics

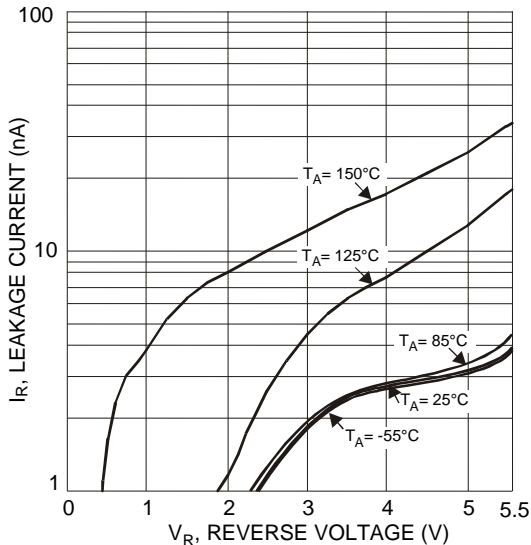


Figure 5 Typical Reverse Characteristics

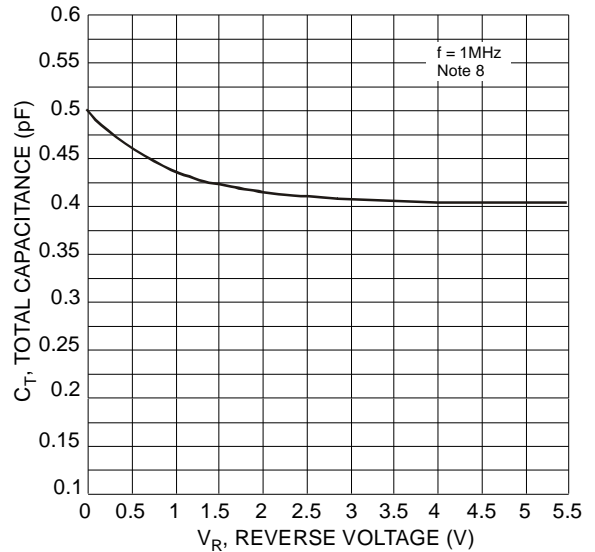
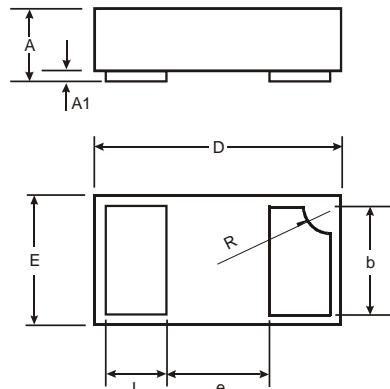


Figure 6 Total Capacitance vs. Reverse Voltage

Package Outline Dimensions

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

X1-DFN1006-2



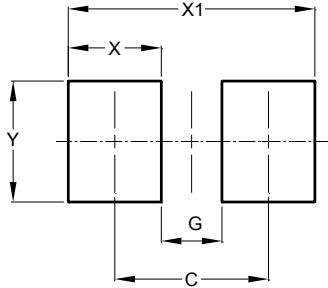
| X1-DFN1006-2 | | | |
|--------------|------|-------|------|
| Dim | Min | Max | Typ |
| A | 0.47 | 0.53 | 0.50 |
| A1 | 0 | 0.05 | 0.03 |
| b | 0.45 | 0.55 | 0.50 |
| D | 0.95 | 1.075 | 1.00 |
| E | 0.55 | 0.675 | 0.60 |
| e | - | - | 0.40 |
| L | 0.20 | 0.30 | 0.25 |
| R | 0.05 | 0.15 | 0.10 |

All Dimensions in mm

Suggested Pad Layout

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

X1-DFN1006-2



| Dimensions | Value (in mm) |
|------------|---------------|
| C | 0.70 |
| G | 0.30 |
| X | 0.40 |
| X1 | 1.10 |
| Y | 0.70 |

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