

**1 CHANNEL LOW CAPACITANCE TVS DIODE ARRAY**
**Features**

- IEC 61000-4-2 (ESD): Air  $\pm 20$ kV, Contact  $\pm 15$ 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/>

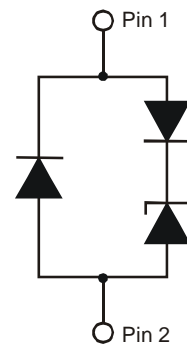
**Mechanical Data**

- 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 $\mu\text{s}$ , Per Figure 3
ESD Protection – Contact Discharge	$V_{ESD\_CONTACT}$	$\pm 15$	kV	Standard IEC 61000-4-2
ESD Protection – Air Discharge	$V_{ESD\_AIR}$	$\pm 20$	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	$^\circ\text{C}/\text{W}$
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	—	$\Omega$	$I_R = 1\text{A}, t_P = 8/20\mu\text{s}$
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 $\mu\text{s}$  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/destdtools/appnote\\_dnote.html](http://www.diodes.com/destdtools/appnote_dnote.html).

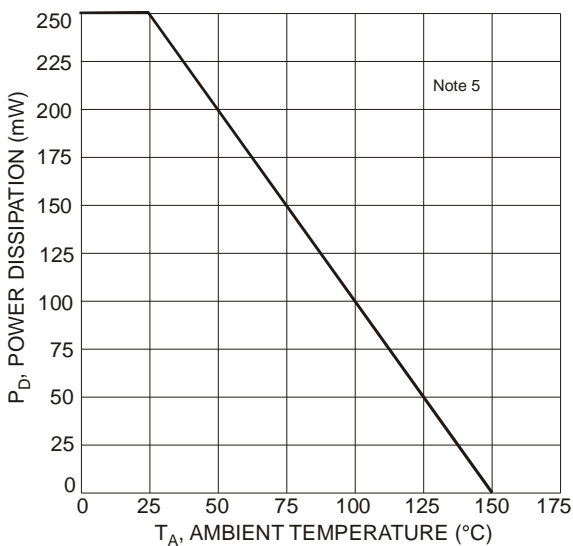


Figure 1 Power Derating Curve

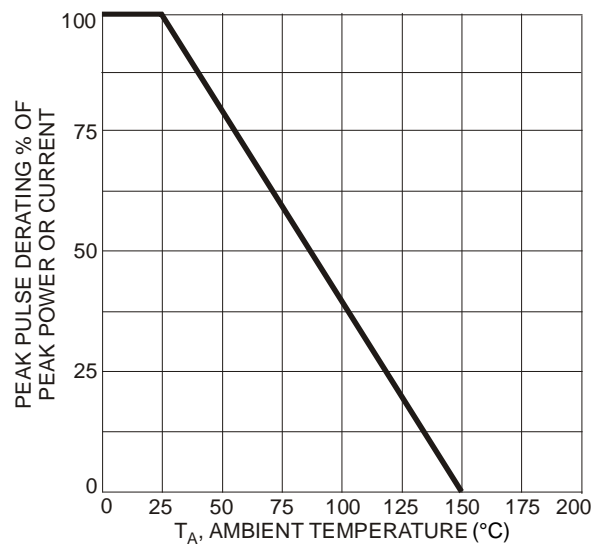


Figure 2 Pulse Derating Curve

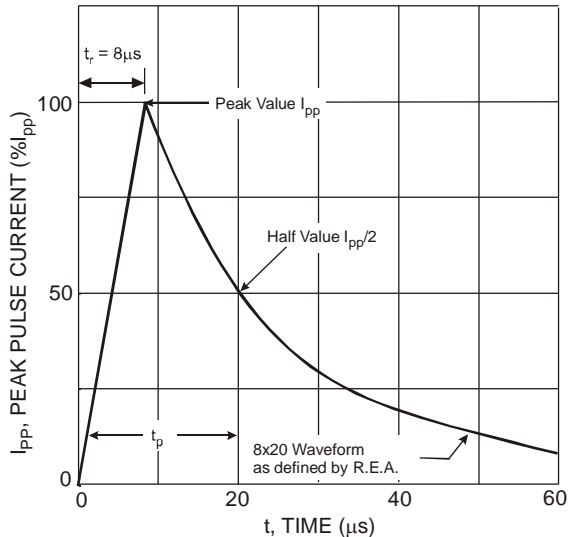


Figure 3 Pulse Waveform

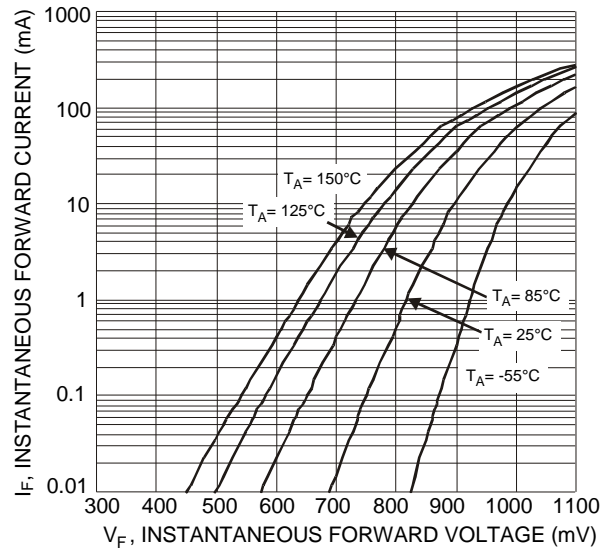


Figure 4 Typical Forward Characteristics

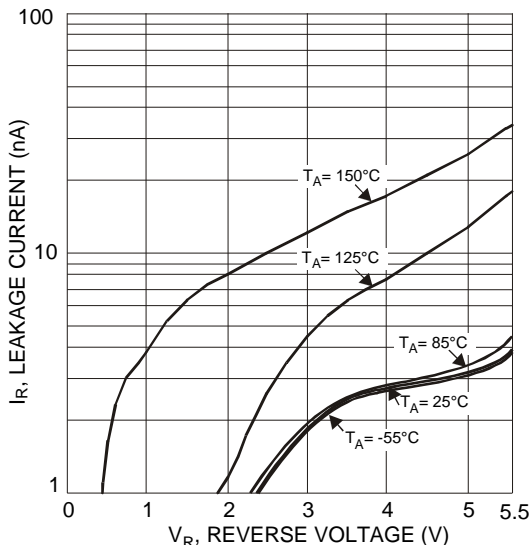


Figure 5 Typical Reverse Characteristics

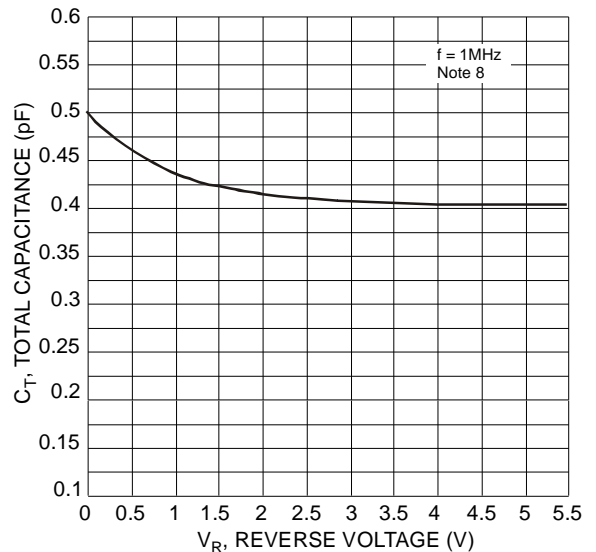
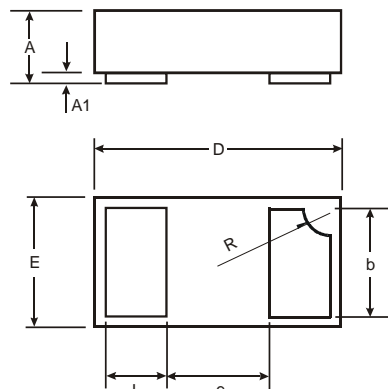


Figure 6 Total Capacitance vs. Reverse Voltage

## Package Outline Dimensions

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

### X1-DFN1006-2

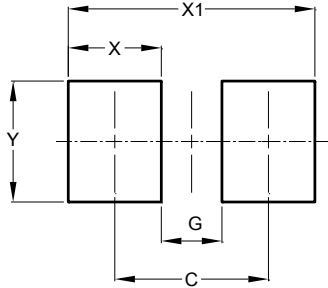


X1-DFN1006-2			
Dim	Min	Max	Typ
A	0.47	0.53	0.50
A1	0	0.05	0.03
b	0.45	0.55	0.50
D	0.95	1.075	1.00
E	0.55	0.675	0.60
e	-	-	0.40
L	0.20	0.30	0.25
R	0.05	0.15	0.10
All Dimensions in mm			

## 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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