

## Product Summary

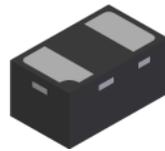
VBR (min)	IPP (max)	CT (typ)
25V	5A	15.6pF

## Description

This new generation TVS is designed to protect sensitive electronics from the damage due to ESD. The combination of small size and high ESD surge capability makes it ideal for use in portable applications such as cellular phones, digital cameras, and MP3 players. The sidewall plating option of this package allows optical inspection after soldering reflow for easy and reliable quality control.

## Applications

- Cellular Handsets
- Portable Electronics
- Computers and Peripheral



Bottom View

## Features

- Low Profile Package (0.53mm max) and Ultra-Small PCB Footprint Area (1.08 x 0.68mm max) Suitable for Compact Portable Electronics
- Provides ESD Protection per IEC 61000-4-2 Standard: Air  $\pm 30$ kV, Contact  $\pm 30$ kV
- One Channel of ESD Protection
- Low Channel Input Capacitance
- Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- Halogen and Antimony Free. "Green" Device (Note 3)**
- The D24V0LA1B2LPQ is suitable for automotive applications requiring specific change control; this part is AEC-Q101 qualified, PPAP capable, and manufactured in IATF 16949 certified facilities.**

<https://www.diodes.com/quality/product-definitions/>

## Mechanical Data

- Package: X1-DFN1006-2
- Package 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 <sup>(e4)</sup>
- Weight: 0.001 grams (Approximate)

X1-DFN1006-2



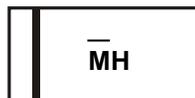
Device Schematic

## Ordering Information (Note 4)

Part Number	Compliance	Package	Marking	Reel Size (inches)	Tape Width (mm)	Packing	
						Qty.	Carrier
D24V0LA1B2LPQ-7B	Automotive	X1-DFN1006-2	MH	7	8	10,000	Tape & Reel

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

## Marking Information



MH = Product Type Marking Code  
Bar Denotes Cathode Side

**Maximum Ratings** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit	Conditions
Peak Pulse Power Dissipation	P <sub>PP</sub>	230	W	8/20μs, Per Figure 3
Peak Pulse Current	I <sub>PP</sub>	5	A	8/20μs, Per Figure 3
ESD Protection – Contact Discharge	V <sub>ESD_Contact</sub>	±30	kV	IEC 61000-4-2 Standard
ESD Protection – Air Discharge	V <sub>ESD_Air</sub>	±30	kV	IEC 61000-4-2 Standard

**Thermal Characteristics**

Characteristic	Symbol	Value	Unit
Package Power Dissipation (Note 5)	P <sub>D</sub>	250	mW
Thermal Resistance, Junction to Ambient (Note 5)	R <sub>θJA</sub>	500	°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-65 to +150	°C

**Electrical Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Conditions
Reverse Standoff Voltage	V <sub>RWM</sub>	—	—	24	V	—
Channel Leakage Current (Note 6)	I <sub>RM</sub>	—	—	100	nA	V <sub>R</sub> = 24V
Clamping Voltage, Positive Transients	V <sub>CL</sub>	—	—	42	V	I <sub>PP</sub> = 1A, t <sub>P</sub> = 8/20μs
		—	—	46		I <sub>PP</sub> = 5A, t <sub>P</sub> = 8/20μs
		—	31.4	—		I <sub>TLP</sub> = 16A, t <sub>P</sub> = 100ns, Pin1 to Pin2
		—	33.1	—		I <sub>TLP</sub> = 30A, t <sub>P</sub> = 100ns, Pin1 to Pin2
		—	32.3	—		I <sub>TLP</sub> = 16A, t <sub>P</sub> = 100ns, Pin2 to Pin1
		—	34.2	—		I <sub>TLP</sub> = 30A, t <sub>P</sub> = 100ns, Pin2 to Pin1
Breakdown Voltage	V <sub>BR</sub>	25	—	33	V	I <sub>R</sub> = 1mA
Channel Input Capacitance	C <sub>T</sub>	—	15.6	20	pF	V <sub>R</sub> = 0V, f = 1MHz

- Notes: 5. 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>.  
6. Short duration pulse test used to minimize self-heating effect.

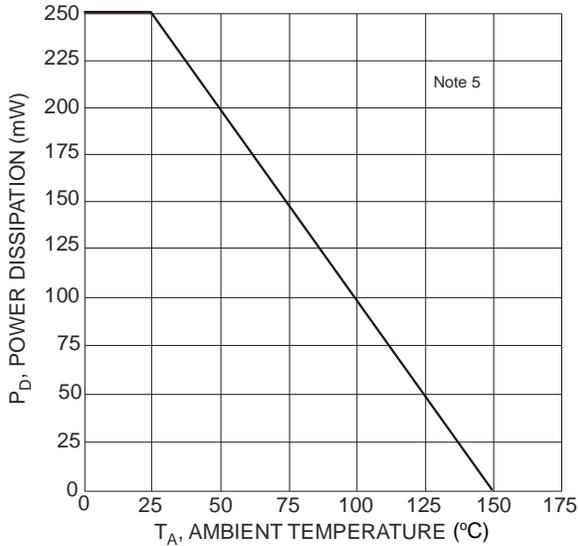


Figure 1 Power Derating Curve

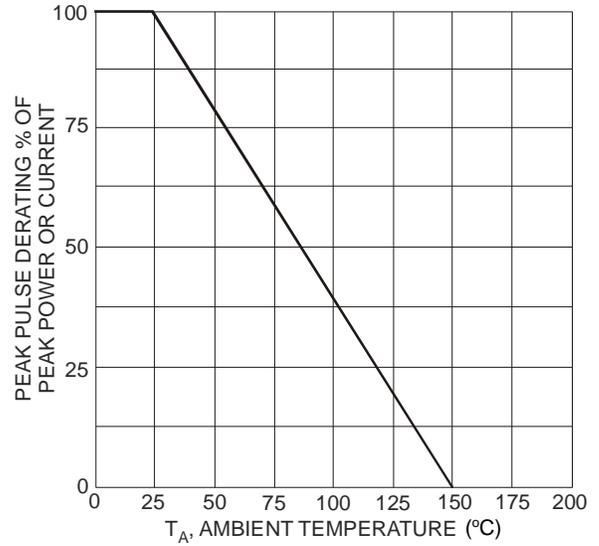


Figure 2 Pulse Derating Curve

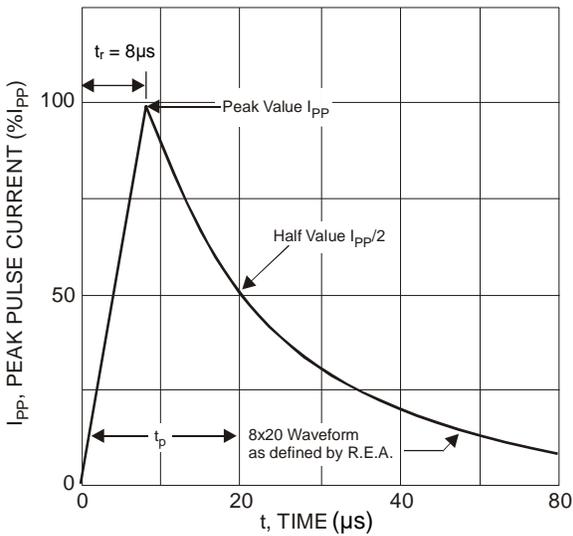


Figure 3 Pulse Waveform

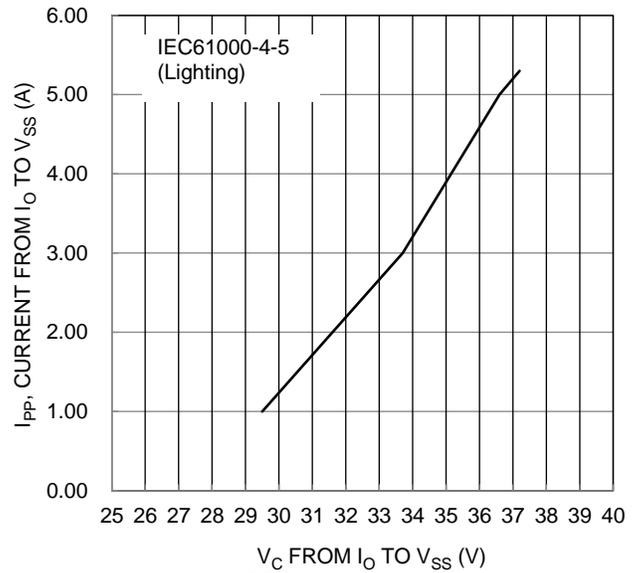


Figure 4 Clamping Voltage Characteristic

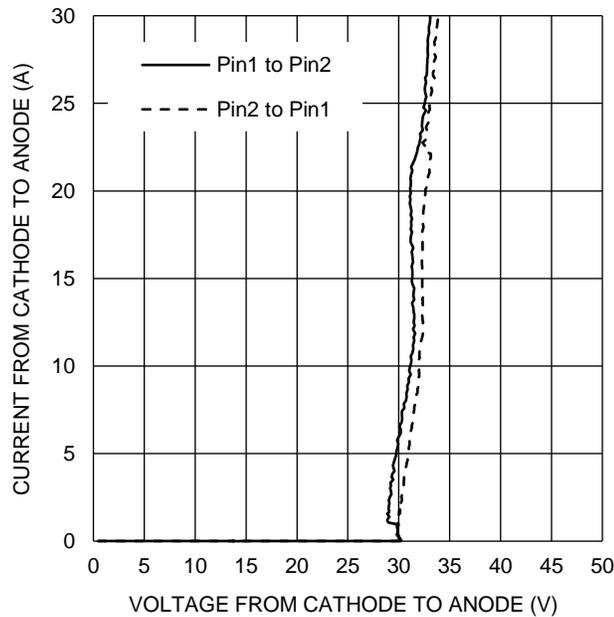
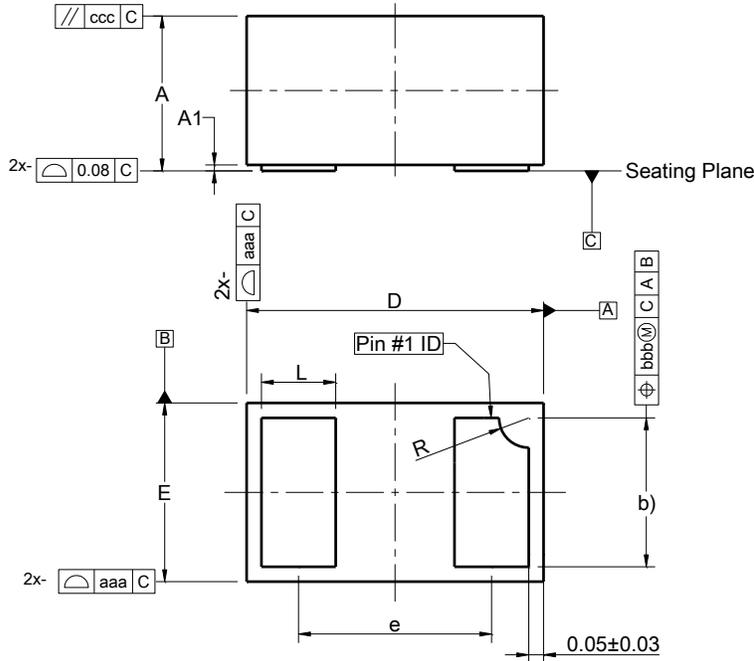


Figure 5 TLP Curve (t<sub>p</sub> = 100ns)

**Package Outline Dimensions**

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

**X1-DFN1006-2**

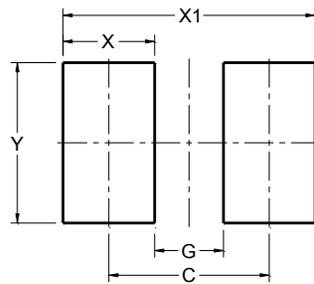


X1-DFN1006-2			
Dim	Min	Max	Typ
A	0.47	0.53	0.50
A1	0.00	0.05	0.03
b	0.45	0.55	0.50
D	0.95	1.075	1.00
E	0.55	0.675	0.60
e	--	--	0.65
L	0.20	0.30	0.25
R	0.05	0.15	0.10
aaa	0.15		
bbb	0.05		
ccc	0.05		
All Dimensions in mm			

**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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