

## Product Summary

V <sub>BR</sub> (Min)	I <sub>PP</sub> (Max)	C <sub>T</sub> (Typ)
26V	2.5A	0.5pF

## 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 automotive applications such as:

- RF signal ESD protections
- RF switching, PA, and antenna ESD protections
- Near field communications
- USB 2.0, USB 3.0
- Audio L/R

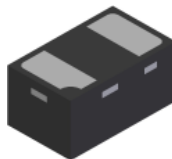
## Features

- Low Profile Package (0.53mm max) and Ultra-Small PCB Footprint Area (1.08mm x 0.68mm max) Suitable for Compact Portable Electronics
- Provides ESD Protection per IEC 61000-4-2 Standard: Air ±20kV, Contact ±18kV
- 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)**
- **For automotive applications requiring specific change control (i.e.: parts qualified to AEC-Q100/101/104/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please refer to the related automotive grade (Q-suffix) part. A listing can be found at <https://www.diodes.com/products/automotive/automotive-products/>.**
- **This part is qualified to JEDEC standards (as references in AEC-Q) for High Reliability. <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 Lead-Frame. Solderable per MIL-STD-202, Method 208 (e4)
- Weight: 0.001 grams (Approximate)

X1-DFN1006-2



Bottom View



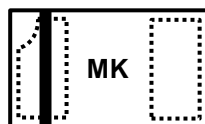
Device Schematic

## Ordering Information (Note 4)

Part Number	Package	Marking	Reel Size (inches)	Tape Width (mm)	Packing	
					Qty.	Carrier
D24V0X1B2LP-7B	X1-DFN1006-2	MK	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



MK or  $\overline{\text{MK}}$  = Product Type Marking Code  
 MK is assembled in Shanghai  
 $\overline{\text{MK}}$  is assembled in Chengdu  
 Line Denotes Pin 1

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

Characteristic	Symbol	Value	Unit	Conditions
Peak Pulse Current	$I_{PP}$	2.5	A	8/20 $\mu\text{s}$ , See Figure 3
ESD Protection—Contact Discharge	$V_{ESD\_Contact}$	$\pm 18$	kV	IEC 61000-4-2 Standard
ESD Protection—Air Discharge	$V_{ESD\_Air}$	$\pm 20$	kV	IEC 61000-4-2 Standard

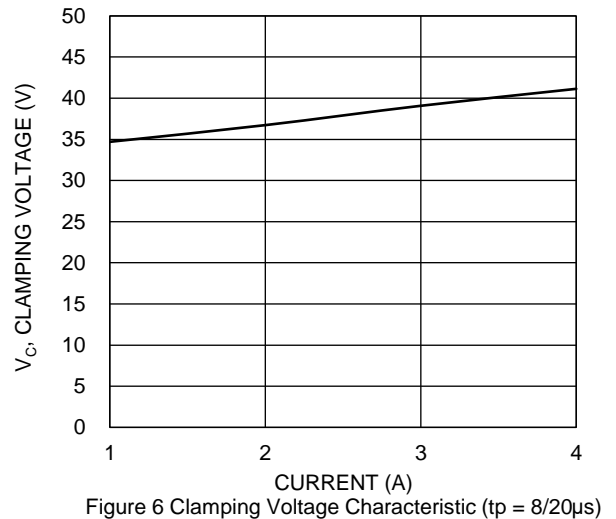
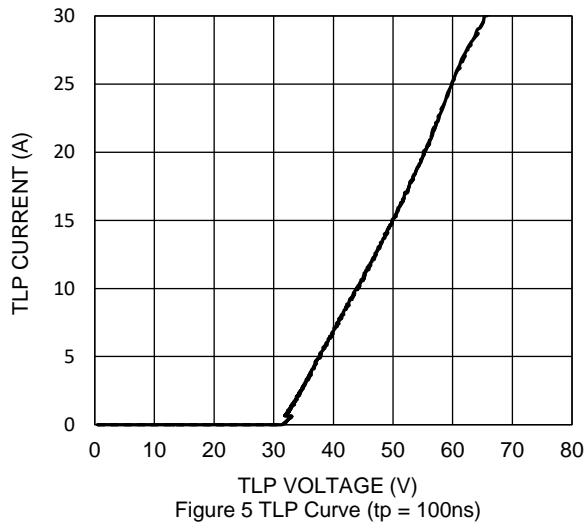
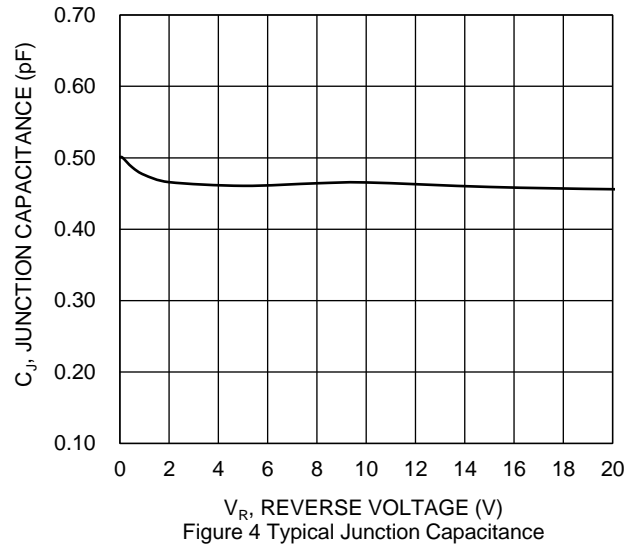
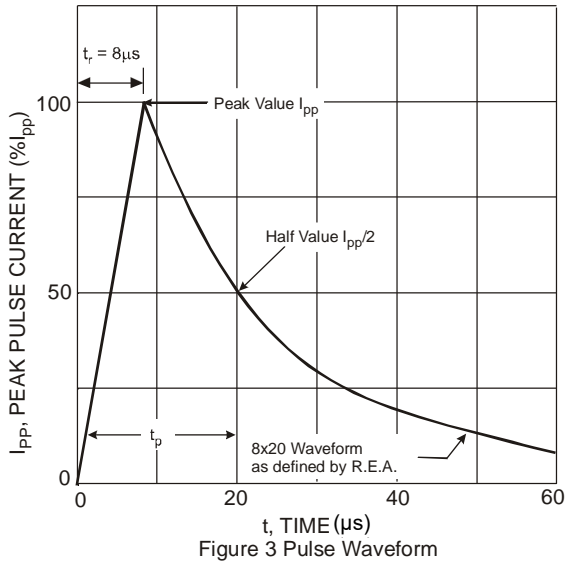
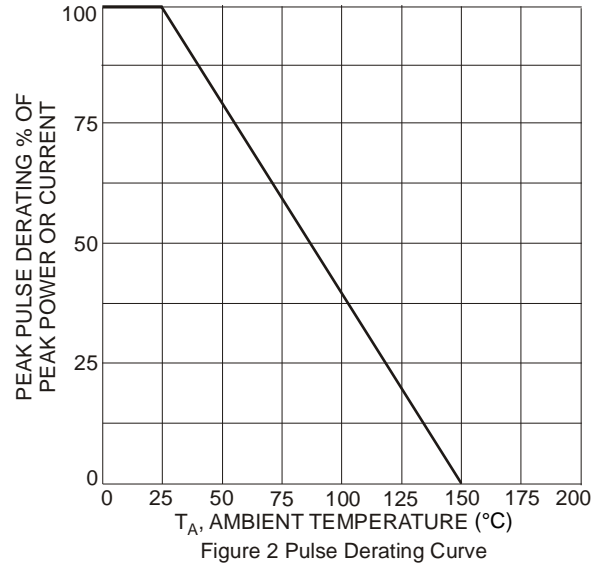
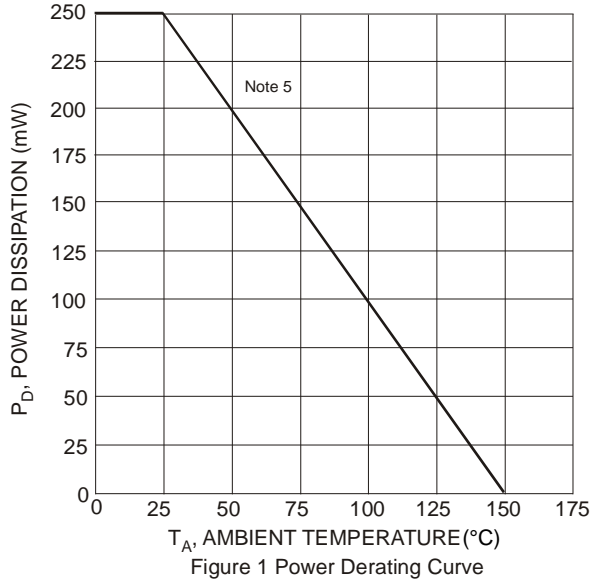
**Thermal Characteristics**

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	$T_J, T_{STG}$	-55 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	$V_{RWM}$	—	—	24	V	—
Reverse Current (Note 6)	$I_R$	—	—	1	$\mu\text{A}$	$V_R = 24\text{V}$
Reverse Breakdown Voltage	$V_{BR}$	26	—	38	V	$I_R = 1\text{mA}$
Reverse Clamping Voltage, Positive Transients	$V_{CL}$	—	—	38	V	$I_{PP} = 1\text{A}, t_P = 8/20\mu\text{s}$
		—	—	44	V	$I_{PP} = 2.5\text{A}, t_P = 8/20\mu\text{s}$
Dynamic Resistance (Note 7)	$R_{DYN}$	—	0.6	—	$\Omega$	TLP, 10A, $t_P = 100\text{ns}$
Capacitance	$C_T$	—	0.5	—	pF	$V_R = 0\text{V}, f = 1\text{MHz}$

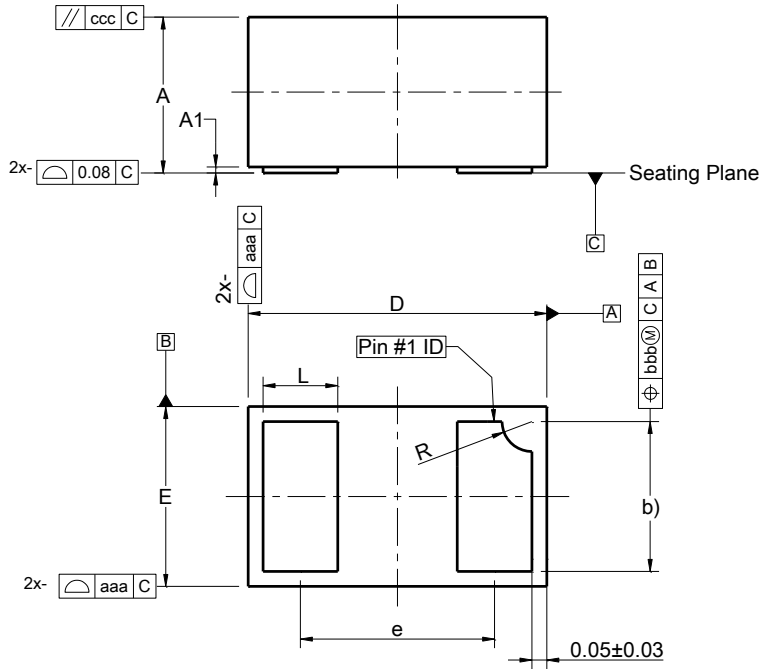
- Notes:
5. Device mounted on FR-4 PCB pad layout (2oz copper) as shown on Diodes Incorporated's suggested pad layout per <http://www.diodes.com/package-outlines.html>.
  6. Short duration pulse test used to minimize self-heating effect.
  7. Non-repetitive current pulse, Transmission Line Pulse (TLP); square pulse ( $t_P = 100\text{ns}$ ).



**Package Outline Dimensions**

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

**X1-DFN1006-2**

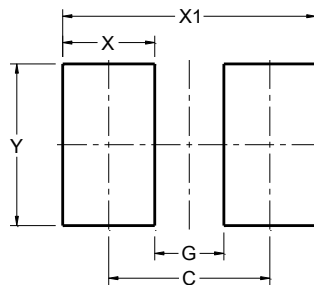


X1-DFN1006-2			
Dim	Min	Max	Typ
A	0.47	0.53	0.50
A1	0.00	0.05	0.03
b	0.45	0.55	0.50
D	0.95	1.075	1.00
E	0.55	0.675	0.60
e	--	--	0.65
L	0.20	0.30	0.25
R	0.05	0.15	0.10
aaa	0.15		
bbb	0.05		
ccc	0.05		
All Dimensions in mm			

**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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