

LOW CAPACITANCE BIDIRECTIONAL TVS DIODES

Features

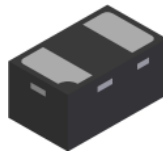
- Low Profile Package (0.53mm max) and Ultra-Small PCB Footprint Area (1.08 mm * 0.68mm max) Suitable for Compact Portable Electronics
- Provides ESD Protection per IEC 61000-4-2 Standard: Air $\pm 30\text{kV}$, Contact $\pm 25\text{kV}$
- 1 Channel of ESD Protection
- Low Channel Input Capacitance
- Typically Used in Cellular Handsets, Portable Electronics, Communication Systems, Computers and Peripherals
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **The DESD3V3S1BLQ 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/>

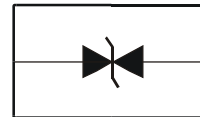
Mechanical Data

- 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 ^(e4)
- Polarity: Cathode Band
- Weight: 0.001 grams (Approximate)

X1-DFN1006-2



Bottom View



Device Schematic

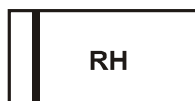
Ordering Information (Note 4)

Orderable Part Number	Package	Marking Code	Reel Size (inches)	Tape Width (mm)	Packing	
					Qty.	Carrier
DESD3V3S1BLQ-7B	X1-DFN1006-2	RH	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

X1-DFN1006-2



RH or $\overline{\text{RH}}$ = 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 Power Dissipation	P_{PP}	35	W	8/20 μs , Per Figure 3
Peak Pulse Current	I_{PP}	5	A	8/20 μs , Per Figure 3
ESD Protection – Contact Discharge	$V_{ESD_CONTACT}$	± 25	kV	IEC 61000-4-2 Standard
ESD Protection – Air Discharge	V_{ESD_AIR}	± 30	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}	-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 Standoff Voltage	V_{RWM}	—	—	3.3	V	—
Channel Leakage Current (Note 6)	I_{RM}	—	10	100	nA	$V_{RWM} = 3.3\text{V}$
Clamping Voltage, Positive Transients	V_{CL}	—	4.5 5.8	5.4 7.0	V	$I_{PP} = 1\text{A}, t_P = 8/20\mu\text{s}$ $I_{PP} = 5\text{A}, t_P = 8/20\mu\text{s}$
Breakdown Voltage	V_{BR}	3.8	—	6.5	V	$I_R = 1\text{mA}$
Differential Resistance	R_{DIF}	—	0.3	—	Ω	$I_R = 1\text{A}$
Channel Input Capacitance	C_T	—	10	13	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.

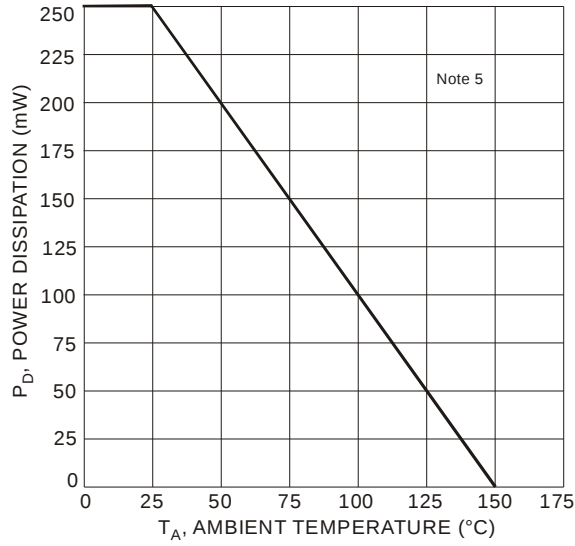


Figure 1 Power Derating Curve

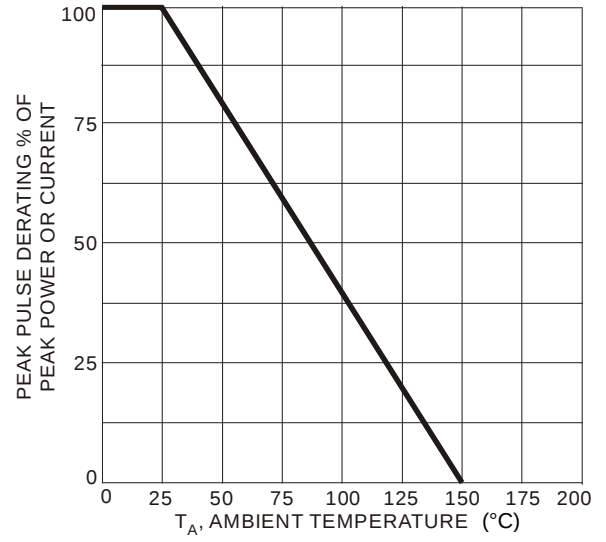


Figure 2 Pulse Derating Curve

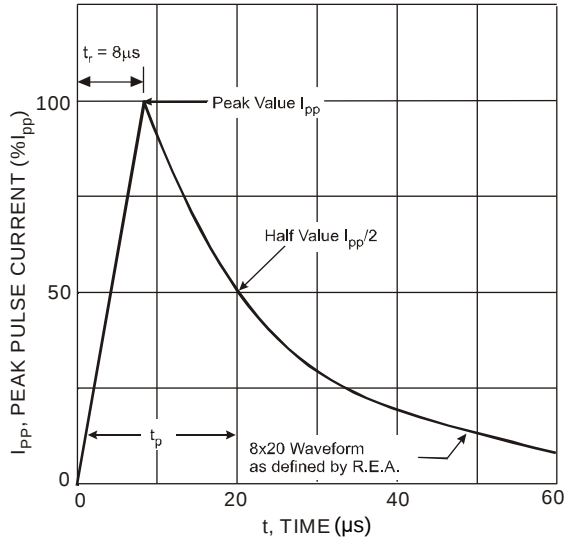
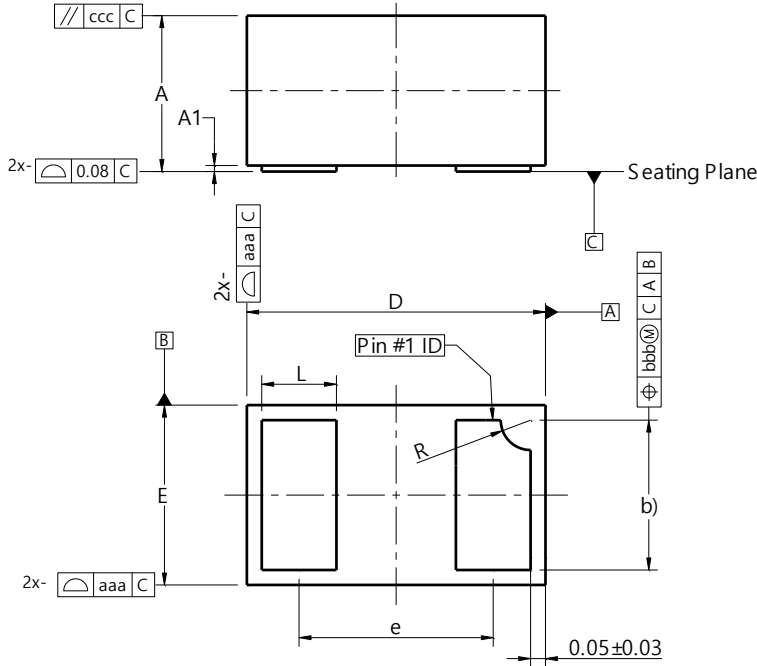


Figure 3 Pulse Waveform

Package Outline Dimensions

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

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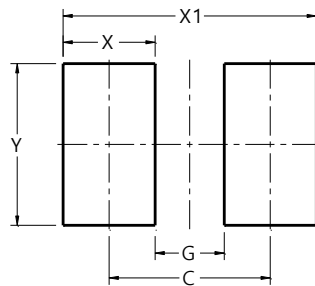


X1-DFN1006-2			
Dim	Min	Max	Typ
A	0.47	0.53	0.50
A1	0.00	0.05	0.03
b	0.45	0.55	0.50
D	0.95	1.075	1.00
E	0.55	0.675	0.60
e	--	--	0.65
L	0.20	0.30	0.25
R	0.05	0.15	0.10
aaa	0.15		
bbb	0.05		
ccc	0.05		
All Dimensions in mm			

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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