

Product Summary

V _{BR} (Min)	I _{PP} (Max)	C _T (Max)
3.75V to 25.0V	3A to 23A	11pF to 56pF

Description and Applications

This new generation TVS is designed to protect sensitive electronics from damage due to ESD. The combination of small size and high ESD surge capability makes it ideal for use in portable applications such as:

- USB modules
- HDMI ports
- LVDS

Features and Benefits

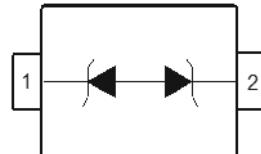
- Provides ESD Protection per IEC 61000-4-2 Standard: Air $\pm 30\text{kV}$, Contact $\pm 30\text{kV}$
- 1 Channel of ESD Protection
- Low Channel Input Capacitance
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- Halogen and Antimony Free. "Green" Device (Note 3)
- The DIODES™ DESDxxVxL1BAQ are suitable for automotive applications requiring specific change control; these parts are AEC-Q101 qualified, PPAP capable, and manufactured in IATF 16949 certified facilities.

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

Mechanical Data

- Package: SOD323
- Package Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish Annealed over Alloy 42 Leadframe. Solderable per MIL-STD-202, Method 208 (e3)
- Weight: 0.004 grams (Approximate)

SOD323



Device Schematic

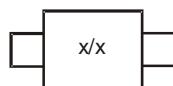
Ordering Information (Note 4)

Part Number	Package	Marking	Reel Size (inches)	Tape Width (mm)	Packing	
					Qty.	Carrier
DESDxxVxL1BAQ-7	SOD323	Electrical Characteristics Table	7	8	3,000	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



x/x = Product Type Marking Code (See Marking Code Below)

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

Characteristic	Symbol	Value	Unit	Conditions
Peak Pulse Power Dissipation	P_{PP}	114 to 230	W	8/20 μs , per Figure 3
ESD Protection – Contact Discharge	$V_{ESD_Contact}$	± 30	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 and Note 6)	P_D	250	mW
Thermal Resistance, Junction to Ambient (Note 6)	$R_{\theta JA}$	500	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

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

Part Number	Reverse Standoff Voltage	Breakdown Voltage V_{BR} @ I_T (Note 7)		Test Current	Max. Reverse Leakage @ V_{RWM}	Max. Clamping Voltage @ I_{PP} (Note 8)	Max. Peak Pulse Current I_{PP}	Typical Channel Input Capacitance $V_r = 0V, f = 100\text{MHz}$	Marking Code
		V_{RWM} (V)	Min (V)	Max (V)	I_T (mA)	I_R (μA)	V_c (V)	(A)	C_T (pF)
DESD3V3L1BAQ	3.3	3.75	6.5	5	0.5	10	23	56	N/N(Inverted)
DESD5V0L1BAQ	5.0	6.0	9.0	5	0.5	12	15	46	R/R(Inverted)
DESD12VL1BAQ	12	13.5	18.5	5	0.5	22	5	19	S/S(Inverted)
DESD15VL1BAQ	15	16.0	22.5	5	0.5	25	5	16	T/T(Inverted)
DESD24VL1BAQ	24	25.0	31.5	5	0.5	38	3	11	U/U(Inverted)

Notes:

5. Non-repetitive current pulse as shown in Figure 2 and derated above $T_A = +25^\circ\text{C}$ as per Figure 1.
6. Device mounted on FR-4 PCB pad layout (2oz copper) as shown on Diodes Incorporated, which can be found on our website at <http://www.diodes.com/package-outlines.html>.
7. V_{BR} measured at pulse test current I_T with $t_p \leq 5.0\text{ms}$ at $T_A = +25^\circ\text{C}$.
8. Clamping voltage value is based on an 8x20 μs peak pulse current (I_{PP}) waveform.

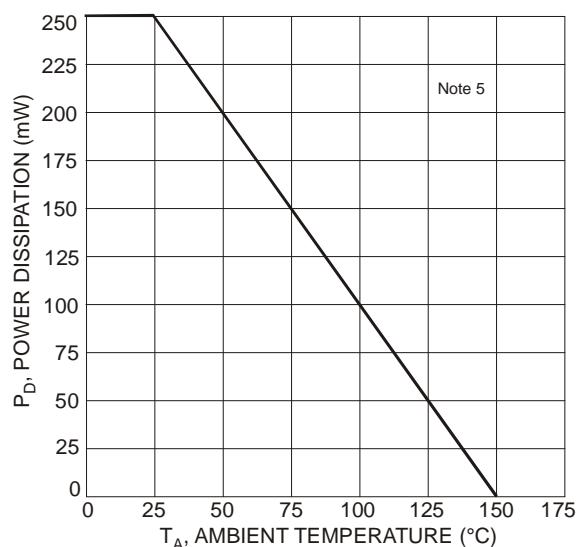


Figure 1 Power Derating Curve

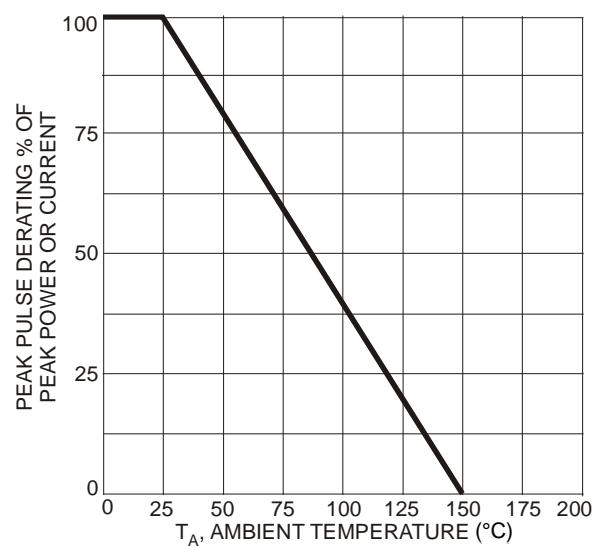


Figure 2 Pulse Derating Curve

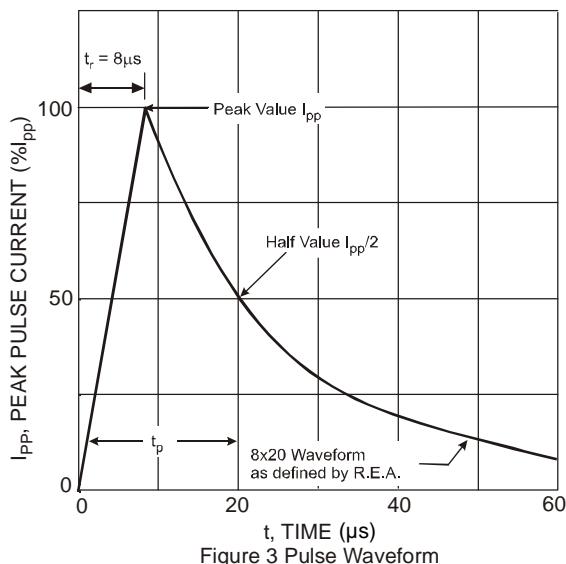


Figure 3 Pulse Waveform

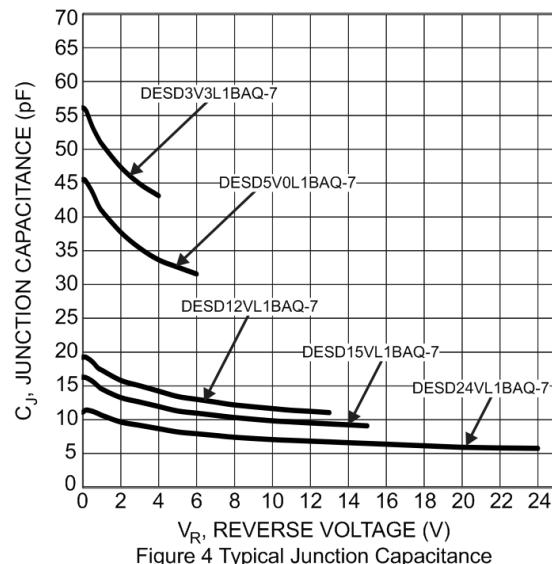


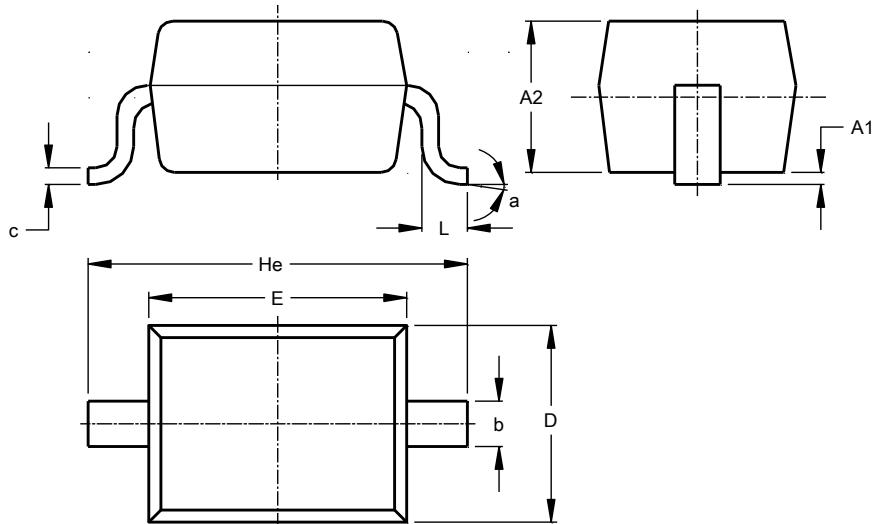
Figure 4 Typical Junction Capacitance

Note: 5. Non-repetitive current pulse as shown in Figure 2 and derated above T_A = +25°C as per Figure 1.

Package Outline Dimensions

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

SOD323



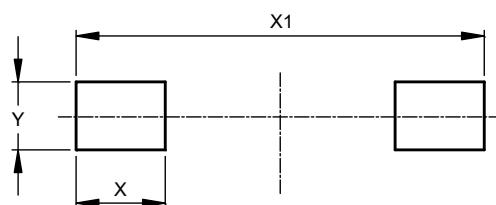
SOD323			
Dim	Min	Max	Typ
A1	--	0.10	0.05
A2	1.00	1.10	1.05
b	0.25	0.35	0.30
c	0.10	0.15	0.11
D	1.20	1.40	1.30
E	1.60	1.80	1.70
He	2.30	2.70	2.50
L	0.20	0.40	0.30
a	0°	8°	--

All Dimensions in mm

Suggested Pad Layout

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

SOD323



Dimensions	Value (in mm)
X	0.590
X1	2.700
Y	0.450

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