

## Product Summary

<b>V<sub>SB</sub> Min</b>	<b>I<sub>PP</sub> Max</b>	<b>C<sub>T</sub> Typ</b>
2.8V	5A	11pF

## Description

Designed to replace multilayer varistors (MLVs) in portable applications where low operating voltage is vital, DIODES™ D3V3L1B2T offers superior electrical characteristics such as lower clamping voltage and no device degradation when compared to MLVs. D3V3L1B2T is designed to protect sensitive semiconductor components from damage or upset due to electrostatic discharge (ESD), lightning, electrical fast transients (EFT), and cable discharge events (CDE).

## Applications

- Cellular handsets & accessories
- Notebooks & handhelds
- Portable instrumentation
- Digital cameras
- Peripherals
- MP3 players

## Features

- Provides ESD Protection per IEC 61000-4-2 Standard :  
Air ±26kV, Contact ±26kV
- 1 Channel of ESD Protection
- Protects One Power or I/O Line
- Max. Peak Pulse Power: P<sub>PP</sub> = 90W at t<sub>p</sub> = 8/20μs
- Low Clamping Voltage
- **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/>**

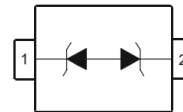
## Mechanical Data

- Package: SOD523
- 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 (Lead-Free Plating). Solderable per MIL-STD-202, Method 208 @3
- Weight: 0.004 grams (Approximate)

SOD523



Top View



Device Schematic

## Ordering Information (Note 4)

Part Number	Package	Marking	Reel Size (inches)	Tape Width (mm)	Packing	
					Qty.	Carrier
D3V3L1B2T-7	SOD523	V / Λ	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



V / Λ = Product Type Marking Code

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

Characteristic	Symbol	Value	Unit	Conditions
Peak Pulse Power Dissipation	P <sub>PP</sub>	90	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>	±26	kV	Standard IEC 61000-4-2
ESD Protection – Air Discharge	V <sub>ESD_Air</sub>	±26	kV	Standard IEC 61000-4-2

**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>	449.21	°C/W
Operating Temperature Range	T <sub>J</sub>	-55 to +125	°C
Storage Temperature Range	T <sub>STG</sub>	-55 to +150	°C
Soldering Temperature, t <sub>Max</sub> = 10s	T <sub>L</sub>	+260	°C

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Conditions
Reverse Working Voltage	V <sub>RWM</sub>	—	—	3.3	V	—
Reverse Current	I <sub>R</sub>	—	0.05	0.5	μA	V <sub>R</sub> = V <sub>RWM</sub> = 3.3V
Punch Through Voltage	V <sub>PT</sub>	3.5	—	—	V	I <sub>R</sub> = 2μA
Snap-Back Voltage	V <sub>SB</sub>	2.8	—	—		I <sub>R</sub> = 50mA
Reverse Clamping Voltage	V <sub>CL</sub>	—	6.0	8.0	V	I <sub>PP</sub> = 1A, t <sub>p</sub> = 8/20μs
		—	8.5	18		I <sub>PP</sub> = 5A, t <sub>p</sub> = 8/20μs
Capacitance	C <sub>T</sub>	—	11	15	pF	V <sub>R</sub> = 0V, f = 1MHz

Note: 5. Device mounted on FR-4 PCB pad layout (2oz copper) as shown in Diodes Incorporated's package outline PDFs, which can be found on our website at <http://www.diodes.com/package-outlines.html>.

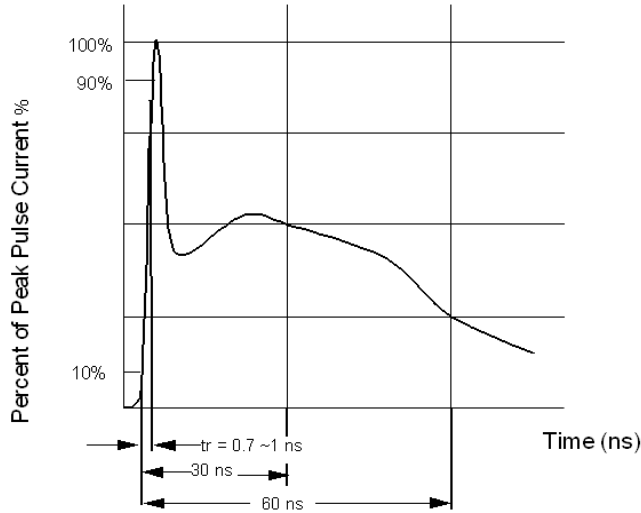


Figure 1. ESD Pulse Waveform According to IEC 61000-4-2

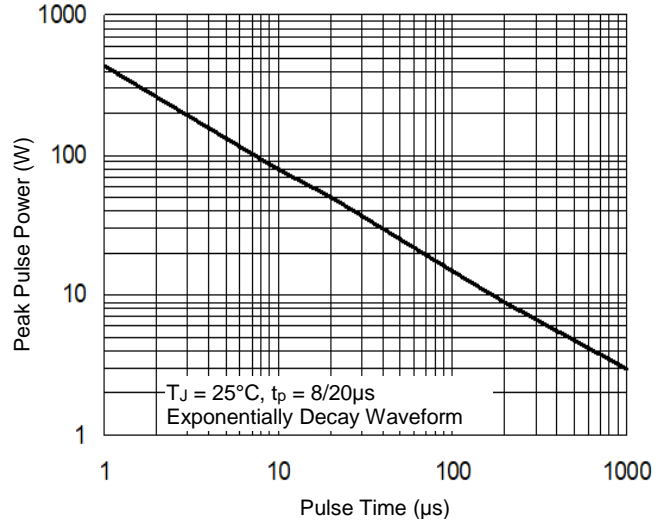


Figure 2. Power Dissipation Versus Pulse Time

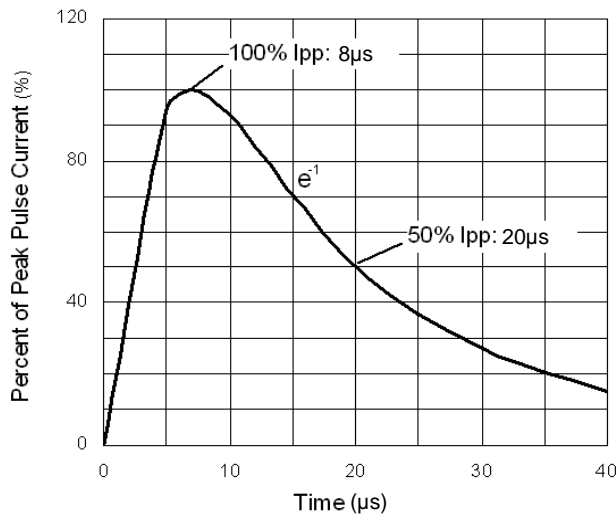


Figure 3. Typical 8 x 20μs Pulse Waveform

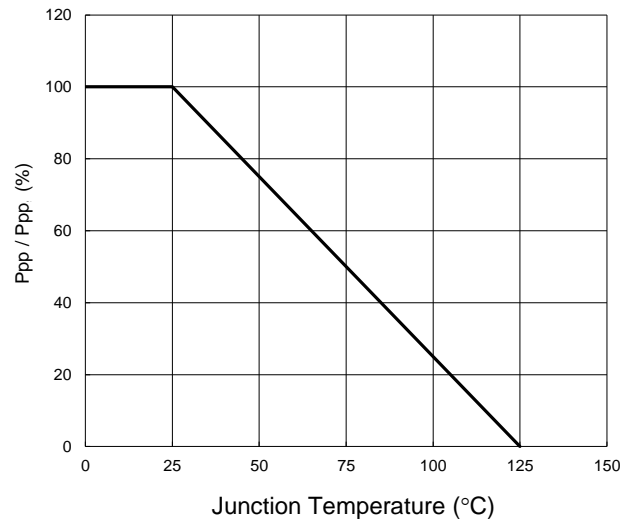


Figure 4. Peak Pulse Power Versus  $T_J$

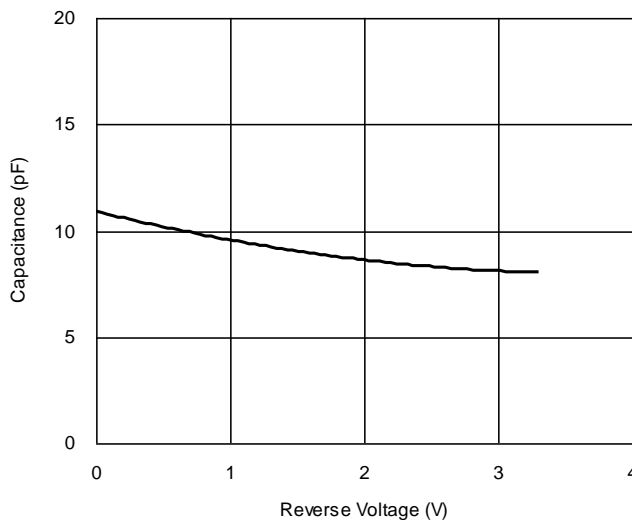


Figure 5. Typical Junction Capacitance

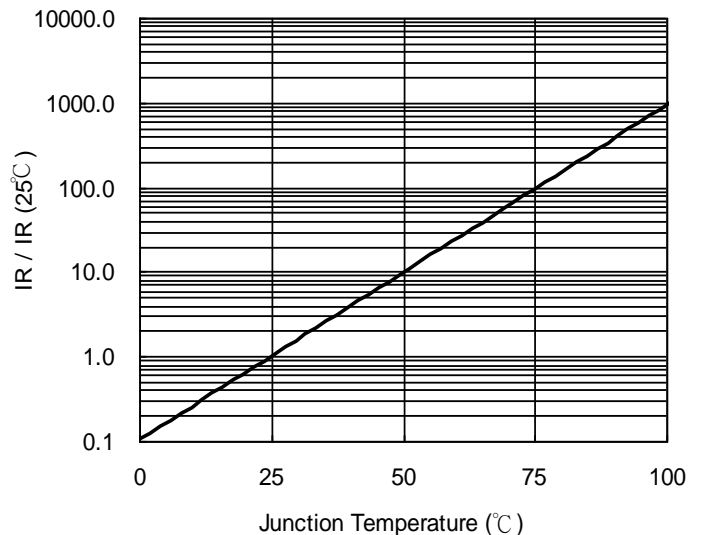
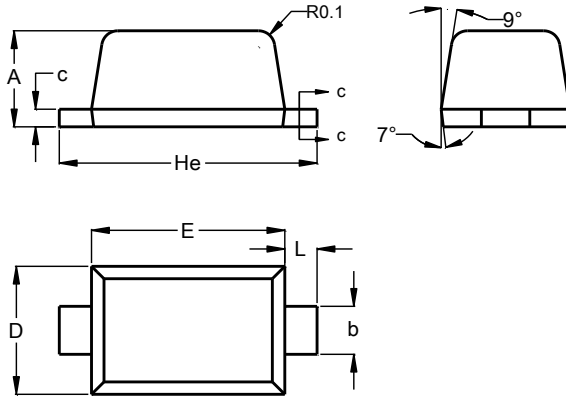


Figure 6. Reverse Leakage Current Versus  $T_J$

**Package Outline Dimensions**

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

**SOD523**

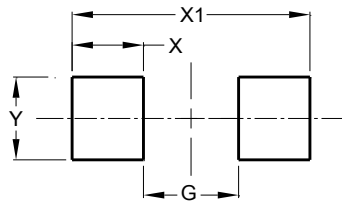


SOD523		
Dim	Min	Max
A	0.55	0.65
b	0.26	0.34
c	0.11	0.17
D	0.75	0.85
E	1.15	1.25
He	1.55	1.65
L	0.10	0.30
All Dimensions in mm		

**Suggested Pad Layout**

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

**SOD523**



Dimensions	Value (in mm)
G	0.80
X	0.60
X1	2.00
Y	0.70

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