

**LOW CAPACITANCE BIDIRECTIONAL TVS DIODE**
**Features**

- 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
- 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)**

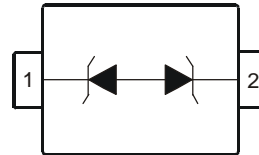
**Mechanical Data**

- Case: SOD523
- Case 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
- Weight: 0.001 grams (approximate)

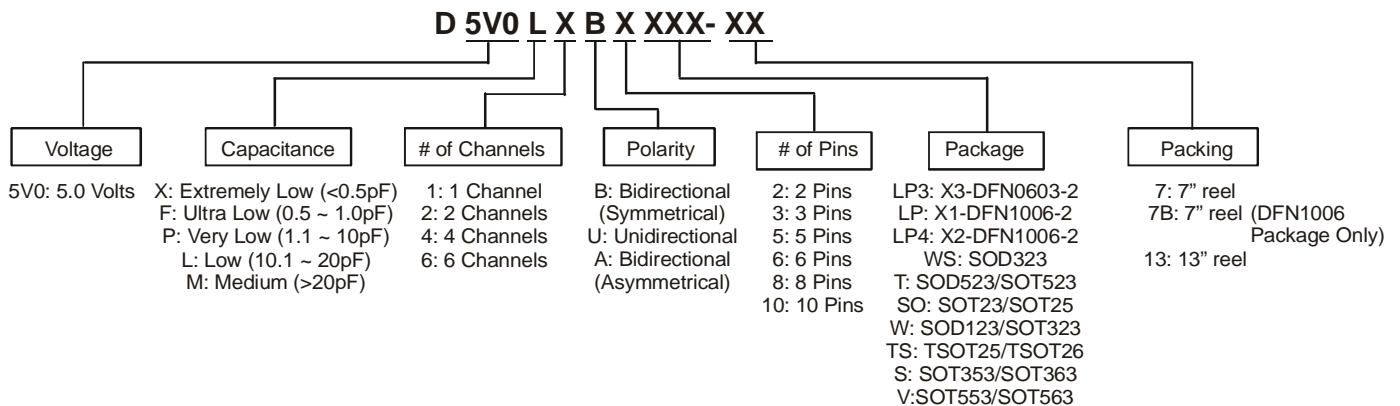
SOD523



Top View

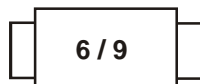


Device Schematic

**Ordering Information (Note 4)**


Part Number	Case	Packaging
D5V0L1B2T-7 (Note 4)	SOD523	3000/Tape & Reel

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
  2. See <http://www.diodes.com> 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 <http://www.diodes.com>.
  5. Dispensed every other cavity of the carrier tape.

**Marking Information**


6 / 9 = Product Type Marking Code

**Maximum Ratings** @ $T_A = 25^\circ\text{C}$  unless otherwise specified

Characteristic	Symbol	Value	Unit	Conditions
Peak Pulse Power Dissipation	$P_{PP}$	84	W	8/20 $\mu\text{s}$ , per Fig. 2
Peak Pulse Current	$I_{PP}$	6	A	8/20 $\mu\text{s}$ , per Fig. 2
ESD Protection – Contact Discharge	$V_{ESD\_Contact}$	$\pm 30$	kV	IEC 61000-4-2 Standard
ESD Protection – Air Discharge	$V_{ESD\_Air}$	$\pm 30$	kV	IEC 61000-4-2 Standard

**Thermal Characteristics**

Characteristic	Symbol	Value	Unit
Package Power Dissipation (Note 6)	$P_D$	150	mW
Thermal Resistance, Junction to Ambient (Note 6)	$R_{\theta JA}$	833	$^\circ\text{C/W}$
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	$V_{RWM}$	-	-	5	V	-
Channel Leakage Current (Note 7)	$I_{RM}$	-	10	100	nA	$V_{RWM} = 5\text{V}$
Clamping Voltage, Positive Transients	$V_{CL}$	-	7.0	9.0	V	$I_{PP} = 1\text{A}, t_p = 8/20\mu\text{s}$
		-	8.7	10.7		$I_{PP} = 3\text{A}, t_p = 8/20\mu\text{s}$
		-	10.5	12.0		$I_{PP} = 5\text{A}, t_p = 8/20\mu\text{s}$
		-	11.5	14.0		$I_{PP} = 6\text{A}, t_p = 8/20\mu\text{s}$
Breakdown Voltage	$V_{BR}$	6	7	8	V	$I_R = 1\text{mA}$
Differential Resistance	$R_{DIF}$	-	0.2	-	$\Omega$	$I_R = 1\text{A}, t_p = 8/20\mu\text{s}$
Channel Input Capacitance	$C_{IN}$	-	15	20	pF	$V_R = 0\text{V}, f = 1\text{MHz}$

- Notes:
- 6. Device mounted on FR-4 PCB pad layout (2oz copper) as shown on Diodes, Inc. suggested pad layout AP02001, which can be found on our website at <http://www.diodes.com>.
  - 7. Short duration pulse test used to minimize self-heating effect.

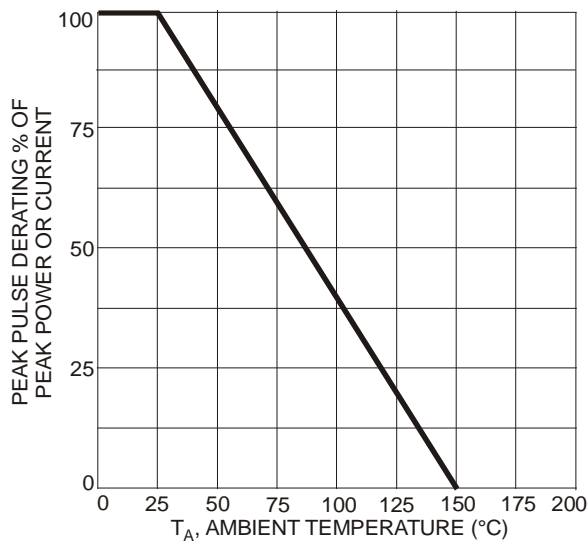


Fig. 1 Power Dissipation vs. Ambient Temperature

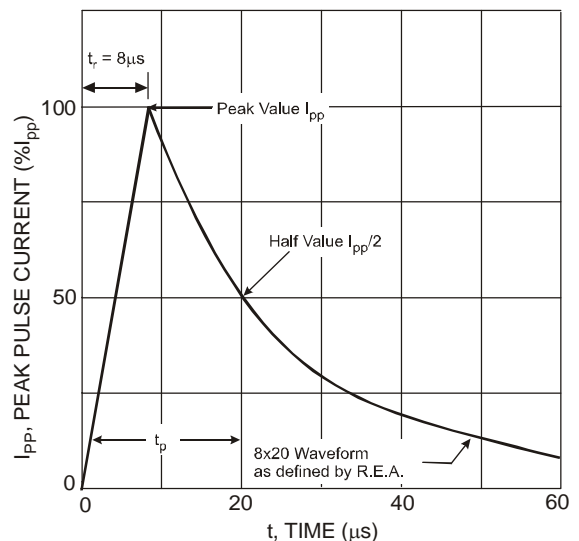


Fig. 2 Pulse Waveform

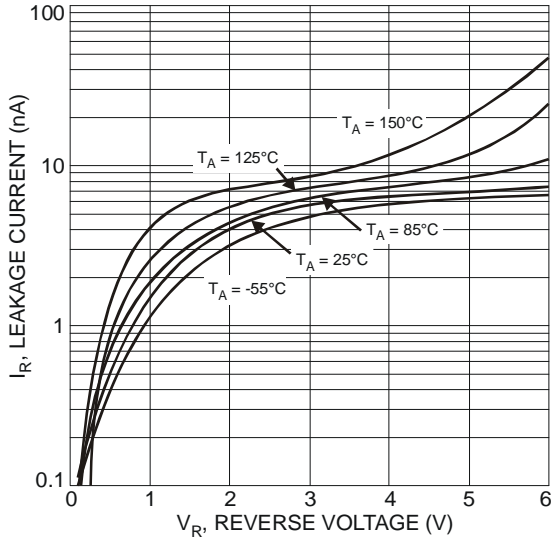


Fig. 3 Typical Reverse Characteristics

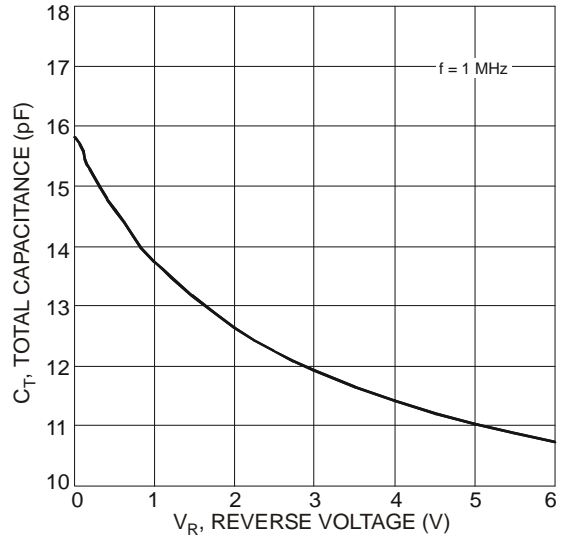


Fig. 4 Typical Total Capacitance vs. Reverse Voltage

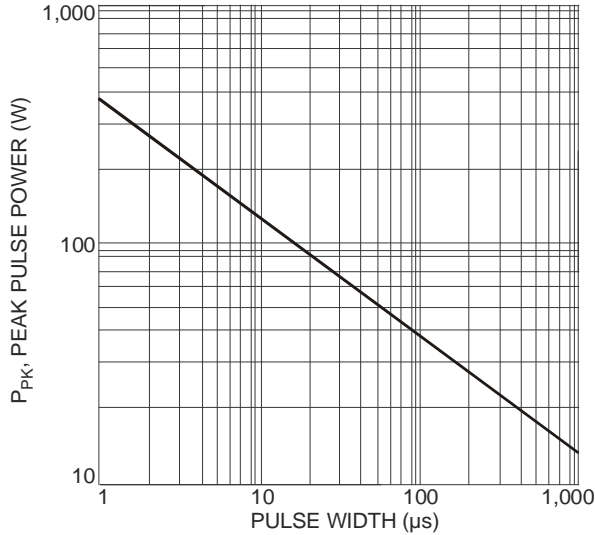
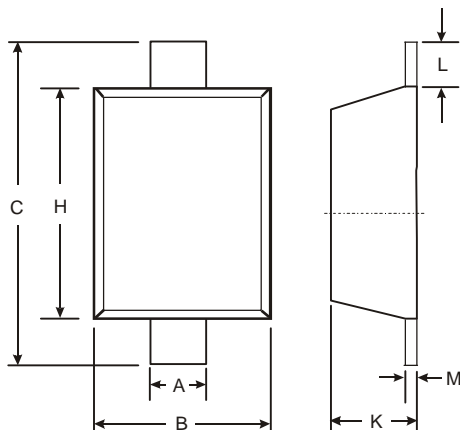


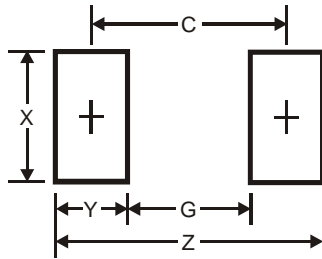
Fig. 5 Pulse Rating Curve vs. Pulse Width  
Power is defined as  $P_{PK} = V_C \times I_{PP}$

**Package Outline Dimensions**



SOD523		
Dim	Min	Max
A	0.25	0.35
B	0.70	0.90
C	1.50	1.70
H	1.10	1.30
K	0.55	0.65
L	0.10	0.30
M	0.10	0.12
All Dimensions in mm		

## Suggested Pad Layout



Dimensions	Value (in mm)
Z	2.3
G	1.1
X	0.8
Y	0.6
C	1.7

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