

## 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)**

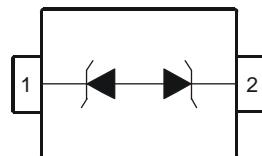
## Mechanical Data

- 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 (e3)
- Weight: 0.001 grams (Approximate)

SOD523



Top View



Device Schematic

## Ordering Information (Note 4)

### D 5V0 L X B X XXX- XX

Voltage	Capacitance	# of Channels	Polarity	# of Pins	Package	Packing
5V0: 5.0 Volts	X: Extremely Low (<0.5pF) F: Ultra Low (0.5 ~ 1.0pF) P: Very Low (1.1 ~ 10pF) L: Low (10.1 ~ 20pF) M: Medium (>20pF)	1: 1 Channel 2: 2 Channels 4: 4 Channels 6: 6 Channels	B: Bidirectional (Symmetrical) U: Unidirectional A: Bidirectional (Asymmetrical)	2: 2 Pins 3: 3 Pins 5: 5 Pins 6: 6 Pins 8: 8 Pins 10: 10 Pins	LP3: X3-DFN0603-2 LP: X1-DFN1006-2 LP4: X2-DFN1006-2 WS: SOD323 T: SOD523/SOT523 SO: SOT23/SOT25 W: SOD123/SOT323 TS: TSOT25/TSOT26 S: SOT353/SOT363 V:SOT553/SOT563	7: 7" reel 7B: 7" reel (DFN1006 Package Only) 13: 13" reel

Part Number	Case	Packaging
D5V0L1B2T-7 (Note 5)	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/quality/lead\\_free.html](http://www.diodes.com/quality/lead_free.html) 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/products/packages.html>
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 Figure 2
Peak Pulse Current	$I_{PP}$	6	A	8/20 $\mu\text{s}$ , per Figure 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)	$P_D$	275	mW
Thermal Resistance, Junction to Ambient (Note 6)	$R_{0JA}$	454	°C/W
Operating and Storage Temperature Range	$T_J, T_{STG}$	-65 to +150	°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 8.7 10.5 11.5	9.0 10.7 12.0 14.0	V	$I_{PP} = 1\text{A}$ , $t_p = 8/20\mu\text{s}$ $I_{PP} = 3\text{A}$ , $t_p = 8/20\mu\text{s}$ $I_{PP} = 5\text{A}$ , $t_p = 8/20\mu\text{s}$ $I_{PP} = 6\text{A}$ , $t_p = 8/20\mu\text{s}$
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.

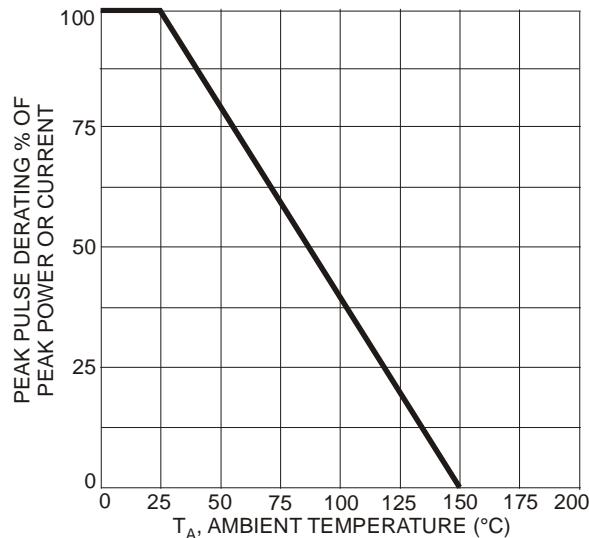


Fig. 1 Power Dissipation vs. Ambient Temperature

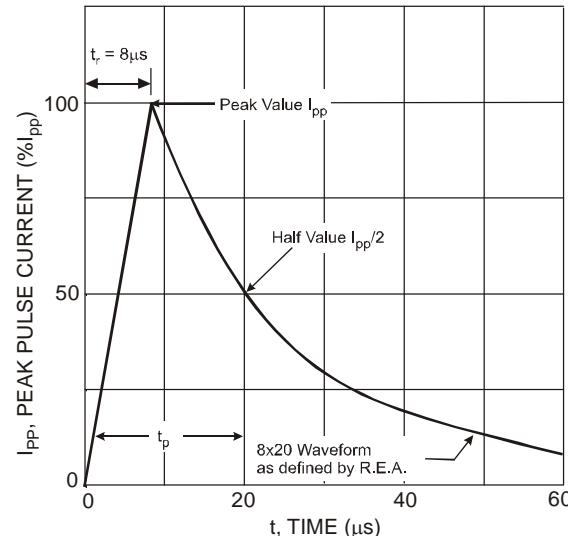


Fig. 2 Pulse Waveform

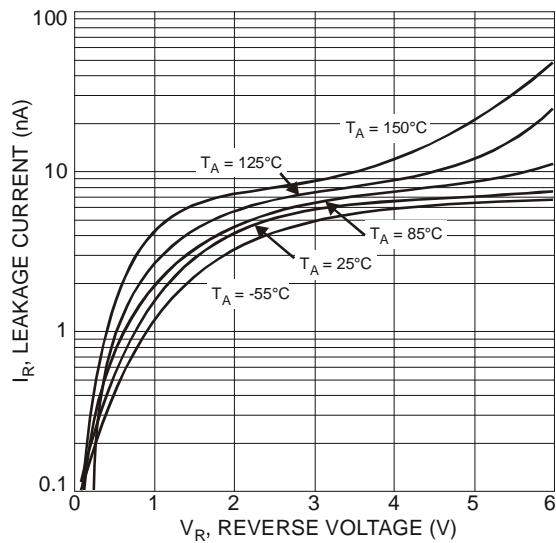


Fig. 3 Typical Reverse Characteristics

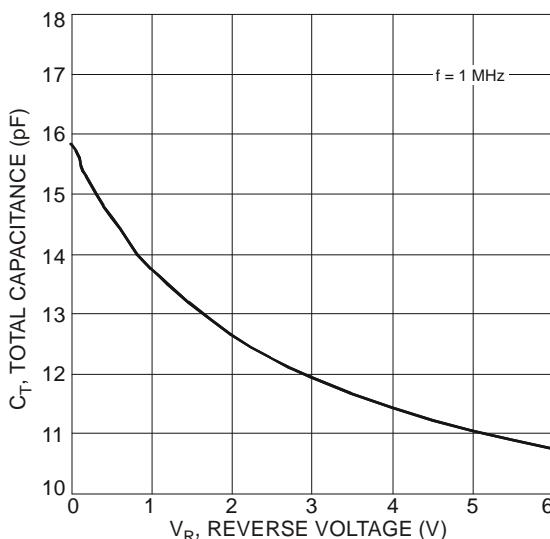


Fig. 4 Typical Total Capacitance vs. Reverse Voltage

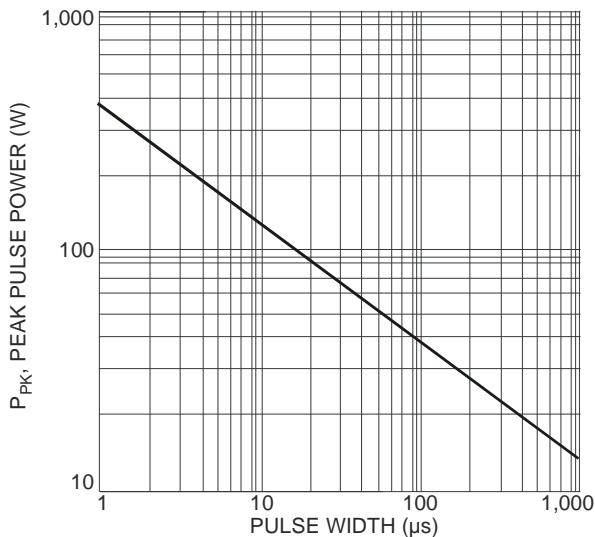
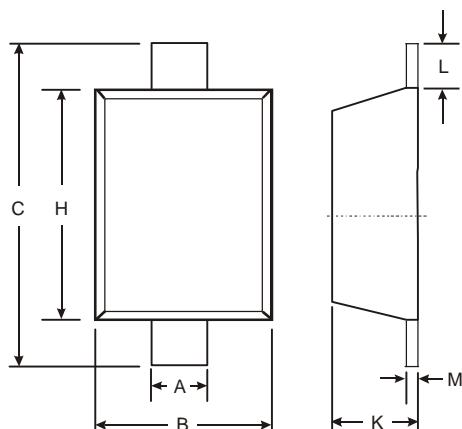


Fig. 5 Pulse Rating Curve vs. Pulse Width  
Power is defined as  $P_{PK} = V_C \times I_{PP}$

## Package Outline Dimensions

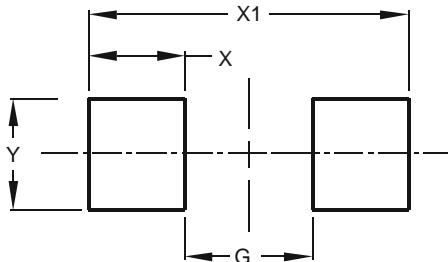
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.



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

Please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for the latest version.



Dimensions	Value (in mm)
<b>G</b>	0.80
<b>X</b>	0.60
<b>X1</b>	2.00
<b>Y</b>	0.70

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