

**LOW CAPACITANCE UNIDIRECTIONAL TVS DIODE**
**Product Summary**

V <sub>BR</sub> min	I <sub>pp</sub> max	C <sub>in</sub> typ
6.0V	1.5A	0.5pF

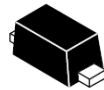
**Description**

This new generation TVS is designed to protect sensitive electronics from the damage due to ESD. The combination of small size and high ESD surge capability makes it ideal for use in portable applications such as cellular phones, digital cameras and MP3 players.

**Applications**

- Cellular Handsets
- Portable Electronics
- Computers and Peripheral

SOD923



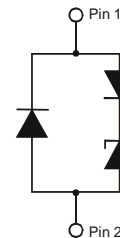
Top View

**Features**

- Provides ESD Protection per IEC 61000-4-2 Standard:  
Air ±15kV, Contact ±15kV
- 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)**

**Mechanical Data**

- Case: SOD923
- 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)



Device Schematic

**Ordering Information (Note 4)**

Product	Compliance	Marking	Reel Size (inches)	Tape Width (mm)	Quantity per Reel
D5V0F1U2S9-7	Standard	TL	7	8	10,000/Tape & Reel

- Notes:
- No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
  - 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.
  - Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
  - For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

**Marking Information**


TL = Product Type Marking Code  
Line Denotes Pin 1 or Cathode Side

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

Characteristic	Symbol	Value	Unit	Conditions
Peak Pulse Current	I <sub>pp</sub>	1.5	A	8/20μs, Per Figure 2
ESD Protection – Contact Discharge	V <sub>ESD_Contact</sub>	±15	kV	Standard IEC 61000-4-2
ESD Protection – Air Discharge	V <sub>ESD_Air</sub>	±15	kV	Standard IEC 61000-4-2

## 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 Working Voltage	$V_{RWM}$	—	—	5.5	V	—
Reverse Current (Note 6)	$I_R$	—	—	100	nA	$V_R = 5.0\text{V}$
Reverse Breakdown Voltage	$V_{BR}$	6.0	—	—	V	$I_R = 1\text{mA}$
Reverse Clamping Voltage, Positive Transients (Note 7)	$V_{CL}$	—	10	12	V	$I_{PP} = 1\text{A}, t_p = 8/20\mu\text{s}$
Dynamic Resistance	$R_{DYN}$	—	0.9	—	$\Omega$	$I_R = 1\text{A}, t_p = 8/20\mu\text{s}$
Capacitance	$C_T$	—	0.4	0.65	pF	$V_R = 2.5\text{V}, f = 1\text{MHz}$
		—	0.5	—	pF	$V_R = 0\text{V}, f = 1\text{MHz}$

- Notes:
5. 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>.
  6. Short duration pulse test used to minimize self-heating effect.
  7. Clamping voltage value is based on an 8x20 $\mu\text{s}$  peak pulse current ( $I_{PP}$ ) waveform.
  8. Measured from any I/O to GND.
  9. For information on the impact of Diodes' USB 2.0 compatible ESD protectors on signal integrity including eye diagram plots, please refer to AN77 at the following URL: [http://www.diodes.com/destdtools/appnote\\_dnote.html](http://www.diodes.com/destdtools/appnote_dnote.html).

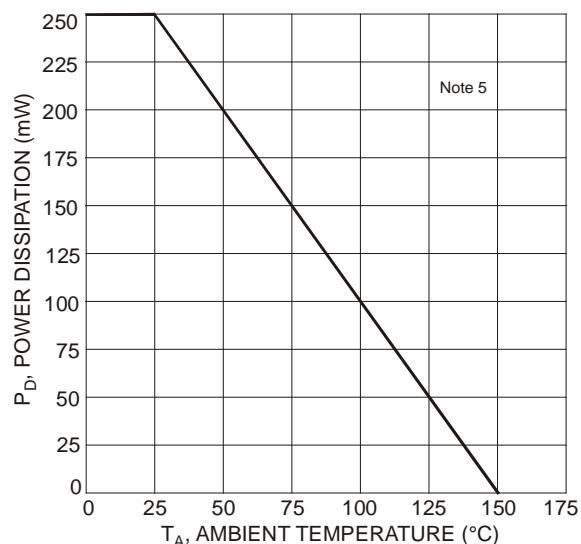


Figure 1 Power Derating Curve

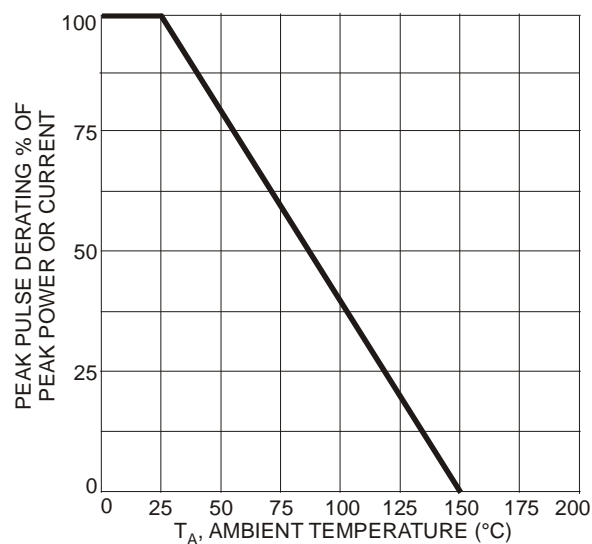


Figure 2 Pulse Derating Curve

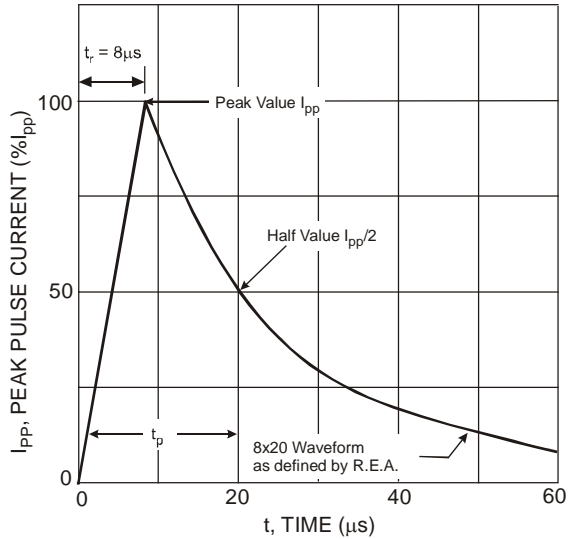


Figure 3 Pulse Waveform

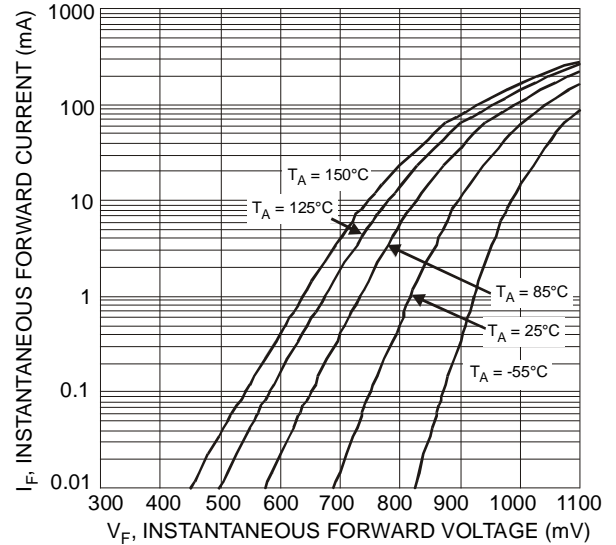


Figure 4 Typical Forward Characteristics

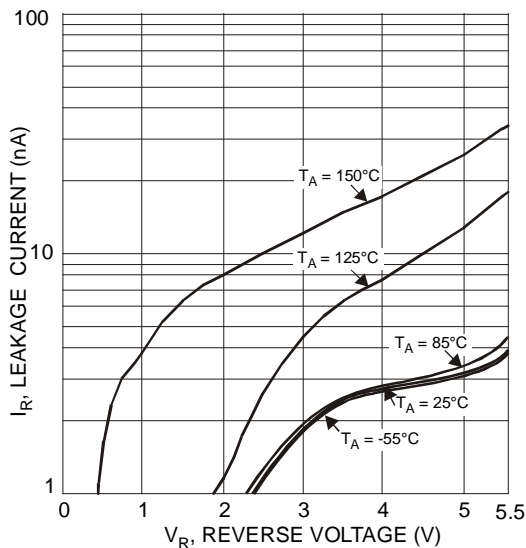


Figure 5 Typical Reverse Characteristics

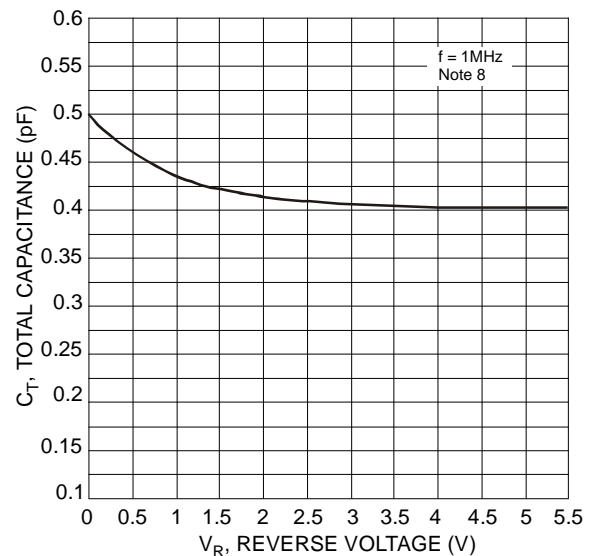
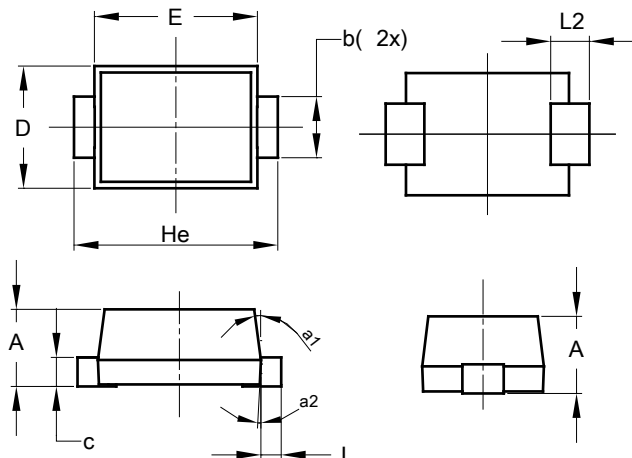


Figure 6 Total Capacitance vs. Reverse Voltage

## Package Outline Dimensions

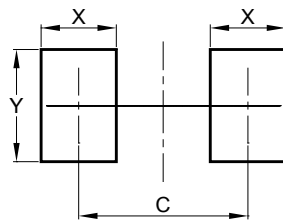
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for latest version.



SOD923 (0.3mm Lead Width)			
Dim	Min	Max	Typ
A	0.34	0.40	0.37
b	0.25	0.35	0.30
c	0.05	0.15	0.10
D	0.55	0.65	0.60
E	0.75	0.85	0.80
He	0.95	1.05	1.00
L	0.05	0.15	0.10
L2	0.190 REF		
a1	0°	8°	7°
a2	2°	4°	3°
All Dimensions in mm			

## Suggested Pad Layout

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



Dimensions	Value (in mm)
C	0.900
X	0.400
Y	0.600

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