LOW CAPACITANCE UNIDIRECTIONAL TVS DIODE

Product Summary

$V_{BR\ min}$	$I_{pp\ max}$	$C_{in\ typ}$
6.0V	1.5A	0.5pF

Features

- Provides ESD Protection per IEC 61000-4-2 Standard: Air ±15kV, Contact ±15kV
- One 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)**
- **Qualified to AEC-Q101 Standards for High Reliability**
- **PPAP Capable (Note 4)**

Description and Applications

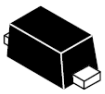
This new generation TVS is designed to protect sensitive electronics from the damage due to ESD. The combination of small size and high ESD surge capability makes it ideal for use in automotive applications such as

- USB Modules
- HDMI Ports
- LVDS

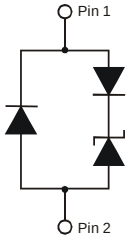
Mechanical Data

- 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)

SOD923



Top View



Device Schematic

Ordering Information (Note 5)

Product	Compliance	Marking	Reel Size (inches)	Tape Width (mm)	Quantity per Reel
D5V0F1U2S9Q-7	Automotive	TL	7	8	10,000/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. Automotive products are AEC-Q101 qualified and are PPAP capable. Refer to https://www.diodes.com/quality/.
5. 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_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit	Conditions
Peak Pulse Current	I_{PP}	1.5	A	8/20µs, Per Figure 2
ESD Protection – Contact Discharge	$V_{ESD\_Contact}$	±15	kV	Standard IEC 61000-4-2
ESD Protection – Air Discharge	V_{ESD_Air}	±15	kV	Standard IEC 61000-4-2

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Package Power Dissipation (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°C unless otherwise specified)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Conditions
Reverse Working Voltage	V_{RWM}	—	—	5.5	V	—
Reverse Current (Note 7)	I_R	—	—	100	nA	V_R = 5.0V
Reverse Breakdown Voltage	V_{BR}	6.0	—	—	V	I_R = 1mA
Reverse Clamping Voltage, Positive Transients (Note 8)	V_{CL}	—	10	12	V	I_{PP} = 1A, t_p = 8/20µs
Dynamic Resistance	R_{DYN}	—	0.9	—	Ω	I_R = 1A, t_p = 8/20µs
Capacitance	C_T	—	0.4	0.65	pF	V_R = 2.5V, f = 1MHz
		—	0.5	—	pF	V_R = 0V, f = 1MHz

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.
8. Clamping voltage value is based on an 8 × 20µs peak pulse current (I_{pp}) waveform.
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/destools/appnote_dnote.html.

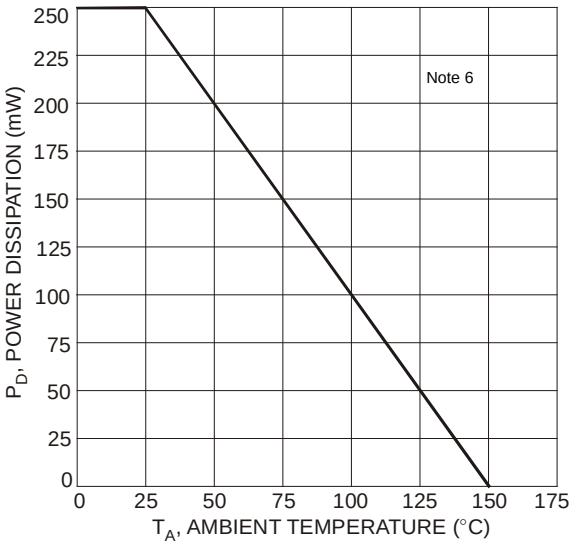


Figure 1 Power Derating Curve

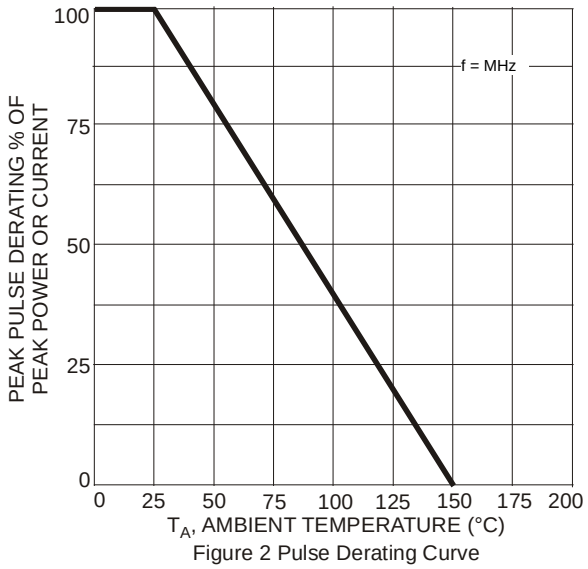


Figure 2 Pulse Derating Curve

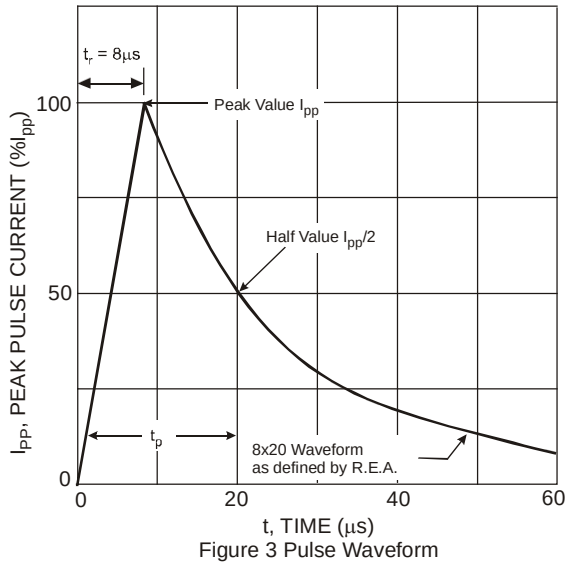


Figure 3 Pulse Waveform

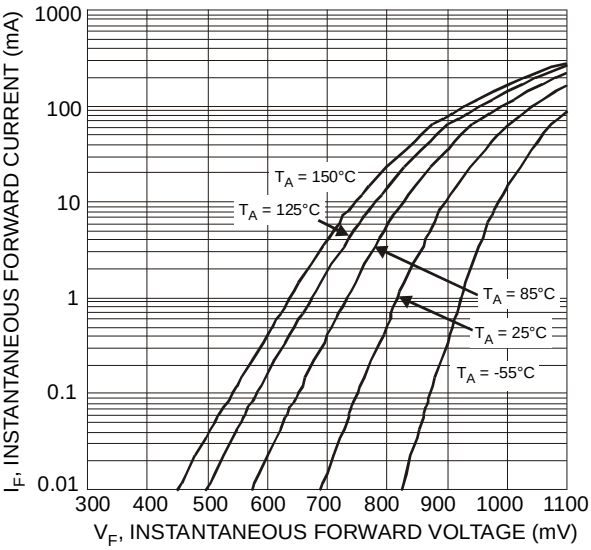


Figure 4 Typical Forward Characteristics

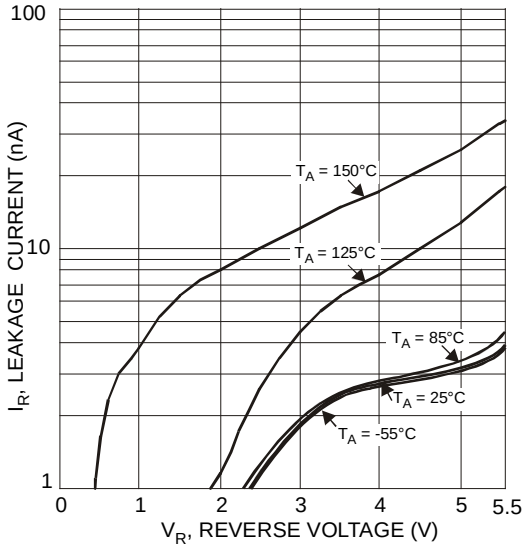


Figure 5 Typical Reverse Characteristics

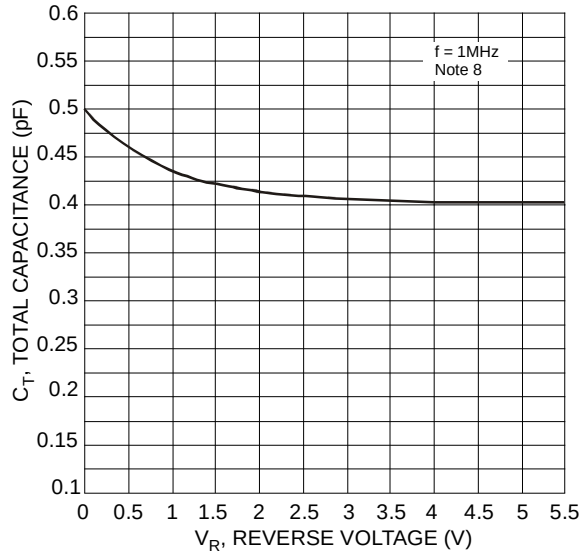
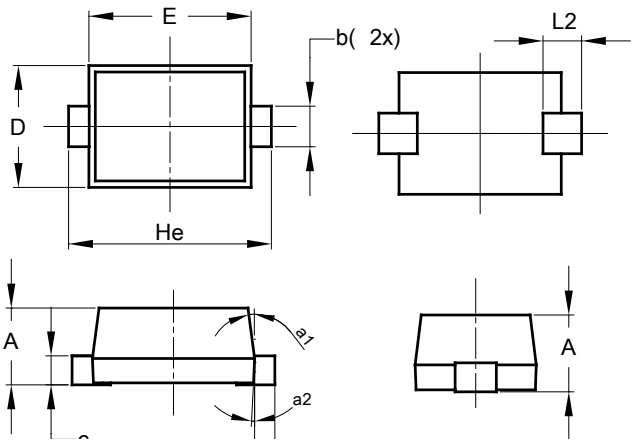


Figure 6 Total Capacitance vs. Reverse Voltage

Package Outline Dimensions

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

SOD923 (0.3mm Lead Width)



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

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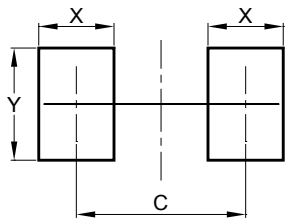
SOD923 (0.3mm Lead Width)



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

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