

Product Summary

VBR min	Ipp max	Cin typ
5.0V	12A	70pF

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.

Applications

- Cellular handsets
- Portable electronics
- Computers and peripherals
- Automotive

Features

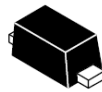
- Provides ESD Protection per IEC 61000-4-2 Standard: Air $\pm 30\text{kV}$, Contact $\pm 30\text{kV}$
- 1 Channel of ESD Protection
- Low Channel Input Capacitance
- Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- Halogen and Antimony Free. "Green" Device (Note 3)**
- The D3V3M1U2S9Q is suitable for automotive applications requiring specific change control; this part is AEC-Q101 qualified, PPAP capable, and manufactured in IATF 16949 certified facilities.**

<https://www.diodes.com/quality/product-definitions/>

Mechanical Data

- Package: SOD923
- 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: 0.001 grams (Approximate)

SOD923 (0.3mm Lead Width)



Top View



Device Schematic

Ordering Information (Note 4)

Orderable Part Number	Package	Marking	Reel Size (inches)	Tape Width (mm)	Packing	
					Qty.	Carrier
D3V3M1U2S9Q-7	SOD923 (0.3mm Lead Width)	TN	7	8	10,000	Tape & Reel

- Notes:
- No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
 - 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.
 - 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 <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

Marking Information



TN = 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 Power Dissipation	P _{PP}	110	W	8/20μs, Figure 3
Peak Pulse Current	I _{PP}	12	A	8/20μs, Figure 3
ESD Protection – Contact Discharge	V _{ESD_Contact}	±30	kV	IEC 61000-4-2 Standard
ESD Protection – Air Discharge	V _{ESD_Air}	±30	kV	IEC 61000-4-2 Standard
ESD Protection – 1000 Contact Discharges (Open Alliance Spec)	V _{ESD_CONTACT1k}	±30	kV	IEC 61000-4-2 Standard
ESD Protection – Contact Discharge (ISO Spec)	V _{ESD_CONTACT2}	±30	kV	ISO 10605, 150pF, 330Ω
ESD Protection – Air Discharge (ISO Spec)	V _{ESD_AIR2}	±30	kV	ISO 10605, 150pF, 330Ω
ESD Protection – Contact Discharge (ISO Spec)	V _{ESD_CONTACT3}	±30	kV	ISO 10605, 330pF, 330Ω
ESD Protection – Air Discharge (ISO Spec)	V _{ESD_AIR3}	±30	kV	ISO 10605, 330pF, 330Ω

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Package Power Dissipation (Note 5)	P _D	250	mW
Thermal Resistance, Junction to Ambient (Note 5)	R _{θJA}	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 Standoff Voltage	V _{RWM}	—	—	3.3	V	—
Channel Leakage Current (Note 6)	I _{RM}	—	—	2.0	μA	V _{RWM} = 3.3V
Clamping Voltage, IEC 61000-4-5	V _{CL}	—	—	8	V	I _{PP} = 1A, t _p = 8/20μs
		—	—	10		I _{PP} = 12A, t _p = 8/20μs
Breakdown Voltage	V _{BR}	5.0	—	—	V	I _R = 1mA
Channel Input Capacitance	C _T	—	70	80	pF	V _R = 0, f = 1MHz

Notes: 5. Device mounted on FR-4 PCB pad layout (2oz copper) as shown on Diodes Incorporated's suggested pad layout, which can be found on our website at <http://www.diodes.com/package-outlines.html>.
6. Short duration pulse test used to minimize self-heating effect.

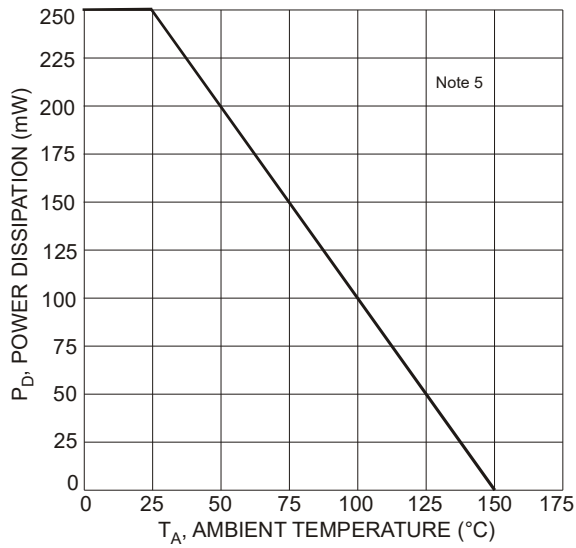


Figure 1 Power Derating Curve

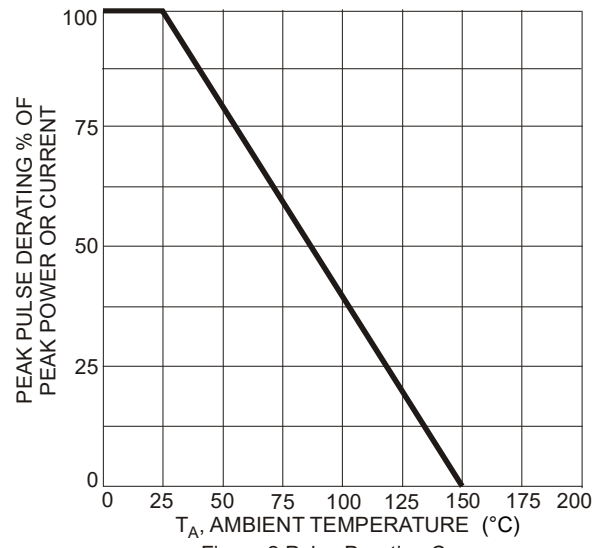


Figure 2 Pulse Derating Curve

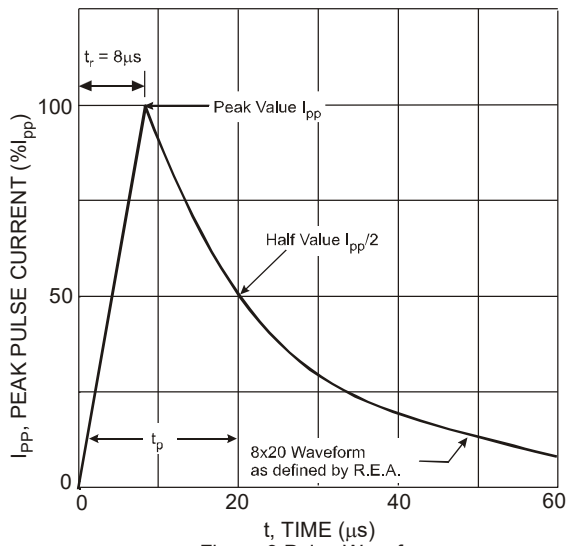


Figure 3 Pulse Waveform

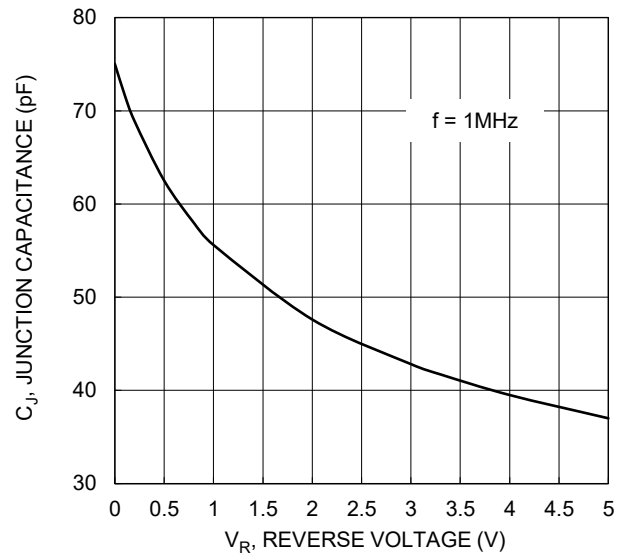
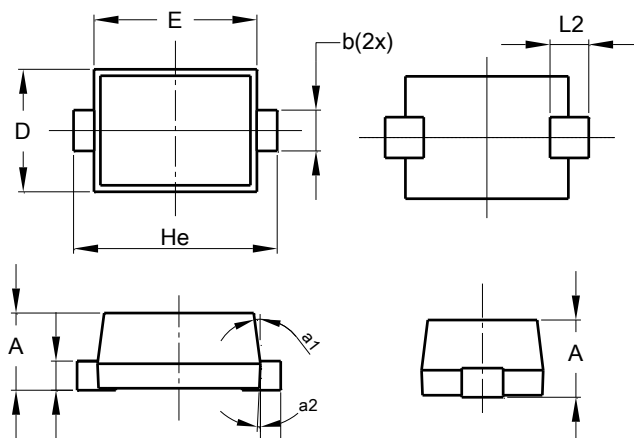


Figure 4 Typical Junction Capacitance

Package Outline Dimensions

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

SOD923 (0.3mm Lead Width)

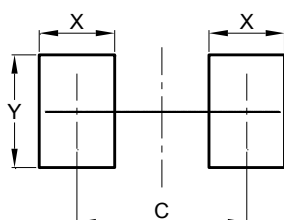


SOD923 (0.3mm Lead Width)			
Dim	Min	Max	Typ
A	0.34	0.40	0.37
b	0.25	0.35	0.30
c	0.05	0.15	0.10
D	0.55	0.65	0.60
E	0.75	0.85	0.80
He	0.95	1.05	1.00
L	0.05	0.15	0.10
L2	0.190 REF		
a1	0°	8°	7°
a2	2°	4°	3°
All Dimensions in mm			

Suggested Pad Layout

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

SOD923 (0.3mm Lead Width)



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

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