

### Product Summary

<b>V<sub>BR</sub> (min)</b>	<b>I<sub>PP</sub> (max)</b>	<b>C<sub>T</sub> (typ)</b>
25.4V & 17.1V	3A	13pF

### Features and Benefits

- Provides ESD Protection per IEC 61000-4-2 Standard: Air ±30kV, Contact ±30kV
- 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)**
- **Qualified to AEC-Q101 Standards for High Reliability**
- **PPAP Capable (Note 4)**

### Description and Applications

This DESD1LIN2WSQ is a next generation ESD and surge protection device packaged in a small footprint surface mount package. It is qualified to AECQ101, supported by a PPAP and is designed to protect one data line of the Local Information Network (LIN) in an automotive.

- LIN Bus protection

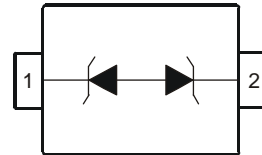
### Mechanical Data

- Case: SOD323
- 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 <sup>e3</sup>
- Weight: 0.005 grams (Approximate)

SOD323



Top View



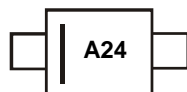
Device Schematic

### Ordering Information (Note 5)

Product	Compliance	Marking	Reel Size (inches)	Tape Width (mm)	Quantity per Reel
DESD1LIN2WSQ-7	Automotive	A24	7	8	3,000/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. Automotive products are AEC-Q101 qualified and are PPAP capable. Automotive, AEC-Q101 and standard products are electrically and thermally the same, except where specified. For more information, please refer to [http://www.diodes.com/quality/product\\_compliance\\_definitions/](http://www.diodes.com/quality/product_compliance_definitions/).
  5. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

### Marking Information



A24 = Product Type Marking Code

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

Characteristic	Symbol	Value	Unit	Conditions
Peak Pulse Power Dissipation	P <sub>PP</sub>	160	W	8/20μs, Per Figure 1
Peak Pulse Current	I <sub>PP</sub>	3.0	A	8/20μs, Per Figure 1
ESD Protection – Contact Discharge	V <sub>ESD_Contact</sub>	±30	kV	Standard IEC 61000-4-2
ESD Protection – Air Discharge	V <sub>ESD_Air</sub>	±30	kV	Standard IEC 61000-4-2

**Thermal Characteristics**

Characteristic	Symbol	Value	Unit
Package Power Dissipation (Note 6)	P <sub>D</sub>	250	mW
Thermal Resistance, Junction to Ambient (Note 6)	R <sub>θJA</sub>	500	°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-65 to +150	°C

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Conditions
Reverse Standoff Voltage, from Pin 1 to Pin 2	V <sub>RWM1</sub>	-	-	15	V	-
Reverse Standoff Voltage, from Pin 2 to Pin 1	V <sub>RWM2</sub>	-	-	24	V	-
Channel Leakage Current, from Pin 1 to Pin 2 (Note 7)	I <sub>RM1</sub>	-	1	50	nA	V <sub>RWM</sub> = 15V
Channel Leakage Current, from Pin 2 to Pin 1 (Note 7)	I <sub>RM2</sub>	-	1	50	nA	V <sub>RWM</sub> = 24V
Breakdown Voltage, from Pin 1 to Pin 2	V <sub>BR1</sub>	17.1	18.9	20.3	V	I <sub>R</sub> = 1mA
Breakdown Voltage, from Pin 1 to Pin 1	V <sub>BR2</sub>	25.4	27.8	30.3	V	I <sub>R</sub> = 1mA
Clamping Voltage, from Pin 1 to Pin 2	V <sub>CL1</sub>	-	-	25	V	I <sub>PP</sub> = 1A, tp = 8/20μS
		-	-	35	V	I <sub>PP</sub> = 5A, tp = 8/20μS
Clamping Voltage, from Pin 2 to Pin 1	V <sub>CL2</sub>	-	-	40	V	I <sub>PP</sub> = 1A, tp = 8/20μS
		-	-	50	V	I <sub>PP</sub> = 3A, tp = 8/20μS
Differential Resistance	R <sub>DIF</sub>	-	0.5	-	Ω	I <sub>R</sub> = 1A, tp = 8/20μS
Channel Input Capacitance	C <sub>T</sub>	-	13	17	pF	V <sub>R</sub> = 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.

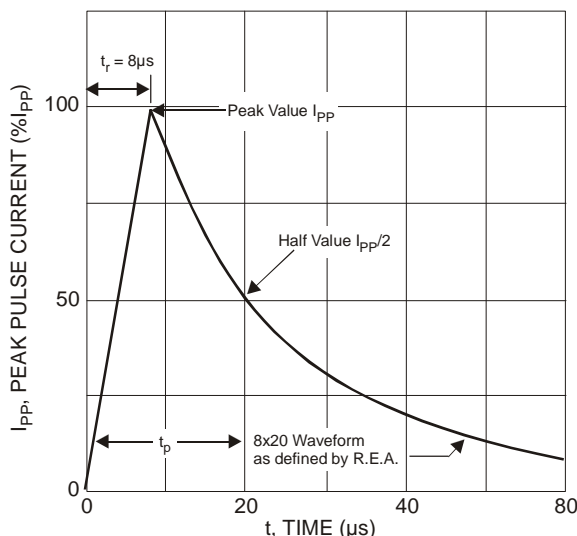


Figure 1 Pulse Waveform

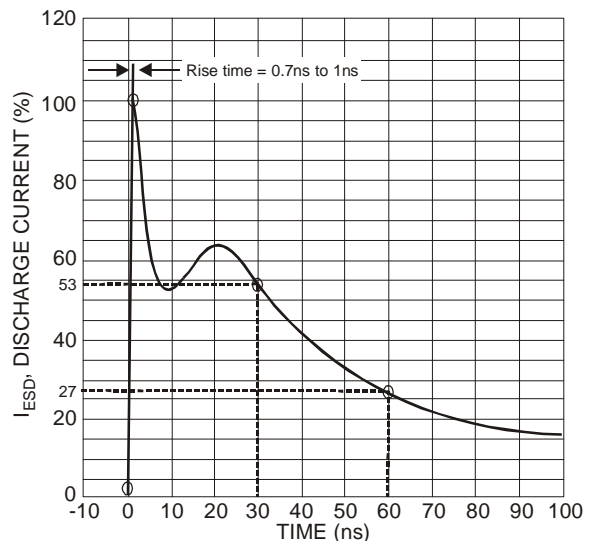


Figure 2 ESD Discharge Current Wave Form  
IEC 61000-4-2 (330Ω/150pF)

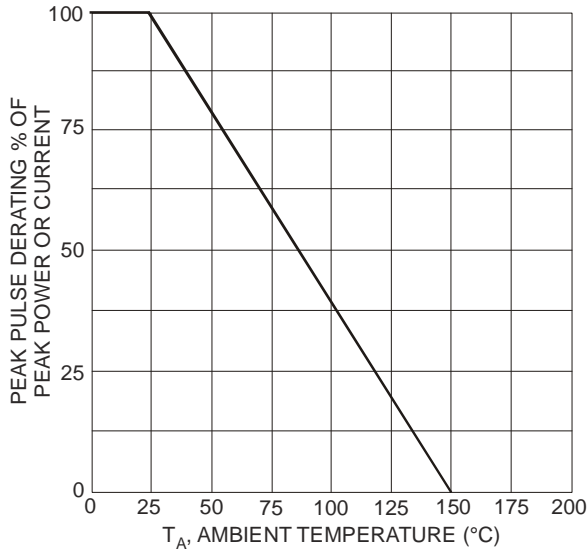


Figure 3 Power Dissipation vs. Ambient Temperature

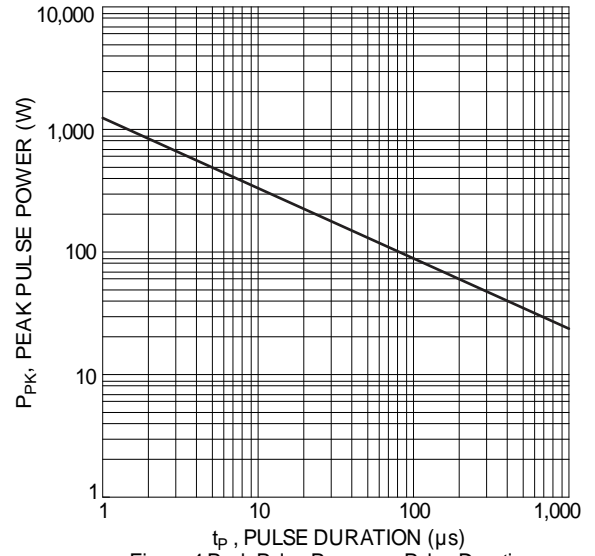


Figure 4 Peak Pulse Power vs. Pulse Duration

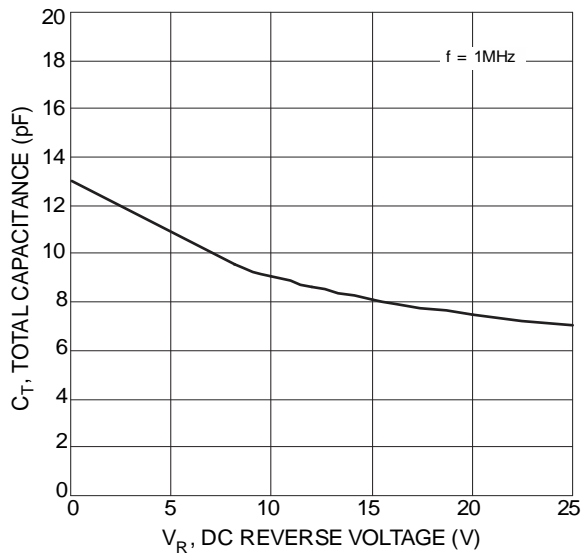
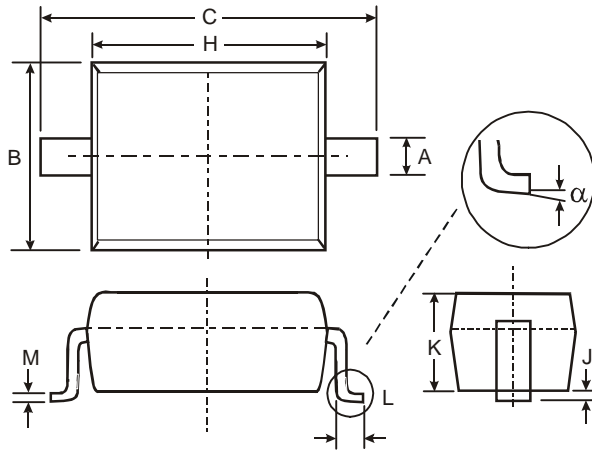


Figure 5 Total Capacitance vs. Reverse Voltage

**Package Outline Dimensions**

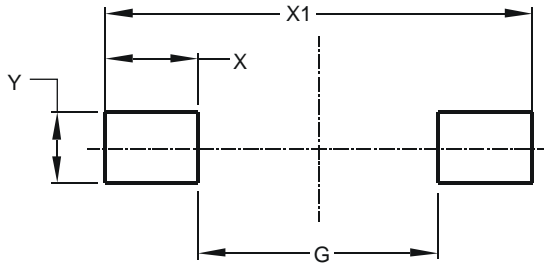
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.



SOD323		
Dim	Min	Max
A	0.25	0.35
B	1.20	1.40
C	2.30	2.70
H	1.60	1.80
J	0.00	0.10
K	1.0	1.1
L	0.20	0.40
M	0.10	0.15
α	0°	8°
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)
G	1.520
X	0.590
X1	2.700
Y	0.450

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