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Lead-free Green

DESD1LIN2WSQ

LIN-BUS BIDIRECTIONAL TVS DIODE

Product Summary

V_{BR} (Min)	I_{PP} (Max)	C_T (Typ)
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)**
- **The DESD1LIN2WSQ 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/

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 AEC-Q101, supported by a PPAP and is designed to protect one data line of the Local Information Network (LIN) in an automotive.

- LIN Bus Protection

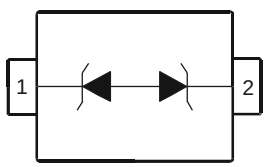
Mechanical Data

- 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 e3
- Weight: 0.005 grams (Approximate)

SOD323



Top View



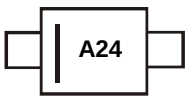
Device Schematic

Ordering Information (Note 4)

Part Number	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) & 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. For packaging details, go to our website at https://www.diodes.com/design/support/packaging/diodes-packaging/.

Marking Information



A24 = Product Type Marking Code

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Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit	Conditions
Peak Pulse Power Dissipation	P_{PP}	160	W	8/20µs, Per Figure 1
Peak Pulse Current	I_{PP}	3.0	A	8/20µs, Per Figure 1
ESD Protection – Contact Discharge	$V_{ESD_Contact}$	±30	kV	Standard IEC 61000-4-2
ESD Protection – Air Discharge	V_{ESD_Air}	±30	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	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-65 to +150	°C

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Conditions
Reverse Standoff Voltage, from Pin 1 to Pin 2	V_{RWM1}	—	—	15	V	—
Reverse Standoff Voltage, from Pin 2 to Pin 1	V_{RWM2}	—	—	24	V	—
Channel Leakage Current, from Pin 1 to Pin 2 (Note 6)	I_{RM1}	—	1	50	nA	V_{RWM} = 15V
Channel Leakage Current, from Pin 2 to Pin 1 (Note 6)	I_{RM2}	—	1	50	nA	V_{RWM} = 24V
Breakdown Voltage, from Pin 1 to Pin 2	V_{BR1}	17.1	18.9	20.3	V	I_R = 1mA
Breakdown Voltage, from Pin 2 to Pin 1	V_{BR2}	25.4	27.8	30.3	V	I_R = 1mA
Clamping Voltage, from Pin 1 to Pin 2	V_{CL1}	—	—	25	V	I_{PP} = 1A, t_P = 8/20µs
		—	—	35	V	I_{PP} = 5A, t_P = 8/20µs
Clamping Voltage, from Pin 2 to Pin 1	V_{CL2}	—	—	40	V	I_{PP} = 1A, t_P = 8/20µs
		—	—	50	V	I_{PP} = 3A, t_P = 8/20µs
Clamping Voltage TLP, from Pin 1 to Pin 2	V_{CL}	—	23.5	—	V	I_{TLP} = 16A, t_P = 100ns
		—	26.6	—	V	I_{TLP} = 30A, t_P = 100ns
Clamping Voltage TLP, from Pin 2 to Pin 1	V_{CL}	—	33	—	V	I_{TLP} = 16A, t_P = 100ns
		—	37.7	—	V	I_{TLP} = 30A, t_P = 100ns
Differential Resistance	R_{DIF}	—	0.5	—	Ω	I_R = 1A, t_P = 8/20µs
Channel Input Capacitance	C_T	—	13	17	pF	V_R = 0V, f = 1MHz
		—	—	100	pF	V_R = 12V, f = 100kHz

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.

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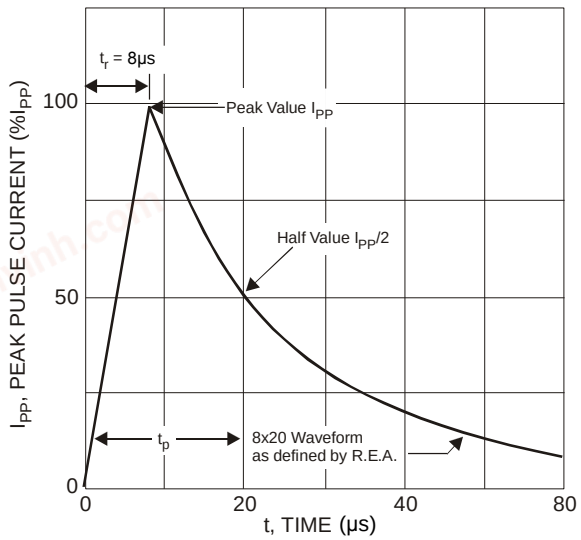


Figure 1 Pulse Waveform

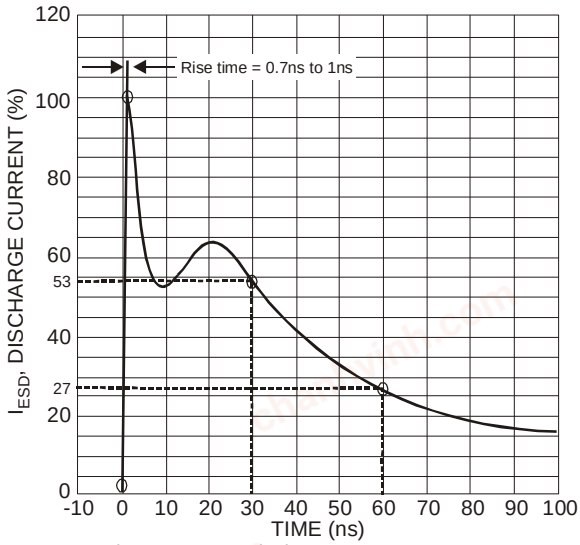


Figure 2 ESD Discharge Current Wave Form
IEC 61000-4-2 (330Ω/150pF)

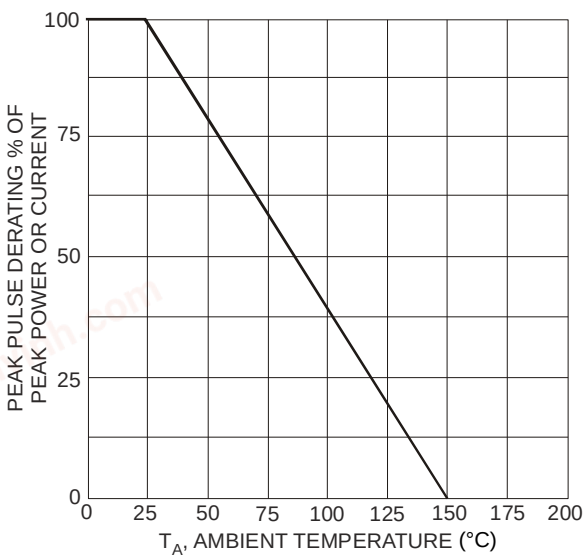


Figure 3 Power Dissipation vs. Ambient Temperature

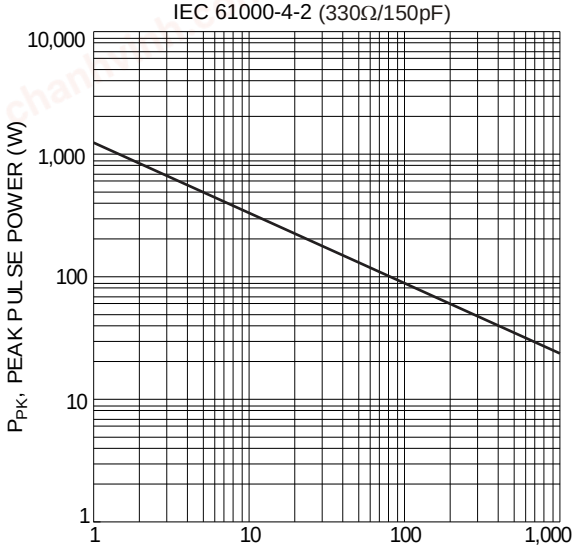


Figure 4 Peak Pulse Power vs. Pulse Duration

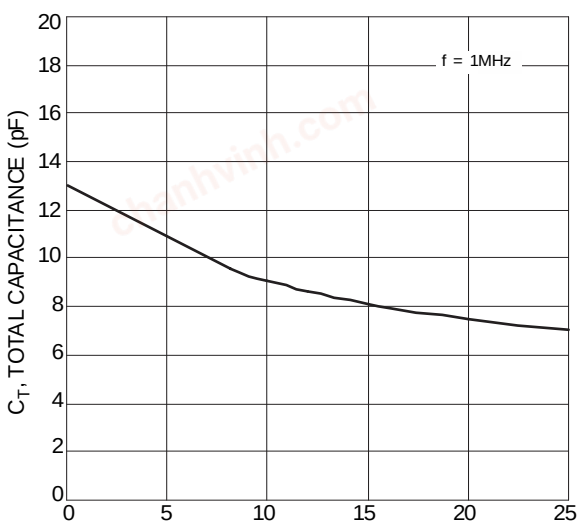


Figure 5 Total Capacitance vs. Reverse Voltage

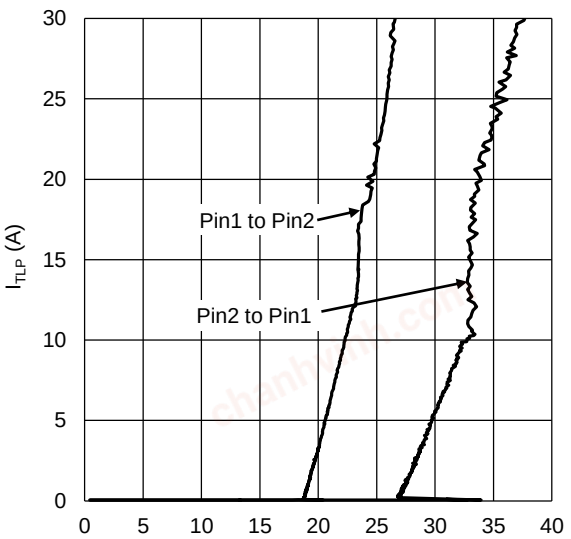


Figure 6 TLP I-V Curve

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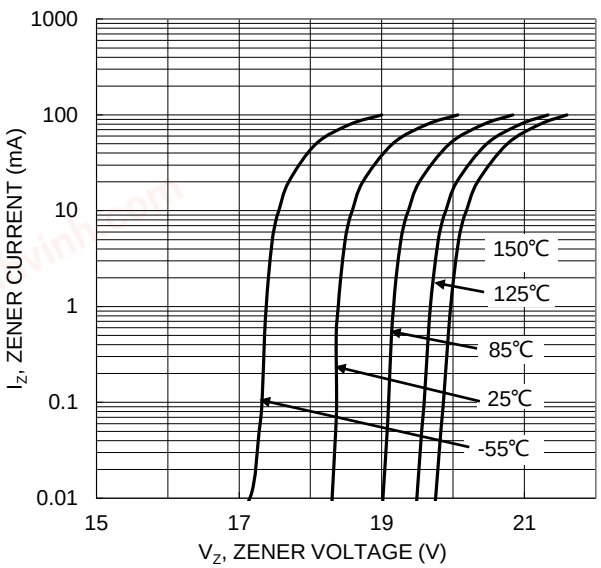


Figure 7 Typical Reverse Characteristics

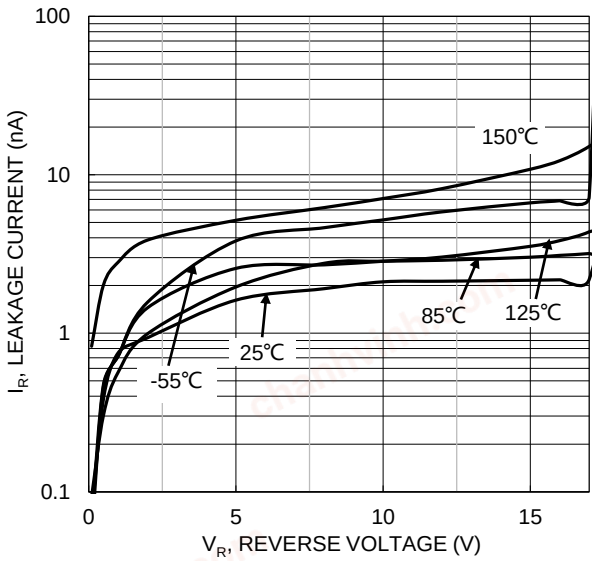


Figure 8 I_R vs. V_R Temperature Characteristic

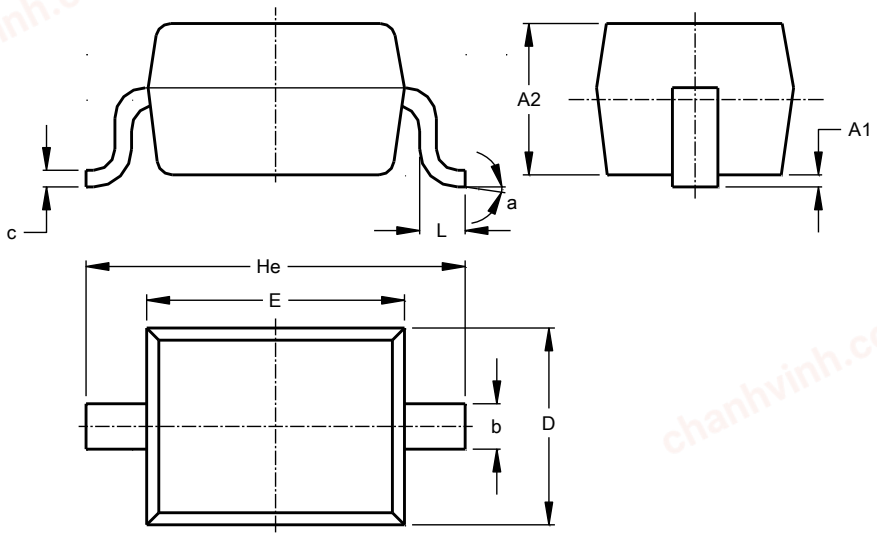
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Package Outline Dimensions

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

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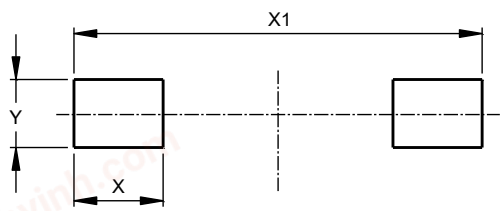


SOD323			
Dim	**Min**	**Max**	**Typ**
A1	--	0.10	0.05
A2	1.00	1.10	1.05
b	0.25	0.35	0.30
c	0.10	0.15	0.11
D	1.20	1.40	1.30
E	1.60	1.80	1.70
He	2.30	2.70	2.50
L	0.20	0.40	0.30
a	0º	8º	--
All Dimensions in mm			

Suggested Pad Layout

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

SOD323



Dimensions	Value (in mm)
X	0.590
X1	2.700
Y	0.450

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