DESD32VS2SO

32V CAN/LIN BUS PROTECTOR
SOT23

Product Summary

V_{RWM}	V_{BR} Min	I_R Max
32V	34V	100nA

Features and Benefits

- Provides ESD Protection per IEC 61000-4-2 Standard:
  Air – ±30kV, Contact – ±30kV
- 200W Peak Power Dissipation
- Typically Used to Protect LIN and CAN Transceiver from ESD and other Harmful Transient Voltage Events
- **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**

Description and Applications

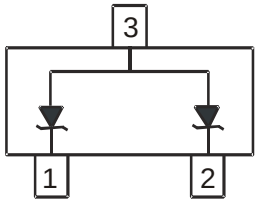
This DESD32VS2SO is a an ESD and surge protection device packaged in a small footprint surface mount package. It is qualified to AEC-Q101 to protect data lines of the Local Interconnect Network (LIN) and Controller Area Network (CAN) for:

- LIN/CAN Bus Protection
- Industrial Control Network

Mechanical Data

- Case: SOT23
- 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: 0.009 grams (Approximate)

Top View



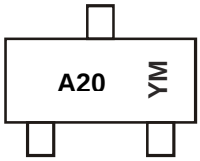
Device Schematic

Ordering Information (Note 4)

Product	Compliance	Marking	Reel Size (inches)	Tape Width (mm)	Quantity per Reel
DESD32VS2SO-7	AEC-Q101	A20	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 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 http://www.diodes.com/products/packages.html.

Marking Information



A20 = Product Type Marking Code
YM = Date Code Marking
Y = Year (ex: E = 2017)
M = Month (ex: 9 = September)

Date Code Key

Year	2017	2018	2019	2020	2021	2022	2023
Code	E	F	G	H	I	J	K

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

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

Characteristic	Symbol	Value	Unit	Conditions
Peak Pulse Power Dissipation	P_{PP}	200	W	8/20µs, Per Figure 3
Peak Pulse Current	I_{PP}	4	A	8/20µs, Per Figure 3
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
ESD Protection – Human Body Model	V_{ESD_HBM}	±16	kV	MIL-STD-883
Electrical Fast Transient Current	I_{EFT}	80	A	Standard IEC 61000-4-4(EFT)

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Package Power Dissipation (Note 5)	P_D	300	mW
Thermal Resistance, Junction to Ambient (Note 5)	$R_{\theta JA}$	417	°C/W
Operating Junction Temperature Range	T_J	-65 to +150	°C
Storage Temperature Range	T_{STG}	-65 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}	—	—	32	V	—
Breakdown Voltage	V_{BR}	34	—	40	V	I_R = 1.0mA
Reverse Leakage Current (Note 6)	I_R	—	—	100	nA	V_{RWM} = 32V
Clamping Voltage (Note 7)	V_{CL}	—	—	42	V	I_{PP} = 1A, t_p = 8/20µs
		—	—	50	V	I_{PP} = 4A, t_p = 8/20µs
Channel Input Capacitance	C_T	—	36	42	pF	V_{IN} = 0V, f = 1MHz, Pin 1 or Pin 2 to Pin 3
		—	18	21	pF	V_{IN} = 0V, f = 1MHz, between Pin 1 and Pin 2

Notes: 5. Device mounted on FR-4 PCB pad layout (2oz copper) as shown on Diodes' website at http://www.diodes.com/package-outlines.html.
6. Short duration pulse test used to minimize self-heating effect.
7. Measured from pin 1 or pin 2 to pin 3; Non-repetitive current pulse per Figure 3.

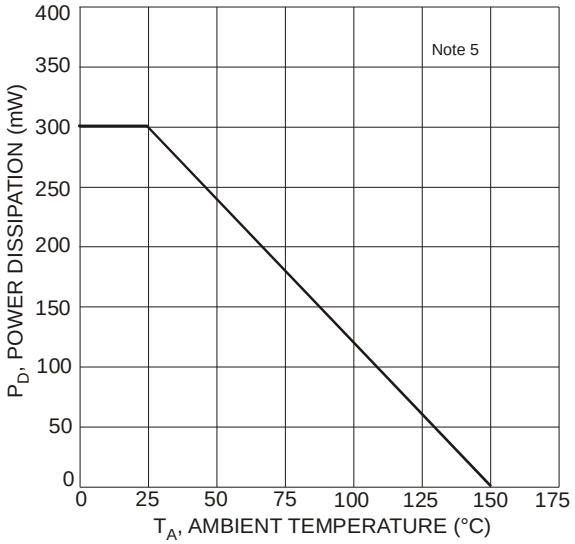


Figure 1 Power Derating Curve

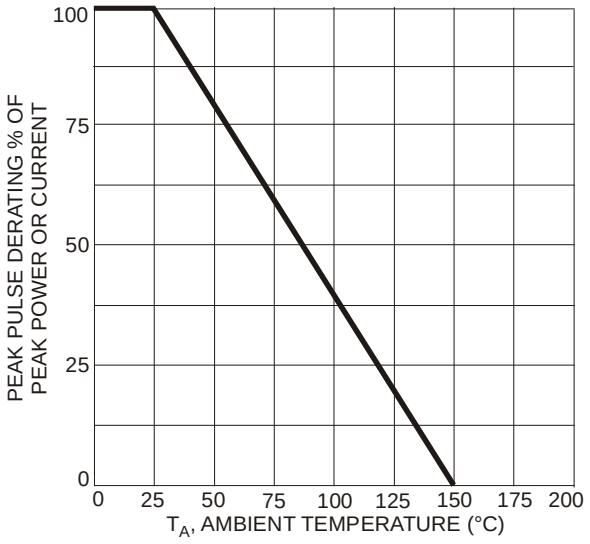


Figure 2 Pulse Derating Curve

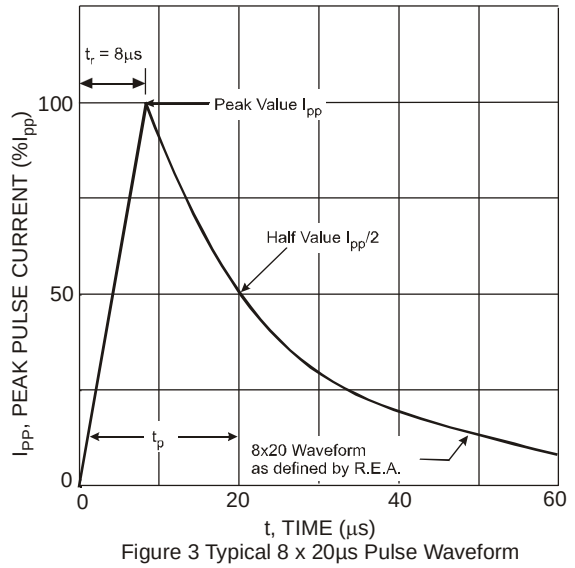


Figure 3 Typical 8 x 20µs Pulse Waveform

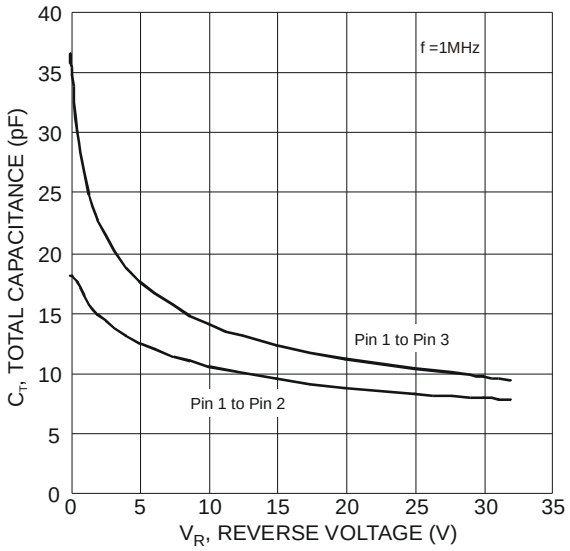


Figure 4 Typical Total Capacitance vs. Reverse Voltage

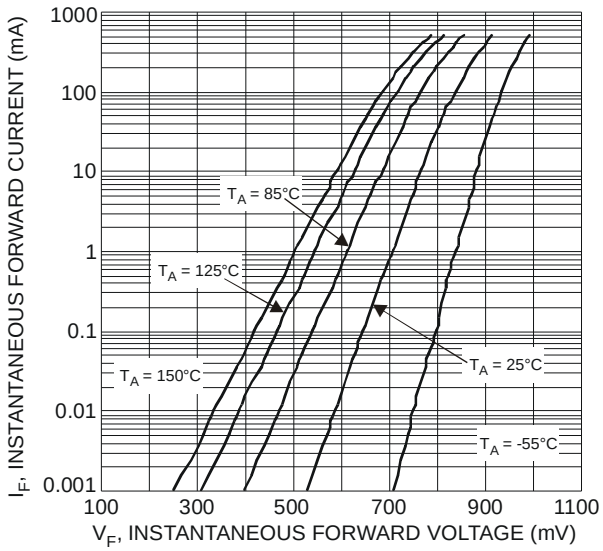


Figure 5 Typical Forward Characteristics

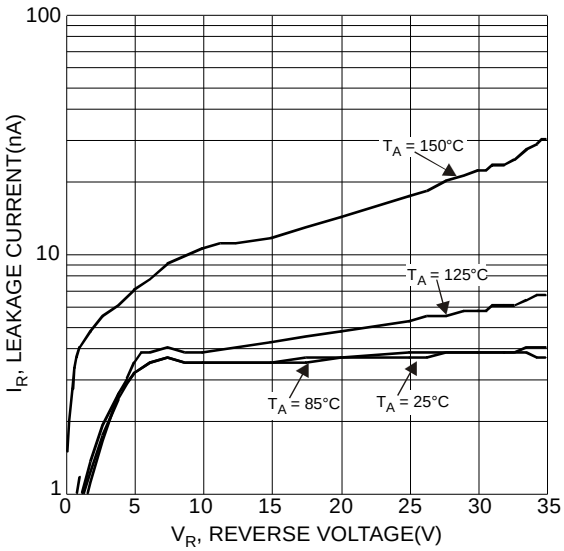


Figure 6 Typical Reverse Characteristics

Package Outline Dimensions

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

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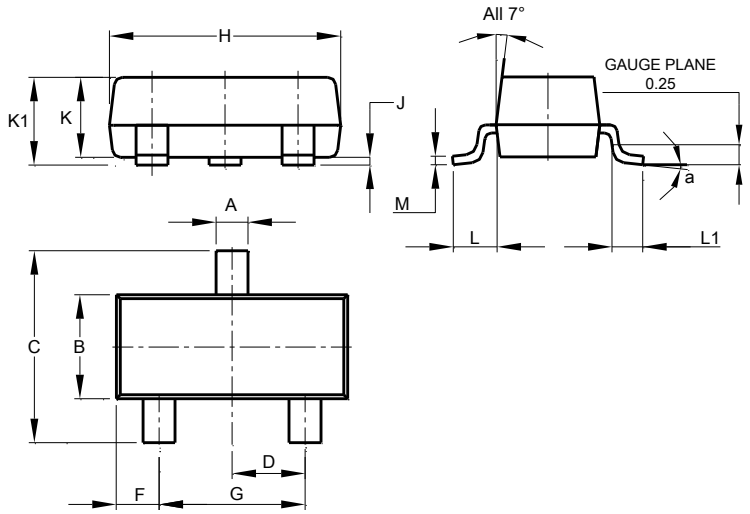

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Dim	**Min**	**Max**	**Typ**
A	0.37	0.51	0.40
B	1.20	1.40	1.30
C	2.30	2.50	2.40
D	0.89	1.03	0.915
F	0.45	0.60	0.535
G	1.78	2.05	1.83
H	2.80	3.00	2.90
J	0.013	0.10	0.05
K	0.890	1.00	0.975
K1	0.903	1.10	1.025
L	0.45	0.61	0.55
L1	0.25	0.55	0.40
M	0.085	0.150	0.110
a	0°	8°	--
All Dimensions in mm			

Suggested Pad Layout

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

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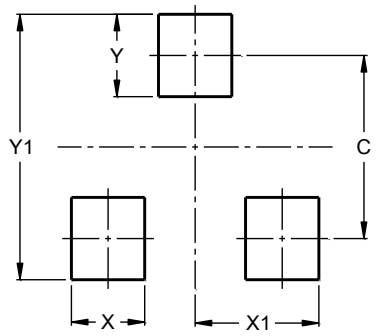

Dimensions	Value (in mm)
C	2.0
X	0.8
X1	1.35
Y	0.9
Y1	2.9

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