

Product Summary

V _{RWM}	V _{BR} Min	I _R Max
24V	26V	10nA

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)**
- The DESD24VS2SOQ 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 DESD24VS2SOQ is an ESD and surge protection device packaged in a small footprint surface-mount package. The combination of small size and high ESD surge capability makes it ideal for use in automotive infotainment applications.

- USB modules
- HDMI inputs
- Infotainment consoles

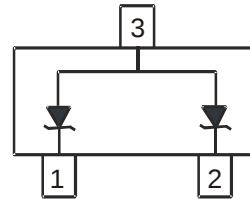
SOT23



Top View

Mechanical Data

- Package: SOT23
- 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 208②③
- Weight: 0.009 grams (Approximate)



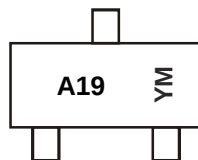
Device Schematic

Ordering Information (Note 4)

Part Number	Package	Marking	Reel Size (inches)	Tape Width (mm)	Packing	
					Qty.	Carrier
DESD24VS2SOQ-7	SOT23	A19	7	8	3,000	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



A19 = Product Type Marking Code
YM = Date Code Marking
Y = Year (ex: L = 2024)
M = Month (ex: 9 = September)

Date Code Key

Year	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Code	L	M	N	P	R	S	T	U	V	W	X	Y
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}	230	W	8/20μs, Per in Figure 3
Peak Pulse Current	I _{PP}	5	A	8/20μs, Per in 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 _{θJA}	417	°C/W
Operating Junction Temperature Range	T _J	-55 to +150	°C
Storage Temperature Range	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}	—	—	24	V	—
Breakdown Voltage	V _{BR}	26	—	32	V	I _R = 1.0mA
Reverse Leakage Current (Note 6)	I _R	—	—	10	nA	V _{RWM} = 24V
Clamping Voltage (Note 7)	V _{CL}	—	—	34	V	I _{PP} = 1A, t _P = 8/20μs
		—	—	41	V	I _{PP} = 5A, t _P = 8/20μs
Differential Resistance	R _{DIF}	—	1	—	Ω	I _R = 1.0A, t _P = 8/20μs
Channel Input Capacitance	C _T	—	42	52	pF	V _{IN} = 0V, f = 1MHz, Pin 1 or Pin 2 to Pin 3
		—	21	28	pF	V _{IN} = 0V, f = 1MHz, between Pin 1 and Pin 2

- Notes:
- Device mounted on FR-4 PCB pad layout (2oz copper) as shown in Diodes Incorporated's package outline PDFs, which can be found on our website at <http://www.diodes.com/package-outlines.html>.
 - Short duration pulse test used to minimize self-heating effect.
 - Measured from pin 1 or pin 2 to pin 3; Non-repetitive current pulse per Figure 3.

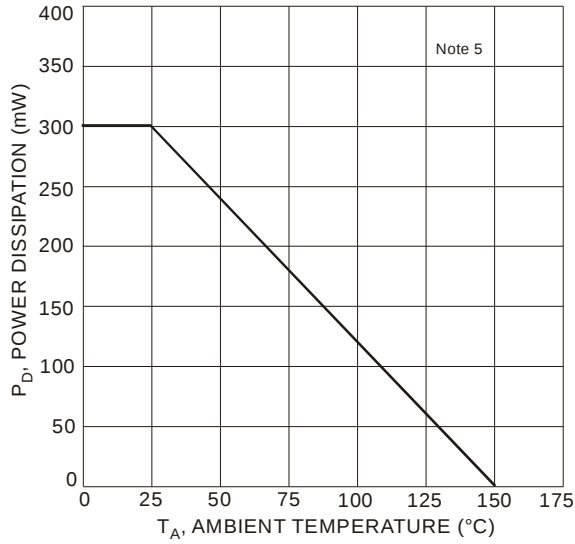


Figure 1 Power Derating Curve

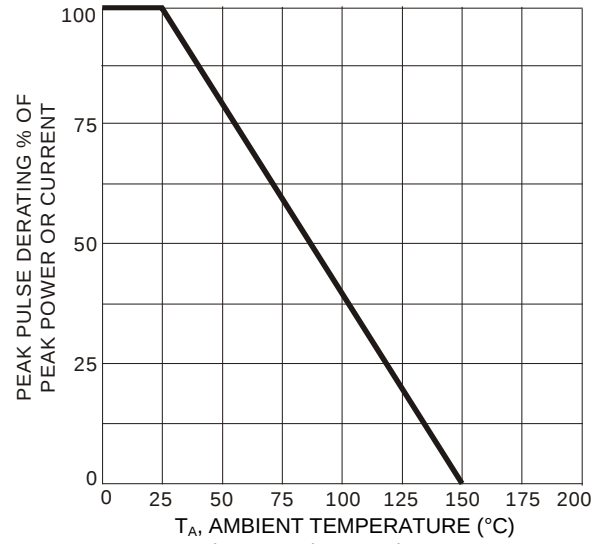


Figure 2 Pulse Derating Curve

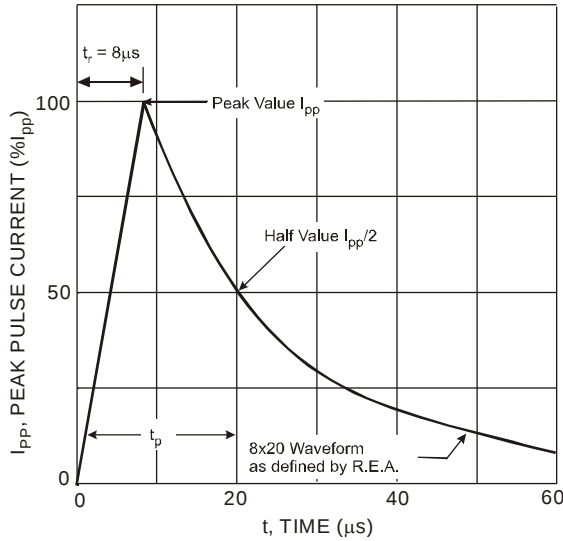


Figure 3 Typical 8 × 20 μs Pulse Waveform

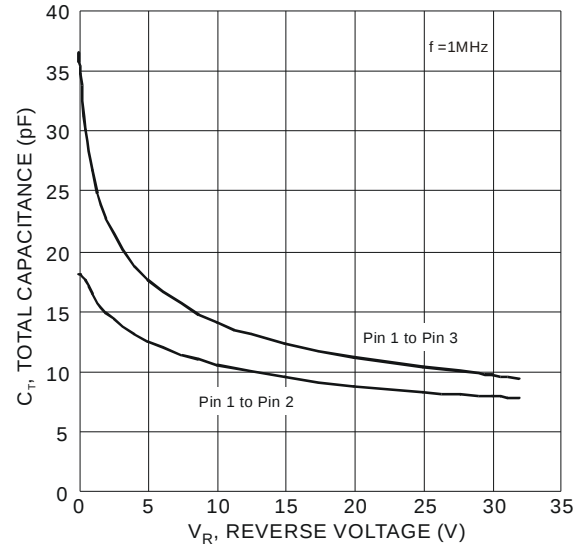


Figure 4 Typical Total Capacitance vs. Reverse Voltage

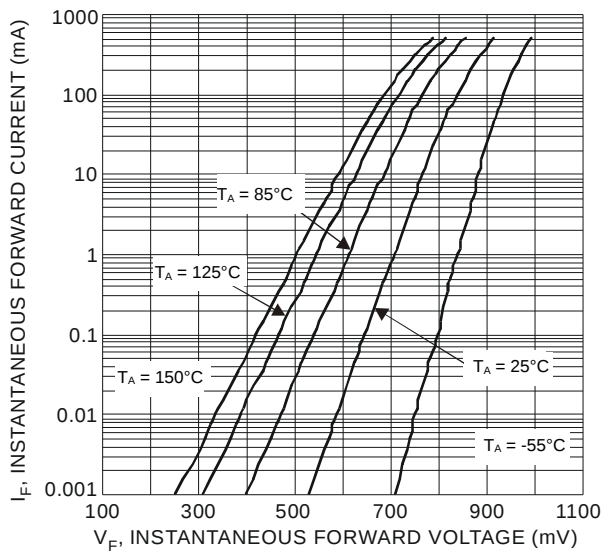


Figure 5 Typical Forward Characteristics

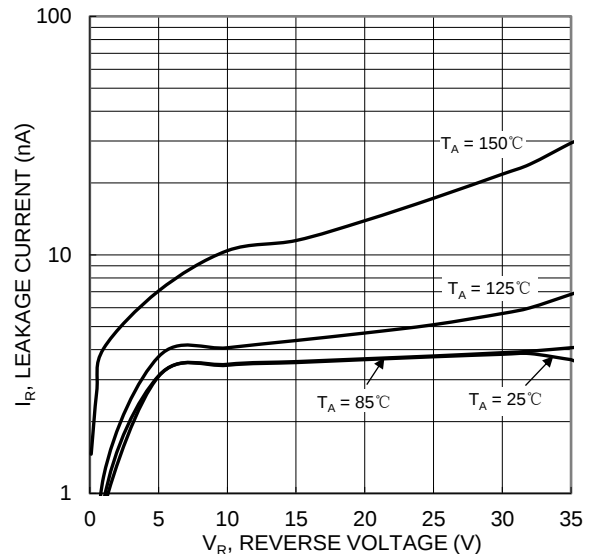
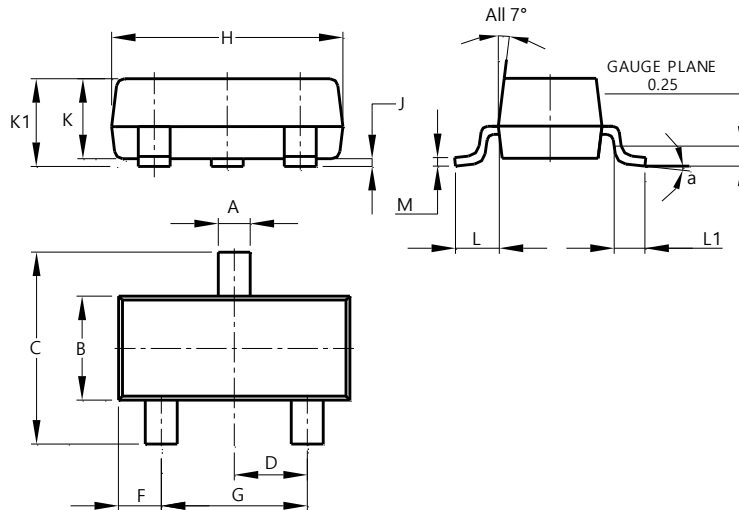


Figure 6 Typical Reverse Characteristics

Package Outline Dimensions

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

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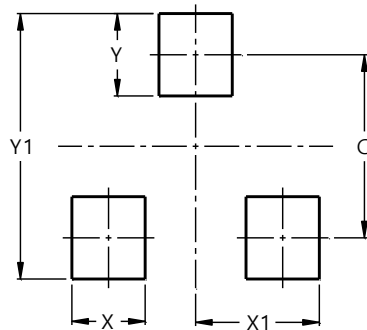


SOT23			
Dim	Min	Max	Typ
A	0.37	0.51	0.40
B	1.20	1.40	1.30
C	2.30	2.50	2.40
D	0.89	1.03	0.915
F	0.45	0.60	0.535
G	1.78	2.05	1.83
H	2.80	3.00	2.90
J	0.013	0.10	0.05
K	0.890	1.00	0.975
K1	0.903	1.10	1.025
L	0.45	0.61	0.55
L1	0.25	0.55	0.40
M	0.085	0.150	0.110
a	0°	8°	--
All Dimensions in mm			

Suggested Pad Layout

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

SOT23



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

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