Product Summary

$V_{BR\ (min)}$	$I_{PP\ (max)}$	$C_{T\ (typ)}$
14.2	12A	78pF

Description

The DIODES™ D12V0H2U3SO is a dual voltage suppressor designed to protect components which are connected to data and transmission lines against electrostatic discharge (ESD).

The device clamps the voltage just above the logic level supply for positive transients and to a diode drop below ground for negative transients.

The device can also work as a bi-directional suppressor by connecting only pin 1 to 2.

Applications

- Computers and peripherals
- Communication system
- Portable electronics
- Cellular handset and accessories

Features

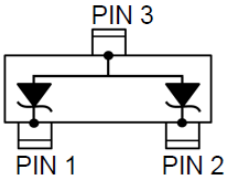
- 300 W Peak Power Dissipation per Line (8/20µs Waveform)
- Provides ESD Protection per IEC 61000-4-2 Standard: Air ±15kV, Contact ±8kV
- 2 Channels Unidirectional of ESD Protection
- Ultra-Low Leakage Current: I_{RM} < 1 uA @ V_{BR}
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **For automotive applications requiring specific change control (i.e. parts qualified to AEC-Q100/101/104/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please contact us or your local Diodes representative. https://www.diodes.com/quality/product-definitions/**

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 208 e3
- Weight: 0.009 grams (Approximate)

SOT23

Top View



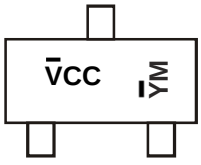
Device Schematic

Ordering Information (Note 4)

Product	Marking	Reel Size (inches)	Tape Width (mm)	Quantity per Reel
D12V0H2U3SO-7	$\bar{V}$CC	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



$\bar{V}$CC = Product Type Marking Code
YM = Date Code Marking
Y = Year (ex: J = 2022)
M = Month (ex: 9 = September)

Date Code Key

Year	2019	……	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Code	G	……	J	K	L	M	N	O	P	R	S	T

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}	300	W	8/20µs, per Figure 1
Peak Pulse Current	I_{PP}	12	A	8/20µs, per Figure 1
ESD Protection – Contact Discharge	$V_{ESD\_Contact}$	±8	kV	IEC 61000-4-2 Standard
ESD Protection – Air Discharge	V_{ESD_Air}	±15	kV	IEC 61000-4-2 Standard

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 Temperature Range	T_J	-55 to +125	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C
Soldering Temperature, t max =10s	T_L	260	°C

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Conditions
Reverse Standoff Voltage	V_{RWM}	—	—	12	V	—
Channel Leakage Current (Note 6)	I_{RM}	—	—	1	uA	V_{RWM} = 12V
Breakdown Voltage	V_{BR}	14.2	—	15.8	V	I_R = 1mA
Clamping Voltage, Positive Transients	V_{CL}	—	—	19	V	I_{PP} = 1A, tp = 8/20µS, Figure 1
		—	—	25	V	I_{PP} = 12A, tp = 8/20µS, Figure 1
Channel Input Capacitance	C_T	—	78	100	pF	V_R = 0V, f = 1MHz

Notes: 5. Device mounted on FR-4 PCB pad layout (2oz copper) as shown on Diodes, Inc. suggested pad layout at www.diodes.com/package-outlines.html.
6. Short duration pulse test used to minimize self-heating effect.

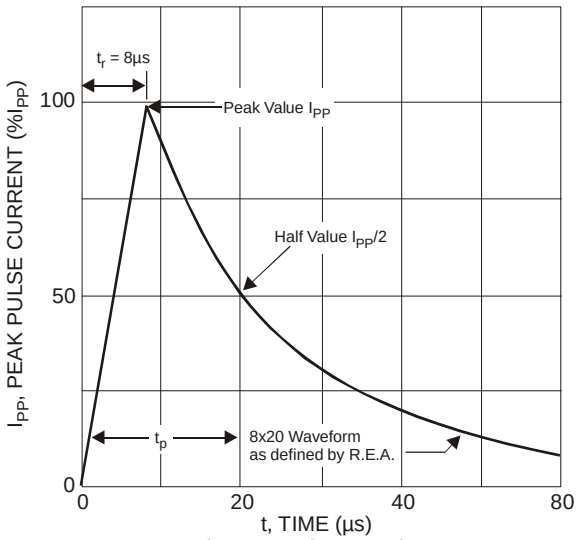


Figure 1 Pulse Waveform

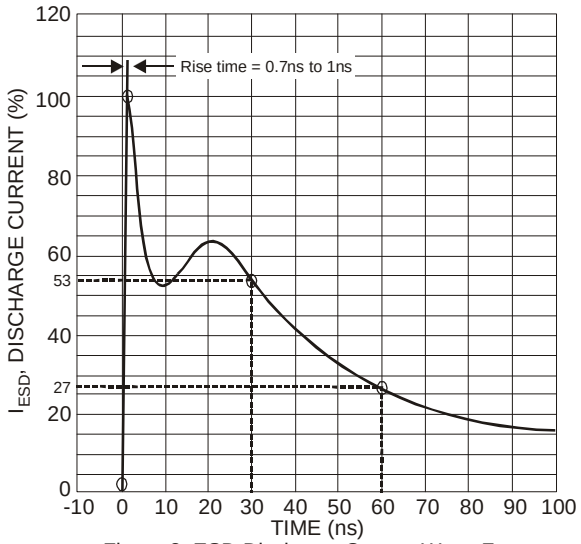


Figure 2 ESD Discharge Current Wave Form
IEC 6100-4-2 (330Ω/150pF)

FIG.3- Power Dissipation Versus Pulse Time

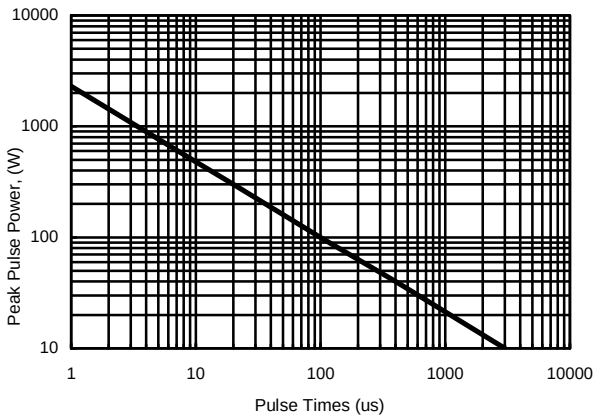


FIG.4- Peak Pulse Power Versus Tj

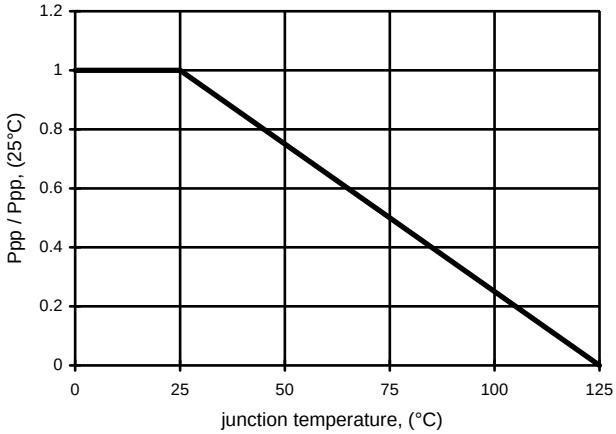


FIG.5- Typical Junction Capacitance

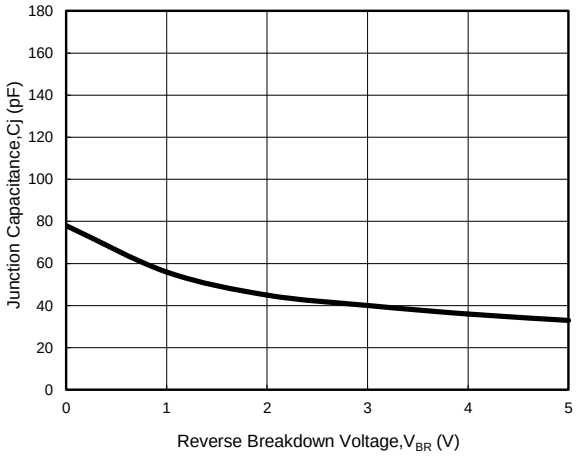


FIG.6- Reverse Leakage Current Versus Tj

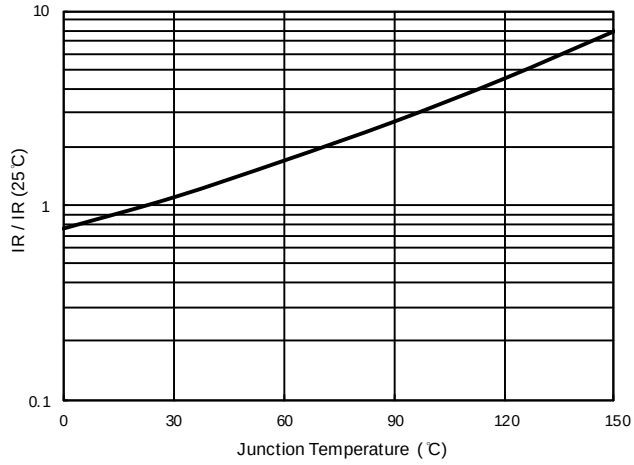


FIG.7- Clamping Voltage Characteristic (tp = 8/20μS)

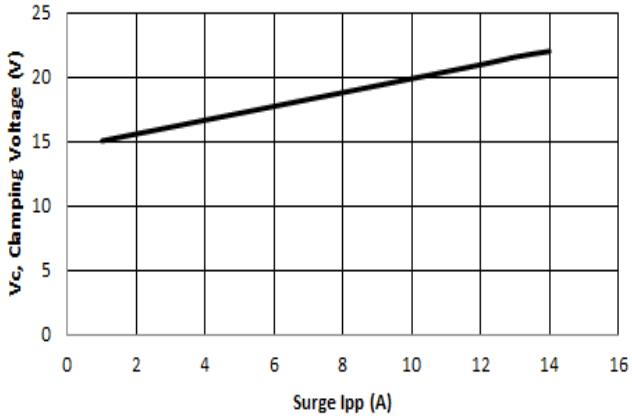
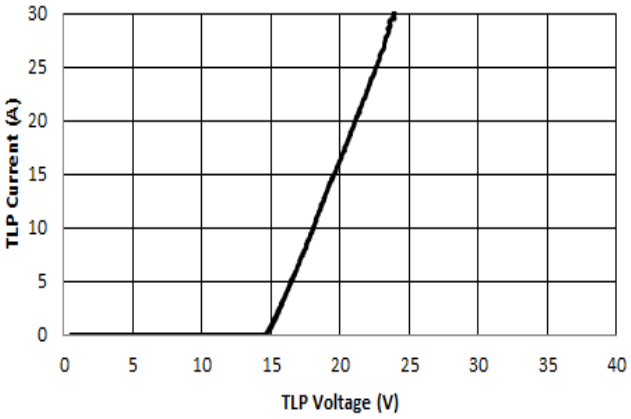


FIG.8- TLP Curve (tp = 100 ns)



Package Outline Dimensions

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

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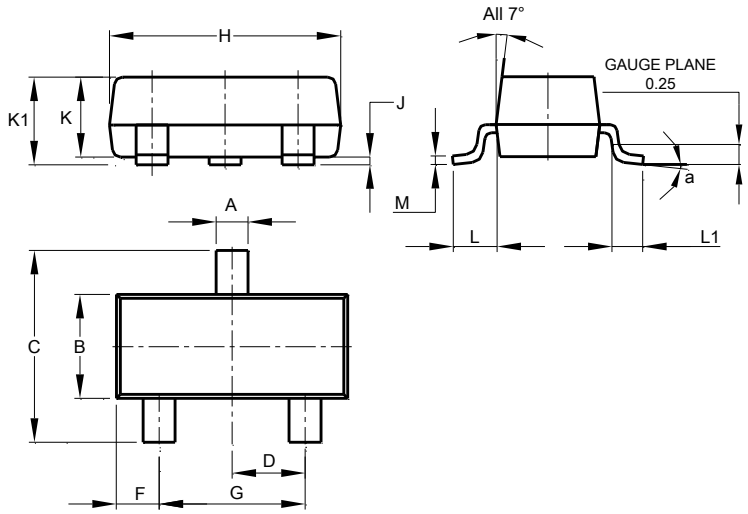
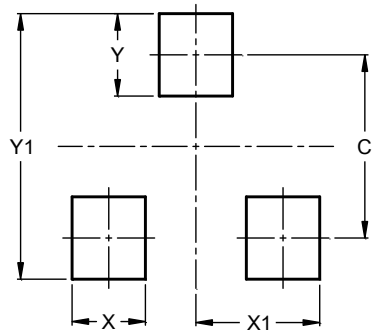


SOT23			
Dim	**Min**	**Max**	**Typ**
A	0.37	0.51	0.40
B	1.20	1.40	1.30
C	2.30	2.50	2.40
D	0.89	1.03	0.915
F	0.45	0.60	0.535
G	1.78	2.05	1.83
H	2.80	3.00	2.90
J	0.013	0.10	0.05
K	0.890	1.00	0.975
K1	0.903	1.10	1.025
L	0.45	0.61	0.55
L1	0.25	0.55	0.40
M	0.085	0.150	0.110
a	0°	8°	--
All Dimensions in mm			

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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