

Product Summary

V_{BR} (Min)	I_{PP} (Max)	C_T (Typ)
25.4V	5A	25pF

Description and Applications

This DESD2FLEX2SOQ 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 two automotive FlexRay bus lines from ElectroStatic Discharge and other transients.

- FlexRay Bus Protection
- Industrial Control Network

SOT23



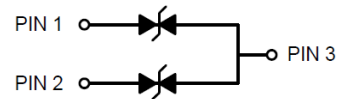
Bottom View

Features

- 230W Peak Power Dissipation per Line (8/20μs Waveform)
- Provides ESD Protection per IEC 61000-4-2 Standard:
Air ±30kV, Contact ±30kV
- 2 Channels 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)**

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 
- Weight: 0.009 grams (Approximate)



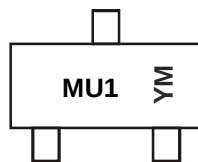
Device Schematic

Ordering Information (Note 5)

Part Number	Compliance	Marking	Reel Size (inches)	Tape Width (mm)	Quantity per Reel
DESD2FLEX2SOQ-7	Automotive	MU1	7	8	3,000/Tape & Reel

- Notes:
- No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
 - 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.
 - Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
 - Automotive products are AEC-Q101 qualified and are PPAP capable. Refer to http://www.diodes.com/product_compliance_definitions.html.
 - For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

Marking Information



MU1 = Product Type Marking Code
YM = Date Code Marking
Y = Year (ex: D = 2016)
M = Month (ex: 9 = September)

Date Code Key

Year	2014	2015	2016	2017	2018	2019	2020
Code	B	C	D	E	F	G	H

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 Figure 1
Peak Pulse Current	I _{PP}	5	A	8/20μs, per Figure 1
ESD Protection – Contact Discharge	V _{ESD_Contact}	±30	kV	IEC 61000-4-2 Standard
ESD Protection – Air Discharge	V _{ESD_Air}	±30	kV	IEC 61000-4-2 Standard

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Package Power Dissipation (Note 6)	P _D	300	mW
Thermal Resistance, Junction to Ambient (Note 6)	R _{θJA}	417	°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	V _{RWM}	—	—	24	V	—
Channel Leakage Current (Note 7)	I _{RM}	—	<1	10	nA	V _{RWM} = 24V
Clamping Voltage, Positive Transients	V _{CL}	—	—	34	V	I _{PP} = 1A, t _p = 8/20μs, Figure 1
		—	—	41		I _{PP} = 5A, t _p = 8/20μs, Figure 1
Breakdown Voltage	V _{BR}	25.4	28.0	30.3	V	I _R = 1mA
Differential Resistance	R _{DIF}	—	0.4	—	Ω	I _R = 1A, t _p = 8/20μs
Channel Input Capacitance	C _T	—	25	30	pF	V _R = 0V, f = 5MHz

Notes: 6. 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>.
7. Short duration pulse test used to minimize self-heating effect.

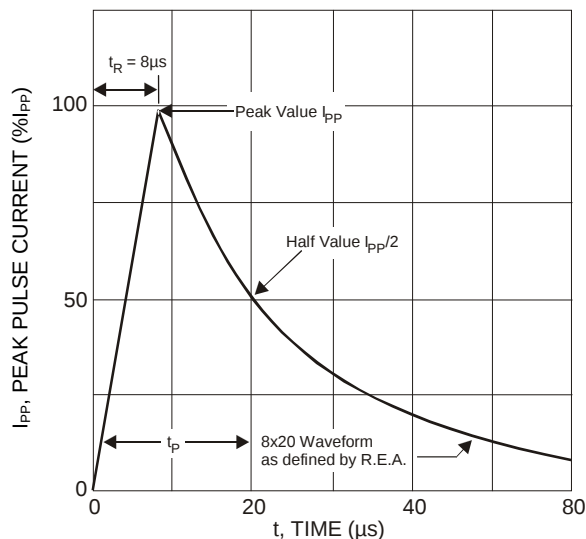


Figure 1 Pulse Waveform

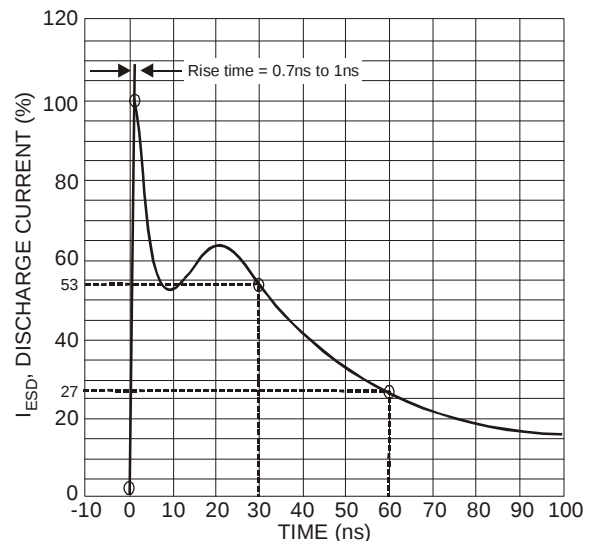


Figure 2 ESD Discharge Current Wave Form
IEC 6100-4-2 (330Ω/150pF)

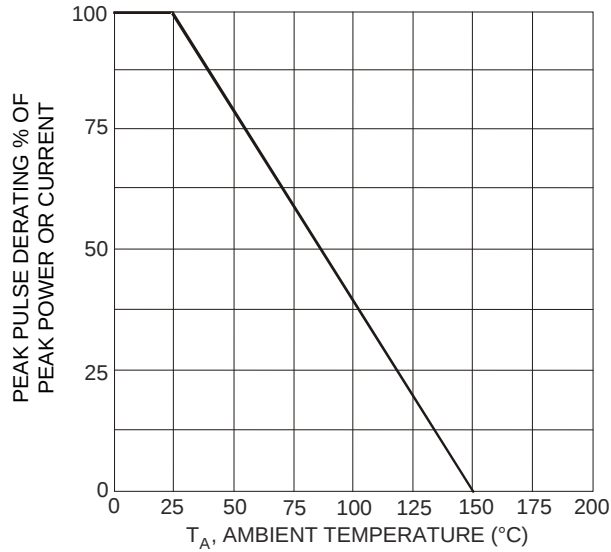


Figure 3 Power Dissipation vs. Ambient Temperature

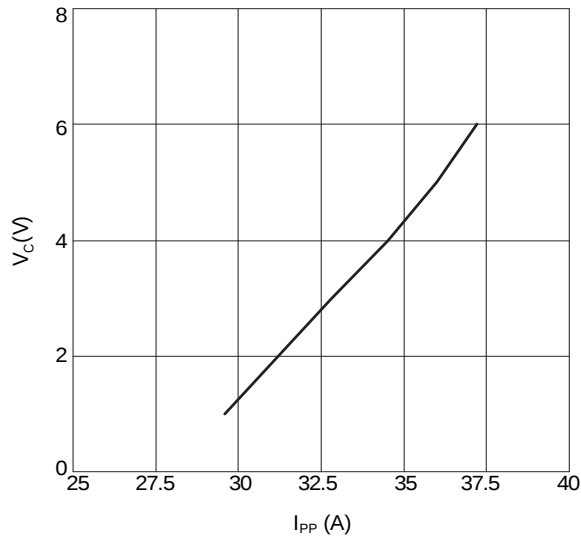


Figure 5 Typical Peak Clamping Voltage V_C vs. Peak Pulse Current I_{PP}

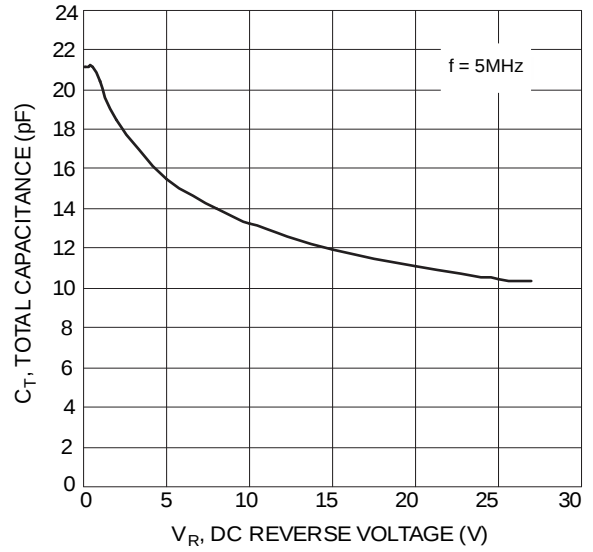


Figure 4 Total Capacitance vs. Reverse Voltage

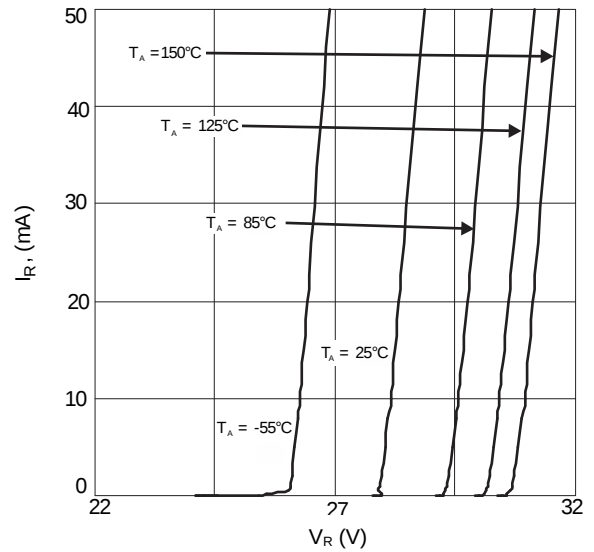
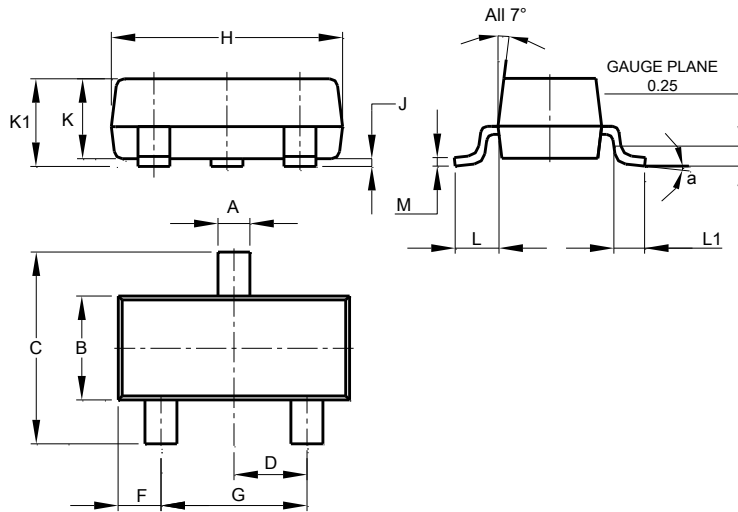


Figure 6 Reverse Current as a Function of Reverse Voltage

Package Outline Dimensions

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

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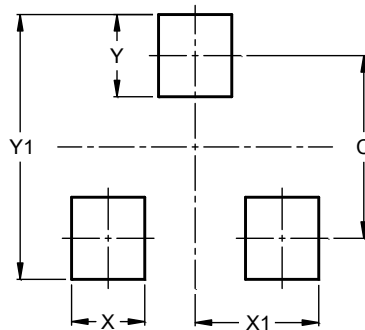


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Dim	Min	Max	Typ
A	0.37	0.51	0.40
B	1.20	1.40	1.30
C	2.30	2.50	2.40
D	0.89	1.03	0.915
F	0.45	0.60	0.535
G	1.78	2.05	1.83
H	2.80	3.00	2.90
J	0.013	0.10	0.05
K	0.890	1.00	0.975
K1	0.903	1.10	1.025
L	0.45	0.61	0.55
L1	0.25	0.55	0.40
M	0.085	0.150	0.110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

Suggested Pad Layout

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

SOT23



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

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