

## Product Summary

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

## Features

- 230W Peak Power Dissipation per Line (8/20 $\mu$ s Waveform)
- Provides ESD Protection per IEC 61000-4-2 Standard:  
Air  $\pm$ 30kV, Contact  $\pm$ 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)**

## Description and Applications

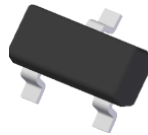
This DESD2FLEX2SOQ is a next generation ESD and surge protection device packaged in a small footprint surface mount package. It is qualified to AEC-Q101, supported by a PPAP and is designed to protect two automotive FlexRay bus lines from ElectroStatic Discharge and other transients.

- FlexRay Bus Protection
- Industrial Control Network

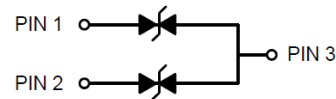
## Mechanical Data

- 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)

SOT23



Bottom View



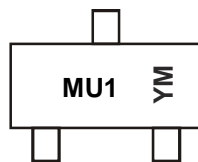
Device Schematic

## 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:
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](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. Automotive products are AEC-Q101 qualified and are PPAP capable. Refer to [http://www.diodes.com/product\\_compliance\\_definitions.html](http://www.diodes.com/product_compliance_definitions.html).
  5. 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** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

Characteristic	Symbol	Value	Unit	Conditions
Peak Pulse Power Dissipation	$P_{PP}$	230	W	8/20 $\mu\text{s}$ , per Figure 1
Peak Pulse Current	$I_{PP}$	5	A	8/20 $\mu\text{s}$ , per Figure 1
ESD Protection – Contact Discharge	$V_{ESD\_Contact}$	$\pm 30$	kV	IEC 61000-4-2 Standard
ESD Protection – Air Discharge	$V_{ESD\_Air}$	$\pm 30$	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)	$R_{\theta JA}$	417	$^\circ\text{C/W}$
Operating and Storage Temperature Range	$T_J, T_{STG}$	-65 to +150	$^\circ\text{C}$

**Electrical Characteristics** (@ $T_A = +25^\circ\text{C}$ , 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	$V_{RWM} = 24\text{V}$
Clamping Voltage, Positive Transients	$V_{CL}$	—	—	34	V	$I_{PP} = 1\text{A}, t_p = 8/20\mu\text{s}$ , Figure 1
		—	—	41		$I_{PP} = 5\text{A}, t_p = 8/20\mu\text{s}$ , Figure 1
Breakdown Voltage	$V_{BR}$	25.4	28.0	30.3	V	$I_R = 1\text{mA}$
Differential Resistance	$R_{DIF}$	—	0.4	—	$\Omega$	$I_R = 1\text{A}, t_p = 8/20\mu\text{s}$
Channel Input Capacitance	$C_T$	—	25	30	pF	$V_R = 0\text{V}, f = 5\text{MHz}$

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.

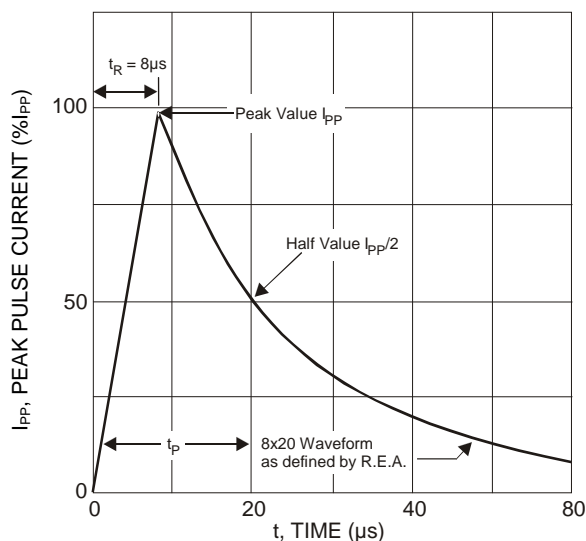
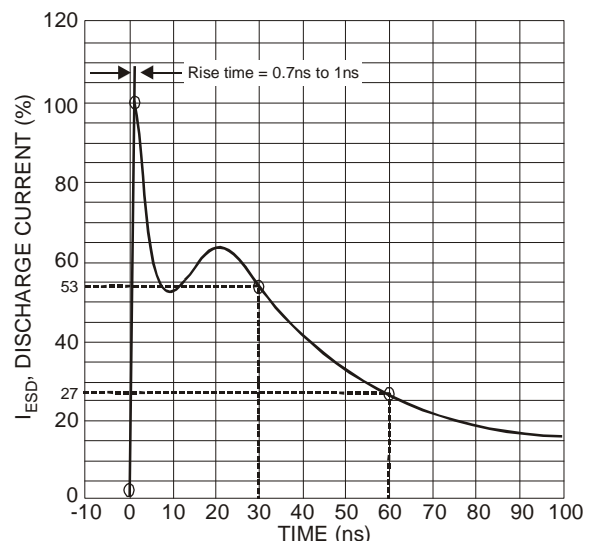


Figure 1 Pulse Waveform


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

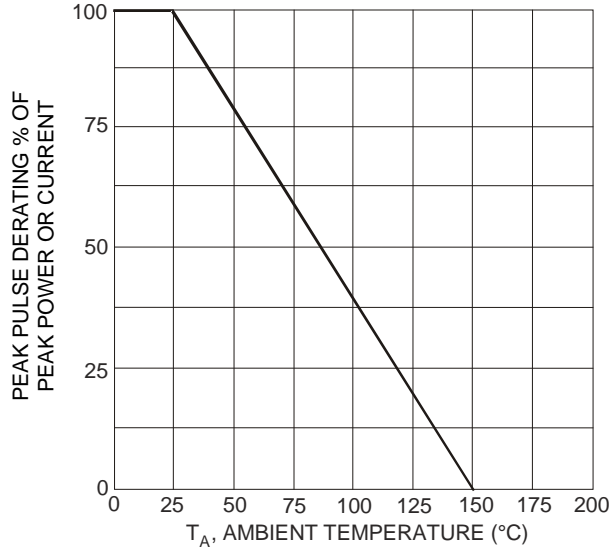


Figure 3 Power Dissipation vs. Ambient Temperature

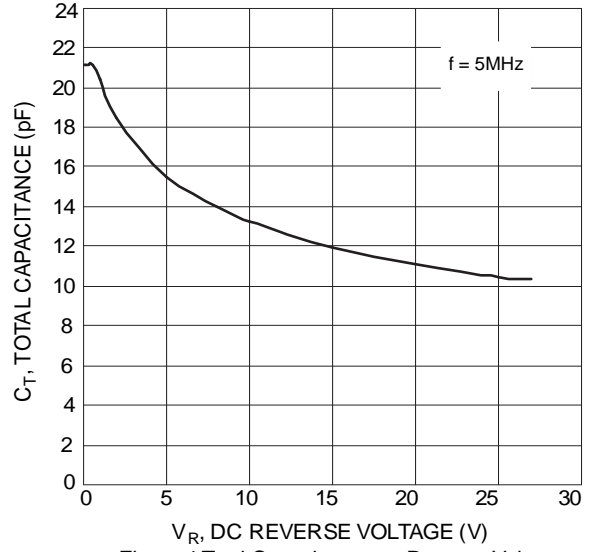


Figure 4 Total Capacitance vs. Reverse Voltage

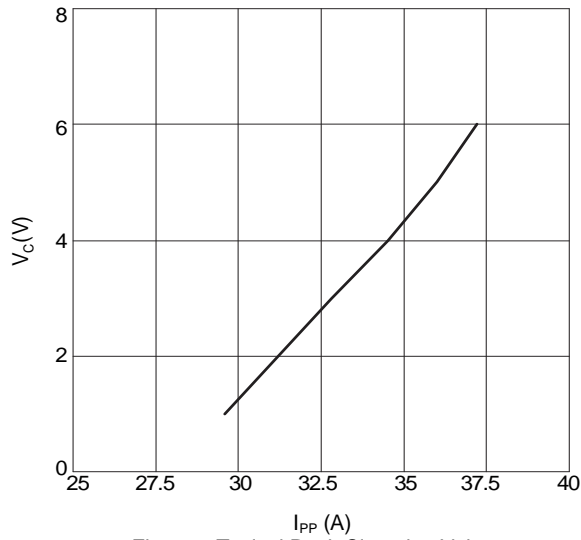


Figure 5 Typical Peak Clamping Voltage V<sub>C</sub> vs. Peak Pulse Current I<sub>PP</sub>

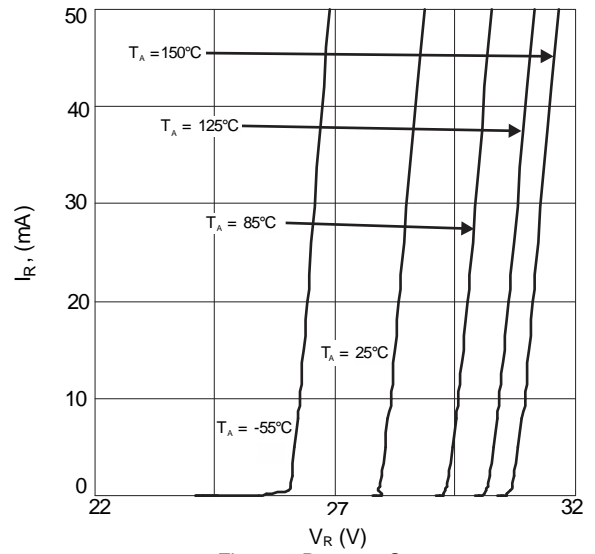
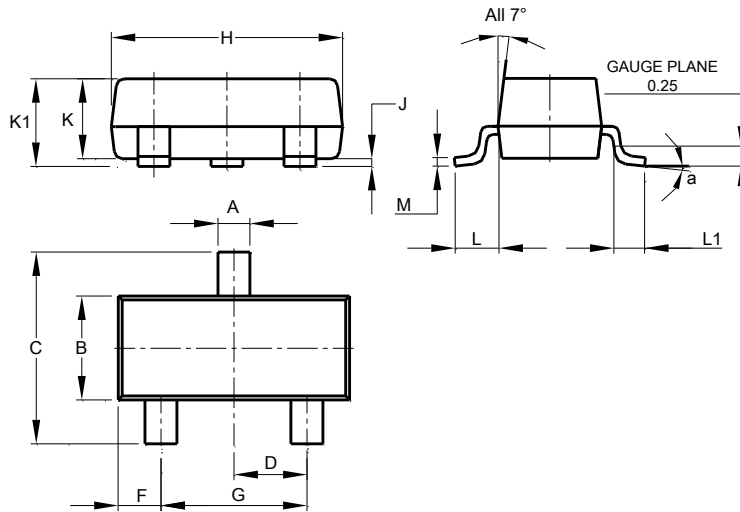


Figure 6 Reverse Current as a Function of Reverse Voltage

## Package Outline Dimensions

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

### SOT23

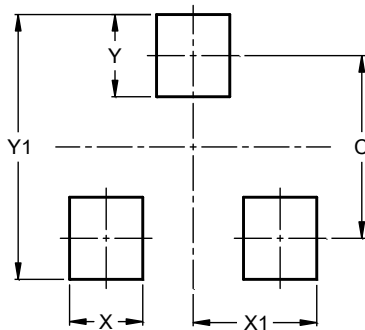


SOT23			
Dim	Min	Max	Typ
A	0.37	0.51	0.40
B	1.20	1.40	1.30
C	2.30	2.50	2.40
D	0.89	1.03	0.915
F	0.45	0.60	0.535
G	1.78	2.05	1.83
H	2.80	3.00	2.90
J	0.013	0.10	0.05
K	0.890	1.00	0.975
K1	0.903	1.10	1.025
L	0.45	0.61	0.55
L1	0.25	0.55	0.40
M	0.085	0.150	0.110
a	0°	8°	--
All Dimensions in mm			

## 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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