

**LOW CAPACITANCE, ESD PROTECTION DIODE ARRAY**

**Features**

- Low Capacitance
- Small Surface Mount Package
- For ESD Protection of High-Speed Data Lines
- **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)**

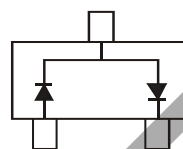
**Mechanical Data**

- Case: SOT323
- 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: 0.006 Grams (Approximate)

SOT323



Top View



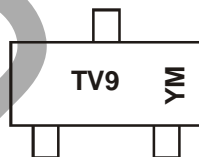
Top View  
Internal Schematic

**Ordering Information** (Notes 5)

Part Number	Qualification	Case	Packaging
DESD1P0RFW-7	Commercial	SOT323	3000/Tape & Reel
DESD1P0RFWQ-7	Automotive	SOT323	3000/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. Automotive products are AEC-Q101 qualified and are PPAP capable. Automotive, AEC-Q101 and standard products are electrically and thermally the same, except where specified. For more information, please refer to <https://www.diodes.com/quality/>.
  5. For packaging details, go to our website at <http://www.diodes.com>.

**Marking Information**



TV9 = Product Type Marking Code  
 YM = Date Code Marking  
 Y = Year (ex: Y = 2018)  
 M = Month (ex: 9 = September)

Date Code Key

Year	2011	2012	2013	2014	2015	2016	2017	2018
Code	Y	Z	A	B	C	D	E	F

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

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**Maximum Ratings** @ $T_A = 25^\circ\text{C}$  unless otherwise specified

Characteristic	Symbol	Value	Unit	Conditions
Peak Pulse Current	$I_{PP}$	15	A	8/20 $\mu\text{s}$ (Notes 6 & 7)
ESD Protection – Contact Discharge	$V_{ESD\_Contact}$	$\pm 30$	kV	Standard IEC 61000-4-2(Notes 7)
ESD Protection – Air Discharge	$V_{ESD\_Air}$	$\pm 30$	kV	Standard IEC 61000-4-2(Notes 7)

**Thermal Characteristics**

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 8)	$P_D$	200	mW
Thermal Resistance Junction to Ambient Air (Note 8)	$R_{\theta JA}$	625	$^\circ\text{C/W}$
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 (Note 6)	Symbol	Min	Typ	Max	Unit	Test Conditions
Reverse Working Voltage	$V_{RWM}$	—	—	70	V	—
Reverse Current	$I_{RM}$	—	—	100	nA	$V_{RM} = 70\text{V}$
Forward Clamping Voltage (Note 7)	$V_{FC}$	—	2	6	V	$I_{PP} = 3\text{A}$ ; per IEC 61000-4-5 (Note 9)
		—	4	8		$I_{PP} = 10\text{A}$ ; per IEC 61000-4-5 (Note 9)
Capacitance	$C_T$	—	1	1.5	pF	$V_R = 0\text{V}$ , $f = 1\text{MHz}$ (Note 10)
		—	1.7	2.5		$V_R = 0\text{V}$ , $f = 1\text{MHz}$ (Note 11)

- Notes:
6. Diodes Short duration pulse test used to minimize self-heating effect.
  7. Anti-parallel connection.
  8. Device mounted on FR-4 PCB with minimum recommended pad layout.
  9. Clamping voltage value is based on an  $8 \times 20\mu\text{s}$  peak pulse current ( $I_{PP}$ ) waveform.
  10. Total capacitance line to ground (per diode).
  11. Total capacitance line to ground (anti-parallel connection).

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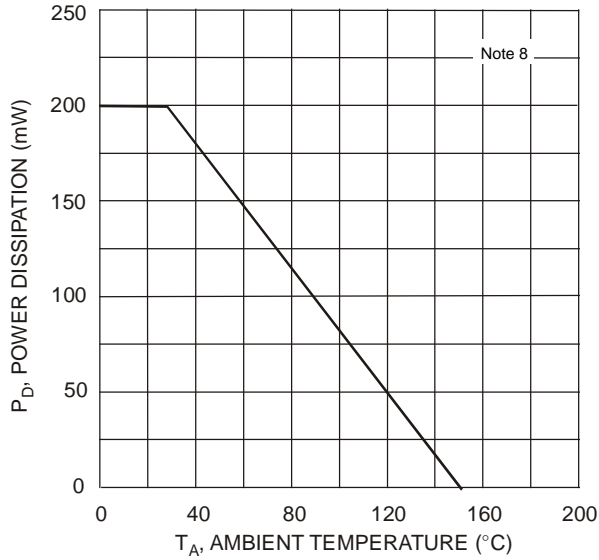


Fig. 1 Power Derating Curve, Total Package

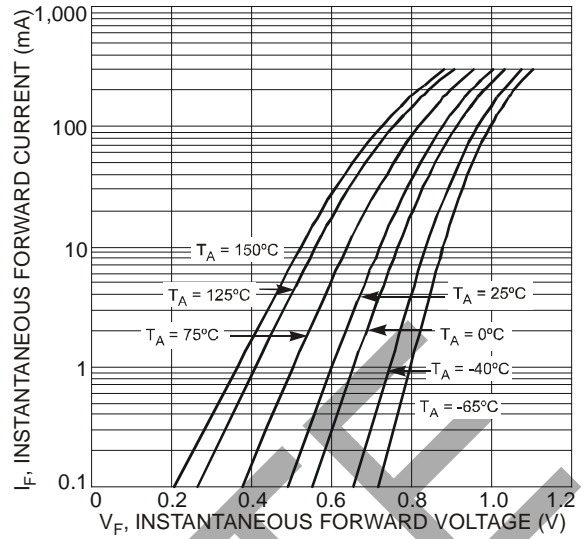


Fig. 2 Typical Forward Characteristics, Per Element

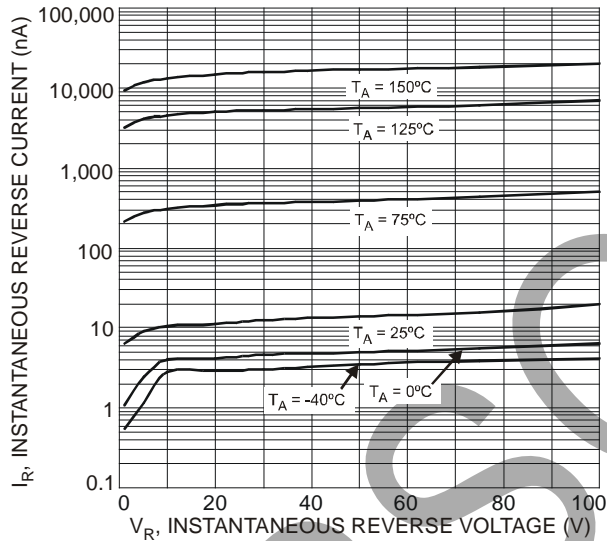


Fig. 3 Typical Reverse Characteristics, Per Element

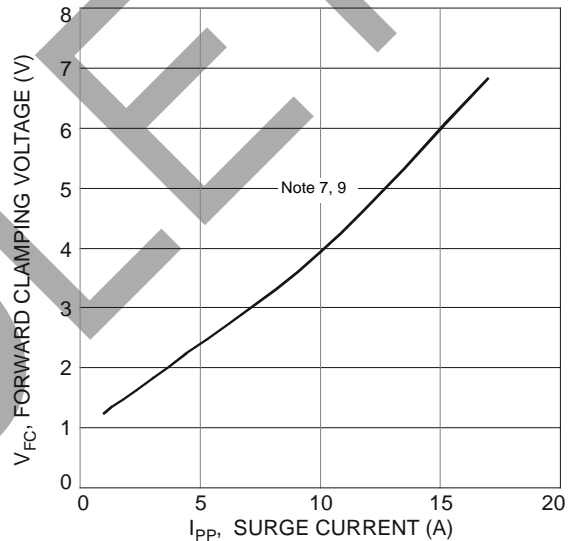
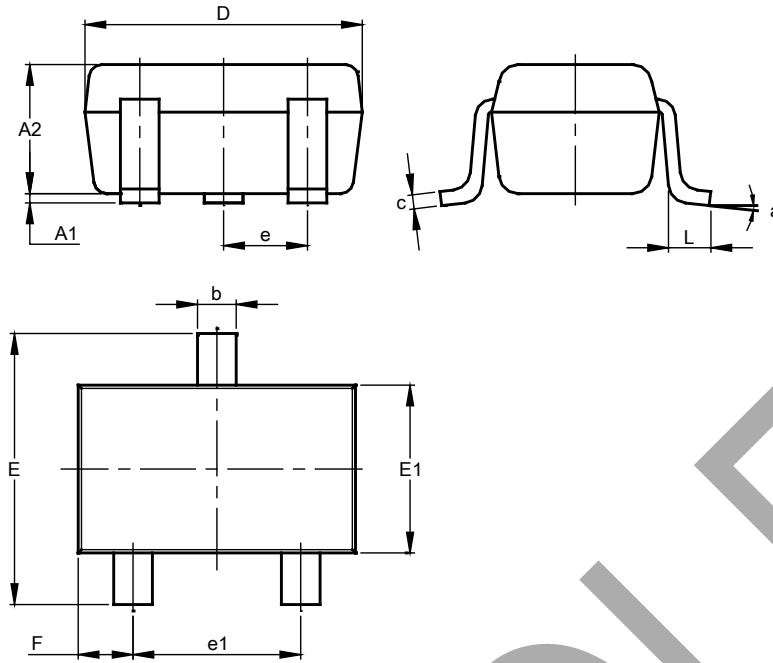


Fig. 4 Typical Forward Clamping Characteristics

**Package Outline Dimensions**

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

SOT323



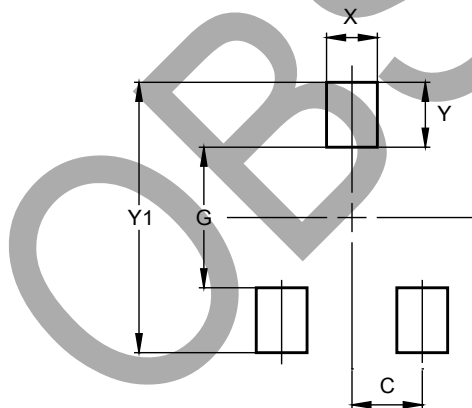
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Dim	Min	Max	Typ
A1	0.00	0.10	0.05
A2	0.90	1.00	0.95
b	0.25	0.40	0.30
c	0.10	0.18	0.11
D	1.80	2.20	2.15
E	2.00	2.20	2.10
E1	1.15	1.35	1.30
e	0.650 BSC		
e1	1.20	1.40	1.30
F	0.375	0.475	0.425
L	0.25	0.40	0.30
a	0°	8°	--
All Dimensions in mm			

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**Suggested Pad Layout**

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

SOT323



Dimensions	Value (in mm)
C	0.650
G	1.300
X	0.470
Y	0.600
Y1	2.500

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