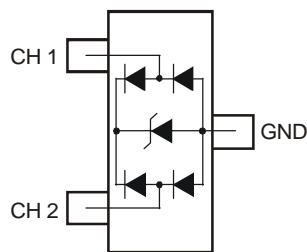


**Features**

- IEC 61000-4-2 (ESD): Air  $\pm 15$ kV, Contact  $\pm 8$ kV
- 2 Channels of ESD protection
- Low Channel Input Capacitance
- Typically Used at High Speed Ports such as USB 2.0, IEEE1394, Serial ATA, DVI, HDMI, PCI
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- Halogen and Antimony Free. "Green" Device (Note 3)



Top View



Device Schematic

**Mechanical Data**

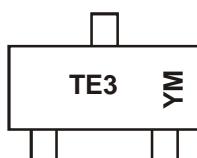
- Case: SOT323
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish annealed over Alloy 42 leadframe (Lead Free Plating). Solderable per MIL-STD-202, Method 208 (e3)
- Weight: 0.006 grams (Approximate)

**Ordering Information** (Note 4)

Part Number	Case	Packaging
D1213A-02WL-7	SOT323	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> 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 <http://www.diodes.com>.

**Marking Information**

TE3 = Product Type Marking Code

YM = Date Code Marking

Y = Year (ex: Z = 2012)

M = Month (ex: 9 = September)

## Date Code Key

Year	2011	2012	2013	2014	2015	2016	2017					
Code	Y	Z	A	B	C	D	E					
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 Current (Note 7)	$I_{PP}$	5	A	8/20 $\mu\text{s}$ , Per Fig. 2
ESD Protection – Contact Discharge	$V_{ESD\_Contact}$	$\pm 8$	kV	Standard IEC 61000-4-2
ESD Protection – Air Discharge	$V_{ESD\_Air}$	$\pm 15$	kV	Standard IEC 61000-4-2

**Thermal Characteristics**

Characteristic	Symbol	Value	Unit
Package Power Dissipation (Note 5)	$P_D$	200	mW
Thermal Resistance, Junction to Ambient (Note 5)	$R_{\theta JA}$	625	°C/W
Operating Temperature Range	$T_J$	-55 to +125	°C
Storage Temperature Range	$T_{STG}$	-65 to +150	°C

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

Characteristic (Note 7)	Symbol	Min	Typ	Max	Unit	Test Conditions
Reverse working voltage	$V_{RWM}$	-	-	3.3	V	-
Reverse current (Note 6)	$I_R$	-	0.1	1.0	$\mu\text{A}$	$V_R = V_{RWM} = 3.3\text{V}$
Reverse breakdown voltage	$V_{BR}$	6.0	7.5	9.0	V	$I_R = 1\text{mA}$
Forward voltage	$V_F$	0.6	0.8	0.95	V	$I_F = 8\text{mA}$
Reverse clamping voltage, Positive Transients	$V_{CL1}$	-	10.0	-	V	$I_{PP} = 1\text{A}$ , $t_p = 8/20\mu\text{s}$
Reverse clamping voltage, Negative Transients	$V_{CL2}$	-	-1.7	-	V	$I_{PP} = -1\text{A}$ , $t_p = 8/20\mu\text{s}$
Dynamic resistance	$R_{DYN}$	-	0.9	-	$\Omega$	$I_R = 1\text{A}$ , $t_p = 8/20\mu\text{s}$
Capacitance	$C_T$	-	0.85	1.2	pF	$V_R = 1.65\text{V}$ , $f = 1\text{MHz}$

Notes:

5. Device mounted on FR-4 PCB pad layout (2oz copper) as shown on Diodes, Inc. suggested pad layout AP02001, which can be found on our website at <http://www.diodes.com>.
6. Short duration pulse test used to minimize self-heating effect.
7. Measured between any channel and GND

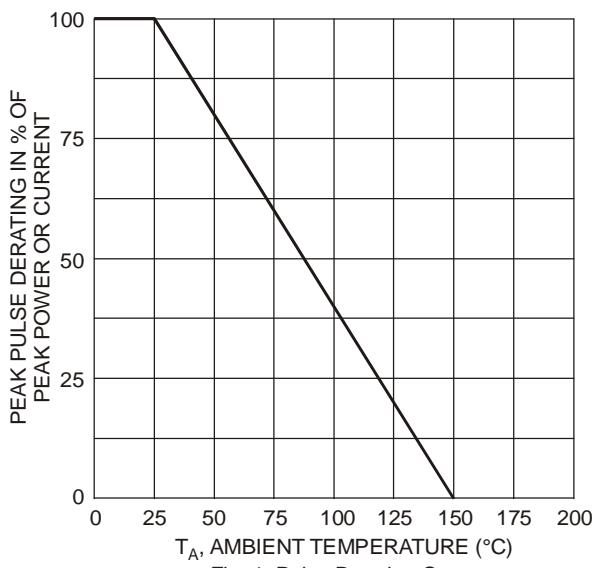


Fig. 1 Pulse Derating Curve

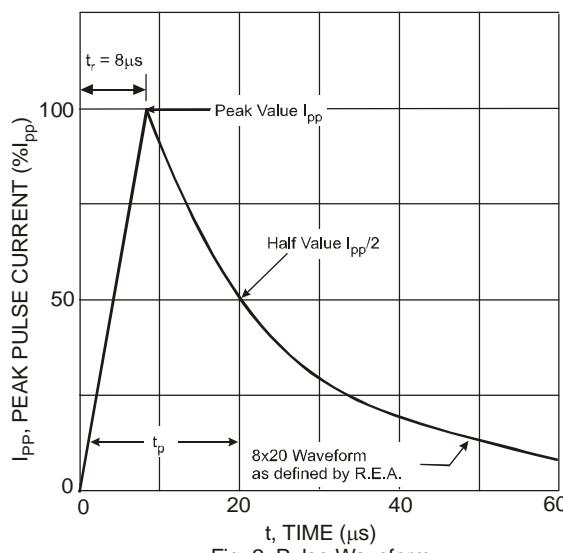


Fig. 2 Pulse Waveform

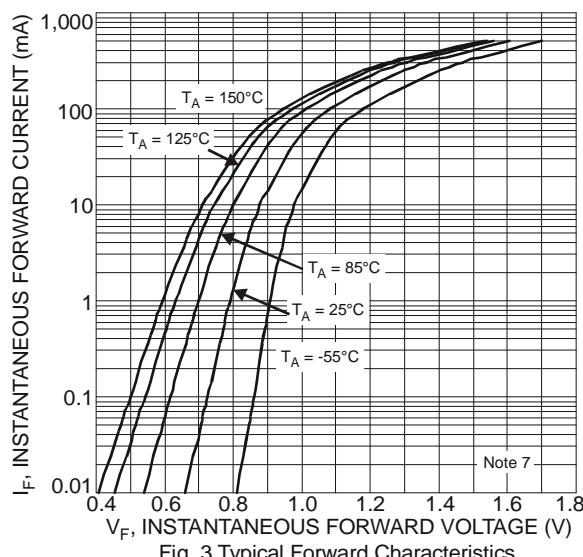


Fig. 3 Typical Forward Characteristics

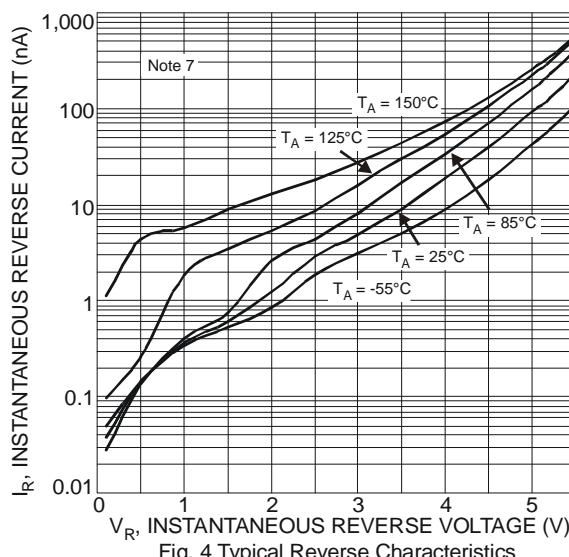


Fig. 4 Typical Reverse Characteristics

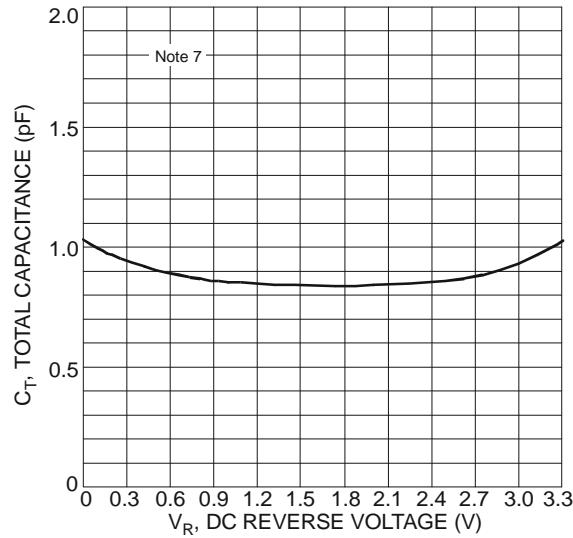
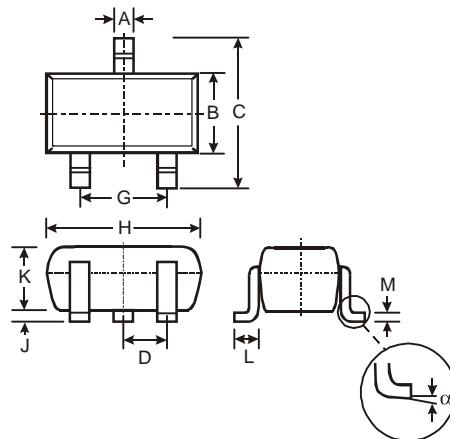


Fig. 5 Total Capacitance vs. Reverse Voltage

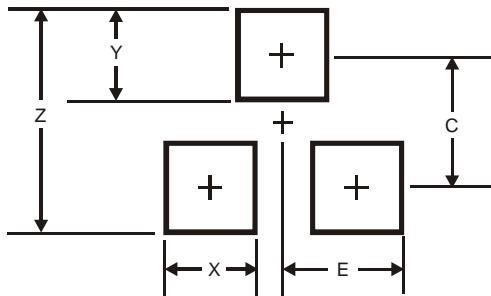
## Package Outline Dimensions



SOT323			
Dim	Min	Max	Typ
A	0.25	0.40	0.30
B	1.15	1.35	1.30
C	2.00	2.20	2.10
D	-	-	0.65
G	1.20	1.40	1.30
H	1.80	2.20	2.15
J	0.0	0.10	0.05
K	0.90	1.00	1.00
L	0.25	0.40	0.30
M	0.10	0.18	0.11
$\alpha$	0°	8°	-

All Dimensions in mm

## Suggested Pad Layout



Dimensions	Value (in mm)
Z	2.8
X	0.7
Y	0.9
C	1.9
E	1.0

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- Подбор аналогов;
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- Поставка образцов и прототипов;
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