



D1213A-01SO

1 CHANNEL LOW CAPACITANCE TVS DIODE ARRAY

Features

- IEC 61000-4-2 (ESD): Air ±15kV, Contact ±8kV
- 1 Channel of ESD Protection
- Low Channel Input Capacitance of 0.85pF Typical
- 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)
- Qualified to AEC-Q101 Standards for High Reliability

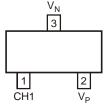
Mechanical Data

- 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: 0.0089 grams (approximate)



SOT23

Top View



Pin Configuration



Device Schematic

Ordering Information (Note 4)

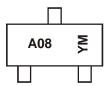
Part Number	Case	Packaging
D1213A-01SO-7	SOT23	3000/Tape & Reel

Notes: 1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.

See http://www.diodes.com 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.

4. For packaging details, go to our website at http://www.diodes.com.

Marking Information



A08 = Product Type Marking Code YM = Date Code Marking Y = Year (ex: Z = 2012) M = Month (ex: 9 = September)

Date Code Key

Year	2011	1	2012		2013	20	14	2015		2016	2	2017
Code	Y		Z		А	E	3	С		D		E
Month	Jan	Feb	Mar	Apr	Мау	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	0	Ν	D



Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit	Conditions
Operating Supply Voltage	V _P - V _N	6.0	V	_
DC Voltage at any Channel Input	-	(V _N – 0.5) to (V _P + 0.5)	V	_
Peak Pulse Current	I _{PP}	5	А	8/20µs, Per Figure 3
ESD Protection – Contact Discharge	V _{ESD_Contact}	±8	kV	Standard IEC 61000-4-2
ESD Protection – Air Discharge	V _{ESD_Air}	±15	kV	Standard IEC 61000-4-2

Thermal Characteristics

Characteristic	Symbol	Value	Unit
	Symbol		
Power Dissipation (Note 5)	PD	300	mW
Thermal Resistance, Junction to Ambient (Note 5)	$R_{ heta JA}$	417	°C/W
Operating and Storage Temperature Range	TJ, T _{STG}	-65 to +150	°C

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

Characteristic	Symbol	Min	Тур	Max	Unit	Test Conditions
Operating Supply Voltage	VP	_	3.3	5.5	V	-
Operating Supply Current (Note 6)	IP	_	—	8.0	μA	$(V_{P} - V_{N}) = 3.3V$
Channel Leakage Current (Note 6)	I _R	_	±0.1	±1.0	μA	$V_P = 5V, V_N = 0V$
Reverse breakdown voltage	V _{BR}	6.0	—	_	V	I _R = 1mA
Clamping Voltage, Positive Transients	V _{CL1}	_	10.0	_	V	$I_{PP} = 1A, t_p = 8/20\mu s$
Clamping Voltage, Negative Transients	V _{CL2}	_	-1.7	_	V	$I_{PP} = -1A, t_p = 8/20 \mu s$
Forward Voltage for Top Diode	V _{FD1}	0.60	0.80	0.95	V	$I_F = 8mA$, CH1 to V_P
Forward Voltage for Bottom Diode	V _{FD2}	0.60	0.80	0.95	V	$I_F = 8mA$, V_N to CH1
Dynamic Resistance	R _{DYN}	_	0.9	_	Ω	I _{PP} = 1A, t _p = 8/20µs
Channel Input Capacitance	CT	—	0.85	1.2	pF	$V_{IN} = 1.65V, V_P = 3.3V, V_N = 0V, f = 1MHz$

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.

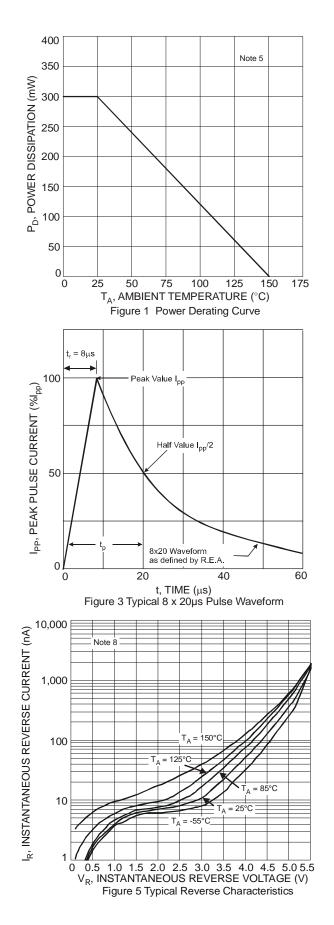
6. Short duration pulse test used to minimize self-heating effect.

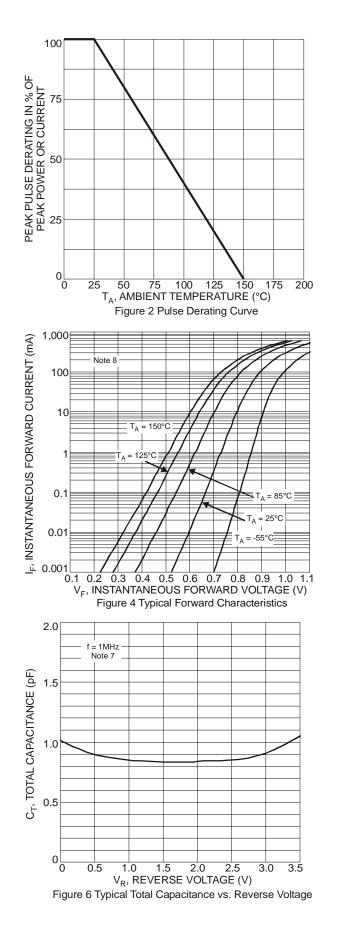
7. Measured from CH1 to V_N.

8. Measured from VP to VN.

9. For information on the impact of Diodes' USB 2.0 compatible ESD protectors on signal integrity including eye diagram plots, please refer to AN77 at the following URL: http://www.diodes.com/destools/appnote_dnote.html.



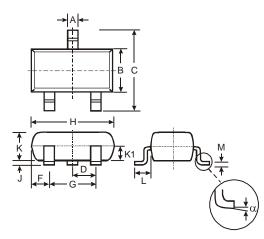






Package Outline Dimensions

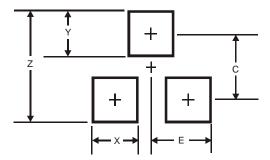
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for latest version.



	SOT23						
Dim	Min	Max	Тур				
Α	0.37	0.51	0.40				
В	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				
Н	2.80	3.00	2.90				
J	0.013	0.10	0.05				
K	0.903	1.10	1.00				
K1	-	-	0.400				
L	0.45	0.61	0.55				
М	0.085	0.18	0.11				
α	0°	8°	-				
All	All Dimensions in mm						

Suggested Pad Layout

Please see AP02001 at http://www.diodes.com/datasheets/ap02001.pdf for the latest version.



Dimensions	Value (in mm)
Z	2.9
Х	0.8
Y	0.9
C	2.0
E	1.35



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