

Features

- ESD Protection >30kV (Human Body Model) (Note 1)
- Ultra-Small Surface Mount Package
- Protects 2 Data Lines
- Low Leakage <25nA
- Low Capacitance 3pF Typ.
- Protects USB 2.0 and USB 1.1
- **Lead, Halogen and Antimony Free, RoHS Compliant "Green" Device (Notes 2, 3 and 4)**

Mechanical Data

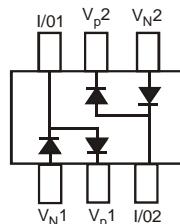
- Case: SOT-363
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish — Matte Tin annealed over Alloy 42 leadframe. Solderable per MIL-STD-202, Method 208
- Orientation: See Diagram Below
- Weight: 0.006 grams (approximate)

EC Compatibility (Note 1)

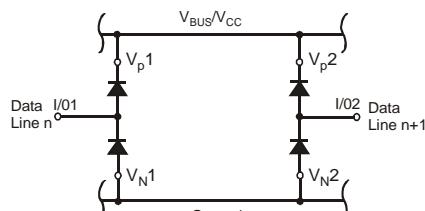
- 61000-4-2 (ESD) Air-30kV Contact-30kV
- 61000-4-4 (EFT) 40A, 5/50 ns
- 61000-4-5 (Surge) 8x20 μ s, 20 Amperes



Top View



Internal Schematic



APPLICATION

Top View

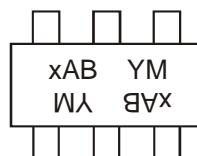
Ordering Information (Note 5)

Part Number	Case	Packaging
SDA004-7	SOT-363	3000/Tape & Reel

Notes:

1. Tested with V_P connected to V_N to simulate appropriate V_{BUS}/V_{CC} decoupling to ground.
2. No purposefully added lead. Halogen and Antimony Free.
3. Diodes Inc.'s "Green" policy can be found on our website at <http://www.diodes.com>.
4. Product manufactured with Data Code V9 (week 33, 2008) and newer are built with Green Molding Compound. Product manufactured prior to Data Code V9 are built with Non-Green Molding Compound and may contain Halogens or Sb_2O_3 Fire Retardants.
5. For packaging details, go to our website at <http://www.diodes.com>.

Marking Information



KAB or JAB = Product Type Marking Code

YM = Date Code Marking

Y = Year ex: R = 2004

M = Month ex: 9 = September

Date Code Key

Year	2004	2005	2006	2007	2008	2009	2010	2111	2012	2013	2014	2015
Code	R	S	T	U	V	W	X	Y	Z	A	B	C
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
Non-Repetitive Peak Reverse Voltage	V_{RM}	100	V
Peak Repetitive Reverse Voltage	V_{RRM}		
Working Peak Reverse Voltage	V_{RWM}	80	V
DC Blocking Voltage	V_R		
Forward Continuous Current (Note 6)	I_{FM}	500	mA
Repetitive Peak Forward Current @ $T_P = 5\mu\text{s}$, $f = 50\text{kHz}$ (Note 6)	I_{FRM}	1000	mA
Non-Repetitive Peak Forward Surge Current @ $t = 1.0\mu\text{s}$	I_{FSM}	20	A
Clamping Voltage @ $I_{pp} = 20\text{A}$ (Note 7) 8x20 μs Waveform	V_C	16	V

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 6)	P_D	200	mW
Thermal Resistance, Junction to Ambient Air (Note 6)	R_{QJA}	625	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-65 to +150	°C

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Breakdown Voltage (Note 8)	$V_{(BR)R}$	80	—	—	V	$I_R = 100\mu\text{A}$
Forward Voltage	V_F	0.62	—	0.72	V	$I_F = 5.0\text{mA}$
		—	—	0.93		$I_F = 20\text{mA}$
		—	—	1.0		$I_F = 100\text{mA}$
		—	—	1.25		$I_F = 150\text{mA}$
Reverse Current (Note 8)	I_R	—	—	100	nA	$V_R = 70\text{V}$
		—	—	50		$V_R = 75\text{V}$, $T_J = 150^\circ\text{C}$
		—	—	30		$V_R = 25\text{V}$, $T_J = 150^\circ\text{C}$
		—	—	25		$V_R = 20\text{V}$
Capacitance, Between I/O Lines (I/O1 & I/O2)	C_{LL}	—	2.5	4.0	pF	$V_R = 0\text{V}$, $f = 1.0\text{MHz}$
Capacitance Between I/O Line and Ground	C_{LG}	—	3.3	5.3	pF	$V_R = 0\text{V}$, $f = 1.0\text{MHz}$
Reverse Recovery Time	t_{rr}	—	—	4.0	ns	$V_R = 6\text{V}$, $I_F = 5\text{mA}$

Notes:

6. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch; pad layout as shown on Diodes Inc. suggested pad layout document AP02001, which can be found on our website at <http://www.diodes.com>.
7. Referenced to V_P or V_N .
8. Short duration pulse test used to minimize self-heating effect.

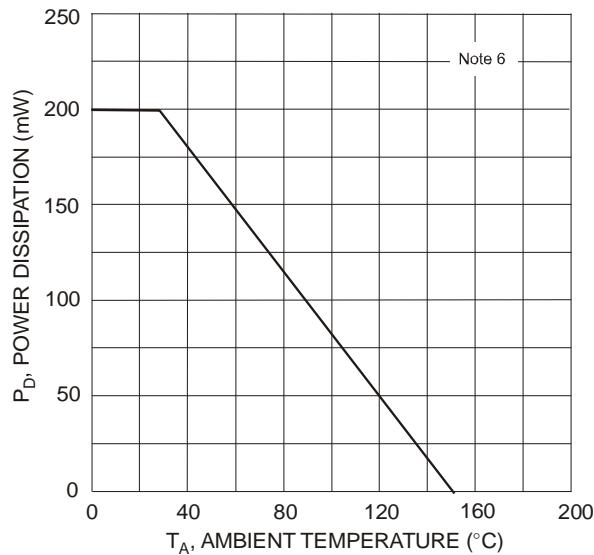


Fig. 1 Power Derating Curve, Total Package

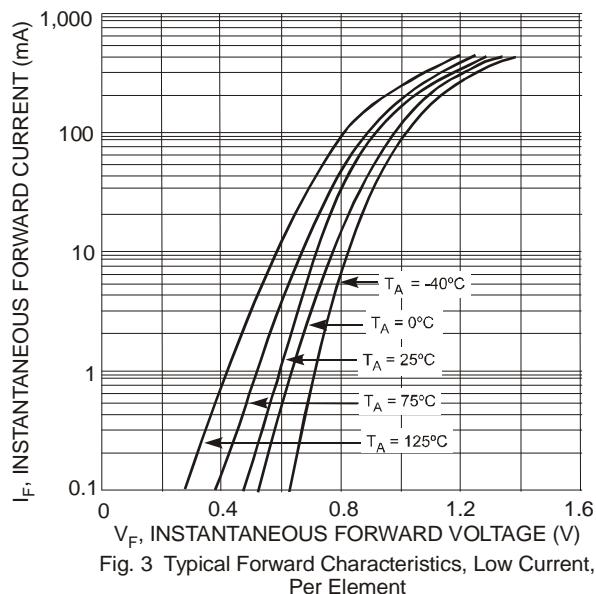


Fig. 3 Typical Forward Characteristics, Low Current, Per Element

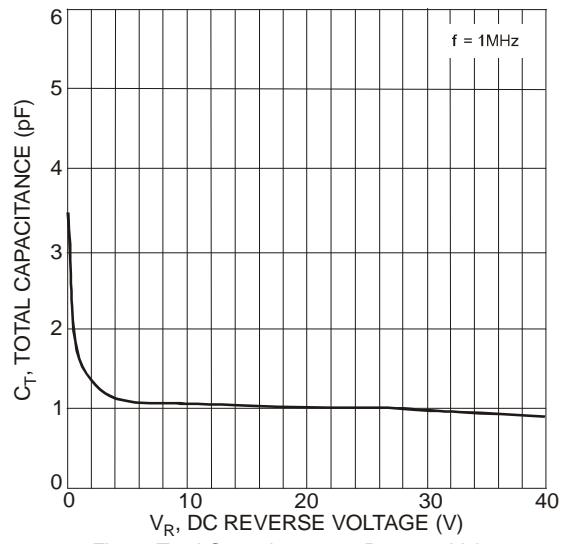


Fig. 5 Total Capacitance vs. Reverse Voltage Per Element

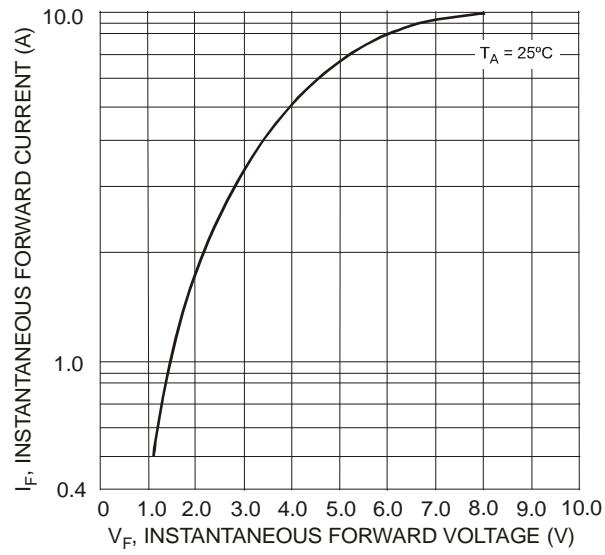


Fig. 2 Typical Forward Characteristics, High Current, Per Element

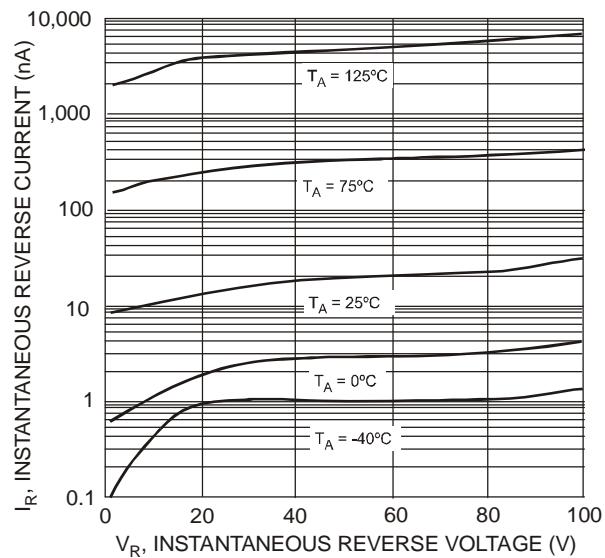


Fig. 4 Typical Reverse Characteristics, Per Element

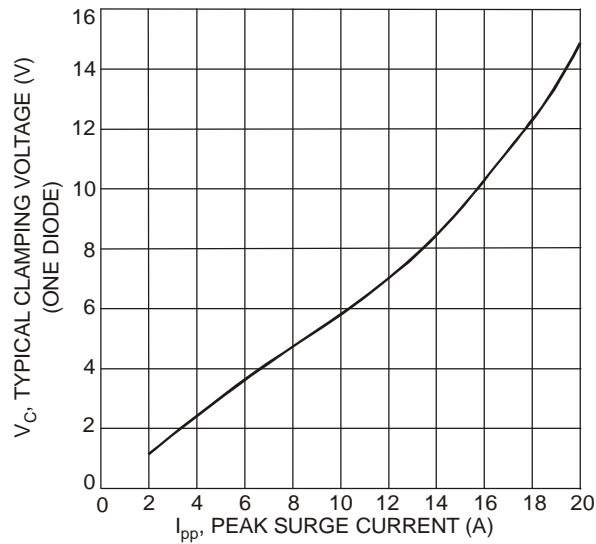
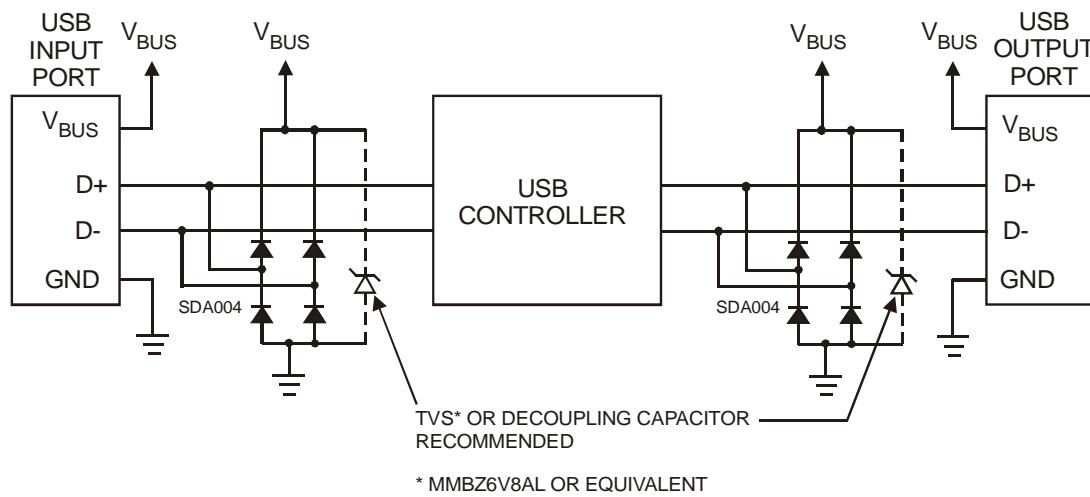
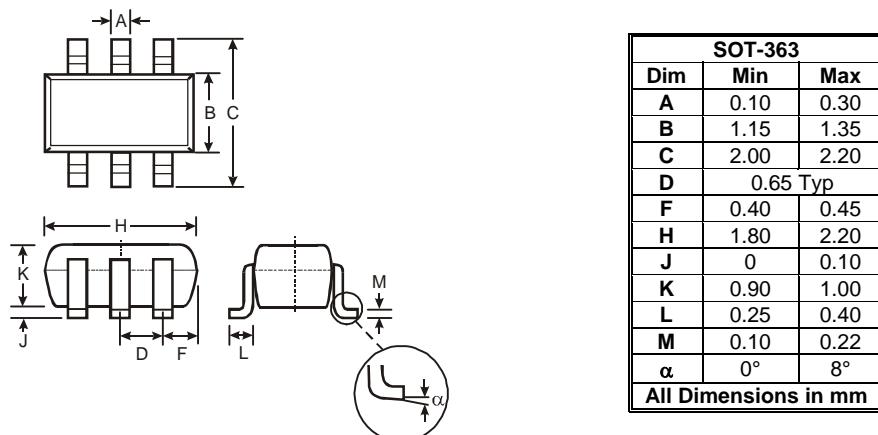


Fig. 6 6100-4-5 8x20μs Surge Response, Per Element

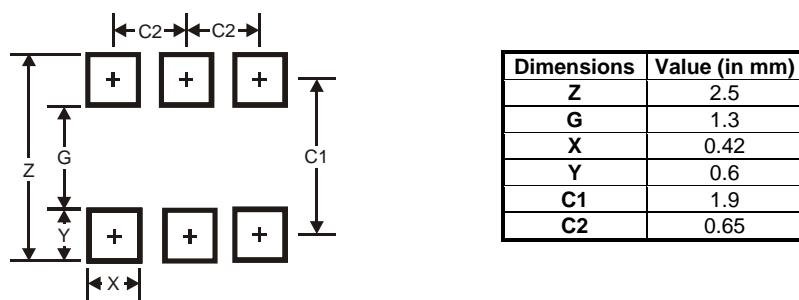


ESD PROTECTION - USB APPLICATION

Package Outline Dimensions



Suggested Pad Layout



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