

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 4, 5 and 6)**

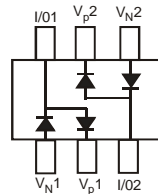
IEC Compatibility (Note 1)

- 61000-4-2 (ESD) Air-30kV Contact-30kV
- 61000-4-4 (EFT) 40A, 5/50 ns
- 61000-4-5 (Surge) 8x20μs, 20 Amperes

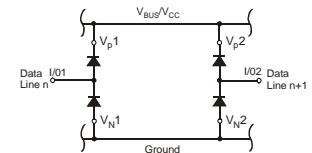


TOP VIEW

SOT-363



Internal Schematic


 APPLICATION
TOP VIEW

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}	80	V	
Working Peak Reverse Voltage	V_{RWM}			
DC Blocking Voltage	V_R			
Forward Continuous Current (Note 2)	I_{FM}	500	mA	
Repetitive Peak Forward Current @ $T_P = 5\mu\text{s}$, $f = 50\text{kHz}$ (Note 2)	I_{FRM}	1000	mA	
Non-Repetitive Peak Forward Surge Current	I_{FSM}	@ $t = 1.0\mu\text{s}$	20	A
		@ $t = 1.0\text{s}$	2.0	
Clamping Voltage @ $I_{pp} = 20\text{A}$ (Note 3) 8x20μs Waveform	V_C	16	V	

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 2)	P_D	200	mW
Thermal Resistance, Junction to Ambient Air (Note 2)	$R_{\theta JA}$	625	$^\circ\text{C}/\text{W}$
Operating and Storage Temperature Range	T_J, T_{STG}	-65 to +150	$^\circ\text{C}$

- Notes:
1. Tested with V_P connected to V_N to simulate appropriate V_{BUS}/V_{CC} decoupling to ground.
 2. 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/datasheets/ap02001.pdf>.
 3. Referenced to V_P or V_N .
 4. No purposefully added lead. Halogen and Antimony Free.
 5. Diodes Inc.'s "Green" policy can be found on our website at http://www.diodes.com/products/lead_free/index.php.
 6. Product manufactured with Data Code V9 (week 33, 2008) and newer are built with Green Molding Compound. Product manufactured prior to Date Code V9 are built with Non-Green Molding Compound and may contain Halogens or Sb_2O_3 Fire Retardants.

Electrical Characteristics @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Breakdown Voltage (Note 7)	V _{(BR)R}	80	—	—	V	I _R = 100μA
Forward Voltage	V _F	0.62	—	0.72 0.93 1.0 1.25	V	I _F = 5.0mA I _F = 20mA I _F = 100mA I _F = 150mA
Reverse Current (Note 7)	I _R	—	—	100 50 30 25	nA μA μA nA	V _R = 70V V _R = 75V, T _J = 150°C V _R = 25V, T _J = 150°C V _R = 20V
Capacitance, Between I/O Lines (I/O1 & I/O2)	C _{LL}	—	2.5	4.0	pF	V _R = 0V, f = 1.0MHz
Capacitance Between I/O Line and Ground	C _{LG}	—	3.3	5.3	pF	V _R = 0V, f = 1.0MHz
Reverse Recovery Time	t _{rr}	—	—	4.0	ns	V _R = 6V, I _F = 5mA

Notes: 7. Short duration pulse test used to minimize self-heating effect.

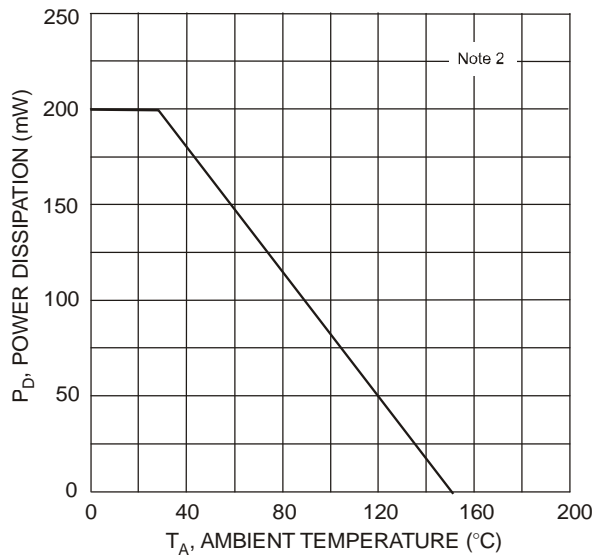


Fig. 1 Power Derating Curve, Total Package

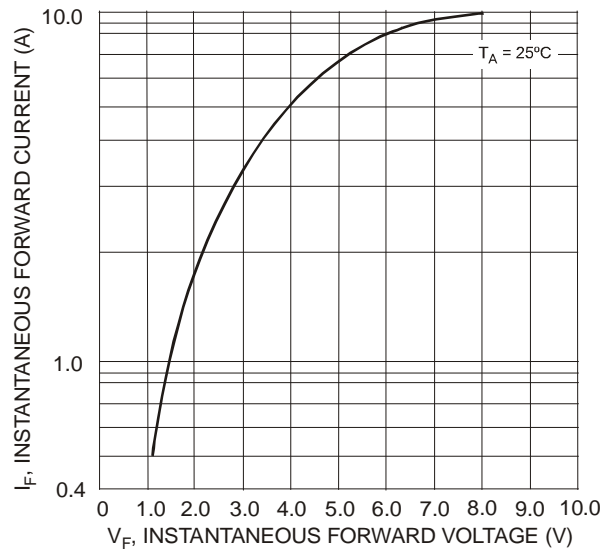


Fig. 2 Typical Forward Characteristics, High Current, Per Element

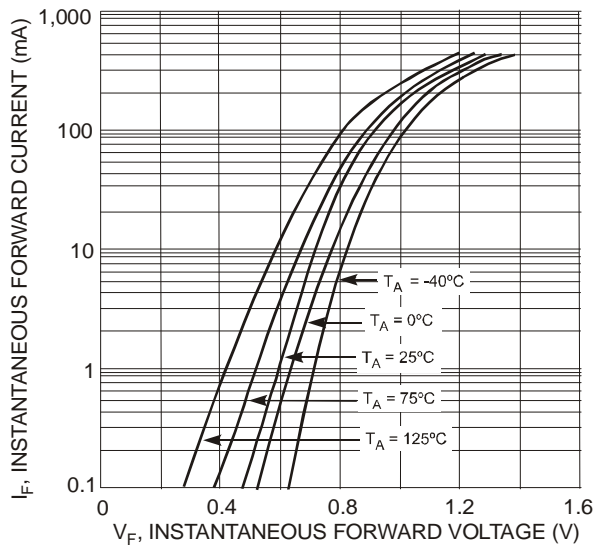


Fig. 3 Typical Forward Characteristics, Low Current, Per Element

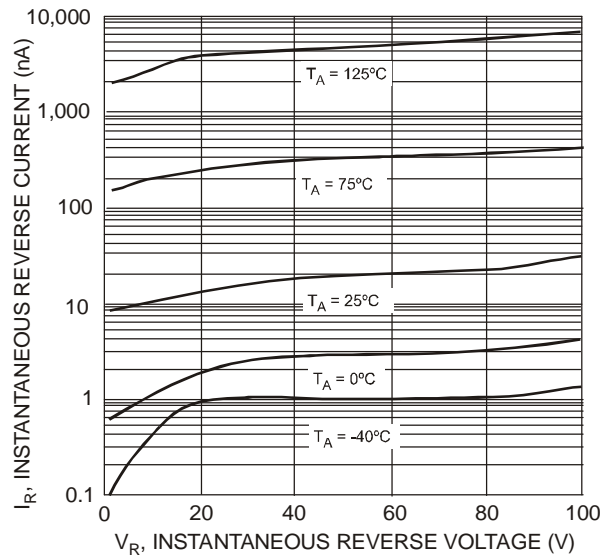


Fig. 4 Typical Reverse Characteristics, Per Element

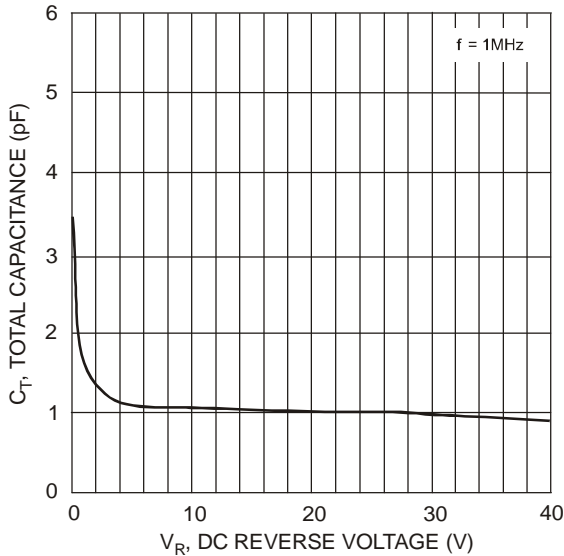


Fig. 5 Total Capacitance vs. Reverse Voltage Per Element

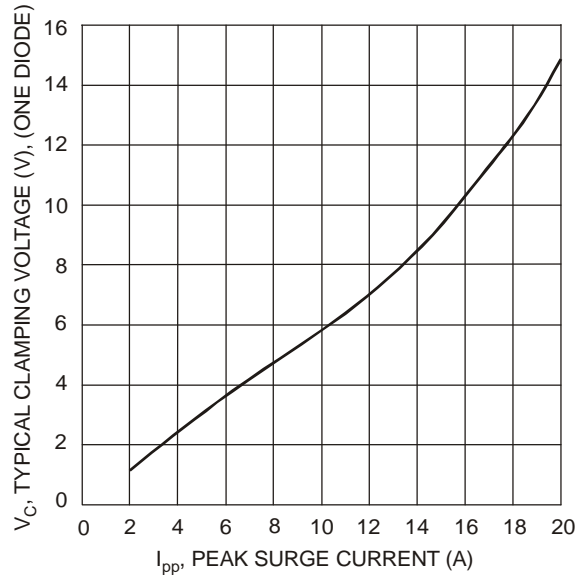
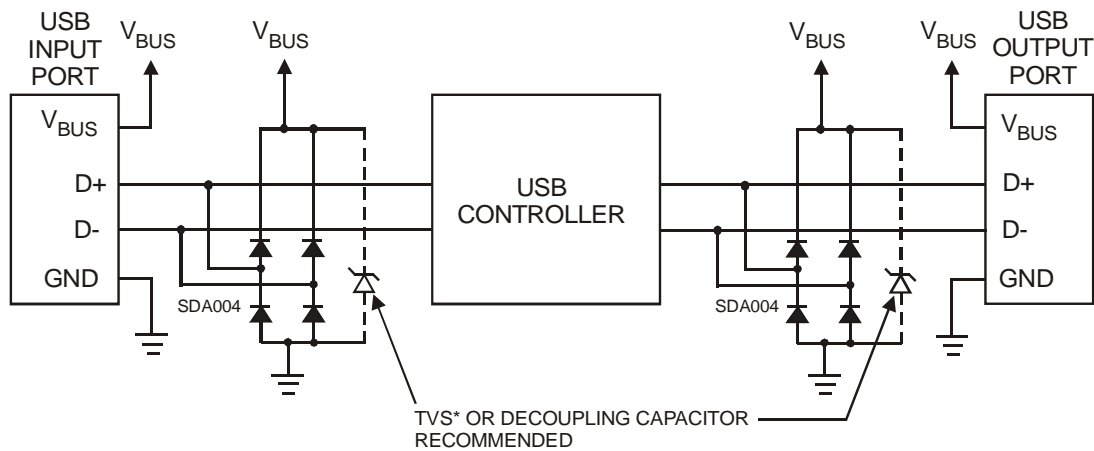


Fig. 6 6100-4-5 8x20 μ s Lightning Surge Response, Per Element



* MMBZ6V8AL OR EQUIVALENT

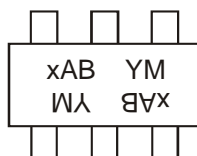
ESD PROTECTION - USB APPLICATION

Ordering Information (Note 8)

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

Notes: 8. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

Marking Information



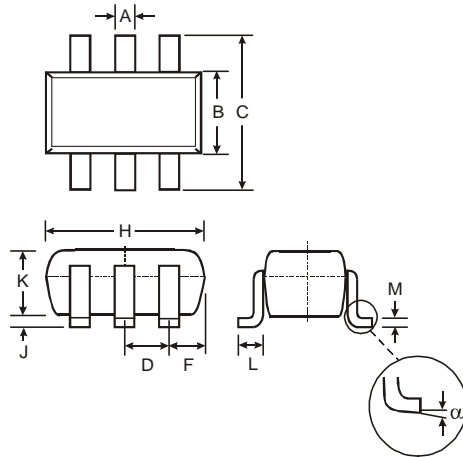
KAB or JAB = Product Type Marking Code
 YM = Date Code Marking
 Y = Year ex: R = 2004
 M = Month ex: 9 = September

Date Code Key

Year	2004	2005	2006	2007	2008	2009	2010	2111	2012
Code	R	S	T	U	V	W	X	Y	Z

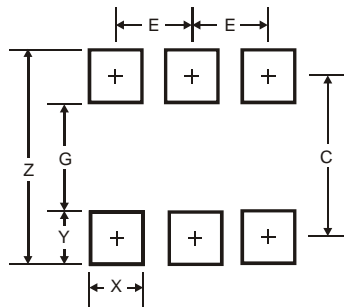
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

Package Outline Dimensions



SOT-363		
Dim	Min	Max
A	0.10	0.30
B	1.15	1.35
C	2.00	2.20
D	0.65 Nominal	
F	0.30	0.40
H	1.80	2.20
J	—	0.10
K	0.90	1.00
L	0.25	0.40
M	0.10	0.25
α	0°	8°
All Dimensions in mm		

Suggested Pad Layout



Dimensions	Value (in mm)
Z	2.5
G	1.3
X	0.42
Y	0.6
C	1.9
E	0.65

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