

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)**

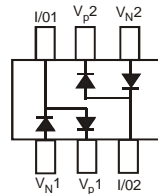
IEC Compatibility (Note 1)

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

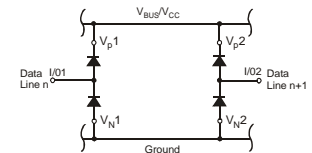


TOP VIEW

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}	@ $t = 1.0\mu\text{s}$ @ $t = 1.0\text{s}$	20 2.0	A
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.

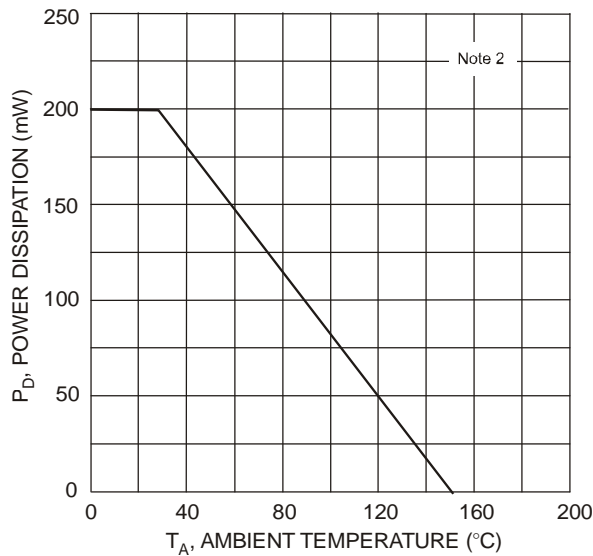


Fig. 1 Power Derating Curve, Total Package

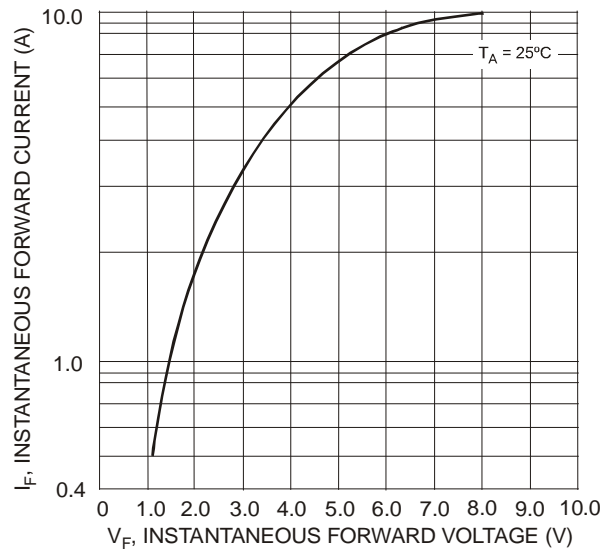


Fig. 2 Typical Forward Characteristics, High Current, Per Element

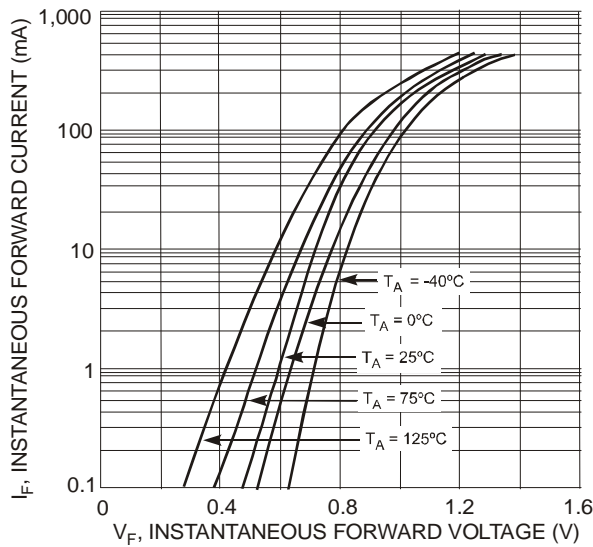


Fig. 3 Typical Forward Characteristics, Low Current, Per Element

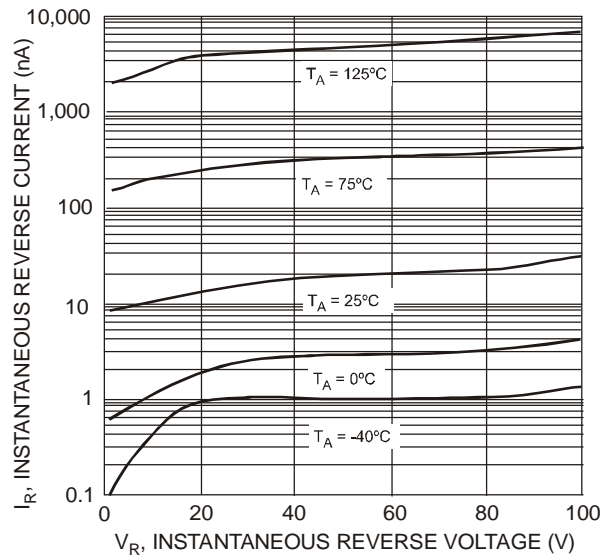


Fig. 4 Typical Reverse Characteristics, Per Element

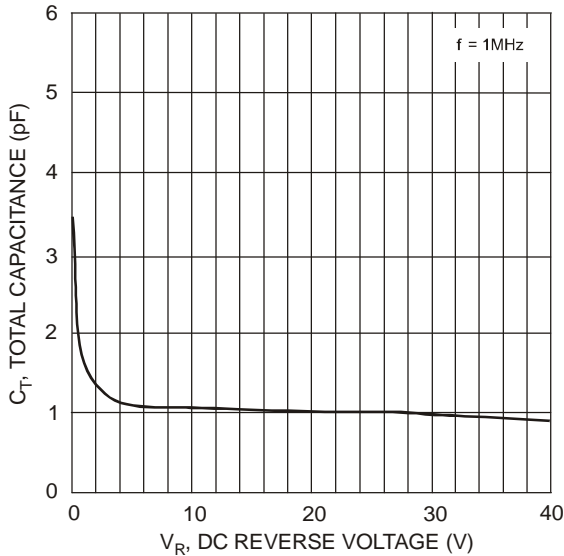


Fig. 5 Total Capacitance vs. Reverse Voltage Per Element

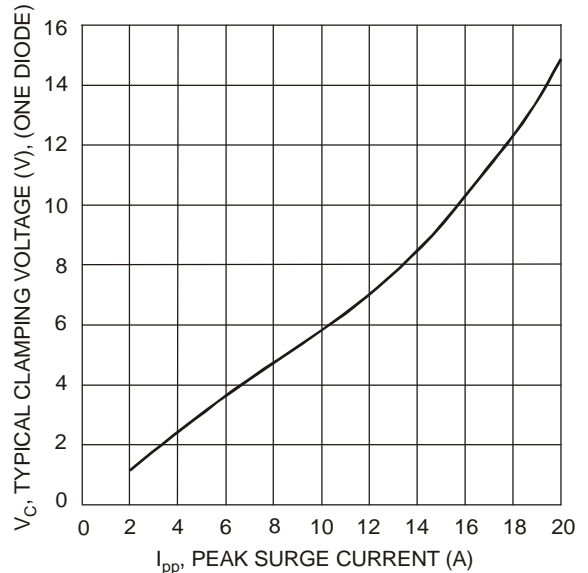
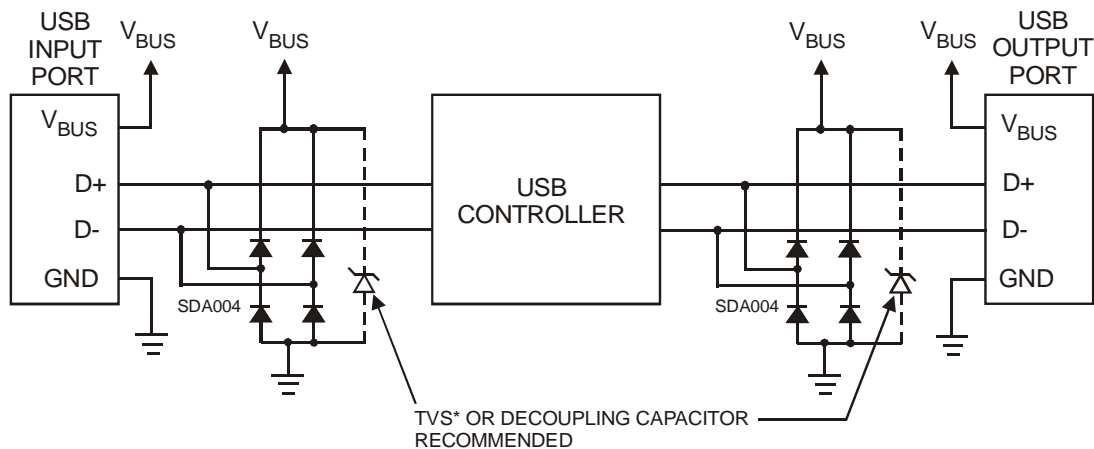


Fig. 6 6100-4-5 8x20 μs Lightning Surge Response, Per Element



* MMBZ6V8AL OR EQUIVALENT

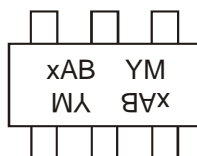
ESD PROTECTION - USB APPLICATION

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



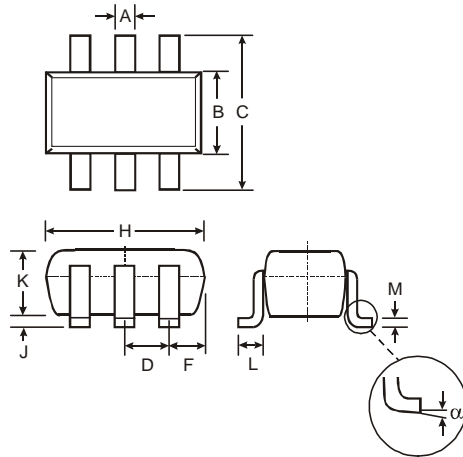
KAB or JAB = Product Type Marking Code
 YM = Date Code Marking
 Y = Year ex: R = 2004
 M = Month ex: 9 = September

Date Code Key

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

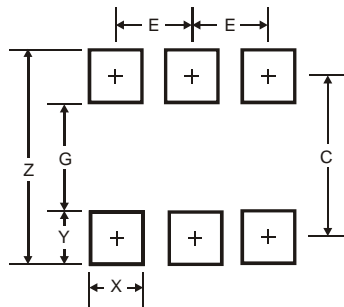
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

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

IMPORTANT NOTICE

Diodes Incorporated and its subsidiaries reserve the right to make modifications, enhancements, improvements, corrections or other changes without further notice to any product herein. Diodes Incorporated does not assume any liability arising out of the application or use of any product described herein; neither does it convey any license under its patent rights, nor the rights of others. The user of products in such applications shall assume all risks of such use and will agree to hold Diodes Incorporated and all the companies whose products are represented on our website, harmless against all damages.

LIFE SUPPORT

Diodes Incorporated products are not authorized for use as critical components in life support devices or systems without the expressed written approval of the President of Diodes Incorporated.