

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)**

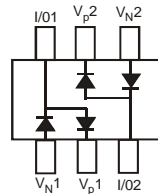
IEC Compatibility (Note 1)

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

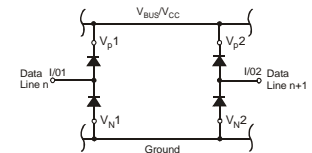


TOP VIEW

SOT-363



Internal Schematic


 APPLICATION
TOP VIEW

Maximum Ratings @_{TA} = 25°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 @ $T_P = 5\mu s, f = 50kHz$ (Note 2) | I_{FRM} | 1000 | mA | |
| Non-Repetitive Peak Forward Surge Current | I_{FSM} | @ $t = 1.0\mu s$ | 20 | A |
| | | @ $t = 1.0s$ | 2.0 | |
| Clamping Voltage @ $I_{pp} = 20A$ (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 | °C/W |
| Operating and Storage Temperature Range | T_J, T_{STG} | -65 to +150 | °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.

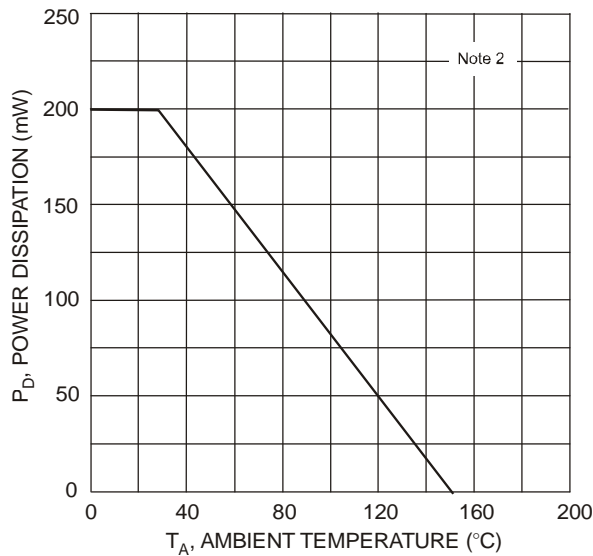


Fig. 1 Power Derating Curve, Total Package

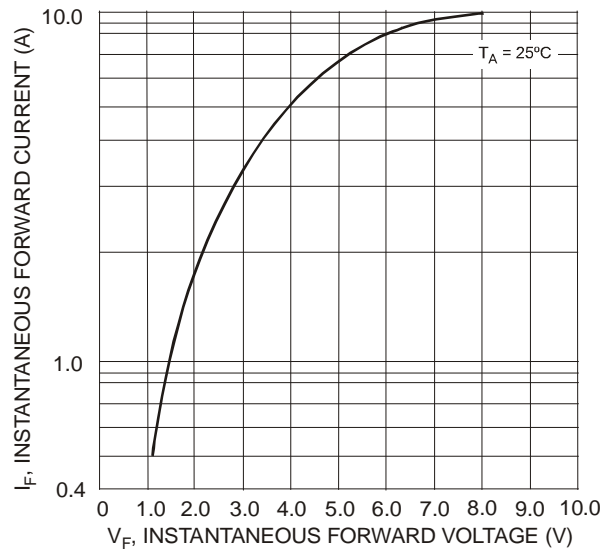


Fig. 2 Typical Forward Characteristics, High Current, Per Element

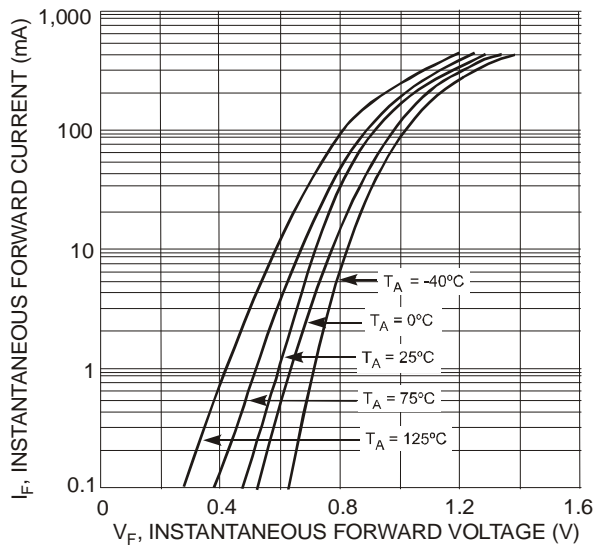


Fig. 3 Typical Forward Characteristics, Low Current, Per Element

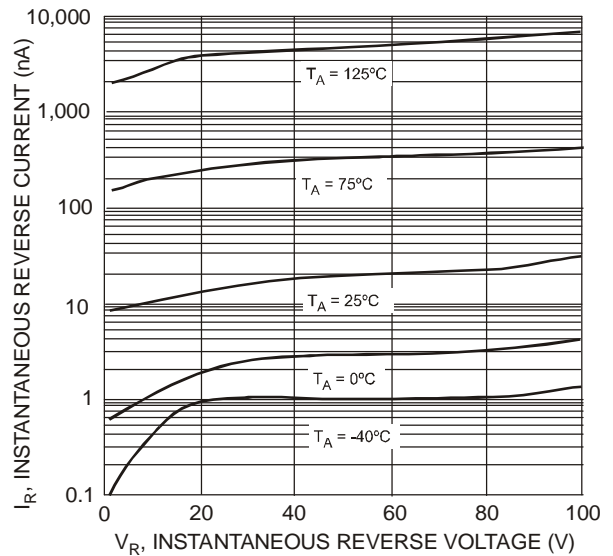


Fig. 4 Typical Reverse Characteristics, Per Element

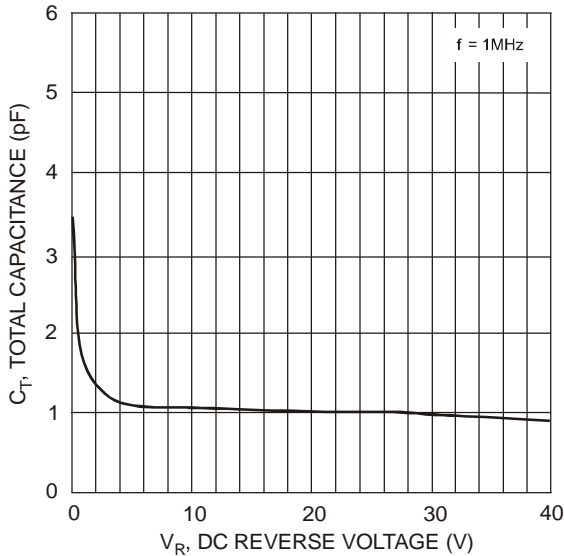


Fig. 5 Total Capacitance vs. Reverse Voltage Per Element

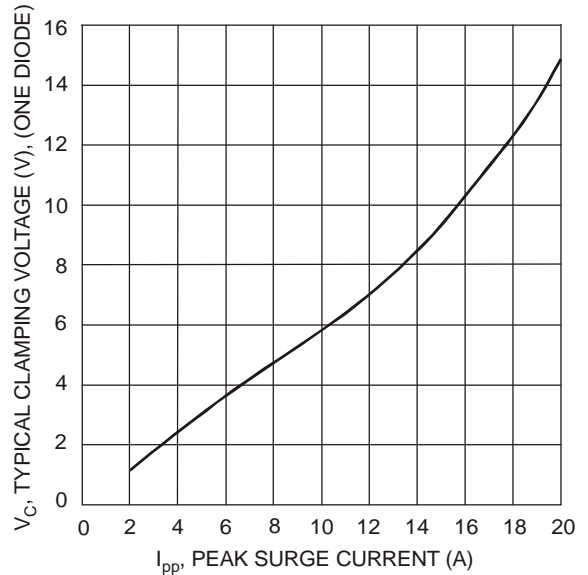
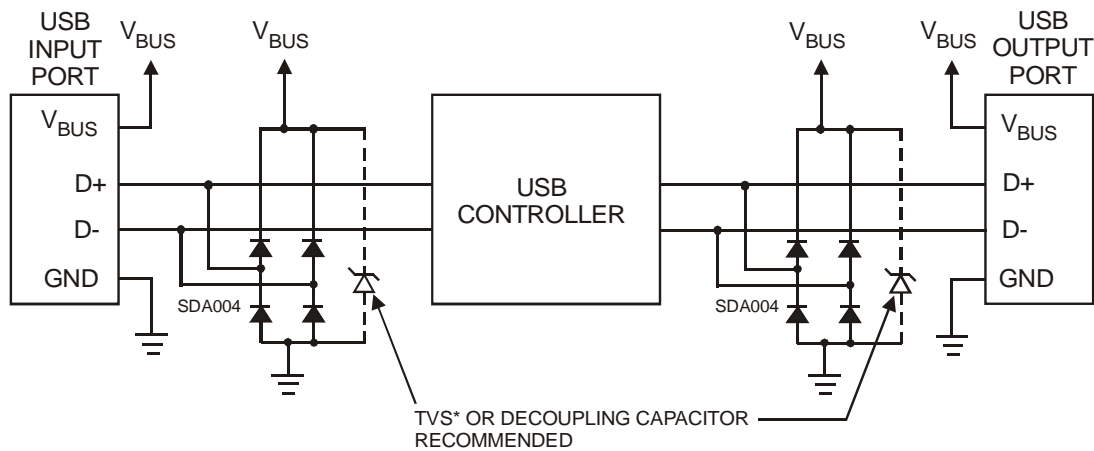


Fig. 6 6100-4-5 8x20 μ s Lightning Surge Response, Per Element



* MMBZ6V8AL OR EQUIVALENT

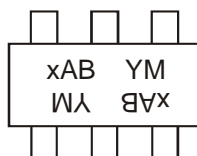
ESD PROTECTION - USB APPLICATION

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



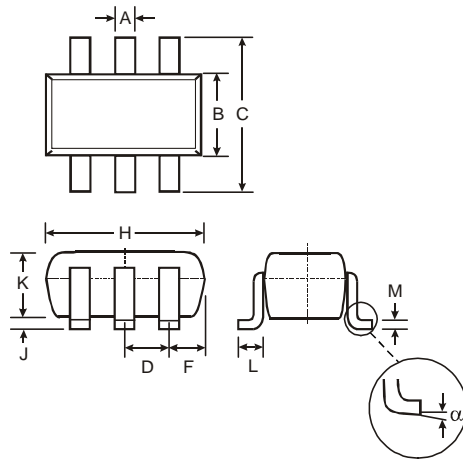
KAB or JAB = Product Type Marking Code
 YM = Date Code Marking
 Y = Year ex: R = 2004
 M = Month ex: 9 = September

Date Code Key

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

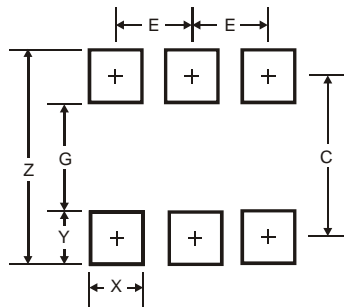
| Month | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Code | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | O | N | D |

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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