

## Features

- Fast Switching Speed
- Ultra-Small Surface Mount Package
- **Lead Free By Design/RoHS Compliant (Note 3)**
- **"Green" Device (Note 4)**
- **Qualified to AEC-Q101 Standards for High Reliability**

## Data Line Transient Protection

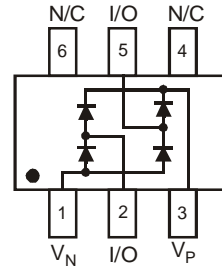
In accordance with (Note 1):

- IEC 61000-4-2 Contact Method:  $\pm 15\text{kV}$
- IEC 61000-4-2 Air Discharge Method:  $\pm 25\text{kV}$



TOP VIEW

SOT-363



Device Schematic

## Mechanical Data

- Case: SOT-363
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0 (Note 3)
- Moisture Sensitivity: Level 1 per J-STD-020D
- Terminals: Finish — Matte Tin annealed over Alloy 42 Leadframe. Solderable per MIL-STD-202, Method 208
- Ordering Information: See Page 3
- Marking Information: See Page 3
- Weight: 0.006 grams (approximate)

## Maximum Ratings @ $T_A = 25^\circ\text{C}$ unless otherwise specified

| Characteristic   | Symbol          | Value                  | Unit |
|--|-----------------|------------------------|------|
| Peak Repetitive Reverse Voltage  | $V_{RRM}$       | 85                     | V    |
| Working Peak Reverse Voltage   | $V_{RWM}$       |                        |      |
| DC Blocking Voltage  | $V_R$           |                        |      |
| RMS Reverse Voltage  | $V_{R(RMS)}$    | 60                     | V    |
| Forward Current (Single Diode)   | $I_{FM}$        | 200                    | mA   |
| Peak Forward Surge Current<br>8.3ms Single half Sine-Wave Superimposed on Rated Load | $I_{FM(surge)}$ | 3.5                    | A    |
| Average Rectified Forward Current (Note 1)   | $I_{F(AV)}$     | 1                      | A    |
| Repetitive Peak Forward Current  | $I_{FRM}$       | 450                    | mA   |
| Non-Repetitive Peak Forward Surge Current  | $I_{FSM}$       | @ $t = 1.0\mu\text{s}$ | 4.0  |
|  |                 | @ $t = 1.0\text{ms}$   | 1.0  |
|  |                 | @ $t = 1.0\text{s}$    | 0.5  |

## 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  $V_{CC}$  pins connected to GND pin.
  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. No purposefully added lead.
  4. Diodes Inc.'s "Green" policy can be found on our website at [http://www.diodes.com/products/lead\\_free/index.php](http://www.diodes.com/products/lead_free/index.php).

**Electrical Characteristics** @T<sub>A</sub> = 25°C unless otherwise specified

| Characteristic  | Symbol             | Min | Typ | Max                         | Unit | Test Condition   |
|---|--------------------|-----|-----|-----------------------------|------|--|
| Reverse Breakdown Voltage (Note 5)  | V <sub>(BR)R</sub> | 85  | —   | —                           | V    | I <sub>R</sub> = 100μA   |
| Forward Voltage   | V <sub>F</sub>     | —   | —   | 0.80<br>0.90<br>1.0<br>1.25 | V    | I <sub>F</sub> = 1.0mA<br>I <sub>F</sub> = 10mA<br>I <sub>F</sub> = 50mA<br>I <sub>F</sub> = 150mA                   |
| Leakage Current (Note 5)  | I <sub>R</sub>     | —   | —   | 2.5<br>30<br>50             | μA   | V <sub>R</sub> = 70V<br>V <sub>R</sub> = 25V, T <sub>J</sub> = 150°C<br>V <sub>R</sub> = 70V, T <sub>J</sub> = 150°C |
| Total Capacitance (per element)   | C <sub>T</sub>     | —   | 2   | —                           | pF   | V <sub>R</sub> = 0, f = 1.0MHz   |
| Capacitance Between Two Data Lines (DL <sub>1</sub> & DL <sub>2</sub> , DL <sub>1</sub> & DL <sub>3</sub> ) | C <sub>LL</sub>    | —   | 1.6 | 2.0                         | pF   | V <sub>R</sub> = 0, f = 1.0MHz   |
| Capacitance Between Data Line and Ground  | C <sub>LG</sub>    | —   | 2.3 | 3.0                         | pF   | V <sub>R</sub> = 0, f = 1.0MHz   |
| Reverse Recovery Time   | t <sub>rr</sub>    | —   | —   | 3.0                         | μs   | I <sub>F</sub> = I <sub>R</sub> = 10mA,<br>I <sub>rr</sub> = 0.1 x I <sub>R</sub> , R <sub>L</sub> = 100Ω            |

Notes: 5. Short duration pulse test used to minimize self-heating effect.

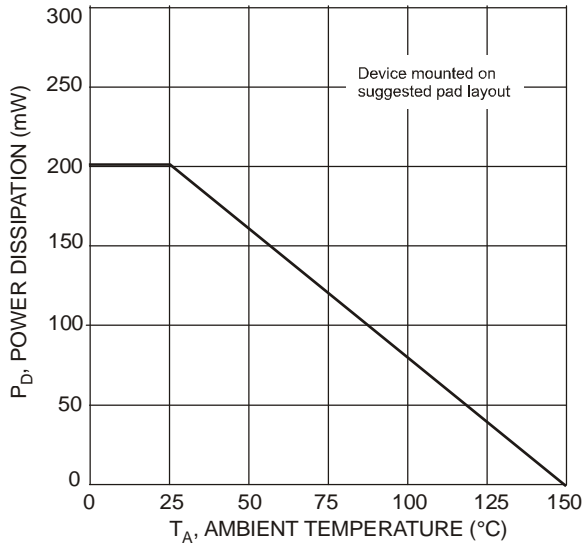


Fig. 1 Power Derating Curve, Total Package

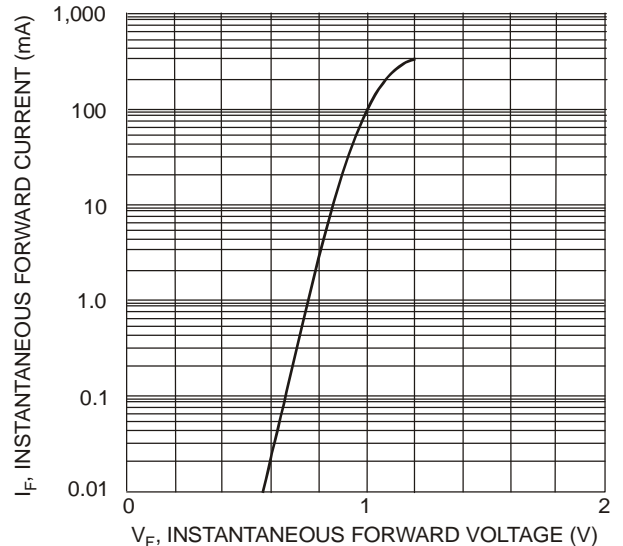


Fig. 2 Typical Forward Characteristics, Per Element

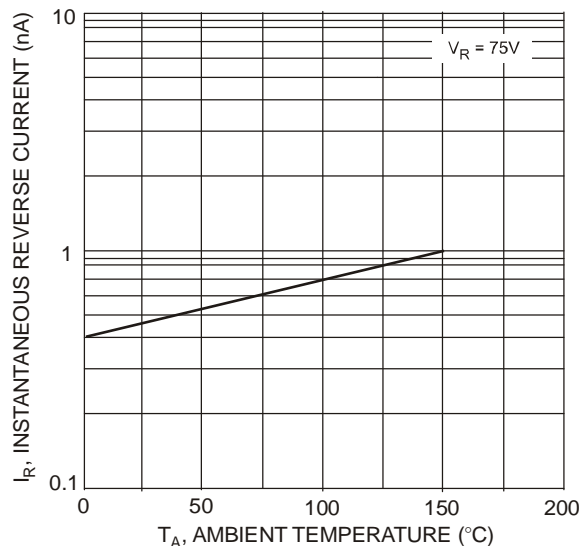


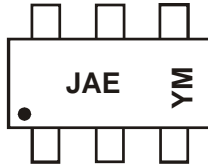
Fig. 3 Typical Reverse Characteristics, Per Element

**Ordering Information** (Note 6)

| Part Number | Case    | Packaging        |
|-------------|---------|------------------|
| DLPA004-7   | SOT-363 | 3000/Tape & Reel |

Notes: 6. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

**Marking Information**



JAE = Product Type Marking Code  
 YM = Date Code Marking  
 Y = Year (ex: V = 2008)  
 M = Month (ex: 9 = September)

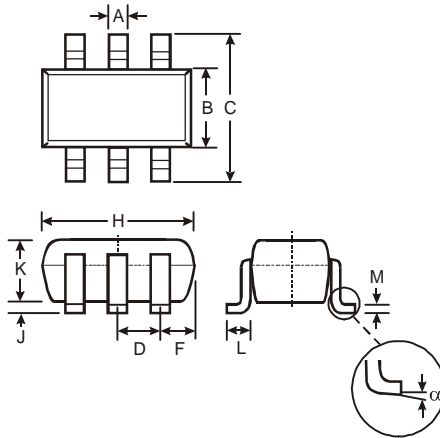
Date Code Key

| Year | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|------|------|------|------|------|------|------|------|------|
| Code | V    | W    | X    | Y    | Z    | A    | B    | C    |

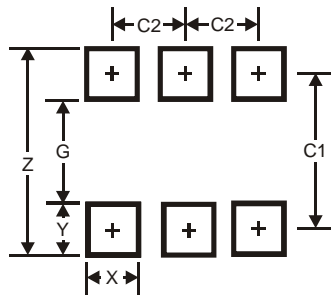
| Month | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Code  | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | O   | N   | D   |

**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 Typ |      |
| F                    | 0.40     | 0.45 |
| H                    | 1.80     | 2.20 |
| J                    | 0        | 0.10 |
| K                    | 0.90     | 1.00 |
| L                    | 0.25     | 0.40 |
| M                    | 0.10     | 0.22 |
| $\alpha$             | 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           |
| C1         | 1.9           |
| C2         | 0.65          |

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