

## Features

- Fast Switching Speed
- Ultra-Small Surface Mount Package
- Ideal For Three Dataline Rail Clamp or Three Phase Full Wave Bridge Rectification
- **Lead Free By Design/RoHS Compliant (Note 4)**
- **"Green" Device (Note 5)**

## Data Line Transient Protection

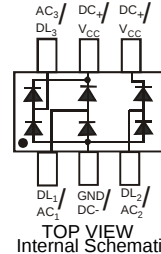
In accordance with (Note 1):

- 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



TOP VIEW  
Internal Schematic

## 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)            | $I_{FM}$     | 160   | mA   |
| Non-Repetitive Peak Forward Surge Current | $I_{FSM}$    | 4.0   | A    |
|                                           |              | 1.0   |      |
|                                           |              | 0.5   |      |

## Thermal Characteristics

| Characteristic                                      | Symbol          | Value       | Unit               |
|-----------------------------------------------------|-----------------|-------------|--------------------|
| Power Dissipation (Note 2)                          | $P_D$           | 200         | mW                 |
| Power Dissipation (Note 3)                          | $P_D$           | 300         | mW                 |
| Thermal Resistance Junction to Ambient Air (Note 2) | $R_{\theta JA}$ | 625         | $^\circ\text{C/W}$ |
| Thermal Resistance Junction to Ambient Air (Note 3) | $R_{\theta JA}$ | 417         | $^\circ\text{C/W}$ |
| Operating and Storage Temperature Range             | $T_J, T_{STG}$  | -65 to +150 | $^\circ\text{C}$   |

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

| Characteristic                                                           | Symbol      | Min | Typ | Max                        | Unit          | Test Condition                                                                             |
|--------------------------------------------------------------------------|-------------|-----|-----|----------------------------|---------------|--------------------------------------------------------------------------------------------|
| Reverse Breakdown Voltage (Note 6)                                       | $V_{(BR)R}$ | 85  | —   | —                          | V             | $I_R = 100\mu\text{A}$                                                                     |
| Forward Voltage                                                          | $V_F$       | —   | —   | 0.90<br>1.0<br>1.1<br>1.25 | V             | $I_F = 1.0\text{mA}$<br>$I_F = 10\text{mA}$<br>$I_F = 50\text{mA}$<br>$I_F = 150\text{mA}$ |
| Leakage Current (Note 6)                                                 | $I_R$       | —   | —   | 5.0<br>80                  | nA            | $V_R = 75\text{V}$<br>$V_R = 75\text{V}, T_J = 150^\circ\text{C}$                          |
| Total Capacitance (per element)                                          | $C_T$       | —   | 2   | —                          | pF            | $V_R = 0, f = 1.0\text{MHz}$                                                               |
| Capacitance Between Two Data Lines ( $DL_1$ & $DL_2$ , $DL_1$ & $DL_3$ ) | $C_{LL}$    | —   | 1.6 | 2.6                        | pF            | $V_R = 0, f = 1.0\text{MHz}$                                                               |
| Capacitance Between Data Line and Ground                                 | $C_{LG}$    | —   | 2.5 | 3.5                        | pF            | $V_R = 0, f = 1.0\text{MHz}$                                                               |
| Reverse Recovery Time                                                    | $t_{rr}$    | —   | —   | 3.0                        | $\mu\text{s}$ | $I_F = I_R = 10\text{mA}$ ,<br>$I_{rr} = 0.1 \times I_R, R_L = 100\Omega$                  |

- 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. Device mounted on Alumina PCB, 0.4 inch x 0.3 inch x 0.024 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>.
  4. No purposefully added lead.
  5. 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).
  6. Short duration pulse test used to minimize self-heating.

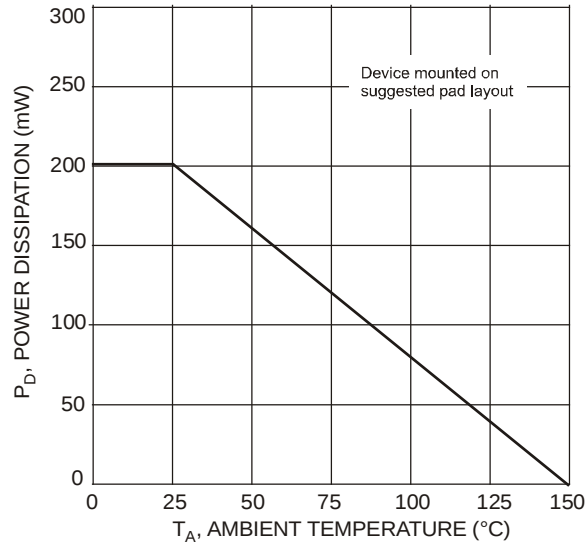


Fig. 1 Power Derating Curve, Total Package

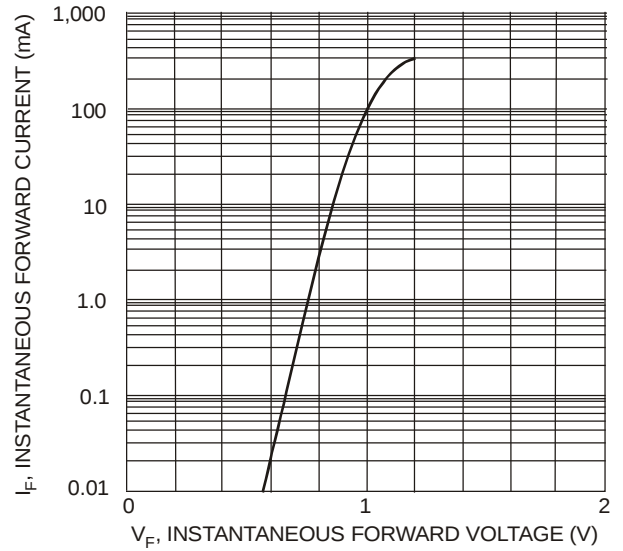


Fig. 2 Typical Forward Characteristics, Per Element

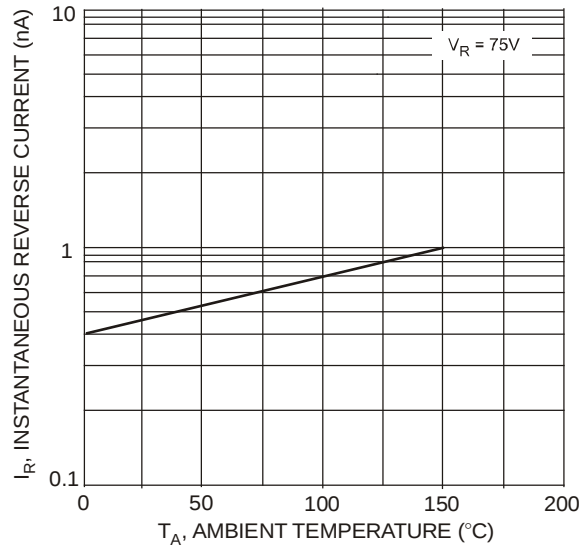


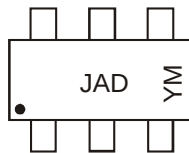
Fig. 3 Typical Reverse Characteristics, Per Element

## Ordering Information (Note 7)

| Part Number | Case    | Packaging        |
|-------------|---------|------------------|
| DLPA006-7   | SOT-363 | 3000/Tape & Reel |

 Notes: 7. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

## Marking Information



JAD = Product Type Marking Code  
 YM = Date Code Marking  
 Y = Year (ex: S = 2005)  
 M = Month (ex: 9 = September)

### Date Code Key

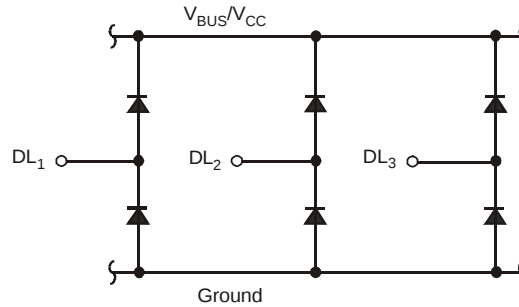
| Year | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
|------|------|------|------|------|------|------|------|------|
| Code | S    | T    | U    | V    | W    | X    | Y    | Z    |

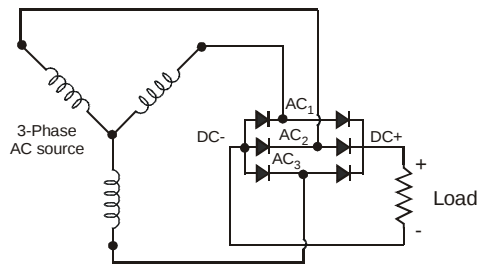
| Month | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Code  | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | O   | N   | D   |

## Typical Applications

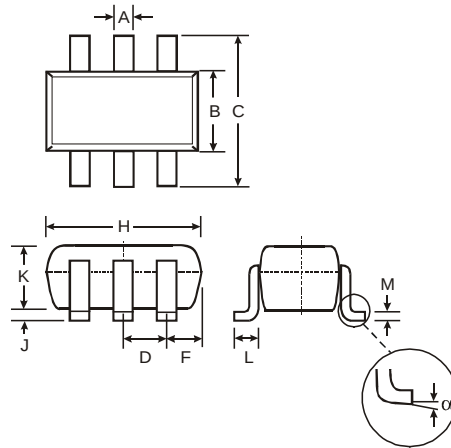
Data Line Bus Transient Suppressor



Three Phase, Full-Wave Bridge Rectifier

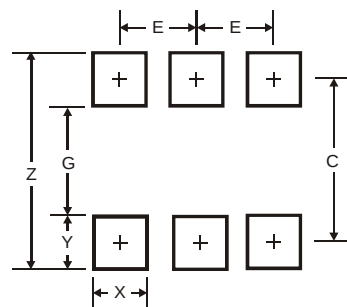


## Package Outline Dimensions



| 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 |
| $\alpha$             | 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           |
| C          | 1.9           |
| E          | 0.65          |

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