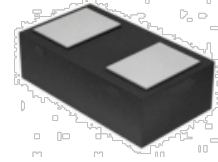


Bi-directional ESD Protection Diode in DFN1006 Package

1. Features

- Capacitance: 15pF(typ.)
- Reverse Working Voltage: 5V
- IEC 61000-4-2 (ESD Air): ± 25 KV
IEC 61000-4-2 (ESD Contact): ± 25 KV
IEC 61000-4-5 (Lightning 8/20 μ s): 5A

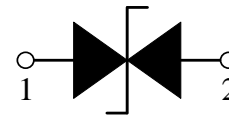
2. Pin Description



3. Applications

- Smart Phone and Tablet PC
- TV and Set Top Box
- Wearable Devices
- PDA

4. Schematic Diagram



5. Order Information

| Type | Package | Delivery Quantity |
|------------|---------|-------------------|
| BTRD04A035 | DFN1006 | 10,000 |

6. Limiting Values($T_A = 25\text{ }^\circ\text{C}$, unless otherwise specified)

| Symbol | Parameter | Conditions | Min | Max | Unit |
|-----------|---------------------------------|----------------------------------|-----|----------|------------------|
| V_{ESD} | Electrostatic Discharge Voltage | IEC 61000-4-2; Contact Discharge | - | ± 25 | kV |
| | | IEC 61000-4-2; Air Discharge | - | ± 25 | kV |
| P_{PP} | Peak Pulse Power | $t_P = 8/20\ \mu\text{s}$ | - | 60 | W |
| I_{PPM} | Rated Peak Pulse Current | $t_P = 8/20\ \mu\text{s}$ | - | 5 | A |
| T_A | Ambient Temperature Range | - | -55 | 125 | $^\circ\text{C}$ |
| T_{stg} | Storage Temperature Range | - | -55 | 150 | $^\circ\text{C}$ |

7. Electrical Characteristics($T_A = 25\text{ }^\circ\text{C}$, unless otherwise specified)

| Symbol | Parameter | Conditions | Min | Typ. | Max | Unit |
|-----------|-------------------------|---|-----|------|-----|---------------|
| V_{RWM} | Reverse Working Voltage | $T_A = 25\text{ }^\circ\text{C}$ | - | - | 5.0 | V |
| V_{BR} | Breakdown Voltage | $I_R = 1\text{ mA}$; $T_A = 25\text{ }^\circ\text{C}$ | 5.6 | 6.5 | 8.4 | V |
| I_R | Reverse Leakage Current | $V_{RWM} = 5\text{ V}$; $T_A = 25\text{ }^\circ\text{C}$ | - | - | 0.1 | μA |
| V_C | Clamping Voltage | $I_{PP} = 1\text{ A}$, $t_P = 8/20\ \mu\text{s}$ | - | - | 10 | V |
| | | $I_{PP} = 5\text{ A}$, $t_P = 8/20\ \mu\text{s}$ | - | - | 12 | V |
| C_J | Junction Capacitance | $V_R = 0\text{ V}$, $f = 1\text{ MHz}$ | - | 15 | 18 | pF |

8. Typical Characteristics

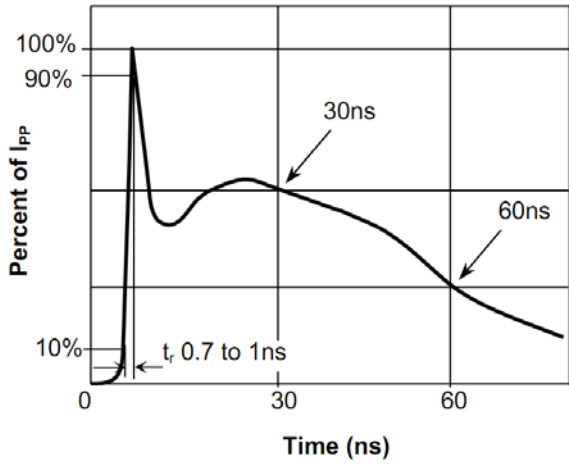


Fig.1 Pulse Waveform-ESD(IEC61000-4-2)

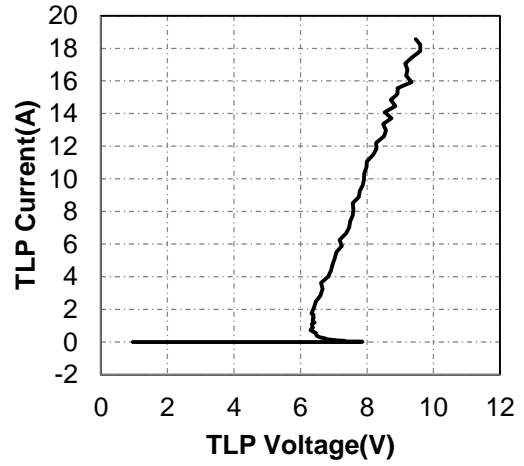


Fig.2 Transmission Line Pulse (TLP)

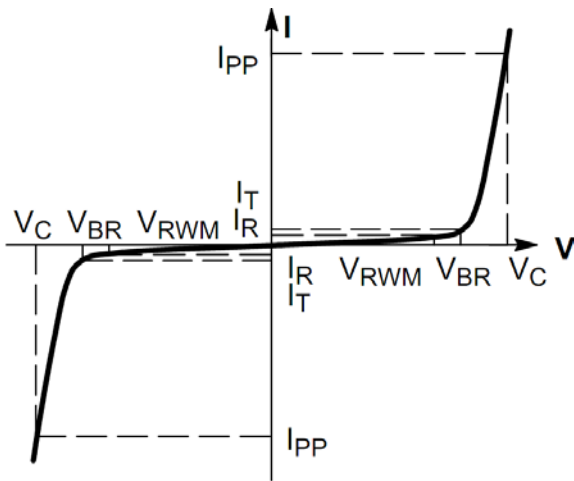


Fig.3 V-I Characteristics for Bidirectional Diode

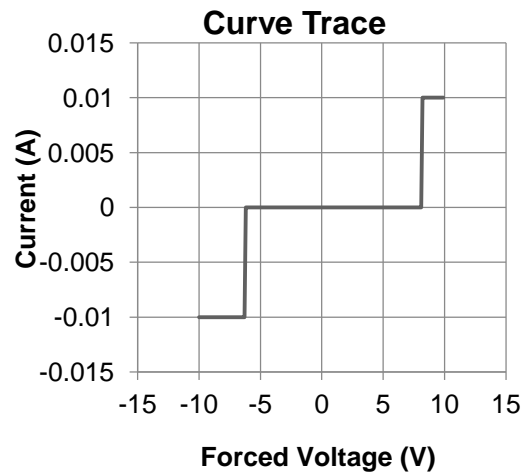


Fig.4 IV Curve

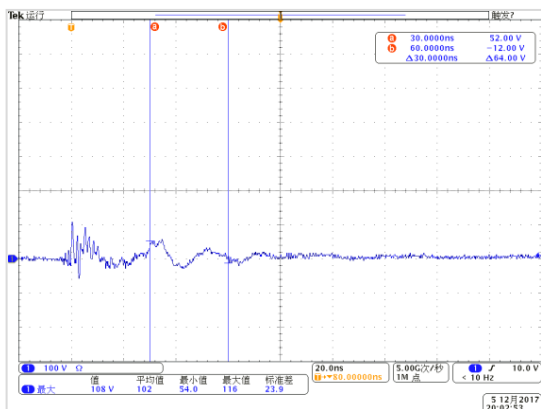


Fig.5 Clamping Voltage at IEC61000-4-2
+8kV Pulse Waveform

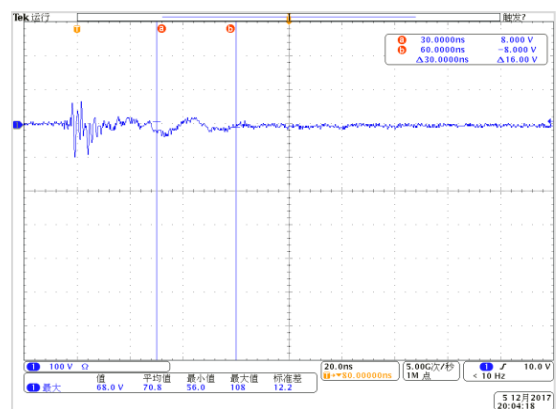
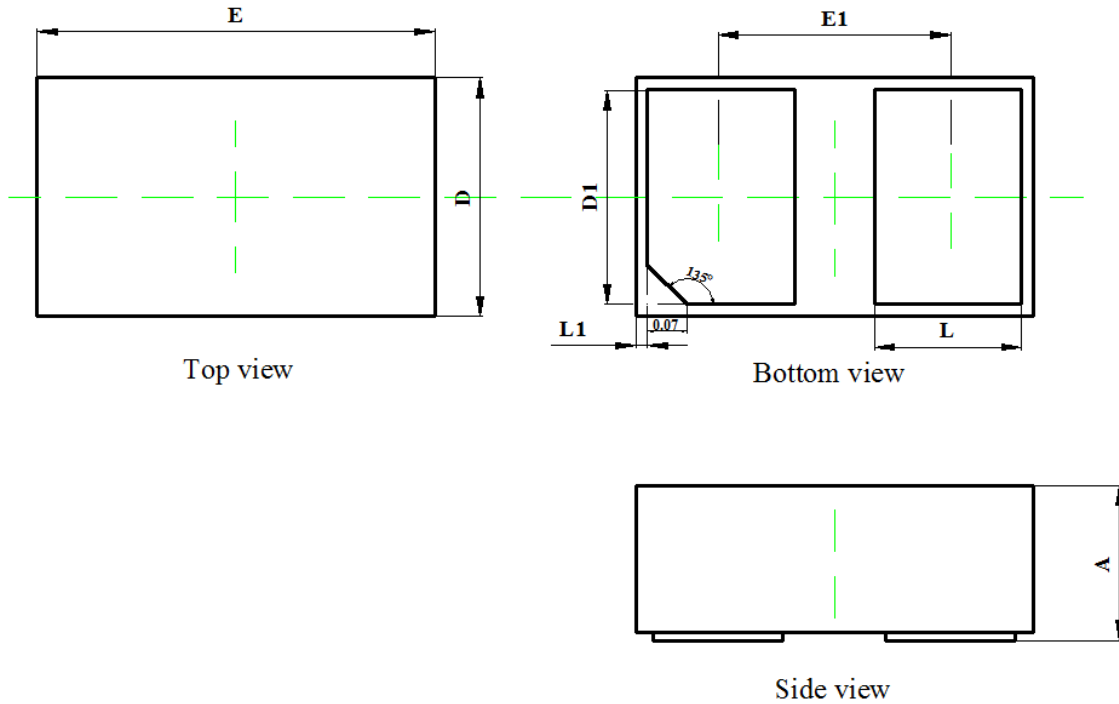


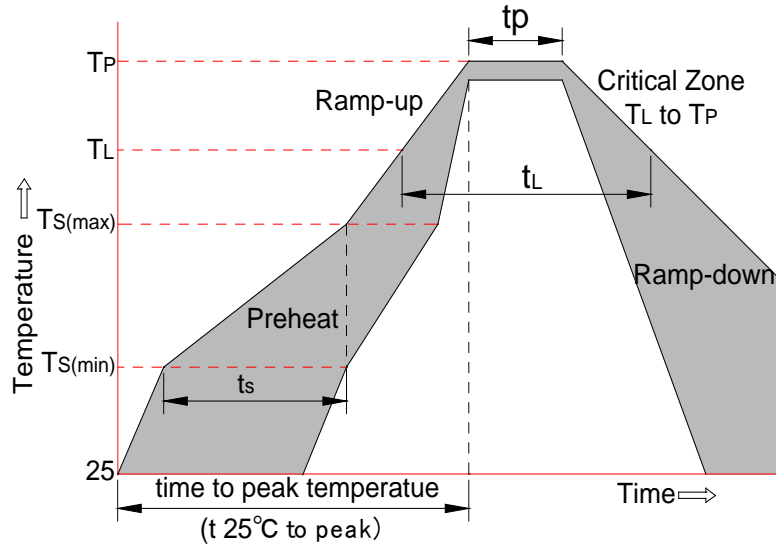
Fig.6 Clamping Voltage at IEC61000-4-2
-8kV Pulse Waveform

9. Package Outline Dimensions

DFN1006 Package Outline



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|-----------|---------------------------|-------|----------------------|-------|
| | Min | Max | Min | Max |
| A | 0.350 | 0.450 | 0.014 | 0.018 |
| D | 0.550 | 0.650 | 0.022 | 0.026 |
| E | 0.950 | 1.050 | 0.037 | 0.041 |
| D1 | 0.420 | 0.520 | 0.017 | 0.020 |
| E1 | 0.550 | 0.650 | 0.022 | 0.026 |
| L | 0.270 | 0.370 | 0.011 | 0.015 |
| L1 | 0.000 | 0.100 | 0.000 | 0.004 |

10. Soldering Parameters


| Reflow Condition | | Pb-Free Assembly |
|---|-----------------------------------|------------------|
| Pre-heat | -Temperature Min ($T_{s(min)}$) | +150°C |
| | -Temperature Max($T_{s(max)}$) | +200°C |
| | -Time (Min to Max) (t_s) | 60-180 secs. |
| Average ramp up rate (Liquid us Temp (T_L) to peak) | | 3°C/sec. Max |
| $T_{s(max)}$ to T_L - Ramp-up Rate | | 3°C/sec. Max |
| Reflow | -Temperature(T_L)(Liquid us) | +217°C |
| | -Temperature(t_L) | 60-150 secs. |
| Peak Temp (T_p) | | +260(+0/-5)°C |
| Time within 5°C of actual Peak Temp (t_p) | | 30 secs. Max |
| Ramp-down Rate | | 6°C/sec. Max |
| xTime 25°C to Peak Temp (T_p) | | 8 min. Max |
| Do not exceed | | +260°C |