# RCLAMP3321P

**1-Line Low Capacitance Bi-directional TVS Diode**

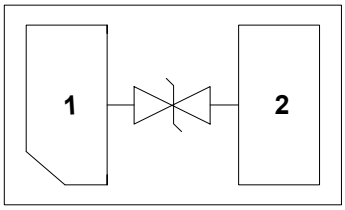
## Features

- Ultra small package: 1.0x0.6x0.5mm
- Ultra low capacitance: 0.3pF typical
- Ultra low leakage: nA level
- Operating voltage: 3.3V
- Low clamping voltage
- Complies with following standards:
  - IEC 61000-4-2 (ESD) immunity test
    - Air discharge: ±20kV
    - Contact discharge: ±20kV
  - IEC61000-4-5 (Lightning) 4A (8/20μs)
- RoHS Compliant

DFN1006-2L

## Mechanical Characteristics

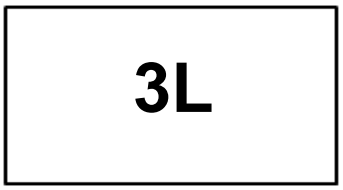
- Package: DFN1006-2L (1.0×0.6×0.5mm)
- Case Material: “Green” Molding Compound.
- Terminal Connections: See Diagram Below
- Marking Information: See Below




**Circuit diagram**

## Applications

- Cellular Handsets and Accessories
- Display Ports
- MDDI Ports
- USB Ports
- Digital Visual Interface (DVI)
- PCI Express and Serial SATA Ports




3L= Device code

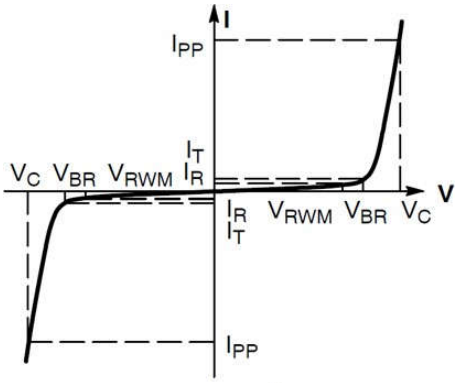
**Marking (Top View)**

## Ordering Information

| Part Number | Packaging | Reel Size |
|---|---|---|
| RCLAMP3321P | 10000/Tape & Reel | 7 inch |

## Portion Electronics Parameter

| Symbol | Parameter |
|---|---|
| $V_{RWM}$ | Peak Reverse Working Voltage |
| $I_R$ | Reverse Leakage Current @ $V_{RWM}$ |
| $V_{BR}$ | Breakdown Voltage @$I_T$ |
| $I_T$ | Test Current |
| $I_{PP}$ | Maximum Reverse Peak Pulse Current |
| $V_C$ | Clamping Voltage @$I_{PP}$ |



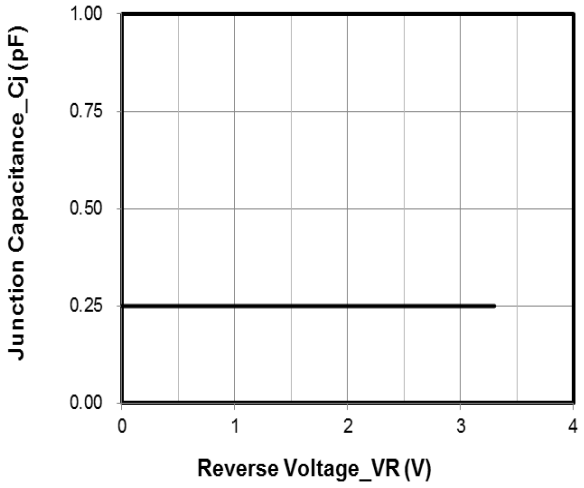
## Absolute Maximum Ratings ($T_A$=25°C unless otherwise specified)

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Peak Pulse Power (8/20μs) | Ppk | 100 | W |
| Peak Pulse Current (8/20μs) | $I_{PP}$ | 4 | A |
| ESD per IEC 61000−4−2 (Air)<br>ESD per IEC 61000−4−2 (Contact) | $V_{ESD}$ | ±20<br>±20 | kV |
| Operating Temperature Range | $T_J$ | −55 to +125 | °C |
| Storage Temperature Range | Tstg | −55 to +150 | °C |

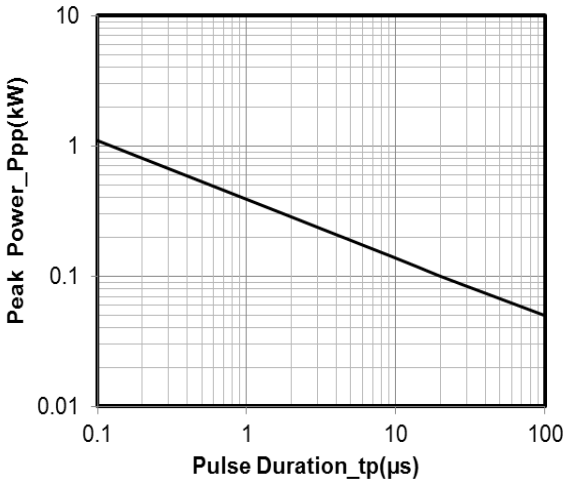
## Electrical Characteristics ($T_A$=25°C unless otherwise specified)

| Parameter | Symbol | Min | Typ | Max | Unit | Test Condition |
|---|---|---|---|---|---|---|
| Reverse Working Voltage | $V_{RWM}$ | | | 3.3 | V | |
| Breakdown Voltage | $V_{BR}$ | 4 | | | V | $I_T$ = 1mA |
| Reverse Leakage Current | $I_R$ | | | 0.2 | μA | $V_{RWM}$ = 3.3V |
| Clamping Voltage | $V_C$ | | | 12 | V | $I_{PP}$ = 1A (8 x 20μs pulse) |
| Clamping Voltage | $V_C$ | | | 25 | V | $I_{PP}$ = 4A (8 x 20μs pulse) |
| Junction Capacitance | $C_J$ | | 0.3 | | pF | VR = 0V, f = 1MHz |

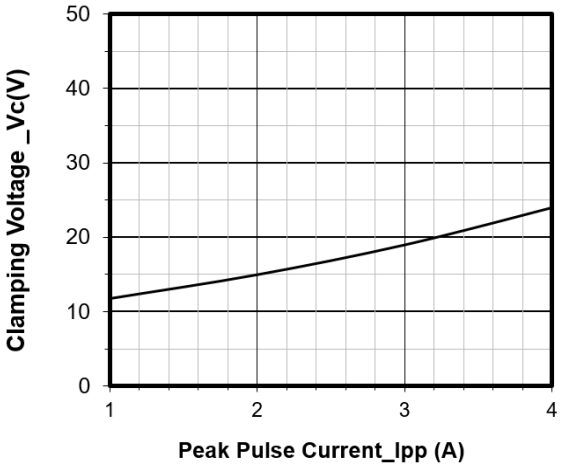
## Typical Performance Characteristics (TA=25°C unless otherwise Specified)



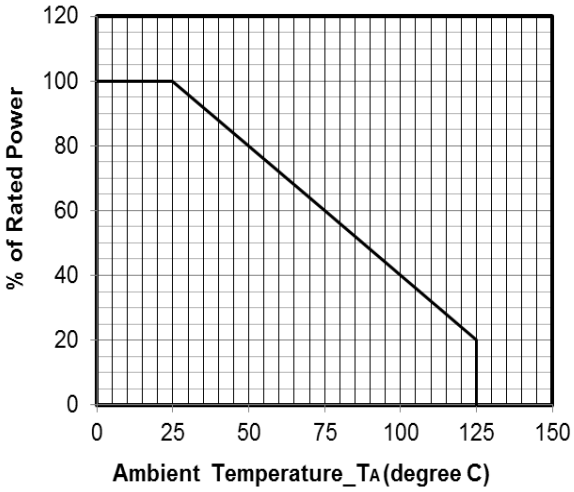

**Junction Capacitance vs. Reverse Voltage**



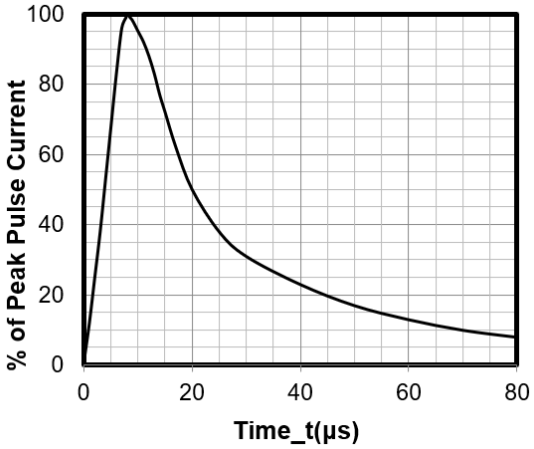

**Peak Pulse Power vs. Pulse Time**



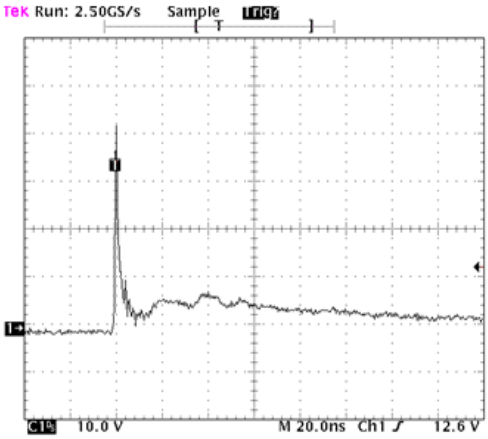

**Clamping Voltage vs. Peak Pulse Current**




**Power Derating Curve**




**8 X 20μs Pulse Waveform**

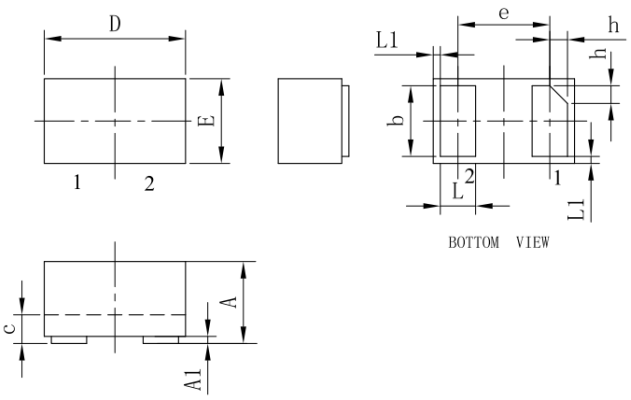



**Note：Data is taken with a 10x attenuator**

**ESD Clamping Voltage**

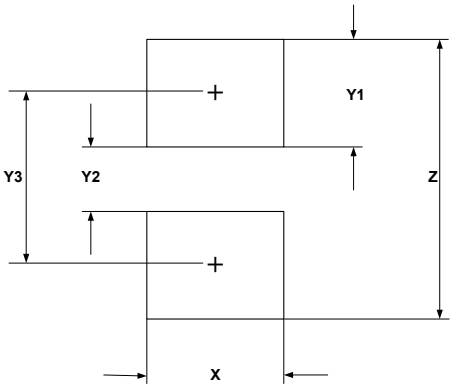
**8 kV Contact per IEC61000−4−2**

## DFN1006-2L Package Outline Drawing




| SYM | DIMENSIONS | | | | | |
|---|---|---|---|---|---|---|
| | MILLIMETERS | | | INCHES | | |
| | MIN | NOM | MAX | MIN | NOM | MAX |
| A | 0.45 | 0.50 | 0.55 | 0.018 | 0.020 | 0.022 |
| A1 | 0.00 | 0.02 | 0.05 | 0.000 | 0.001 | 0.002 |
| b | 0.45 | 0.50 | 0.55 | 0.018 | 0.020 | 0.022 |
| c | 0.12 | 0.15 | 0.18 | 0.005 | 0.006 | 0.007 |
| D | 0.95 | 1.00 | 1.05 | 0.037 | 0.039 | 0.041 |
| e | 0.65 BSC | | | 0.026 BSC | | |
| E | 0.55 | 0.60 | 0.65 | 0.022 | 0.024 | 0.026 |
| L | 0.20 | 0.25 | 0.30 | 0.008 | 0.010 | 0.012 |
| L1 | 0.05REF | | | 0.002REF | | |
| h | 0.07 | 0.12 | 0.17 | 0.003 | 0.005 | 0.007 |

## Suggested Land Pattern




| SYM | DIMENSIONS | |
|---|---|---|
| | MILLIMETERS | INCHES |
| X | 0.60 | 0.024 |
| Y1 | 0.50 | 0.020 |
| Y2 | 0.30 | 0.012 |
| Y3 | 0.80 | 0.032 |
| Z | 1.30 | 0.052 |