

## DESCRIPTION

The JUB12CD2 is a bi-directional TVS diode, utilizing leading monolithic silicon technology to provide fast Response time and low ESD clamping voltage, making this device an ideal solution for protecting voltage sensitive data and power line. The JUB12CD2 complies with the IEC 61000-4-2 (ESD) standard with  $\pm 15$  kV air and  $\pm 8$  kV contact discharge. It is assembled into an ultra-small 1.0x0.6x0.5mm lead-free 0402 package. The small size and high ESD surge protection make JUB12CD2 an ideal choice to protect cell phone, digital cameras, audio players and many other portable applications.

## APPLICATIONS

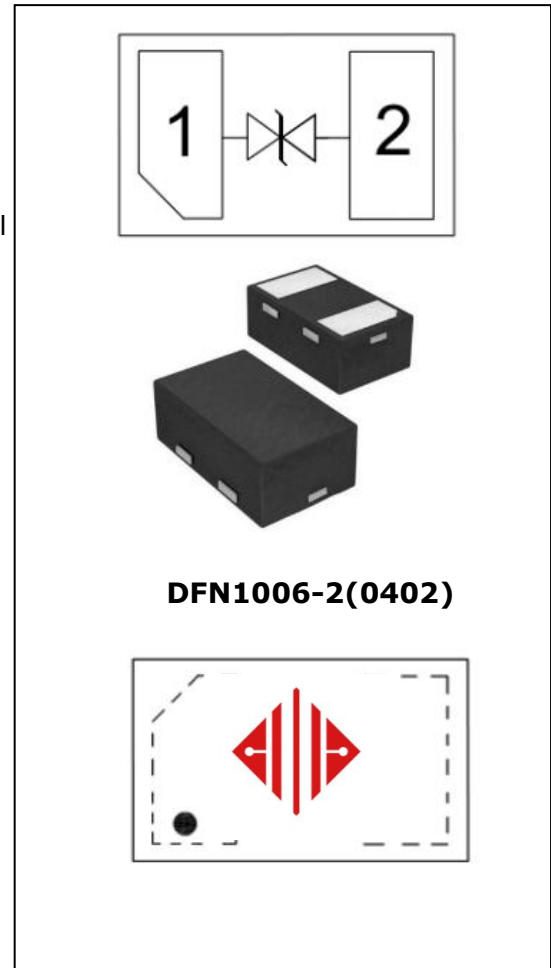
- ✧ Cellular Handsets and Accessories.
- ✧ Personal Digital Assistants.
- ✧ Notebooks and Handhelds.
- ✧ Portable Instrumentation.
- ✧ Digital Cameras.
- ✧ Peripherals.
- ✧ Audio Players.
- ✧ Keypads, Side Keys, LCD Displays.

## FEATURES

- ✧ Ultra small package: 1.0x0.6x0.5mm.
- ✧ Ultra low capacitance: 8pF typical.
- ✧ Ultra low leakage: nA level.
- ✧ Low operating voltage: 12V.
- ✧ Low clamping voltage.
- ✧ 2-pin leadless package.
- ✧ Complies with following standards:
  - IEC 61000-4-2 (ESD) immunity test
    - Air discharge:  $\pm 15$  kV
    - Contact discharge:  $\pm 8$  kV
  - IEC61000-4-5 (Lightning) 7A (8/20 $\mu$ s).
- ✧ RoHS Compliant.

## MECHANICAL CHARACTERISTICS

- ✧ DFN1006-2(0402) Package.
- ✧ Tape & Reel : 10,000pcs.
- ✧ Reel Size : 7 inch.



**DEVICE CHARACTERISTICS**
**Absolute Maximum Ratings ( $T_A=25^{\circ}\text{C}$  unless otherwise specified)**

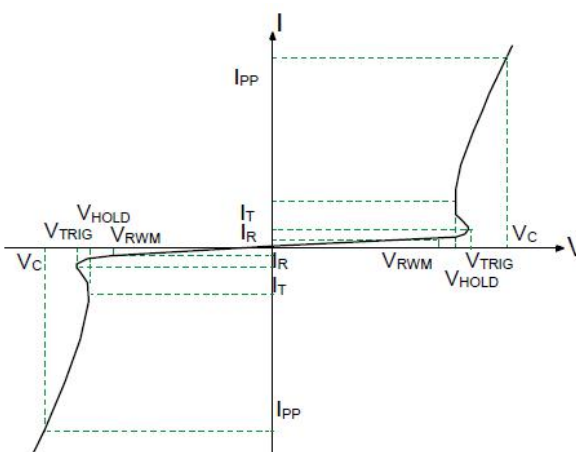
| Parameter  | Symbol | Value               | Unit               |
|--|--------|---------------------|--------------------|
| Peak Pulse Power (8/20 $\mu\text{s}$ )                         | Ppk    | 140                 | W                  |
| Peak Pulse Current (8/20 $\mu\text{s}$ )                       | IPP    | 7                   | A                  |
| ESD per IEC 61000-4-2 (Air)<br>ESD per IEC 61000-4-2 (Contact) | VESD   | $\pm 15$<br>$\pm 8$ | kV                 |
| Operating Temperature Range                                    | TJ     | -55 to +125         | $^{\circ}\text{C}$ |
| Storage Temperature Range                                      | Tstg   | -55 to +150         | $^{\circ}\text{C}$ |

**ELECTRICAL CHARACTERISTICS( $T_A=25^{\circ}\text{C}$  unless otherwise specified)**

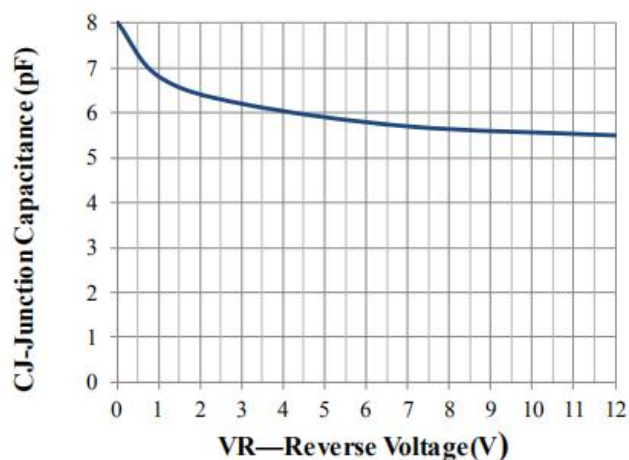
| Parameter               | Symbol           | Test Condition   | Min | Typ | Max | Unit          |
|-------------------------|------------------|--|-----|-----|-----|---------------|
| Reverse Working Voltage | $V_{\text{RWM}}$ |  |     |     | 12  | V             |
| Breakdown Voltage       | $V_{\text{BR}}$  | $I_{\text{T}} = 1\text{mA}$                              | 13  | 15  |     | V             |
| Reverse Leakage Current | $I_{\text{R}}$   | $V_{\text{RWM}} = 12\text{V}$                            |     |     | 0.2 | $\mu\text{A}$ |
| Clamping Voltage        | $V_{\text{C}}$   | $I_{\text{PP}} = 7\text{A}$ (8 x 20 $\mu\text{s}$ pulse) |     | 18  | 20  | V             |
| Junction Capacitance    | $C_{\text{J}}$   | $V_{\text{R}} = 0\text{V}$ , $f = 1\text{MHz}$           |     | 8   | 10  | pF            |

**ELECTRICAL PARAMETER**

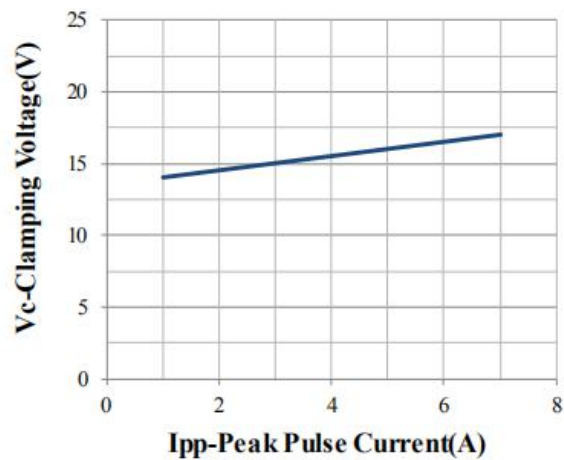
| Symbol          | Parameter                          |
|-----------------|------------------------------------|
| $I_{\text{T}}$  | Test Current                       |
| $I_{\text{PP}}$ | Maximum Reverse Peak Pulse Current |
| $V_{\text{C}}$  | Clamping Voltage @ $I_{\text{PP}}$ |



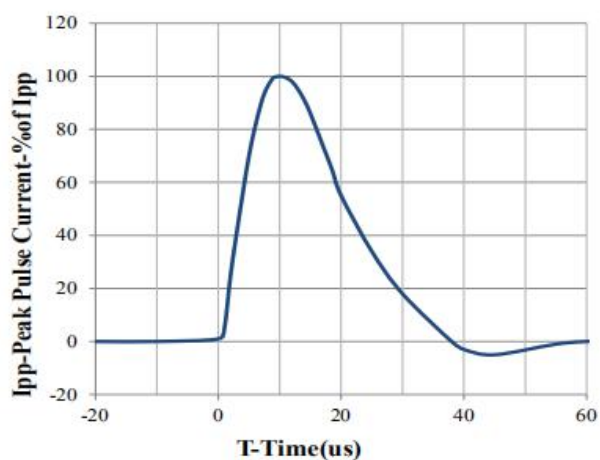
**TYPICAL CHARACTERISTICS**( $T_A=25^{\circ}\text{C}$  unless otherwise Specified)



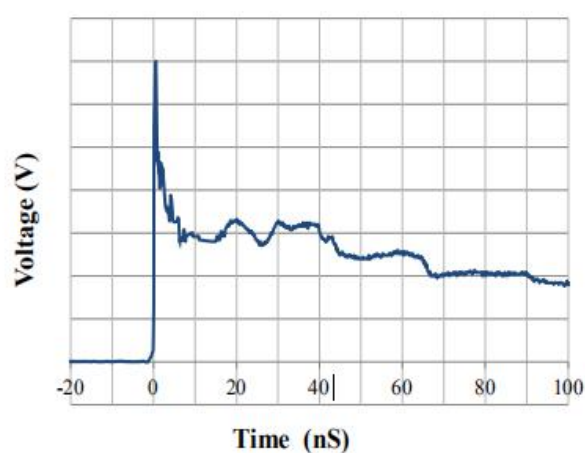
**Junction Capacitance vs. Reverse Voltage**



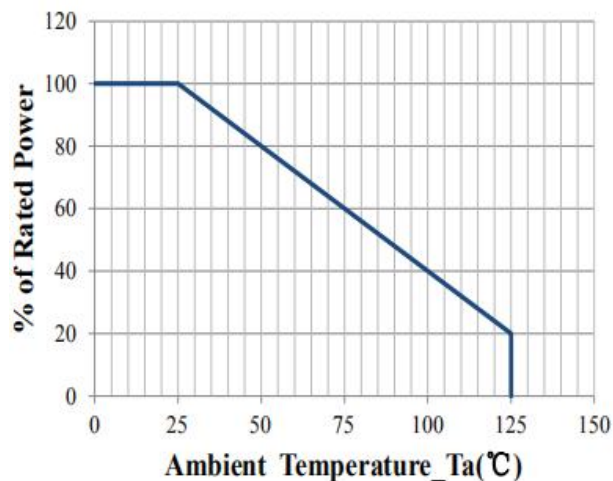
**Clamping Voltage vs. Peak Pulse Current**



**8 X 20us Pulse Waveform**



**IEC61000-4-2 Pulse Waveform**



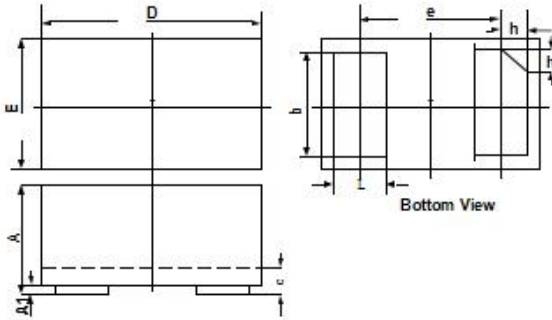
**Power Derating Curve**



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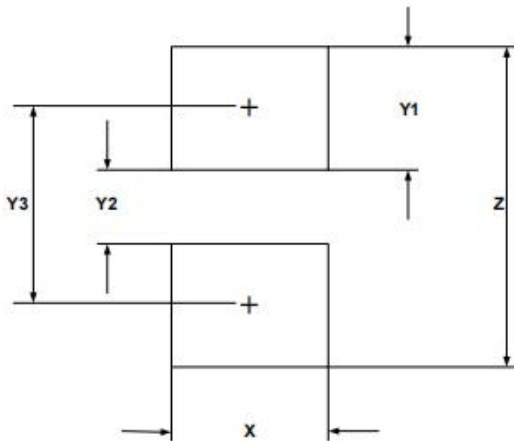
**JUB12CD2**

## DFN1006-2(0402) PACKAGE OUTLINE & DIMENSIONS



| 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 |
| 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  |

Website: <http://www.jksemi.com>

For additional information, please contact your local Sales Representative.

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