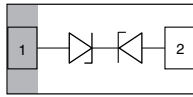
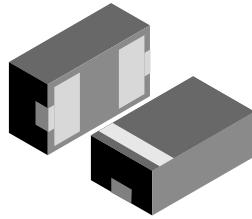


# Bidirectional Symmetrical (BiSy) Single Line ESD Protection Diode in LLP1006-2M



21129



20855

## MARKING (example only)



Bar = pin 1 marking  
 X = date code  
 Y = type code (see table below)

## FEATURES

- Ultra compact LLP1006-2M package
- Low package height < 0.4 mm
- 1-line ESD protection
- Working range  $\pm 5.5$  V
- Low leakage current < 0.1  $\mu$ A
- Low load capacitance  $C_D = 10$  pF
- ESD immunity acc. IEC 61000-4-2  $\pm 30$  kV contact discharge  $\pm 30$  kV air discharge
- Soldering can be checked by standard vision inspection, no X-ray necessary
- Pin plating NiPdAu (e4) no whisker growth
- PATENT(S): [www.vishay.com/patents](http://www.vishay.com/patents)
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



## LINKS TO ADDITIONAL RESOURCES



## ORDERING INFORMATION

| DEVICE NAME  | ORDERING CODE     | TAPED UNITS PER REEL (8 mm TAPE ON 7" REEL) | MINIMUM ORDER QUANTITY |
|--------------|-------------------|---|------------------------|
| VCUT05B1-DD1 | VCUT05B1-DD1-G-08 | 8000  | 8000                   |

## PACKAGE DATA

| DEVICE NAME  | PACKAGE NAME | TYPE CODE | WEIGHT  | MOLDING COMPOUND FLAMMABILITY RATING | MOISTURE SENSITIVITY LEVEL        | SOLDERING CONDITIONS         |
|--------------|--------------|-----------|---------|--------------------------------------|-----------------------------------|------------------------------|
| VCUT05B1-DD1 | LLP1006-2M   | P         | 0.72 mg | UL 94 V-0                            | MSL level 1 (according J-STD-020) | Peak temperature max. 260 °C |

## ABSOLUTE MAXIMUM RATINGS VCUT05B1-DD1

| PARAMETER             | TEST CONDITIONS   | SYMBOL    | VALUE       | UNIT |
|-----------------------|---|-----------|-------------|------|
| Peak pulse current    | Acc. IEC 61000-4-5, 8/20 $\mu$ s/single shot                            | $I_{PPM}$ | 3           | A    |
| Peak pulse power      | Pin 1 to pin 2<br>acc. IEC 61000-4-5; $t_p = 8/20$ $\mu$ s; single shot | $P_{PP}$  | 38          | W    |
| ESD immunity          | Contact discharge acc. IEC 61000-4-2; 10 pulses                         | $V_{ESD}$ | $\pm 30$    | kV   |
|                       | Air discharge acc. IEC 61000-4-2; 10 pulses                             | $V_{ESD}$ | $\pm 30$    |      |
| Operating temperature | Junction temperature  | $T_J$     | -55 to +145 | °C   |
| Storage temperature   |   | $T_{stg}$ | -55 to +150 | °C   |

PATENT(S): [www.vishay.com/patents](http://www.vishay.com/patents)

This Vishay product is protected by one or more United States and international patents.

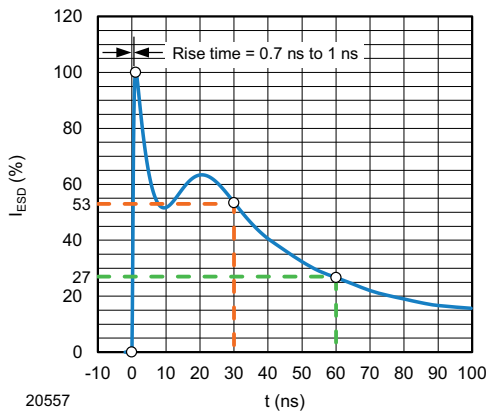
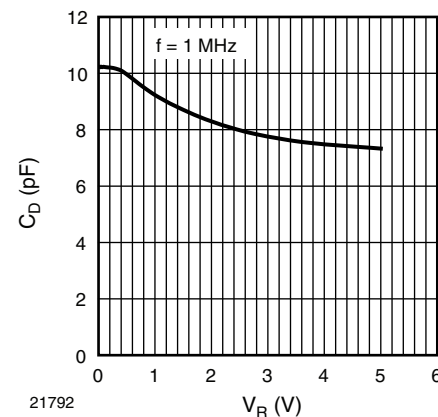
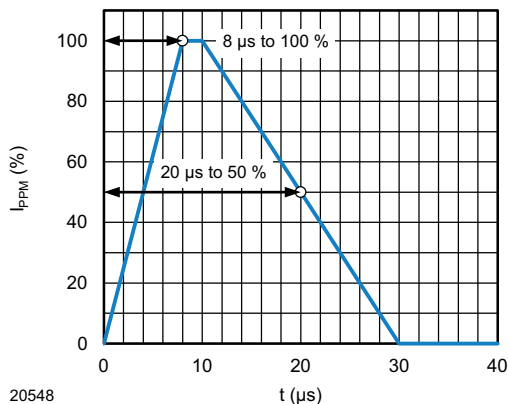
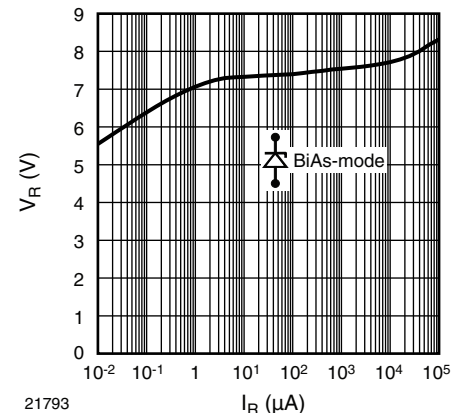
**CUT THE SPIKES WITH VCUT05B1-DD1**

The VCUT05B1-DD1 is a Bidirectional and Symmetrical (BiSy) ESD protection device which clamps positive and negative overvoltage transients to ground. Connected between the signal or data line and the ground the VCUT05B1-DD1 offers a high isolation (low leakage current, low capacitance) within the specified working range. Due to the short leads and small package size of the tiny LLP1006-2M package the line inductance is very low, so that fast transients like and ESD strike can be clamped with minimal over- or undershoots.

**ELECTRICAL CHARACTERISTICS VCUT05B1-DD1**

 ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)

| PARAMETER                 | TEST CONDITIONS/REMARKS                    | SYMBOL        | MIN. | TYP. | MAX. | UNIT          |
|---------------------------|--|---------------|------|------|------|---------------|
| Protection paths          | Number of lines which can be protected     | $N_{channel}$ | -    | -    | 1    | lines         |
| Reverse stand-off voltage | Max. reverse working voltage               | $V_{RWM}$     | -    | -    | 5.5  | V             |
| Reverse voltage           | At $I = 0.1\text{ }\mu\text{A}$            | $V_R$         | 5.5  | -    | -    | V             |
| Reverse current           | At $V = 5.5\text{ V}$                      | $I_R$         | -    | -    | 0.1  | $\mu\text{A}$ |
| Reverse breakdown voltage | At $I = 1\text{ mA}$                       | $V_{BR}$      | 6    | 7.5  | 8.5  | V             |
| Reverse clamping voltage  | At $I_{PP} = 1\text{ A}$                   | $V_C$         | -    | 8.3  | 10.5 | V             |
|                           | At $I_{PP} = I_{PPM} = 3\text{ A}$         | $V_C$         | -    | 10.3 | 12.5 | V             |
| Capacitance               | At $V = 0\text{ V}$ ; $f = 1\text{ MHz}$   | $C_D$         | -    | 10   | 13   | pF            |
|                           | At $V = 2.5\text{ V}$ ; $f = 1\text{ MHz}$ | $C_D$         | -    | 8    | -    | pF            |

**TYPICAL CHARACTERISTICS** ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)

 Fig. 1 - ESD Discharge Current Wave Form acc. IEC 61000-4-2 (330  $\Omega$ /150 pF)

 Fig. 3 - Typical Capacitance  $C_D$  vs. Reverse Voltage  $V_R$ 

 Fig. 2 - 8/20  $\mu\text{s}$  Peak Pulse Current Wave Form acc. IEC 61000-4-5

 Fig. 4 - Typical Reverse Voltage  $V_R$  vs. Reverse Current  $I_R$

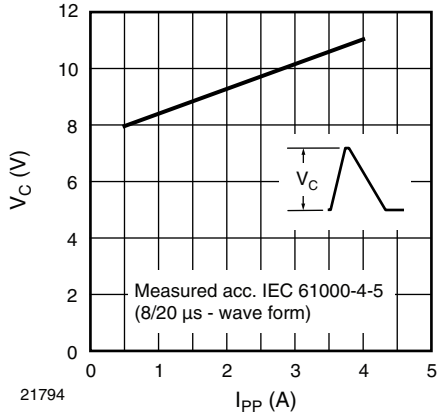


Fig. 5 - Typical Peak Clamping Voltage  $V_C$  vs. Peak Pulse Current  $I_{PP}$

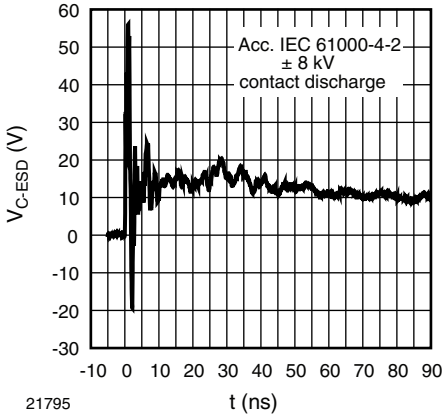


Fig. 6 - Typical Clamping Performance at + 8 kV Contact Discharge (acc. IEC 61000-4-2)

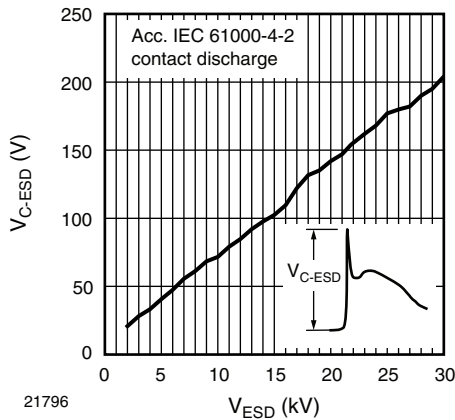
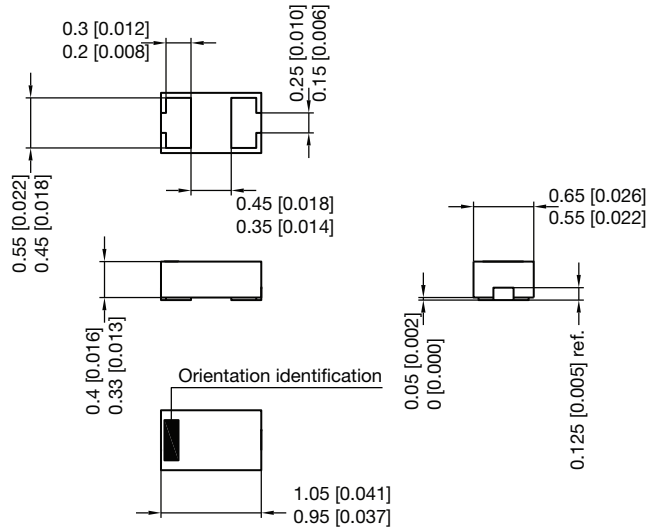


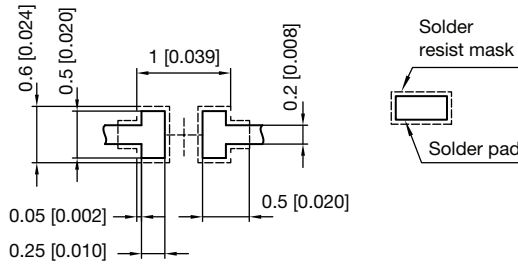
Fig. 7 - Typical Peak Clamping Voltage at ESD Contact Discharge (acc. IEC 61000-4-2)



PACKAGE DIMENSIONS in millimeters (inches): **LLP1006-2M**

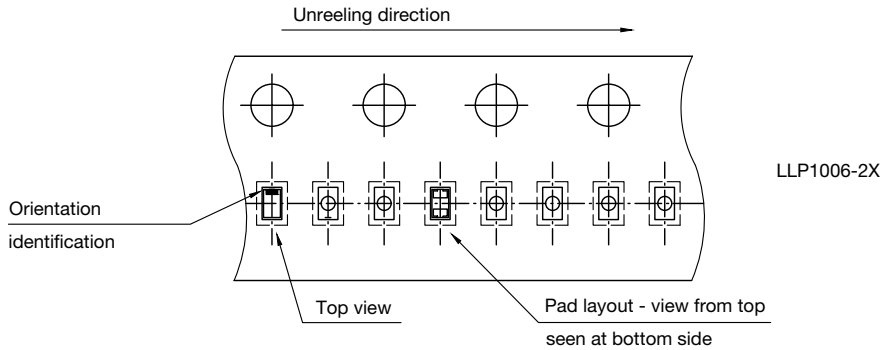


Foot print recommendation:



Pad Design Patented:  
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Document no.: S8-V-3906.04-005 (4)  
Rev. 7 - Date: 11.May 2016  
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S8-V-3906.04-017 (4)  
02.05.2017  
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