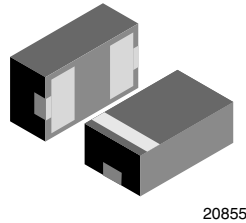
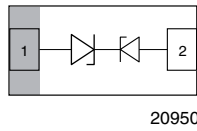


Bidirectional Asymmetrical (BiAs) Single Line ESD Protection Diode in LLP1006-2L


MARKING (example only)


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

DESIGN SUPPORT TOOLS click logo to get started

FEATURES

- Ultra compact LLP1006-2L
- Low package height = 0.4 mm
- 1-line ESD protection
- Working range -6 V up to +10 V or -10 V up to +6 V
- Low leakage current < 0.1 μ A
- Low load capacitance typical $C_D = 5.4$ pF at 0 V
- ESD immunity acc. IEC 61000-4-2
 ± 18 kV contact discharge
 ± 18 kV air discharge
- Tin plated exposed side wall of leadframe; soldering can be checked by standard vision inspection; (AOI = Automated Outgoing Inspection); no X-ray necessary
- e3 - Sn
- PATENT(S): www.vishay.com/patents
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



| ORDERING INFORMATION | | | |
|----------------------|--------------------|---|------------------------|
| DEVICE NAME | ORDERING CODE | TAPED UNITS PER REEL (8 mm TAPE ON 7" REEL) | MINIMUM ORDER QUANTITY |
| VCUT0610AHD1 | VCUT0610AHD1-G3-08 | 10 000 | 100 000 |

| PACKAGE DATA | | | | | | |
|--------------|--------------|-----------|---------|--------------------------------------|-----------------------------------|--------------------------|
| DEVICE NAME | PACKAGE NAME | TYPE CODE | WEIGHT | MOLDING COMPOUND FLAMMABILITY RATING | MOISTURE SENSITIVITY LEVEL | SOLDERING CONDITIONS |
| VCUT0610AHD1 | LLP1006-2L | 6 | 0.72 mg | UL 94 V-0 | MSL level 1 (according J-STD-020) | 260 °C/10 s at terminals |

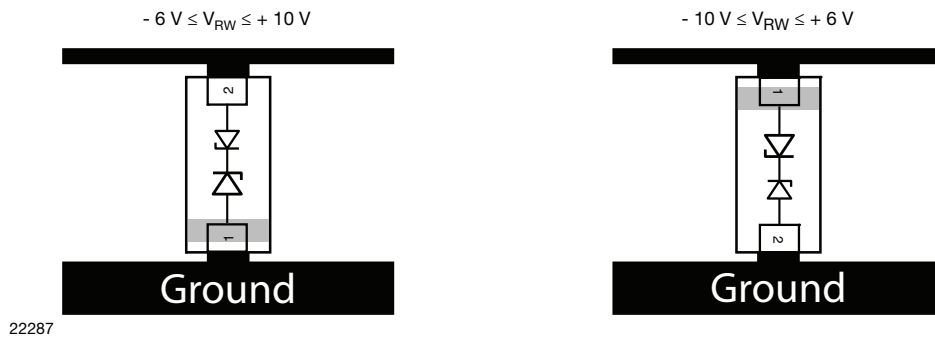
| ABSOLUTE MAXIMUM RATINGS VCUT0610AHD1 | | | | |
|---------------------------------------|---|-----------|-------------|------|
| PARAMETER | TEST CONDITIONS | SYMBOL | VALUE | UNIT |
| Peak pulse current | Pin 1 to pin 2 acc. IEC 61000-4-5, 8/20 μ s/single shot; $T_{amb} = 25$ °C | I_{PPM} | 3.2 | A |
| | Pin 2 to pin 1 acc. IEC 61000-4-5, 8/20 μ s/single shot; $T_{amb} = 25$ °C | | 2.3 | A |
| Peak pulse power | Pin 1 to pin 2 acc. IEC 61000-4-5, 8/20 μ s/single shot; $T_{amb} = 25$ °C | P_{PP} | 54 | W |
| | Pin 2 to pin 1 acc. IEC 61000-4-5, 8/20 μ s/single shot; $T_{amb} = 25$ °C | | 64 | W |
| ESD immunity | Contact discharge acc. IEC 61000-4-2; 10 pulses; $T_{amb} = 25$ °C | V_{ESD} | ± 18 | kV |
| | Air discharge acc. IEC 61000-4-2; 10 pulses | | ± 18 | kV |
| Operating temperature | Junction temperature | T_J | -40 to +125 | °C |
| Storage temperature | | T_{STG} | -55 to +125 | °C |

PATENT(S): www.vishay.com/patents

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

CUT THE SPIKES WITH VCUT0610AHD1

The VCUT0610AHD1 is a bidirectional but asymmetrical (BiAs) ESD protection device which clamps positive and negative overvoltage transients to ground. Connected between the signal or data line and the ground the VCUT0610AHD1 offers a high isolation (low leakage current, small capacitance) within the specified working range of -6 V to +10 V or -10 V and +6 V. Due to the short leads and small package size of the tiny LLP1006-2L package the line inductance is very low, so that fast transients like an ESD strike can be clamped with minimal over- or undershoots.



| ELECTRICAL CHARACTERISTICS VCUT0610AHD1 ($T_{amb} = 25\text{ C}^\circ$, unless otherwise specified) | | | | | | |
|--|--|---------------|------|------|------|---------------|
| Measured from pin 2 to pin 1 | | | | | | |
| 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} | - | - | 10 | V |
| Reverse voltage | At $I_R = 0.1\ \mu\text{A}$ | V_R | 10 | - | - | V |
| Reverse current | At $V = 10\text{ V}$ | I_R | - | - | 0.1 | μA |
| Reverse breakdown voltage | At $I = 1\text{ mA}$ | V_{BR} | 12 | - | - | V |
| Reverse clamping voltage | At $I_{PP} = 1\text{ A}$; $t_p = 8/20\ \mu\text{s}$ | V_C | - | 19 | 23 | V |
| | At $I_{PP} = I_{PPM} = 2.3\text{ A}$; $t_p = 8/20\ \mu\text{s}$ | | - | 24 | 28 | V |
| Capacitance | At $V = 0\text{ V}$; $f = 1\text{ MHz}$ | C_D | - | 5.4 | 6.5 | pF |
| | At $V = 3.3\text{ V}$; $f = 1\text{ MHz}$ | | - | 3.4 | - | pF |

| ELECTRICAL CHARACTERISTICS VCUT0610AHD1 ($T_{amb} = 25\text{ C}^\circ$, unless otherwise specified) | | | | | | |
|--|--|---------------|------|------|------|---------------|
| Measured from pin 1 to pin 2 | | | | | | |
| 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} | - | - | 6 | V |
| Reverse voltage | At $I_R = 0.1\ \mu\text{A}$ | V_R | 6 | - | - | V |
| Reverse current | At $V = 6\text{ V}$ | I_R | - | - | 0.1 | μA |
| Reverse breakdown voltage | At $I = 1\text{ mA}$ | V_{BR} | 6.5 | - | - | V |
| Reverse clamping voltage | At $I_{PP} = 1\text{ A}$; $t_p = 8/20\ \mu\text{s}$ | V_C | - | 10.3 | 12 | V |
| | At $I_{PP} = I_{PPM} = 3.2\text{ A}$; $t_p = 8/20\ \mu\text{s}$ | | - | 13.8 | 17 | V |
| Capacitance | At $V = 0\text{ V}$; $f = 1\text{ MHz}$ | C_D | - | 5.4 | 6.5 | pF |
| | At $V = 3.3\text{ V}$; $f = 1\text{ MHz}$ | | - | 4 | - | pF |

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

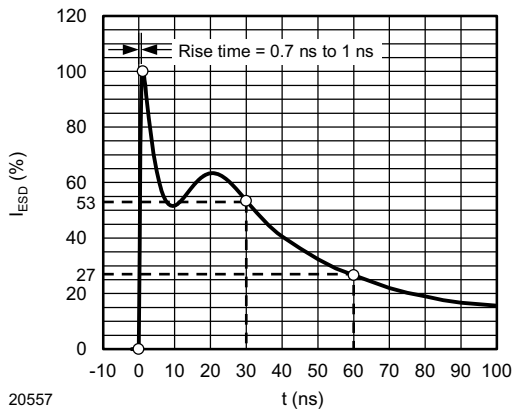


Fig. 1 - ESD Discharge Current Wave Form acc. IEC 61000-4-2 (330 Ω /150 pF)

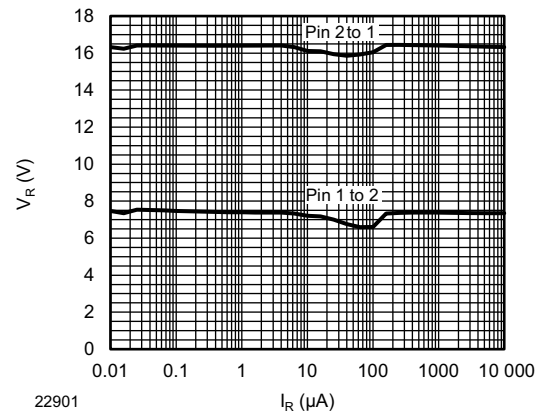


Fig. 4 - Typical Forward and Reverse Voltage vs. Reverse Current

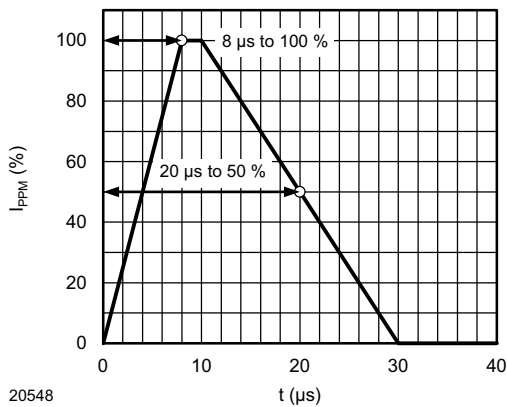


Fig. 2 - 8/20 μ s Peak Pulse Current Wave Form acc. IEC 61000-4-5

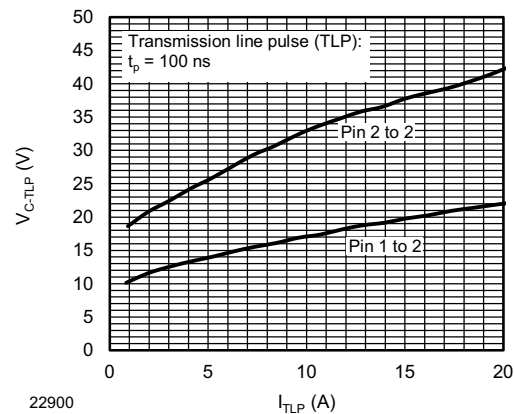


Fig. 5 - Typical Clamping Voltage vs. Peak Pulse Current

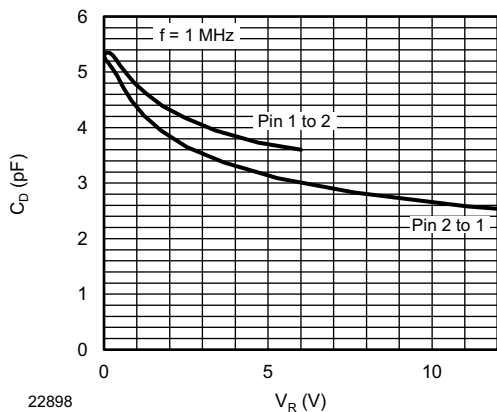


Fig. 3 - Typical Capacitance vs. Reverse Voltage

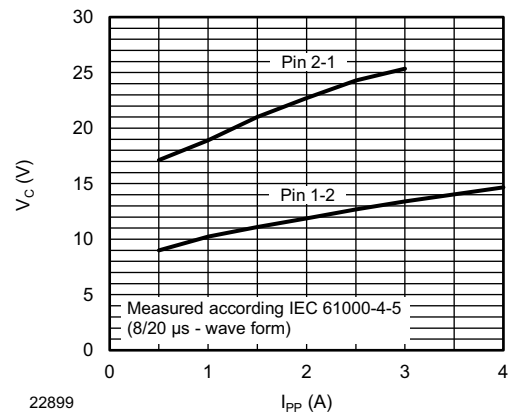
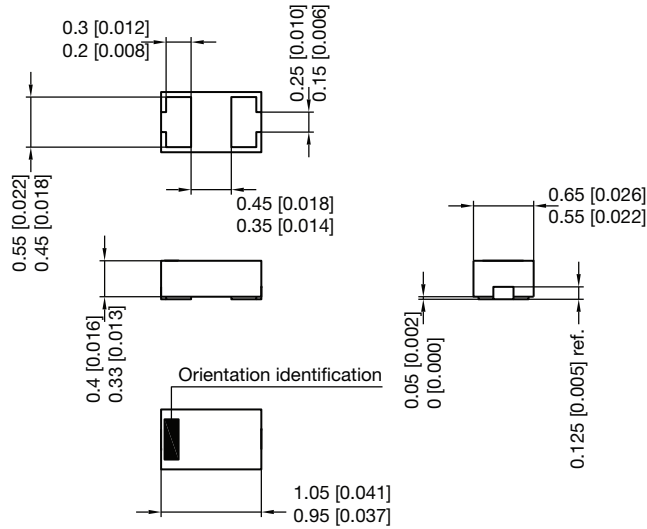


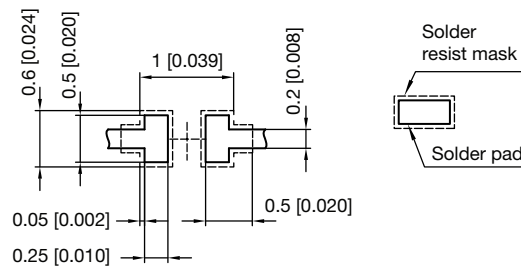
Fig. 6 - Typical Peak Clamping Voltage vs. Peak Pulse Current



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

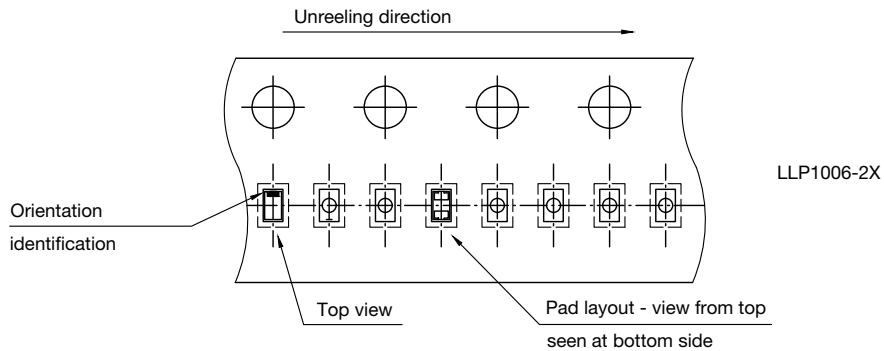


Foot print recommendation:



Pad Design Patented:
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Rev. 7 - Date: 11.May 2016
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