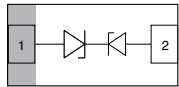
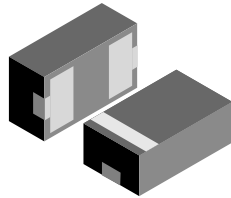


Bidirectional Asymmetrical (BiAs) Single Line ESD Protection Diode in LLP1006-2L



20950



20855

MARKING (example only)



21121

Bar = pin 1 marking

Y = type code (see table below)

X = date code

FEATURES

- Ultra compact LLP1006-2L
- Low package height < 0.4 mm
- 1-line ESD protection
- Working range -7 V up to +14 V or -14 V up to +7 V
- Low leakage current < 0.1 μ A
- Low load capacitance typical $C_D = 8$ pF
- ESD immunity acc. IEC 61000-4-2
 ± 25 kV contact discharge
 ± 30 kV air discharge
- e4 - precious metal (e.g. Ag, Au, NiPd, NiPdAu) (no Sn)
- PATENT(S): www.vishay.com/patents
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



LINKS TO ADDITIONAL RESOURCES


[3D Models](#)

ORDERING INFORMATION

| PIN PLATING | DEVICE NAME | ORDERING CODE | TAPED UNITS PER REEL (8 mm TAPE ON 7" REEL) | MINIMUM ORDER QUANTITY |
|-------------|---------------|--------------------|--|------------------------|
| e4 | VCUT0714A-HD1 | VCUT0714A-HD1-GS08 | 8k | 8k |

PACKAGE DATA

| DEVICE NAME | PACKAGE NAME | PIN PLATING | TYPE CODE | WEIGHT | MOLDING COMPOUND FLAMMABILITY RATING | MOISTURE SENSITIVITY LEVEL | SOLDERING CONDITIONS |
|---------------|--------------|-------------|-----------|---------|---|--------------------------------------|---------------------------------|
| VCUT0714A-HD1 | LLP1006-2L | e4 | B | 0.72 mg | UL 94 V-0 | MSL level 1 (according J-STD-020) | Peak temperature max. 260 °C |

ABSOLUTE MAXIMUM RATINGS

| 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 | I_{PPM} | 5 | A |
| | Pin 2 to pin 1, acc. IEC 61000-4-5, 8/20 μ s/single shot | | 2 | A |
| Peak pulse power | Pin 1 to pin 2, acc. IEC 61000-4-5, 8/20 μ s/single shot | P_{PP} | 63 | W |
| | Pin 2 to pin 1, acc. IEC 61000-4-5, 8/20 μ s/single shot | | 54 | W |
| ESD immunity | Contact discharge acc. IEC 61000-4-2; 10 pulses | V_{ESD} | ± 25 | kV |
| | Air discharge acc. IEC 61000-4-2; 10 pulses | | ± 30 | kV |
| Storage temperature | | T_{STG} | -55 to +150 | °C |
| Operating temperature | Junction temperature | T_J | -40 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

The VCUT0714A-HD1 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 VCUT0714A-HD1 offers a high isolation (low leakage current, small capacitance) within the specified working range of -7 V to +14 V or -14 V and +7 V. Due to the short leads and small package size of the tiny LLP1006 package the line inductance is very low, so that fast transients like an ESD strike can be clamped with minimal over- or undershoots.



22286

ELECTRICAL CHARACTERISTICS (pin 2 to pin 1)

($T_{amb} = 25\text{ }^{\circ}\text{C}$, 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} | - | - | 14 | V |
| Reverse voltage | At $I_R = 0.1\text{ }\mu\text{A}$ | V_R | 14 | - | - | V |
| Reverse current | At $V_{RWM} = 14\text{ V}$ | I_R | - | - | 0.1 | μA |
| Reverse breakdown voltage | At $I_R = 1\text{ mA}$ | V_{BR} | 14.5 | - | - | V |
| Reverse clamping voltage | At $I_{PP} = 1\text{ A}$ | V_C | - | - | 27 | V |
| | At $I_{PP} = I_{PPM} = 2\text{ A}$ | V_C | - | - | 30 | V |
| Capacitance | At $V_R = 0\text{ V}$; $f = 1\text{ MHz}$ | C_D | - | 8 | 8.5 | pF |
| | At $V_R = 7\text{ V}$; $f = 1\text{ MHz}$ | C_D | - | 4 | - | pF |

ELECTRICAL CHARACTERISTICS (pin 1 to pin 2)

($T_{amb} = 25\text{ }^{\circ}\text{C}$, 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} | - | - | 7 | V |
| Reverse voltage | At $I_R = 0.1\text{ }\mu\text{A}$ | V_R | 7 | - | - | V |
| Reverse current | At $V_{RWM} = 7\text{ V}$ | I_R | - | - | 0.1 | μA |
| Reverse breakdown voltage | At $I_R = 1\text{ mA}$ | V_{BR} | 7.3 | - | - | V |
| Reverse clamping voltage | At $I_{PP} = 1\text{ A}$ | V_C | - | - | 13 | V |
| | At $I_{PP} = I_{PPM} = 5\text{ A}$ | V_C | - | - | 17 | V |
| Capacitance | At $V = 0\text{ V}$; $f = 1\text{ MHz}$ | C_D | - | 8 | 8.5 | pF |
| | At $V = 3.5\text{ V}$; $f = 1\text{ MHz}$ | C_D | - | 6.4 | - | pF |

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

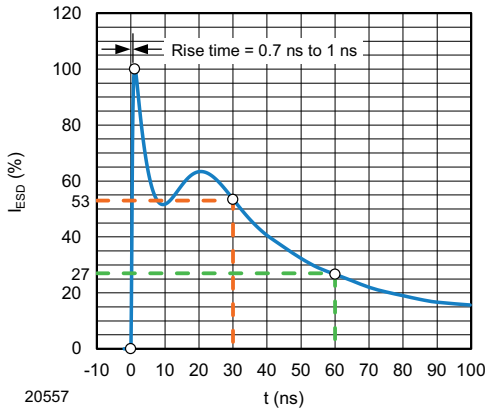


Fig. 1 - ESD Discharge Current Wave Form acc. IEC 61000-4-2 (330 Ω /150 pF)

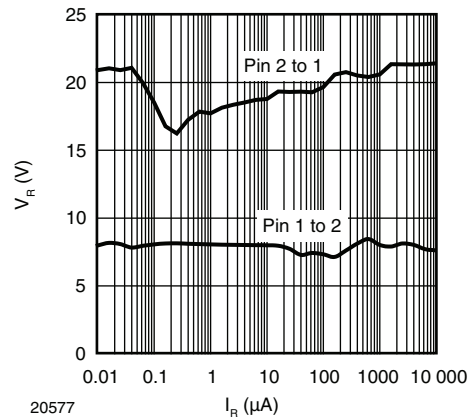


Fig. 4 - Typical Reverse Voltage V_R vs. Reverse Current I_R

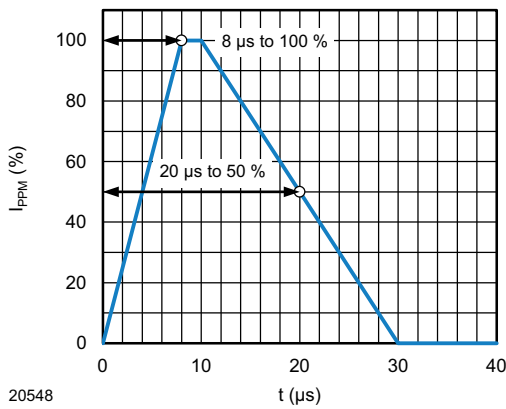


Fig. 2 - 8/20 μs Peak Pulse Current Wave Form acc. IEC 61000-4-5

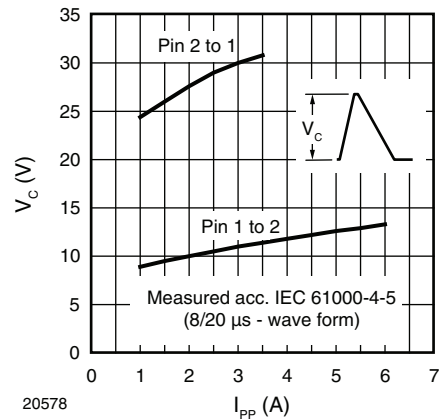


Fig. 5 - Typical Peak Clamping Voltage V_C vs. Peak Pulse Current I_{PP}

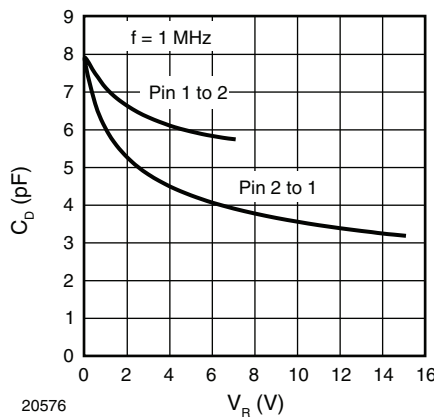


Fig. 3 - Typical Capacitance C_D vs. Reverse Voltage V_R

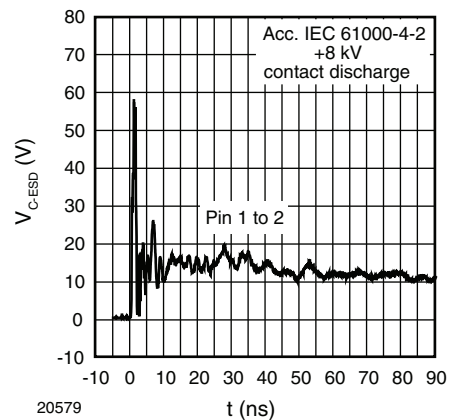


Fig. 6 - Typical Clamping Performance at +8 kV Contact Discharge (acc. IEC 61000-4-2)

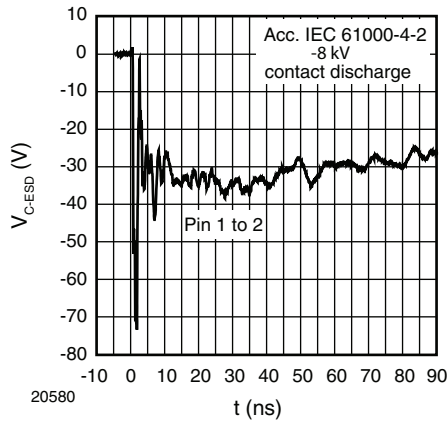


Fig. 7 - Typical Clamping Performance at - 8 kV Contact Discharge (acc. IEC 61000-4-2)

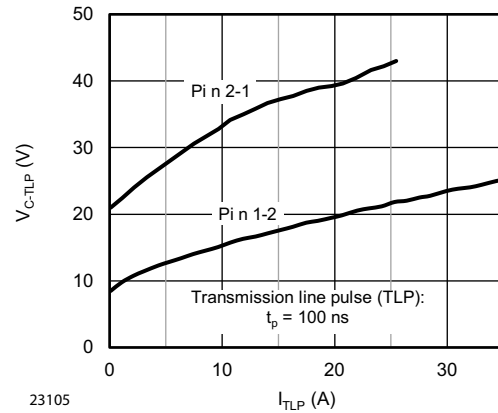
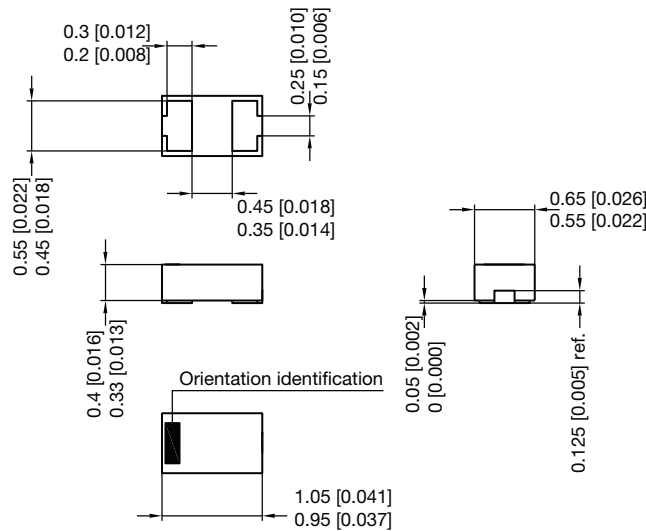
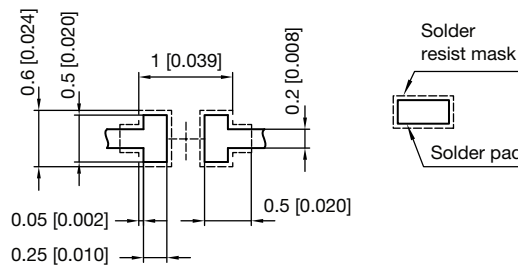


Fig. 8 - Typical Peak Clamping Voltage vs. Peak Pulse Current

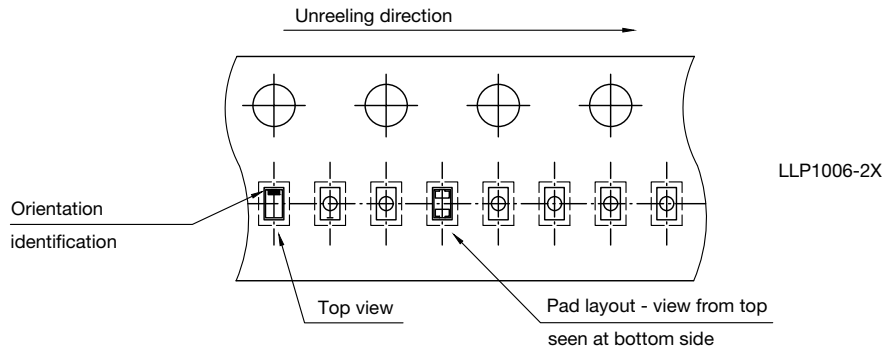
PACKAGE DIMENSIONS in millimeters (inches): **LLP1006-2L**



Foot print recommendation:



Pad Design Patented:
(©US 9.018.537 B2)



S8-V-3906.04-017 (4)
02.05.2017
22965



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