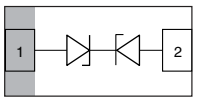
Bidirectional Symmetrical (BiSy) Single Line ESD Protection Diode in LLP1006-2L



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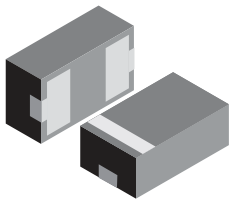

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FEATURES

- Ultra compact LLP1006-2L package
- Low package profile < 0.4 mm
- 1-line ESD protection
- Working range ± 5 V
- Low leakage current I_R < 0.1 µA
- Low load capacitance C_D = 18 pF
- ESD Immunity acc. IEC 61000-4-2
  ± 20 kV contact discharge
  ± 25 kV air discharge
- Soldering can be checked by standard vision inspection; no X-ray necessary
- Pin plating NiPdAu (e4) no whisker growth
- 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

Pb-free

e4

RoHS COMPLIANT

HALOGEN FREE GREEN (5-2008)

MARKING (example only)

21121

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

DESIGN SUPPORT TOOLS

click logo to get started

3D Models Available

ORDERING INFORMATION

DEVICE NAME	ORDERING CODE	TAPED UNITS PER REEL (8 mm TAPE on 7" REEL)	MINIMUM ORDER QUANTITY
VCUT0505B-HD1	VCUT0505B-HD1-GS08	8000	8000

PACKAGE DATA

DEVICE NAME	PACKAGE NAME	TYPE CODE	WEIGHT	MOLDING COMPOUND FLAMMABILITY RATING	MOISTURE SENSITIVITY LEVEL	SOLDERING CONDITIONS
VCUT0505B-HD1	LLP1006-2L	L	0.72 mg	UL 94 V-0	MSL level 1 (according J-STD-020)	Peak temperature max. 260 °C

ABSOLUTE MAXIMUM RATINGS VCUT0505B-HD1

PARAMETER	TEST CONDITIONS	SYMBOL	VALUE	UNIT
Peak pulse current	Acc. IEC 61000-4-5; t_p = 8/20 µs; single shot	I_{PPM}	3.5	A
Peak pulse power	Pin 1 to pin 2 Acc. IEC 61000-4-5; t_p = 8/20 µs; single shot	P_{PP}	56	W
ESD immunity	Contact discharge acc. IEC 61000-4-2; 10 pulses	V_{ESD}	± 20	kV
	Air discharge acc. IEC 61000-4-2; 10 pulses		± 25	kV
Operating temperature	Junction temperature	T_J	-40 to +125	°C
Storage temperature		T_{stg}	-55 to +150	°C

PATENT(S): www.vishay.com/patents
This Vishay product is protected by one or more United States and international patents.

For technical questions, contact: ESDprotection@vishay.com

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ELECTRICAL CHARACTERISTICS VCUT0505B-HD1

(T_{amb} = 25 °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	V
Reverse voltage	At I_R = 0.1 µA	V_R	5	-	-	V
Reverse current	At V_R = 5 V	I_R	-	-	0.1	µA
Reverse breakdown voltage	At I_R = 1 mA	V_{BR}	7	-	-	V
Reverse clamping voltage	At I_{PP} = 1 A	V_C	-	-	12	V
	At I_{PP} = I_{PPM} = 3.5 A	V_C	-	-	16	V
Capacitance	At V_R = 0 V; f = 1 MHz	C_D	-	18	20	pF
	At V_R = 2.5 V; f = 1 MHz	C_D	-	14.5	-	pF

CUT THE SPIKES WITH VCUT0505B-HD1:

The VCUT0505B-HD1 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 VCUT0505B-HD1 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 LLP1006-2L package the line inductance is very low, so that fast transients like an ESD strike can be clamped with minimal over- or undershoots.

TYPICAL CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified)

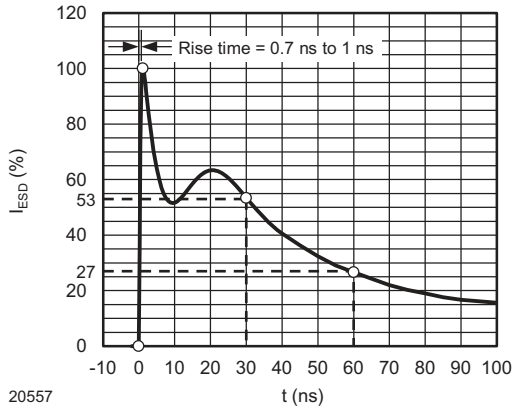

Fig. 1 - ESD Discharge Current Wave Form acc. IEC 61000-4-2 (330 Ω/150 pF)

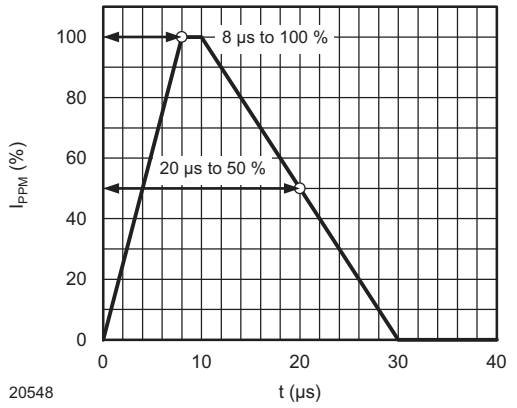

Fig. 2 - 8/20 µs Peak Pulse Current Wave Form acc. IEC 61000-4-5

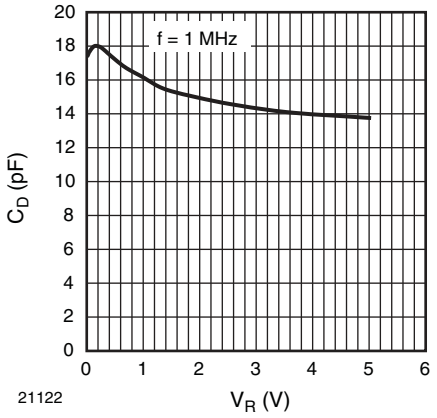

Fig. 3 - Typical Capacitance C_D vs. Reverse Voltage V_R

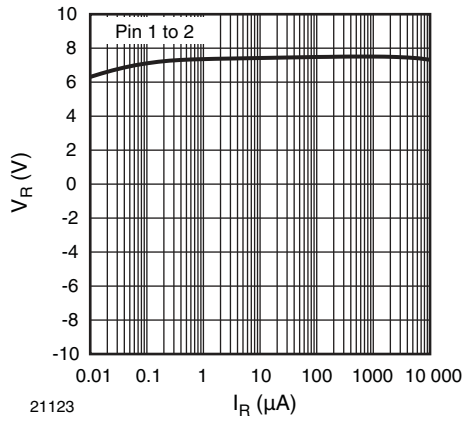

Fig. 4 - Typical Reverse Voltage V_R vs. Reverse Current I_R

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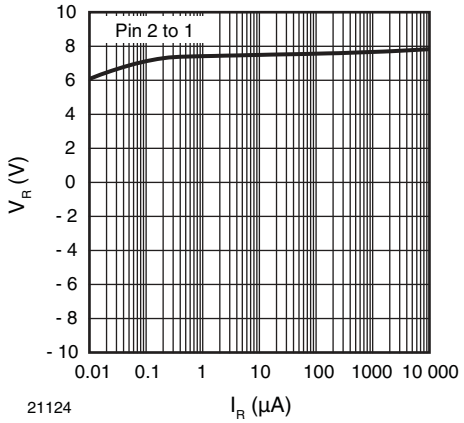

Fig. 5 - Typical Reverse Voltage V_R vs. Reverse Current I_R

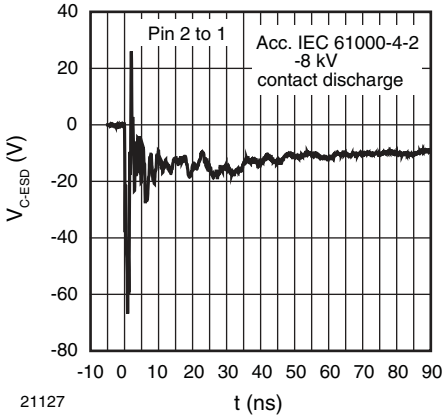

Fig. 8 - Typical Clamping Performance at - 8 kV Contact Discharge (acc. IEC 61000-4-2)

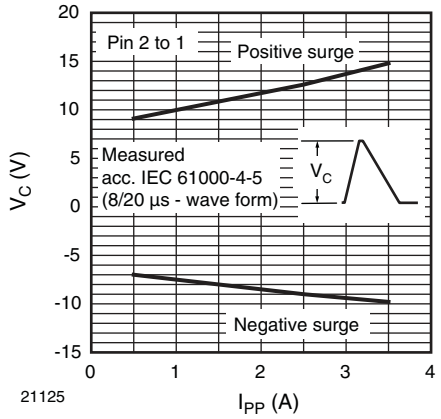

Fig. 6 - Typical Peak Clamping Voltage V_C vs. Peak Pulse Current I_{PP}

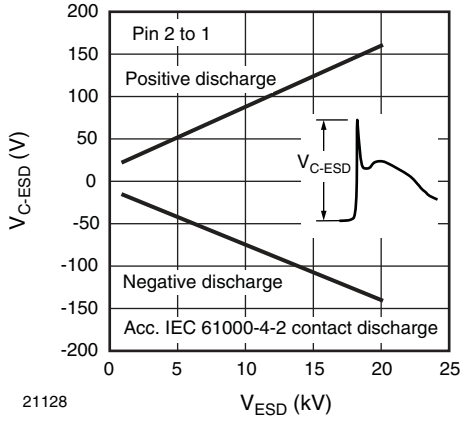

Fig. 9 - Typical Peak. Clamping Voltage at ESD Contact Discharge (acc. IEC 61000-4-2)

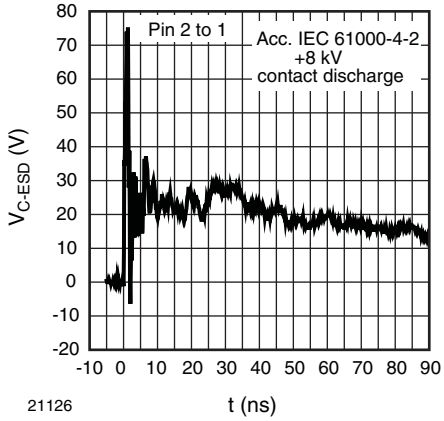

Fig. 7 - Typical Clamping Performance at + 8 kV Contact Discharge (acc. IEC 61000-4-2)

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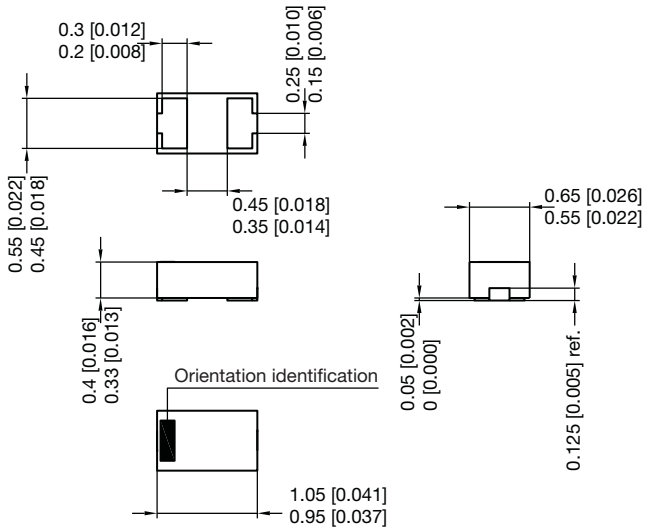
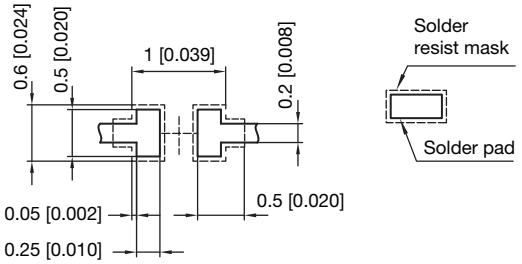
PACKAGE DIMENSIONS in millimeters (Inches): **LLP1006-2L**



Foot print recommendation:



Pad Design Patented:
(Ⓟ US 9.018.537 B2)

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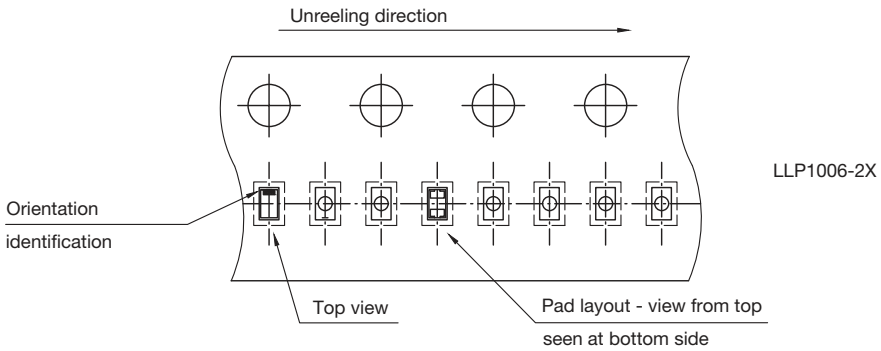

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