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

Features

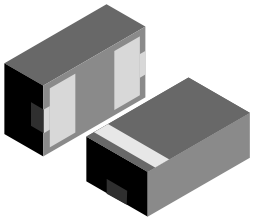
- Ultra compact LLP1006-2L package
- Low package height < 0.4 mm
- 1-line ESD-protection
- Working range ± 5 V
- Low leakage current < 0.1 µA
- Low load capacitance C_D = 18 pF
- ESD-protection acc. IEC 61000-4-2
  - ± 20 kV contact discharge
  - ± 25 kV air discharge
- Soldering can be checked by standard vision inspection. No X-ray necessary
- AEC Q101 qualified
- Pin plating NiPdAu (e4) no whisker growth
- Compliant to RoHS directive 2002/95/EC and in accordance to WEEE 2002/96/EC

Pb-free

e4

RoHS COMPLIANT

GREEN (5-2008)**



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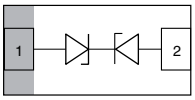


21129

Marking (example only)

21121

Bar = Pin 1 marking
X = Date code
Y = Type code (see table below)

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)	260 °C/10 s at terminals

Absolute Maximum Ratings

Parameter	Test conditions	Symbol	Value	Unit
Peak pulse current	Acc. IEC 61000-4-5, 8/20 µs/single shot	I_{PPM}	3.5	A
Peak pulse power	Pin 1 to pin 2 acc. IEC 61000-4-5, 8/20 µs/single shot	P_{PP}	56	W
ESD immunity	Contact discharge acc. IEC61000-4-2; 10 pulses	V_{ESD}	± 20	kV
	Air discharge acc. IEC61000-4-2; 10 pulses		± 25	
Operating temperature	Junction temperature	T_j	- 40 to + 125	°C
Storage temperature		T_{STG}	- 55 to + 150	°C

** Please see document “Vishay Material Category Policy”: http://www.vishay.com/doc?99902

Cut the spikes with VCUT0505B-HD1:

The **VCUT0505B-HD1** is a **Bi**directional and **Sy**mmetrical (**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.

Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

VCUT0505B-HD1

Parameter	Test conditions/remarks	Symbol	Min.	Typ.	Max.	Unit
Protection paths	Number of lines which can be protected	N_{lines}			1	lines
Reverse stand-off voltage	at I = 0.1 µA	V_{RWM}	5			V
Reverse current	at V = 5 V	I_R			0.1	µA
Reverse breakdown voltage	at I = 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 = 0 V; f = 1 MHz	C_D		18	20	pF
	at V = 2.5 V; f = 1 MHz	C_D		14.5		pF

Typical Characteristics

T_{amb} = 25 °C, unless otherwise specified

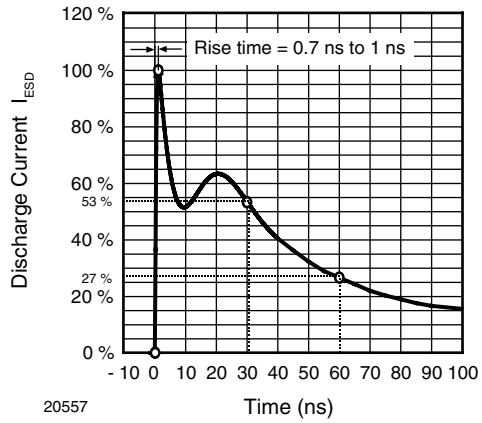


Figure 1. ESD Discharge Current Wave Form
acc. IEC 61000-4-2 (330 Ω/150 pF)

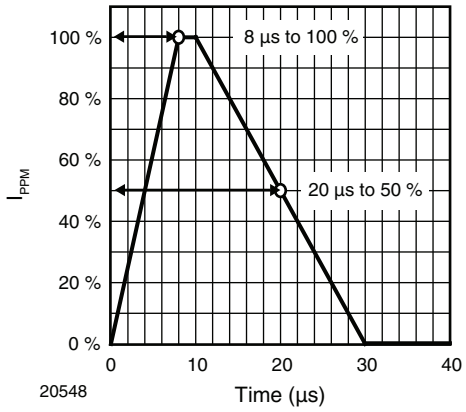


Figure 2. 8/20 µs Peak Pulse Current Wave Form
acc. IEC 61000-4-5

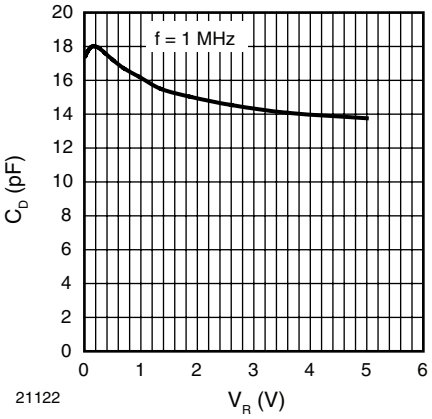


Figure 3. Typical Capacitance C_D vs. Reverse Voltage V_R

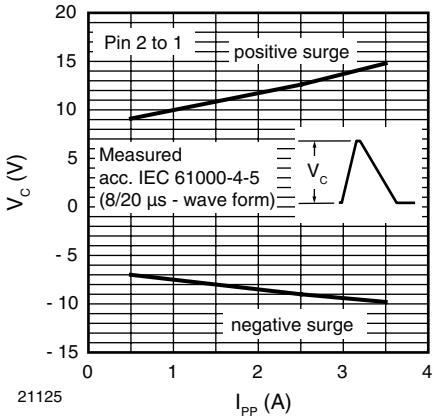


Figure 6. Typical Peak Clamping Voltage V_C vs. Peak Pulse Current I_{PP}

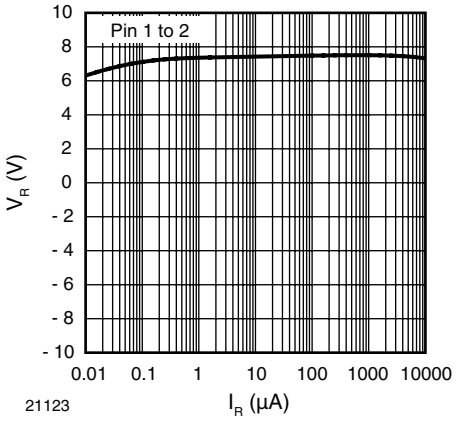


Figure 4. Typical Reverse Voltage V_R vs. Reverse Current I_R

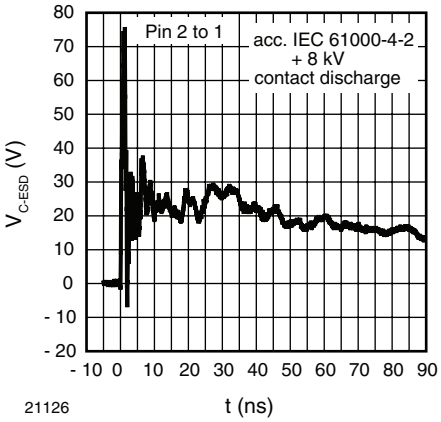


Figure 7. Typical Clamping Performance at + 8 kV Contact Discharge (acc. IEC 61000-4-2)

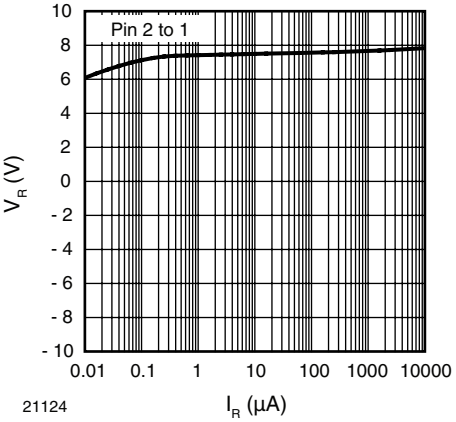


Figure 5. Typical Reverse Voltage V_R vs. Reverse Current I_R

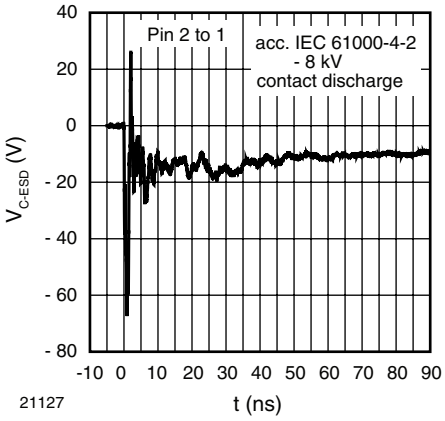


Figure 8. Typical Clamping Performance at - 8 kV Contact Discharge (acc. IEC 61000-4-2)

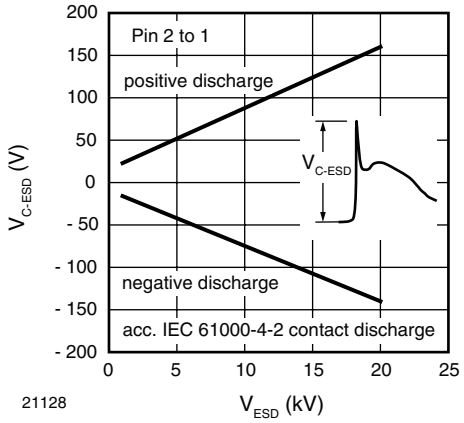
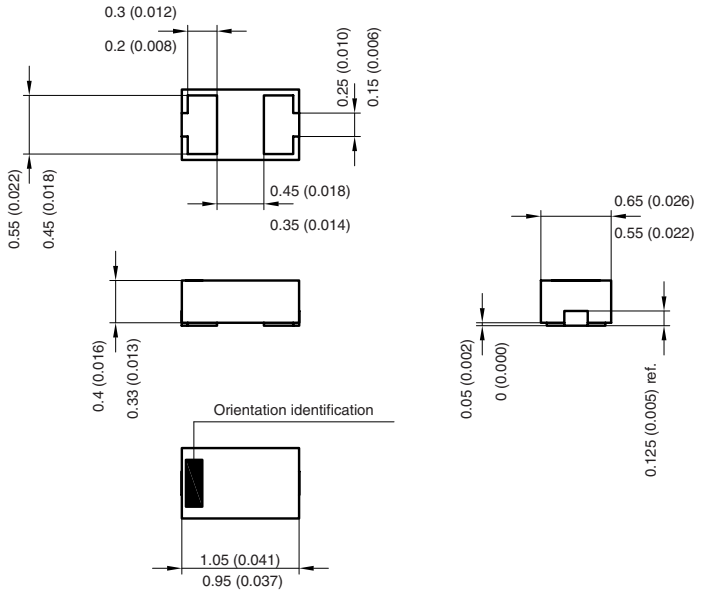
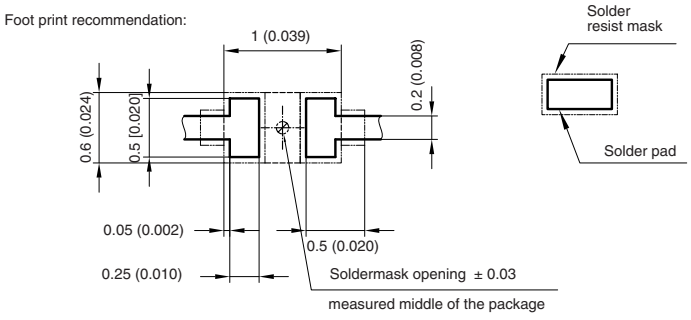


Figure 9. Typical Peak Clamping Voltage at ESD Contact Discharge (acc. IEC 61000-4-2)

Package Dimensions in millimeters (inches): **LLP1006-2L**





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