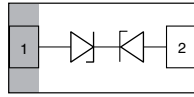
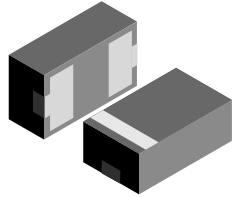


# Bidirectional Symmetrical (BiSy) Single Line ESD-Protection Diode in LLP1006-2L



21129



20855

**MARKING** (example only)


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

**FEATURES**

- Ultra compact LLP1006-2L package
- Low package profile < 0.4 mm
- 1-line ESD-protection
- Working range  $\pm 7$  V
- Low leakage current  $I_R < 0.1 \mu\text{A}$
- Low load capacitance  $C_D = 14$  pF
- ESD-protection 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
- e4 - precious metal (e.g. Ag, Au, NiPd, NiPdAu) (no Sn)
- Material categorization: For definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)


**RoHS**  
 COMPLIANT  
**GREEN**  
 (5-2008)

ORDERING INFORMATION			
DEVICE NAME	ORDERING CODE	TAPED UNITS PER REEL (8 mm TAPE ON 7" REEL)	MINIMUM ORDER QUANTITY
VCUT07B1-HD1	VCUT07B1-HD1-G4-08	8000	8000

PACKAGE DATA						
DEVICE NAME	PACKAGE NAME	TYPE CODE	WEIGHT	MOLDING COMPOUND FLAMMABILITY RATING	MOISTURE SENSITIVITY LEVEL	SOLDERING CONDITIONS
VCUT07B1-HD1	LLP1006-2L	U	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; $t_p = 8/20 \mu\text{s}$ ; single shot	$I_{PPM}$	4	A
Peak pulse power	Pin 1 to pin 2 acc. IEC 61000-4-5; $t_p = 8/20 \mu\text{s}$ ; single shot	$P_{PP}$	60	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		$\pm 30$	kV
Operating temperature	Junction temperature	$T_J$	- 40 to + 125	°C
Storage temperature		$T_{stg}$	- 55 to + 150	°C

ELECTRICAL CHARACTERISTICS (pin 1 to pin 2 or pin 2 to pin 1) $(T_{amb} = 25 \text{ °C, unless otherwise specified})$						
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 $I_R = 0.1 \mu\text{A}$	$V_R$	7	-	-	V
Reverse current	at $V_{RWM} = 7$ V	$I_R$	-	-	0.1	$\mu\text{A}$
Reverse breakdown voltage	at $I_R = 1$ mA	$V_{BR}$	7.3	-	-	V
Reverse clamping voltage	at $I_{PP} = 1$ A	$V_C$	-	9	12	V
	at $I_{PP} = I_{PPM} = 4$ A		-	-	15	V
Capacitance	at $V_R = 0$ V; $f = 1$ MHz	$C_D$	-	14	16	pF
	at $V_R = 2.5$ V; $f = 1$ MHz		-	11	-	pF

## CUT THE SPIKES WITH VCUT07B1-HD1:

The VCUT07B1-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 VCUT07B1-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<sub>amb</sub> = 25 °C, unless otherwise specified)

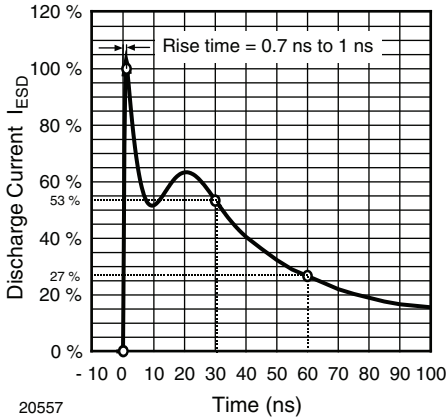


Fig. 1 - ESD Discharge Current Wave Form  
acc. IEC 61000-4-2 (330 Ω/150 pF)

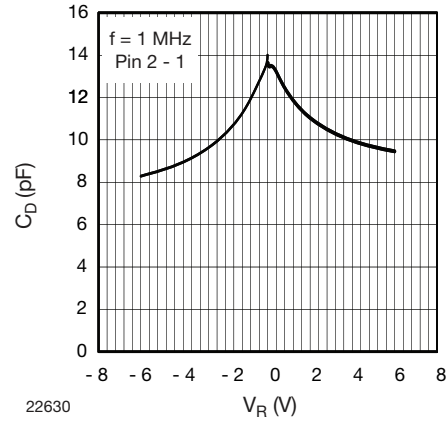


Fig. 3 - Typical Capacitance  $C_D$  vs. Reverse Voltage  $V_R$

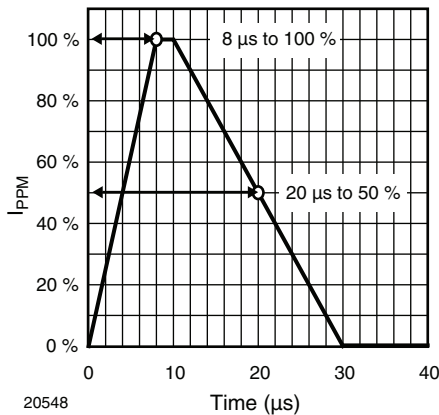


Fig. 2 - 8/20 μs Peak Pulse Current Wave Form  
acc. IEC 61000-4-5

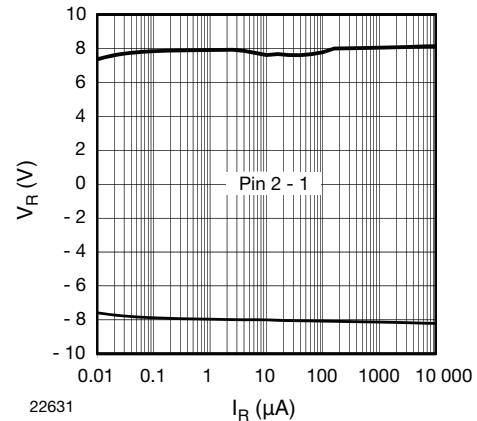


Fig. 4 - Typical Reverse Voltage  $V_R$  vs. Reverse Current  $I_R$

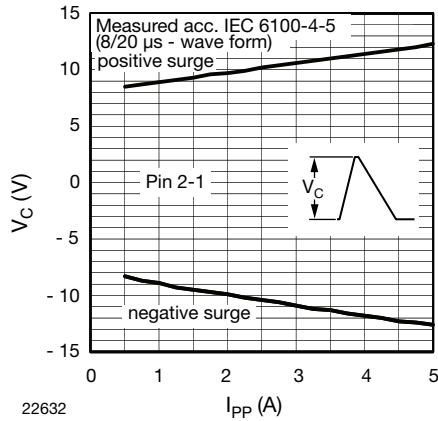


Fig. 5 - Typical Peak Clamping Voltage  $V_C$  vs. Peak Pulse Current  $I_{PP}$

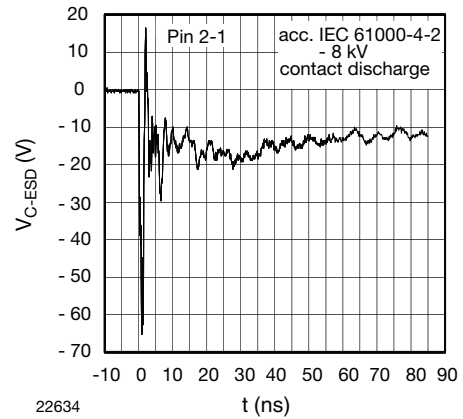


Fig. 7 - Typical Clamping Performance at + 8 kV Contact Discharge (acc. IEC 61000-4-2)

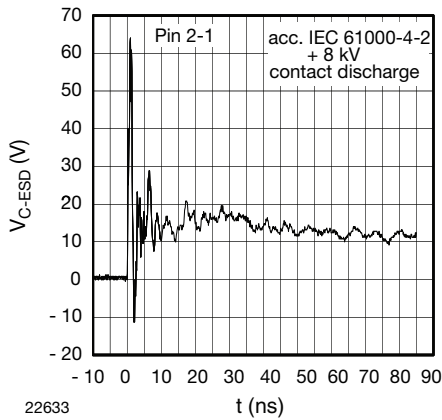


Fig. 6 - Typical Clamping Performance at + 8 kV Contact Discharge (acc. IEC 61000-4-2)

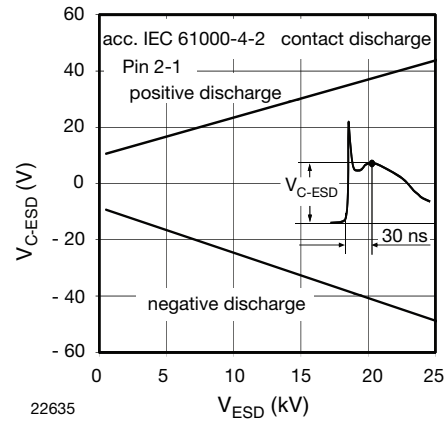
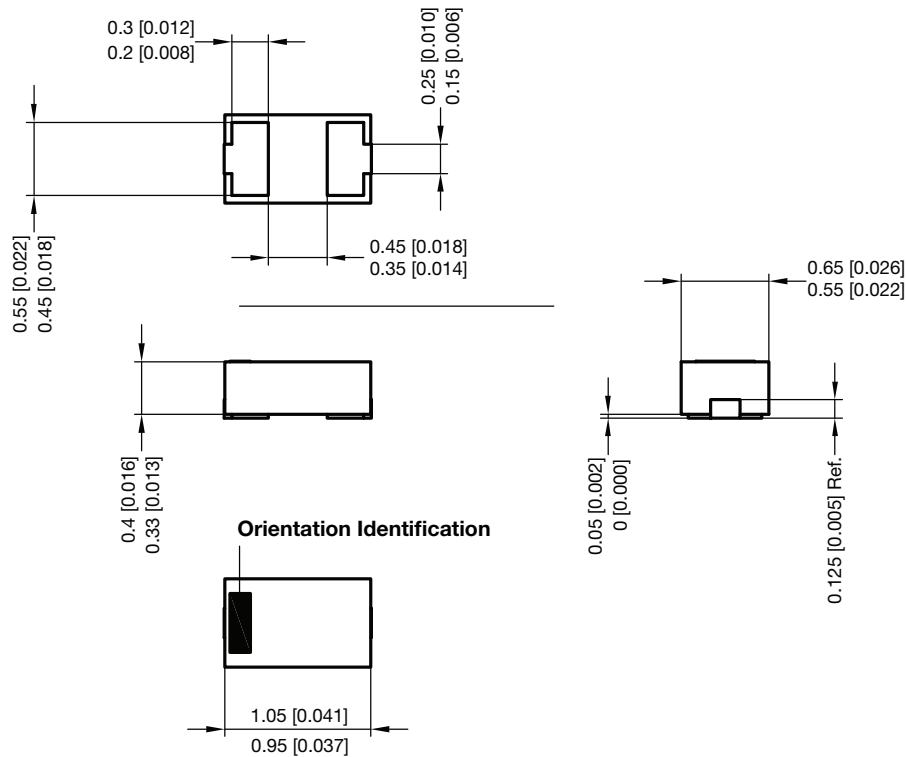
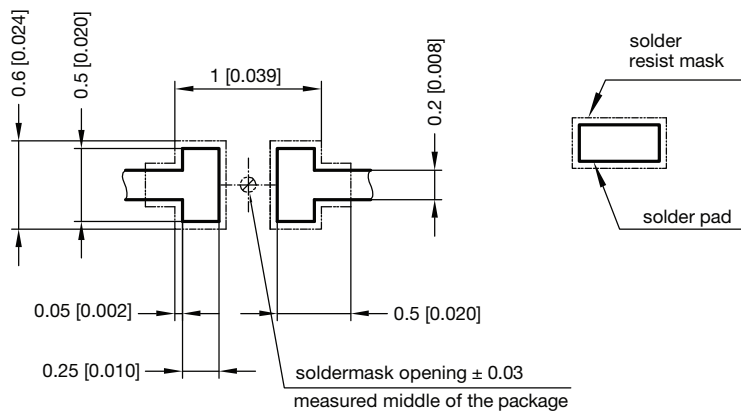


Fig. 8 - Typical Peak Clamping Voltage at ESD Contact Discharge (acc. IEC 61000-4-2)

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



**Foot print recommendation:**



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 Rev. 5 - Date: 21 April 2010  
 Document no.:S8-V-3906.04-005 (4)  
 20812



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