# VCUT07B1-HD1

RoHS

COMPLIANT

HALOGEN

FREE

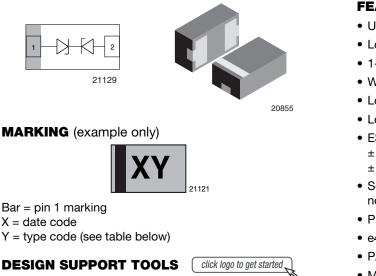
<u>GREEN</u>

(5-2008)



**Vishay Semiconductors** 

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



### **FEATURES**

- Ultra compact LLP1006-2L package
- Low package profile < 0.4 mm</li>
- 1-line ESD protection
- Working range ± 7 V
- Low leakage current I<sub>R</sub> < 0.1 μA</li>
- Low load capacitance C<sub>D</sub> = 14 pF
- ESD immunity acc. IEC 61000-4-2 ± 30 kV contact discharge ± 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)
- PATENT(S): <u>www.vishay.com/patents</u>
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

<b>3D</b>	
Models Available	

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)	Peak temperature max. 260 °C	

ABSOLUTE MAXIMUM RATINGS VCUT07B1-HD1						
PARAMETER	TEST CONDITIONS SYMBOL VALUE			UNIT		
Peak pulse current	Acc. IEC 61000-4-5; $t_{p}$ = 8/20 $\mu s;$ single shot	I <sub>PPM</sub>	4	A		
Peak pulse power	Pin 1 to pin 2 acc. IEC 61000-4-5; t <sub>p</sub> = 8/20 μs; single shot	P <sub>PP</sub>	60	W		
ESD immunity	Contact discharge acc. IEC 61000-4-2; 10 pulses	V	± 30	kV		
	Air discharge acc. IEC 61000-4-2; 10 pulses	V <sub>ESD</sub>	± 30	kV		
Operating temperature	Junction temperature	TJ	-40 to +125	°C		
Storage temperature		T <sub>stg</sub>	-55 to +150	°C		

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

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



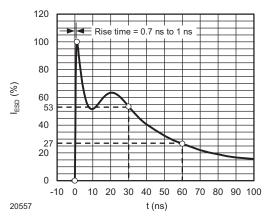
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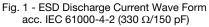
<b>ELECTRICAL CHARACTERISTICS VCUT07B1-HD1</b> (pin 1 to pin 2 or pin 2 to pin1) $(T_{amb} = 25 \text{ °C}, \text{ unless otherwise specified})$								
PARAMETER	TEST CONDITIONS/REMARKS SYMBOL MIN. TY				MAX.	UNIT		
Protection paths	Number of lines which can be protected	N <sub>channel</sub>	-	-	1	lines		
Reverse stand-off voltage	Max. reverse working voltage	V <sub>RWM</sub>	-	-	7	V		
Reverse voltage	At I <sub>R</sub> = 0.1 μA	V <sub>R</sub>	7	-	-	V		
Reverse current	At V <sub>RWM</sub> = 7 V	I <sub>R</sub>	-	-	0.1	μA		
Reverse breakdown voltage	At I <sub>R</sub> = 1 mA	V <sub>BR</sub>	7.3	-	-	V		
Reverse clamping voltage	At I <sub>PP</sub> = 1 A	V	-	9	12	V		
	At I <sub>PP</sub> = I <sub>PPM</sub> = 4 A	V <sub>C</sub>	-	-	15	V		
Capacitance	At $V_R = 0$ V; f = 1 MHz	<u> </u>	-	14	16	pF		
	At V <sub>R</sub> = 2.5 V; f = 1 MHz	C <sub>D</sub>	-	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 (Tamb = 25 °C, unless otherwise specified)





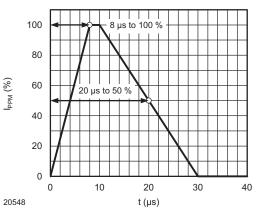
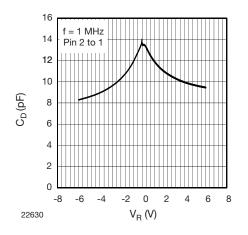


Fig. 2 - 8/20 µs Peak Pulse Current Wave Form acc. IEC 61000-4-5

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Fig. 3 - Typical Capacitance C<sub>D</sub> vs. Reverse Voltage V<sub>R</sub>

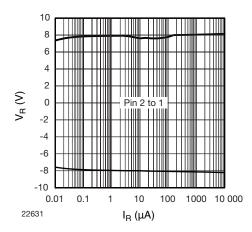


Fig. 4 - Typical Reverse Voltage V<sub>R</sub> vs. Reverse Current I<sub>R</sub>

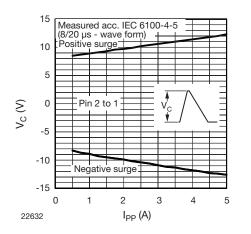


Fig. 5 - Typical Peak Clamping Voltage V<sub>C</sub> vs. Peak Pulse Current  $I_{PP}$ 

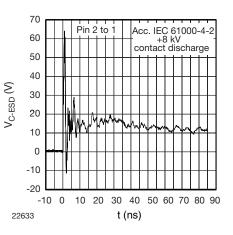


Fig. 6 - Typical Clamping Performance at + 8 kV Contact Discharge (acc. IEC 61000-4-2)

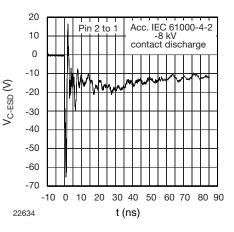


Fig. 7 - Typical Clamping Performance at + 8 kV Contact Discharge (acc. IEC 61000-4-2)

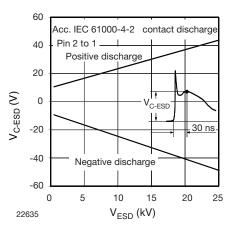


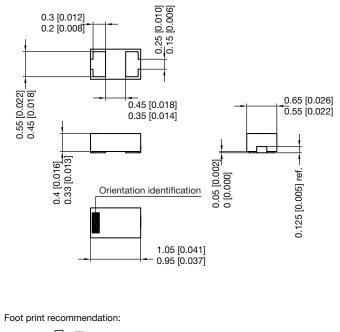
Fig. 8 - Typical Peak. Clamping Voltage at ESD Contact Discharge (acc. IEC 61000-4-2)

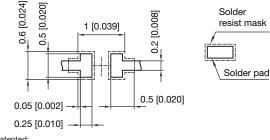
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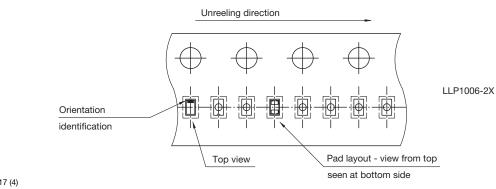
#### PACKAGE DIMENSIONS in millimeters (inches): LLP1006-2L





Pad Design Patented: (PUS 9.018.537 B2)

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