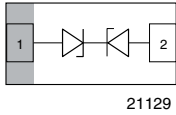
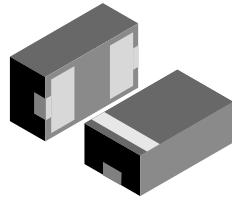


# Bidirectional Symmetrical (BiSy) Single Line ESD-Protection Diode in LLP1006-2M



21129



20855

## MARKING (example only)



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

## LINKS TO ADDITIONAL RESOURCES



## FEATURES

- Ultra compact LLP1006-2M package
- Low package height < 0.4 mm
- 1-line ESD protection
- Working range  $\pm 3.5$  V
- Low leakage current < 0.1  $\mu$ A
- Low load capacitance  $C_D = 12.5$  pF
- ESD immunity acc. IEC 61000-4-2  
 $\pm 18$  kV contact discharge  
 $\pm 20$  kV air discharge
- Soldering can be checked by standard vision inspection, no X-ray necessary
- Pin plating NiPdAu (e4) no whisker growth
- PATENT(S): [www.vishay.com/patents](http://www.vishay.com/patents)
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



ORDERING INFORMATION			
DEVICE NAME	ORDERING CODE	TAPED UNITS PER REEL (8 mm TAPE ON 7" REEL)	MINIMUM ORDER QUANTITY
VCUT03B1-DD1	VCUT03B1-DD1-G-08	8000	8000

PACKAGE DATA						
DEVICE NAME	PACKAGE NAME	TYPE CODE	WEIGHT	MOLDING COMPOUND FLAMMABILITY RATING	MOISTURE SENSITIVITY LEVEL	SOLDERING CONDITIONS
VCUT03B1-DD1	LLP1006-2M	N	0.72 mg	UL 94 V-0	MSL level 1 (according J-STD-020)	Peak temperature max. 260 °C

ABSOLUTE MAXIMUM RATINGS VCUT03B1-DD1				
PARAMETER	TEST CONDITIONS	SYMBOL	VALUE	UNIT
Peak pulse current	Acc. IEC 61000-4-5; $t_p = 8/20$ $\mu$ s; single shot	$I_{PPM}$	3.5	A
Peak pulse power	Pin 1 to pin 2 Acc. IEC 61000-4-5; $t_p = 8/20$ $\mu$ s; single shot	$P_{PP}$	40	W
ESD immunity	Contact discharge acc. IEC61000-4-2; 10 pulses	$V_{ESD}$	$\pm 18$	kV
	Air discharge acc. IEC61000-4-2; 10 pulses		$\pm 20$	
Operating temperature	Junction temperature	$T_J$	-40 to +125	°C
Storage temperature		$T_{STG}$	-55 to +150	°C

PATENT(S): [www.vishay.com/patents](http://www.vishay.com/patents)

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



CUT THE SPIKES WITH VCUT03B1-DD1

The VCUT03B1-DD1 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 VCUT03B1-DD1 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 LLP1006-2M 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 VCUT03B1-DD1						
(T <sub>amb</sub> = 25 °C, unless otherwise specified)						
PARAMETER	TEST CONDITIONS/REMARKS	SYMBOL	MIN.	TYP.	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>	-	-	3.5	V
Reverse voltage	At I <sub>R</sub> = 0.1 μA	V <sub>R</sub>	3.5	-	-	V
Reverse current	At V = 3.5 V	I <sub>R</sub>	-	-	0.1	μA
Reverse breakdown voltage	At I = 1 mA	V <sub>BR</sub>	5.8	6.7	7.5	V
Reverse clamping voltage	At I <sub>PP</sub> = 1 A	V <sub>C</sub>	-	7.8	9	V
	At I <sub>PP</sub> = I <sub>PPM</sub> = 3.5 A	V <sub>C</sub>	-	9.5	11.5	V
Capacitance	At V = 0 V; f = 1 MHz	C <sub>D</sub>	-	12.5	15	pF
	At V = 2.5 V; f = 1 MHz	C <sub>D</sub>	-	11.5	-	pF

TYPICAL CHARACTERISTICS (T<sub>amb</sub> = 25 °C, unless otherwise specified)

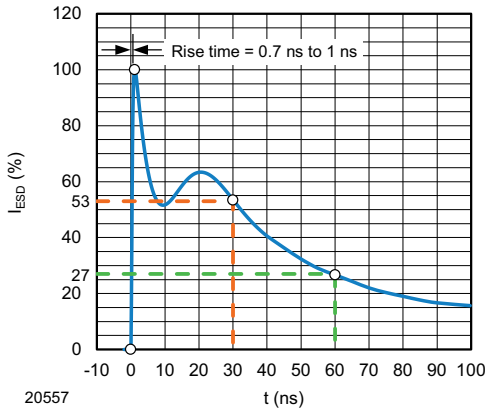


Fig. 1 - ESD Discharge Current Wave Form acc. IEC 61000-4-2 (330 Ω/150 pF)

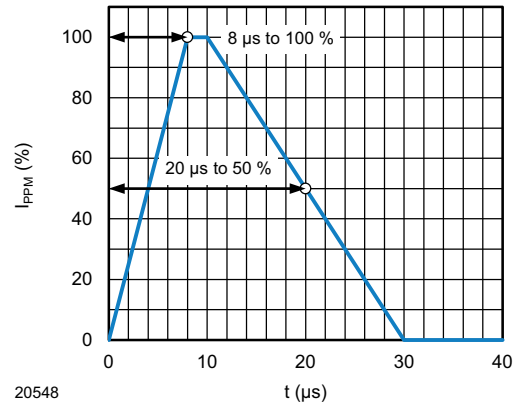


Fig. 2 - 8/20 μs Peak Pulse Current Wave Form acc. IEC 61000-4-5

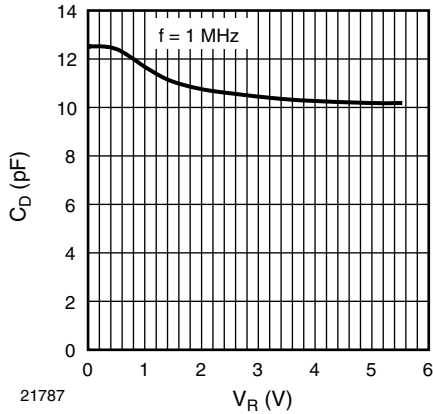


Fig. 3 - Typical Capacitance  $C_D$  vs. Reverse Voltage  $V_R$

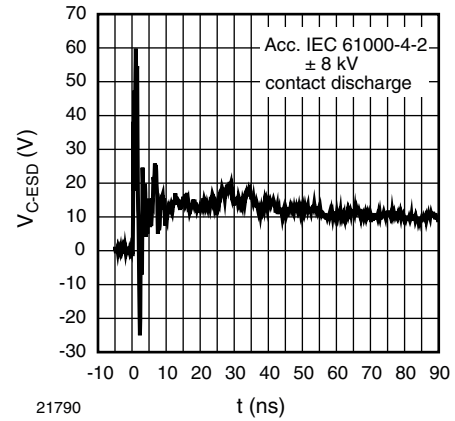


Fig. 6 - Typical Peak Clamping Voltage  $V_C$  vs. Peak Pulse Current  $I_{PP}$

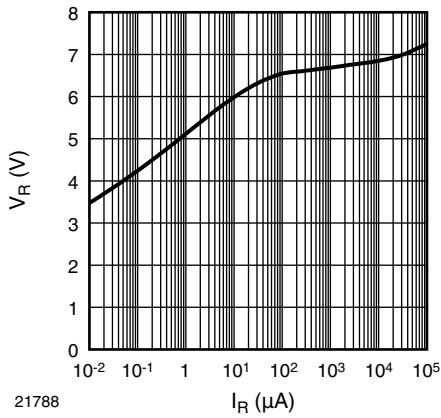


Fig. 4 - Typical Forward Current  $I_F$  vs. Forward Voltage  $V_F$

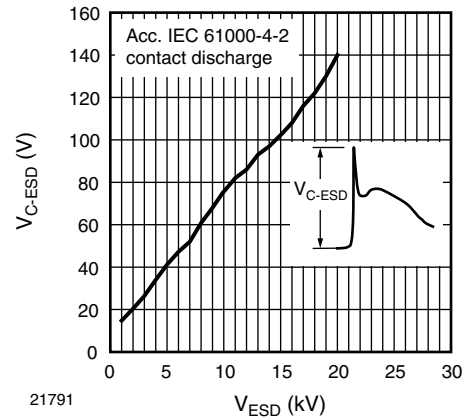


Fig. 7 - Typical Clamping Performance at + 8 kV Contact Discharge (acc. IEC 61000-4-2)

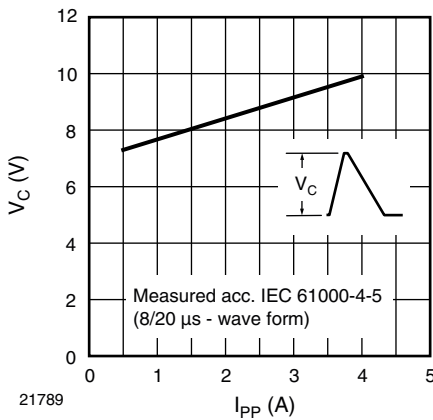
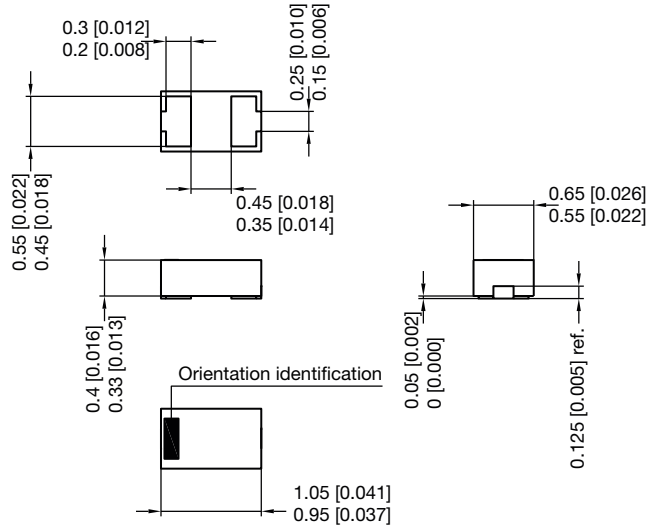


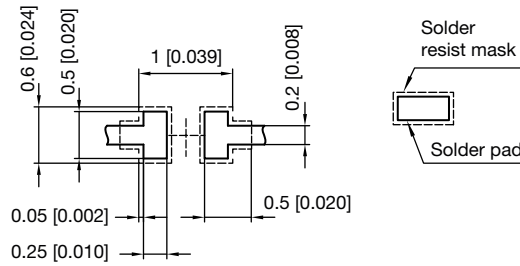
Fig. 5 - Typical Reverse Voltage  $V_R$  vs. Reverse Current  $I_R$



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

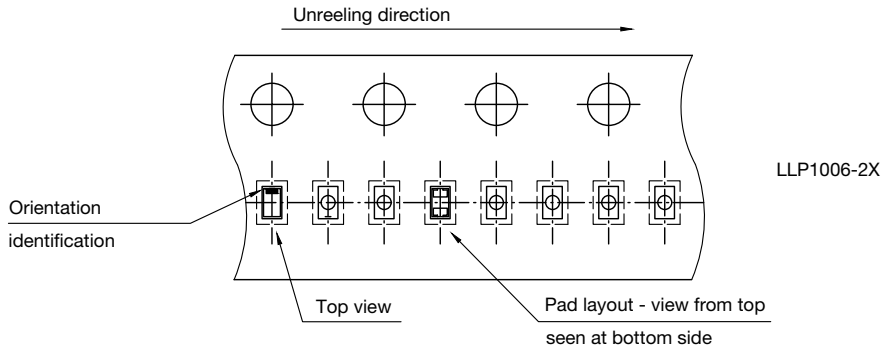


Foot print recommendation:



Pad Design Patented:  
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Rev. 7 - Date: 11.May 2016  
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02.05.2017  
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