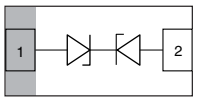
Bidirectional Symmetrical (BiSy) Single Line ESD Protection Diode in LLP1006-2M



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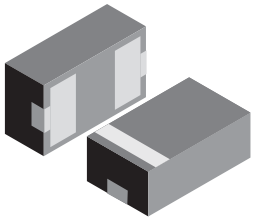
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FEATURES

- Ultra compact LLP1006-2M package
- Low package height < 0.4 mm
- 1-line ESD protection
- Working range ± 5.5 V
- Low leakage current < 0.1 µA
- Low load capacitance C_D = 10 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
- 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 1 marking
X = date code
Y = type code (see table below)

ADDITIONAL RESOURCES

3D Models

SPICE Models

ORDERING INFORMATION			
DEVICE NAME	ORDERING CODE	TAPED UNITS PER REEL (8 mm TAPE ON 7" REEL)	MINIMUM ORDER QUANTITY
VCUT05B1-DD1	VCUT05B1-DD1-G-08	8000	8000

PACKAGE DATA						
DEVICE NAME	PACKAGE NAME	TYPE CODE	WEIGHT	MOLDING COMPOUND FLAMMABILITY RATING	MOISTURE SENSITIVITY LEVEL	SOLDERING CONDITIONS
VCUT05B1-DD1	LLP1006-2M	P	0.72 mg	UL 94 V-0	MSL level 1 (according J-STD-020)	Peak temperature max. 260 °C

ABSOLUTE MAXIMUM RATINGS VCUT05B1-DD1				
PARAMETER	TEST CONDITIONS	SYMBOL	VALUE	UNIT
Peak pulse current	Acc. IEC 61000-4-5, 8/20 µs/single shot	I_{PPM}	3	A
Peak pulse power	Pin 1 to pin 2 acc. IEC 61000-4-5; t_p = 8/20 µs; single shot	P_{PP}	38	W
ESD immunity	Contact discharge acc. IEC 61000-4-2; 10 pulses	V_{ESD}	± 30	kV
	Air discharge acc. IEC 61000-4-2; 10 pulses	V_{ESD}	± 30	
Operating temperature	Junction temperature	T_J	-55 to +145	°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.

CUT THE SPIKES WITH VCUT05B1-DD1

The VCUT05B1-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 VCUT05B1-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 and ESD strike can be clamped with minimal over- or undershoots.

ELECTRICAL CHARACTERISTICS VCUT05B1-DD1
(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}	-	-	5.5	V
Reverse voltage	At I = 0.1 µA	V_R	5.5	-	-	V
Reverse current	At V = 5.5 V	I_R	-	-	0.1	µA
Reverse breakdown voltage	At I = 1 mA	V_{BR}	6	7.5	8.5	V
Reverse clamping voltage	At I_{PP} = 1 A	V_C	-	8.3	10.5	V
	At I_{PP} = I_{PPM} = 3 A	V_C	-	10.3	12.5	V
Capacitance	At V = 0 V; f = 1 MHz	C_D	-	10	13	pF
	At V = 2.5 V; f = 1 MHz	C_D	-	8	-	pF

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

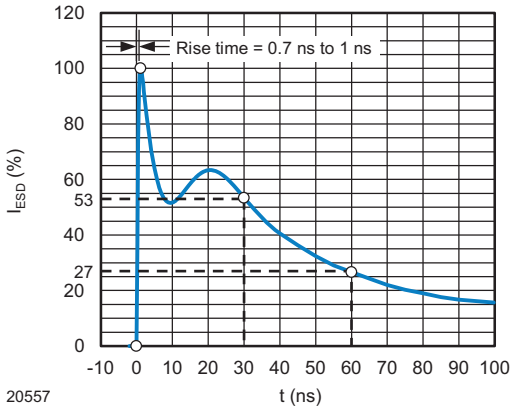


Fig. 1 - ESD Discharge Current Wave Form
acc. IEC 61000-4-2 (330 Ω/150 pF)

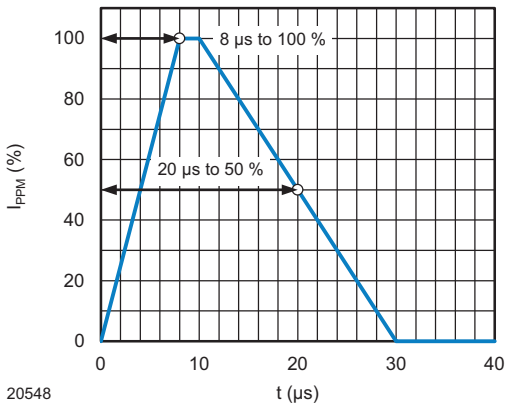


Fig. 2 - 8/20 µs Peak Pulse Current Wave Form
acc. IEC 61000-4-5

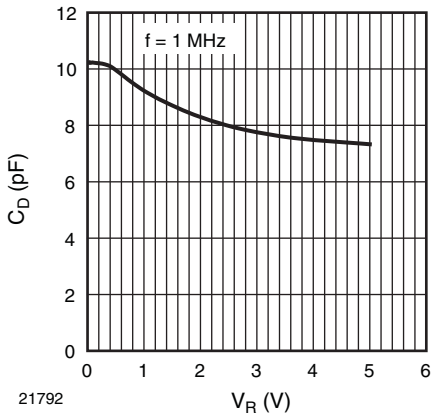


Fig. 3 - Typical Capacitance C_D vs. Reverse Voltage V_R

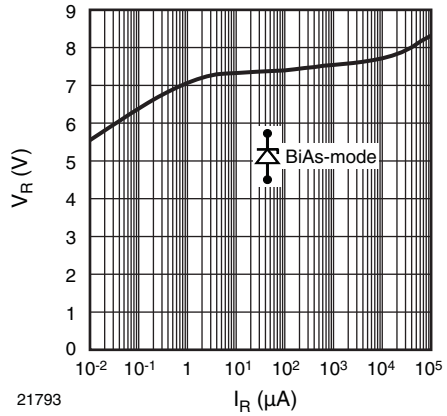


Fig. 4 - Typical Reverse Voltage V_R vs. Reverse Current I_R

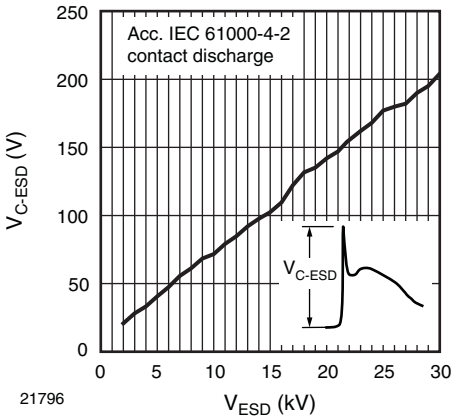


Fig. 7 - Typical Peak Clamping Voltage at ESD Contact Discharge (acc. IEC 61000-4-2)

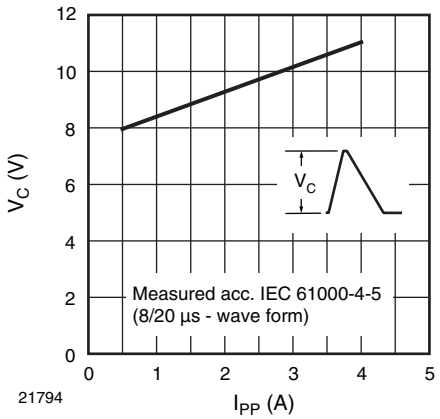


Fig. 5 - Typical Peak Clamping Voltage V_C vs. Peak Pulse Current I_{PP}

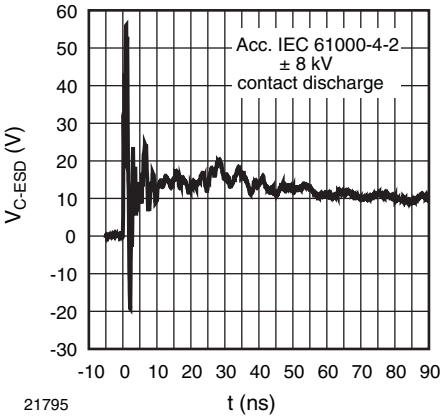
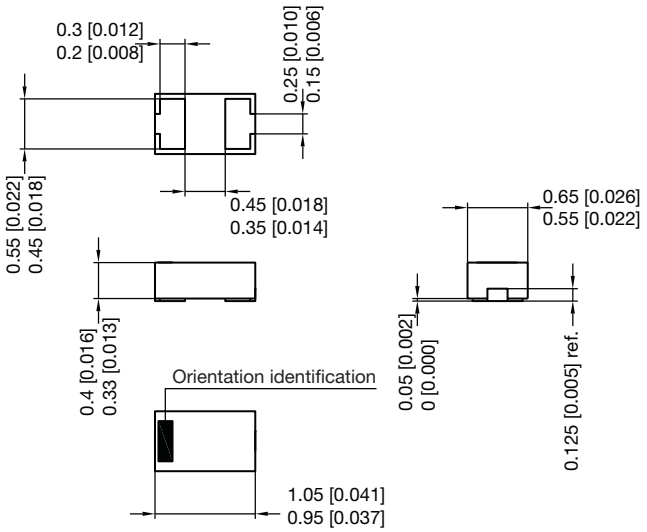
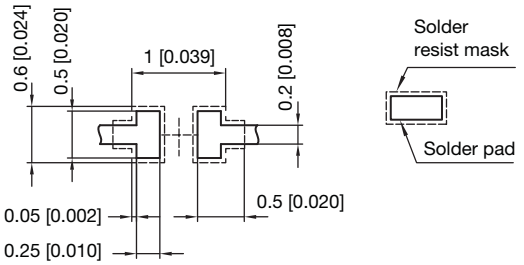


Fig. 6 - Typical Clamping Performance at + 8 kV Contact Discharge (acc. IEC 61000-4-2)

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



Foot print recommendation:



Pad Design Patented:
(Ⓟ US 9.018.537 B2)

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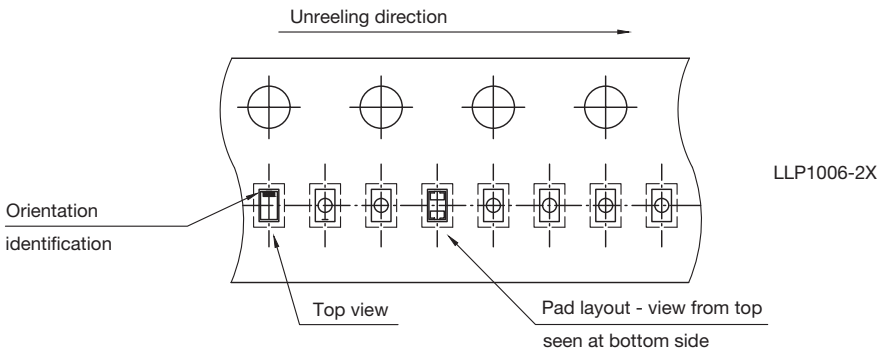

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