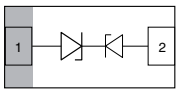
Bidirectional Asymmetrical (BiAs) Single Line ESD Protection Diode in DFN1006-2A



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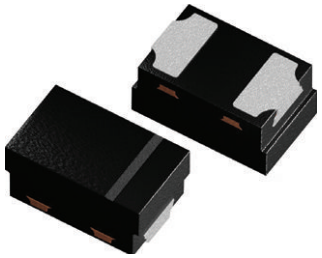


MARKING (example only)

21121

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

LINKS TO ADDITIONAL RESOURCES

3D Models | SPICE Models | Application Notes

FEATURES

- Ultra compact DFN1006-2A
- AEC-Q101 qualified available
- Low package height
- 1-line ESD protection
- Working range -7 V up to +14 V or -14 V up to +7 V
- Low leakage current < 0.1 µA
- Low load capacitance typical C_D = 8 pF
- ESD immunity acc. IEC 61000-4-2
  ± 25 kV contact discharge
  ± 30 kV air discharge
- e3 - Sn
  Tin plated exposed side wall of lead frame
  - Soldering can be checked by standard vision inspection
  - AOI = automated optical inspection
  - No X-ray necessary
- PATENT(S): www.vishay.com/patents
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

AUTOMOTIVE GRADE Available
Pb-free
RoHS COMPLIANT
HALOGEN FREE
GREEN (5-2008)

ORDERING INFORMATION

PART NUMBER (EXAMPLE)	AEC-Q101 QUALIFIED	ENVIRONMENTAL AND QUALITY CODE		PACKAGING CODE	ORDERING CODE
		RoHS-COMPLIANT + LEAD (Pb)-FREE TERMINATIONS	TIN PLATED	10K PER 7" REEL (8 mm TAPE)	
		GREEN		MOQ = 10K	
VCUT0714BHD1	-	G	3	-08	VCUT0714BHD1-G3-08
VCUT0714BHD1	H	G	3	-08	VCUT0714BHD1HG3-08

PACKAGE DATA

DEVICE NAME	PACKAGE NAME	PIN PLATING	TYPE CODE	WEIGHT	MOLDING COMPOUND FLAMMABILITY RATING	MOISTURE SENSITIVITY LEVEL	SOLDERING CONDITIONS
VCUT0714BHD1	DFN1006-2A	e3	:A	0.83 mg	UL 94 V-0	MSL level 1 (according J-STD-020)	Peak temperature max. 260 °C

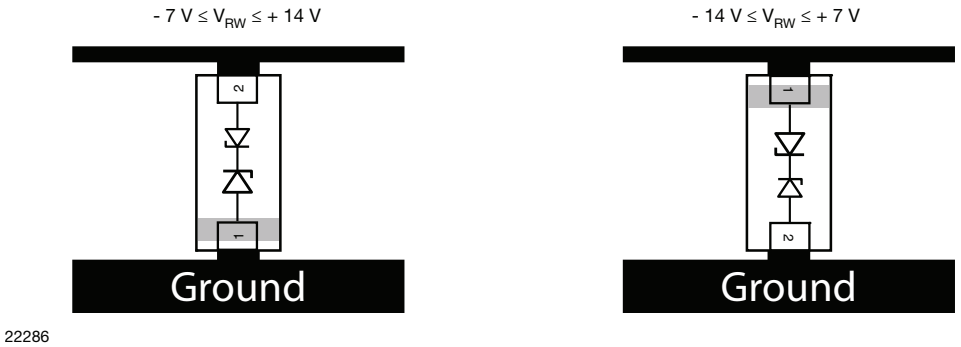
ABSOLUTE MAXIMUM RATINGS

PARAMETER	TEST CONDITIONS	SYMBOL	VALUE	UNIT
Peak pulse current	Pin 1 to pin 2, acc. IEC 61000-4-5, 8/20 µs/single shot	I_{PPM}	3.6	A
	Pin 2 to pin 1, acc. IEC 61000-4-5, 8/20 µs/single shot		2	A
Peak pulse power	Pin 1 to pin 2, acc. IEC 61000-4-5, 8/20 µs/single shot	P_{PP}	50	W
	Pin 2 to pin 1, acc. IEC 61000-4-5, 8/20 µs/single shot		61	W
ESD immunity	Contact discharge acc. IEC 61000-4-2; 10 pulses	V_{ESD}	± 25	kV
	Air discharge acc. IEC 61000-4-2; 10 pulses		± 30	kV
Operating temperature	Junction temperature; for AEC-Q101 qualified devices	T_J	-55 to +150	°C
Storage temperature		T_{stg}	-65 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

The VCUT0714BHD1 is a bidirectional but asymmetrical (BiAs) ESD protection device which clamps positive and negative overvoltage transients to ground. Connected between the signal or data line and the ground the VCUT0714BHD1 offers a high isolation (low leakage current, small capacitance) within the specified working range of -7 V to +14 V or -14 V and +7 V. Due to the short leads and small package size of the tiny DFN1006-2A package the line inductance is very low, so that fast transients like an ESD strike can be clamped with minimal over- or undershoots.



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ELECTRICAL CHARACTERISTICS (pin 2 to pin 1) (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}	-	-	14	V
Reverse voltage	At I_R = 0.1 µA	V_R	14	-	-	V
Reverse current	At V_{RWM} = 14 V	I_R	-	-	0.1	µA
Reverse breakdown voltage	At I_R = 1 mA	V_{BR}	14.5	-	-	V
Reverse clamping voltage	At I_{PP} = 1 A	V_C	-	-	27	V
	At I_{PP} = I_{PPM} = 2 A	V_C	-	-	30	V
Capacitance	At V_R = 0 V; f = 1 MHz	C_D	-	8	8.5	pF
	At V_R = 7 V; f = 1 MHz	C_D	-	4	-	pF

ELECTRICAL CHARACTERISTICS (pin 1 to pin 2) (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}	-	-	7	V
Reverse voltage	At I_R = 0.1 µA	V_R	7	-	-	V
Reverse current	At V_{RWM} = 7 V	I_R	-	-	0.1	µA
Reverse breakdown voltage	At I_R = 1 mA	V_{BR}	7.3	-	-	V
Reverse clamping voltage	At I_{PP} = 1 A	V_C	-	-	13	V
	At I_{PP} = I_{PPM} = 3.6 A	V_C	-	-	15	V
Capacitance	At V = 0 V; f = 1 MHz	C_D	-	8	8.5	pF
	At V = 3.5 V; f = 1 MHz	C_D	-	6.4	-	pF

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

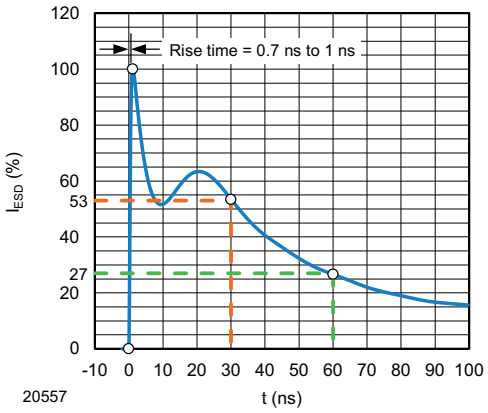


Fig. 1 - ESD Discharge Current Wave Form acc. IEC 61000-4-2 (330 Ω/150 pF)

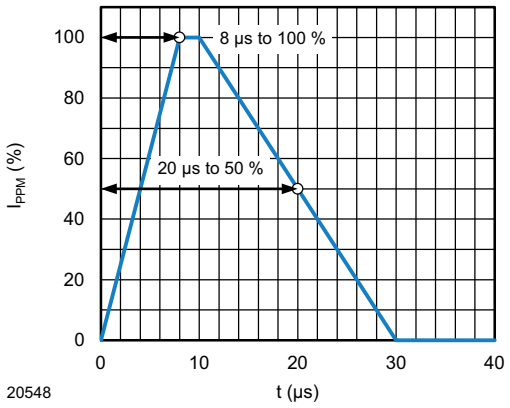


Fig. 2 - 8/20 µs Peak Pulse Current Wave Form acc. IEC 61000-4-5

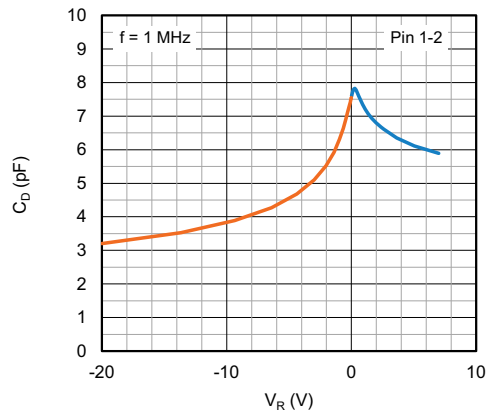


Fig. 3 - Typical Capacitance vs. Reverse Voltage

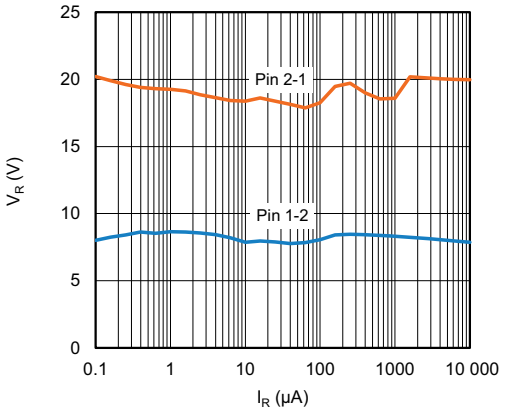


Fig. 4 - Typical Reverse Voltage vs. Reverse Current

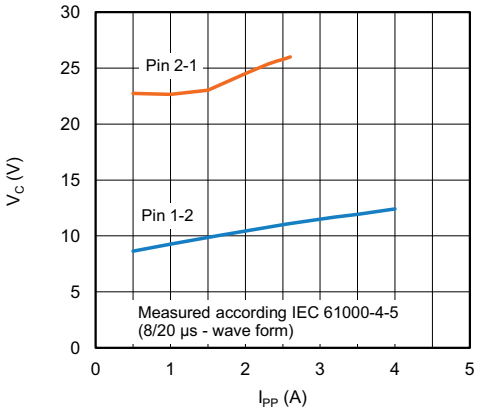


Fig. 5 - Typical Peak Clamping Voltage vs. Peak Pulse Current

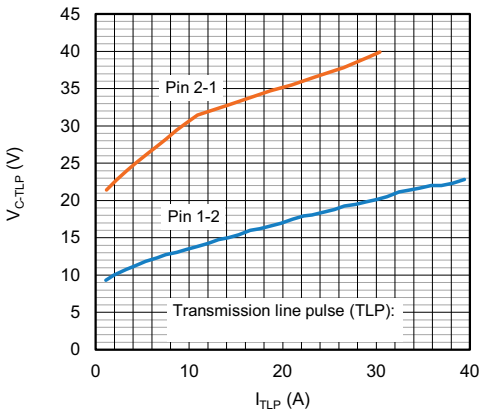
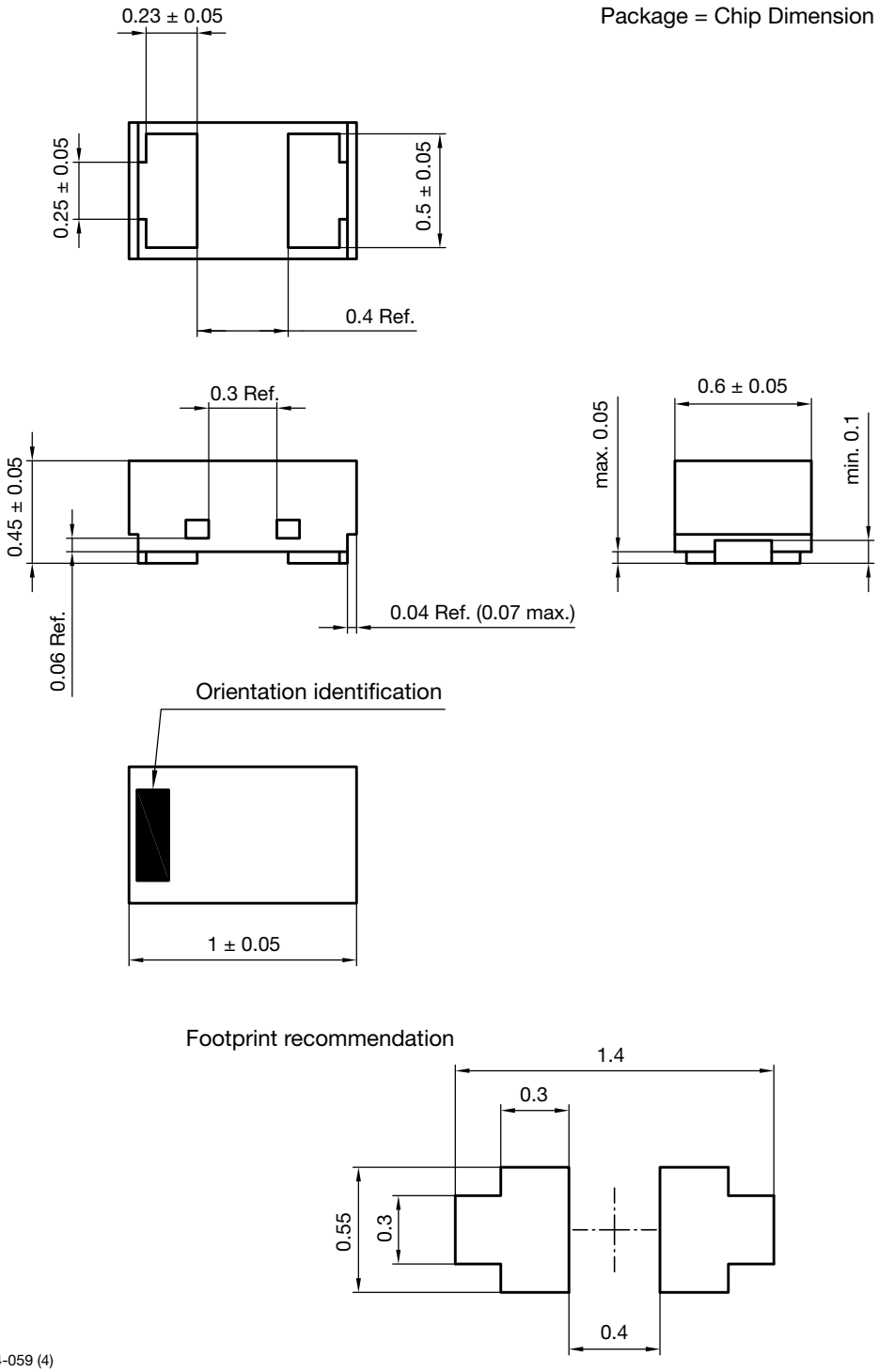


Fig. 6 - Typical Clamping Voltage vs. Peak Pulse Current

PACKAGE DIMENSIONS in millimeters (inches): **DFN1006-2A**



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Rev.5 - Date: 17-Sep-2021

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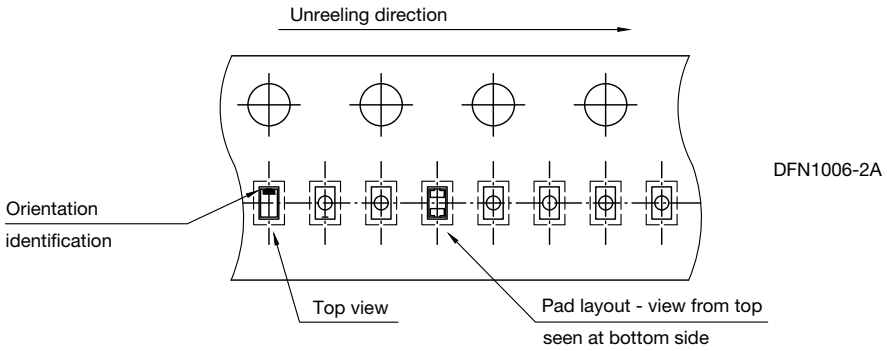
ORIENTATION IN CARRIER TAPE: DFN1006-2A



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