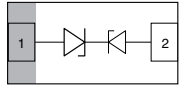


Bidirectional Asymmetrical (BiAs) Single Line ESD Protection Diode in DFN1006-2A



20950


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 μ A
- 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


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 μ s/single shot	I_{PPM}	3.6	A
	Pin 2 to pin 1, acc. IEC 61000-4-5, 8/20 μ s/single shot		2	A
Peak pulse power	Pin 1 to pin 2, acc. IEC 61000-4-5, 8/20 μ s/single shot	P_{PP}	50	W
	Pin 2 to pin 1, acc. IEC 61000-4-5, 8/20 μ s/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
Storage temperature		T_{STG}	-55 to +150	°C
Operating temperature	Junction temperature; for AEC-Q101 qualified devices	T_J	-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

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.



22286

ELECTRICAL CHARACTERISTICS (pin 2 to pin 1)

 ($T_{amb} = 25\text{ }^{\circ}\text{C}$, 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}	-	-	14	V
Reverse voltage	At $I_R = 0.1\text{ }\mu\text{A}$	V_R	14	-	-	V
Reverse current	At $V_{RWM} = 14\text{ V}$	I_R	-	-	0.1	μA
Reverse breakdown voltage	At $I_R = 1\text{ mA}$	V_{BR}	14.5	-	-	V
Reverse clamping voltage	At $I_{PP} = 1\text{ A}$	V_C	-	-	27	V
	At $I_{PP} = I_{PPM} = 2\text{ A}$	V_C	-	-	30	V
Capacitance	At $V_R = 0\text{ V}$; $f = 1\text{ MHz}$	C_D	-	8	8.5	pF
	At $V_R = 7\text{ V}$; $f = 1\text{ MHz}$	C_D	-	4	-	pF

ELECTRICAL CHARACTERISTICS (pin 1 to pin 2)

 ($T_{amb} = 25\text{ }^{\circ}\text{C}$, 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 $I_R = 0.1\text{ }\mu\text{A}$	V_R	7	-	-	V
Reverse current	At $V_{RWM} = 7\text{ V}$	I_R	-	-	0.1	μA
Reverse breakdown voltage	At $I_R = 1\text{ mA}$	V_{BR}	7.3	-	-	V
Reverse clamping voltage	At $I_{PP} = 1\text{ A}$	V_C	-	-	13	V
	At $I_{PP} = I_{PPM} = 3.6\text{ A}$	V_C	-	-	15	V
Capacitance	At $V = 0\text{ V}$; $f = 1\text{ MHz}$	C_D	-	8	8.5	pF
	At $V = 3.5\text{ V}$; $f = 1\text{ MHz}$	C_D	-	6.4	-	pF

TYPICAL CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)

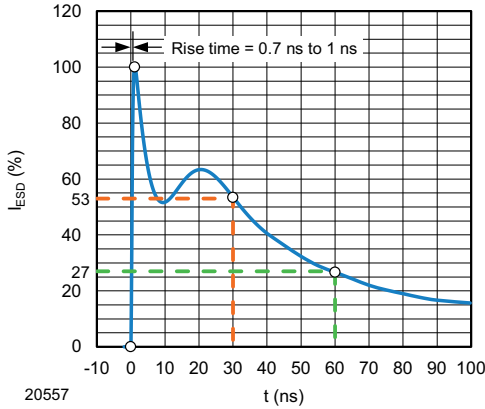


Fig. 1 - ESD Discharge Current Wave Form acc. IEC 61000-4-2 (330 Ω /150 pF)

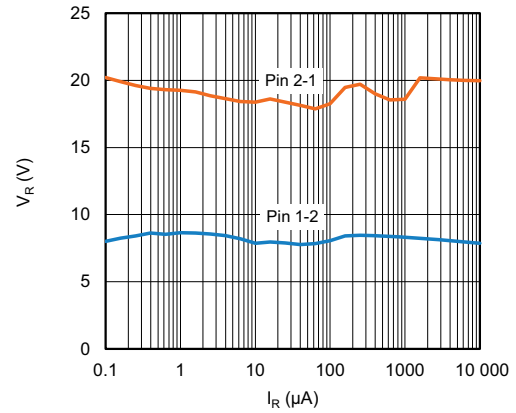


Fig. 4 - Typical Reverse Voltage vs. Reverse Current

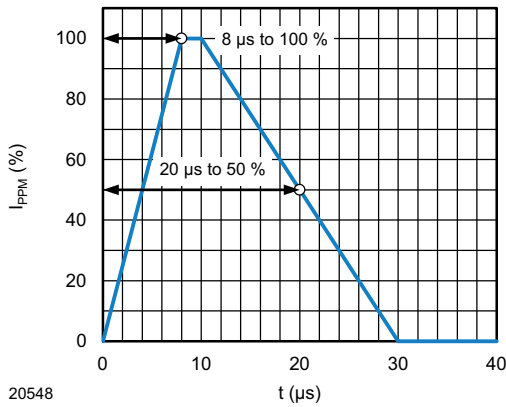


Fig. 2 - 8/20 μs Peak Pulse Current Wave Form acc. IEC 61000-4-5

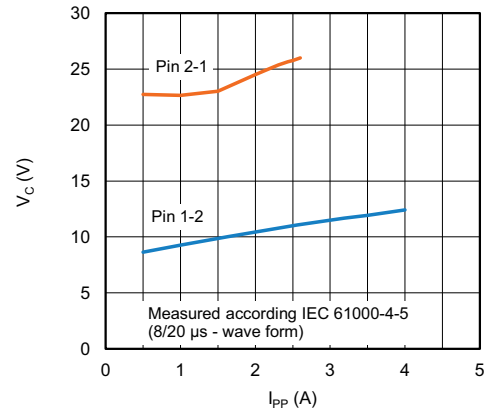


Fig. 5 - Typical Peak Clamping Voltage vs. Peak Pulse Current

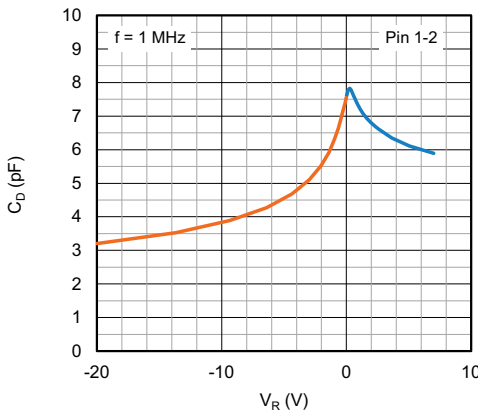


Fig. 3 - Typical Capacitance vs. Reverse Voltage

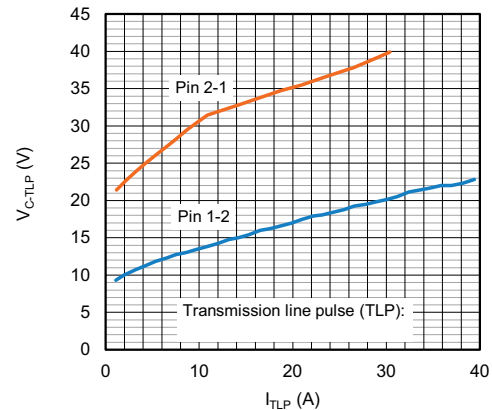
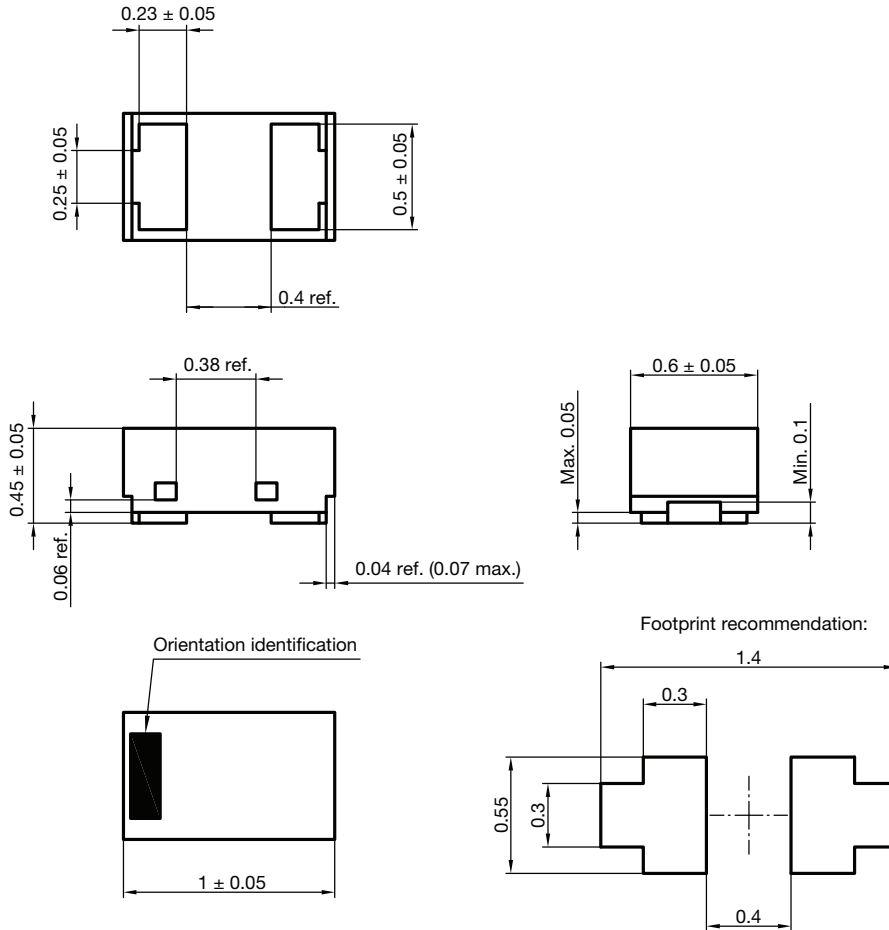


Fig. 6 - Typical Clamping Voltage vs. Peak Pulse Current

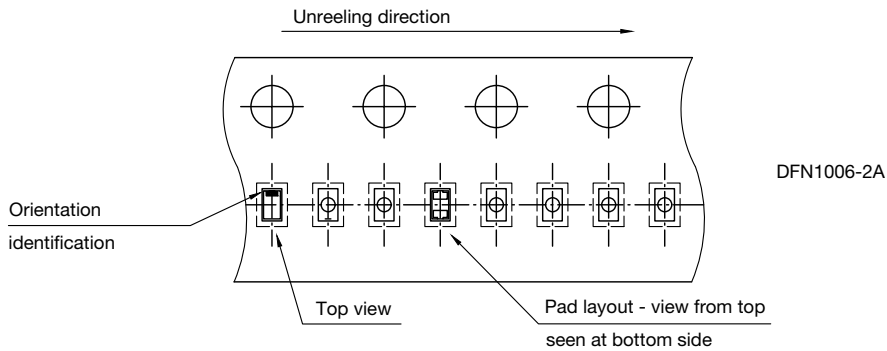


PACKAGE DIMENSIONS in millimeters (inches): **DFN1006-2A**



Document no.: S8-V-3906.04-061 (4)
Created - Date: 01. March 2019

ORIENTATION IN CARRIER TAPE: DFN1006-2A



S8-V-3906.04-017 (4)
02.05.2017
22965



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