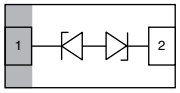
Single-Line Bidirectional ESD-Protection Diode in DFN1006-2B



FEATURES

- Compact DFN1006-2B package
- Low package height < 0.5 mm
- 1-line bidirectional ESD-protection
- AEC-Q101 qualified available
- Working range 16 V and 26 V
- ESD immunity acc. IEC 61000-4-2
  ± 30 kV contact and air discharge
- ESD immunity acc. ISO10605 (330 pF / 330 Ω)
  ± 30 kV contact discharge
- Lead plating: Sn (e3)
  Tin plated exposed side wall of lead frame
  - Soldering can be checked by standard vision inspection
  - AOI = Automated Optical Inspection
  - No X-ray necessary
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

AUTOMOTIVE GRADE Available

Pb-free

e3

RoHS COMPLIANT

HALOGEN FREE GREEN (5-2008)

MARKING (example only)

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

LINKS TO ADDITIONAL RESOURCES

3D Models | SPICE Models | Application Notes

Soldering Recommendations for DFN Packages:
please see Application Note: www.vishay.com/doc?86198

APPLICATIONS

For automotive network such as LIN-BUS

ORDERING INFORMATION

PART NUMBER (EXAMPLE)	AEC-Q101 QUALIFIED	ENVIRONMENTAL AND QUALITY CODE			ORDERING CODE (EXAMPLE)
		RoHS COMPLIANT + LEAD (Pb)-FREE TERMINATIONS	TIN PLATED	10K PER 7" REEL (8 mm TAPE)	
		GREEN		MOQ = 10K/BOX	
VLIN1626-DD1	-	G	3	-08	VLIN1626-DD1-G3-08
VLIN1626-DD1	H	G	3	-08	VLIN1626-DD1HG3-08

PACKAGE DATA

DEVICE NAME	PACKAGE NAME	TYPE CODE	WEIGHT	MOLDING COMPOUND FLAMMABILITY RATING	MOISTURE SENSITIVITY LEVEL	SOLDERING CONDITIONS
VLIN1626-DD1	DFN1006-2B	5E	0.83 mg	UL 94 V-0	MSL level 1 (according J-STD-020)	Peak temperature max. 260 °C

ABSOLUTE MAXIMUM RATINGS - PIN 1 TO PIN 2 (16 V) (T_{amb} = 25 °C, unless otherwise specified)				
PARAMETER	**TEST CONDITIONS**	**SYMBOL**	**VALUE**	**UNIT**
Peak pulse current	Acc. IEC 61000-4-5, 8/20 µs/single shot (1)	I_{PPM}	5	A
Peak pulse power	Acc. IEC 61000-4-5, 8/20 µs/single shot (1)	P_{PP}	160	W
Peak pulse current	t_p = 10/1000 µs (1)	I_{PPM}	0.6	A
Peak pulse power	t_p = 10/1000 µs (1)	P_{PP}	18	W
ESD immunity	Contact discharge acc. IEC 61000-4-2; 10 pulses (1)	V_{ESD}	30	kV
	Air discharge acc. IEC 61000-4-2; 10 pulses (1)		30	kV
	Contact discharge acc. ISO10605 (330 pF / 330 Ω); 10 pulses (1)		30	kV
Operating temperature	Junction temperature	T_J	-55 to +150	°C
Storage temperature		T_{stg}	-55 to +150	°C

ABSOLUTE MAXIMUM RATINGS - PIN 2 TO PIN 1 (26 V) (T_{amb} = 25 °C, unless otherwise specified)				
PARAMETER	**TEST CONDITIONS**	**SYMBOL**	**VALUE**	**UNIT**
Peak pulse current	Acc. IEC 61000-4-5, 8/20 µs/single shot (1)	I_{PPM}	3.9	A
Peak pulse power	Acc. IEC 61000-4-5, 8/20 µs/single shot (1)	P_{PP}	175	W
Peak pulse current	t_p = 10/1000 µs (1)	I_{PPM}	0.4	A
Peak pulse power	t_p = 10/1000 µs (1)	P_{PP}	17	W
ESD immunity	Contact discharge acc. IEC 61000-4-2; 10 pulses (1)	V_{ESD}	30	kV
	Air discharge acc. IEC 61000-4-2; 10 pulses (1)		30	kV
	Contact discharge acc. ISO10605 (330 pF / 330 Ω); 10 pulses (1)		30	kV
Operating temperature	Junction temperature	T_J	-55 to +150	°C
Storage temperature		T_{stg}	-55 to +150	°C

ELECTRICAL CHARACTERISTICS - PIN 1 TO PIN 2 (16 V) (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}	-	-	16	V
Reverse voltage	At I_R = 50 nA	V_R	16	-	-	V
Reverse current	At V_R = 16 V	I_R	-	< 1	0.05	µA
Reverse breakdown voltage	At I_R = 1 mA	V_{BR}	17.4	18.5	20.0	V
	At I_R = 1 mA; T_J = -40 °C to +150 °C (1)		16	-	22.5	V
Reverse clamping voltage	At I_{PP} = I_{PPM} = 5 A, t_p = 8/20 µs (1)	V_C	-	26	32	V
	At I_{PP} = I_{PPM} = 0.6 A, t_p = 10/1000 µs (1)		-	25	30	V
	t_p = 100 ns (TLP); $I_{\_TLP}$ = 16 A (1)	V_{C_TLP}	-	26	-	V
Dynamic resistance	t_p = 100 ns (TLP); $I_{\_TLP}$ = 0 A to 50 A (1)	r_{dyn}	-	0.28	-	Ω
Capacitance	At V_R = 0 V; f = 1 MHz	C_D	-	16	20	pF

ELECTRICAL CHARACTERISTICS - PIN 2 TO PIN 1 (26 V) (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}	-	-	26	V
Reverse voltage	At I_R = 50 nA	V_R	26	-	-	V
Reverse current	At V_R = 26 V	I_R	-	< 1	0.05	µA
Reverse breakdown voltage	At I_R = 1 mA	V_{BR}	28	30	32	V
	At I_R = 1 mA; T_J = -40 °C to +150 °C (1)		26	-	36	V
Reverse clamping voltage	At I_{PP} = I_{PPM} = 3.9 A, t_p = 8/20 µs (1)	V_C	-	39	45	V
	At I_{PP} = I_{PPM} = 0.4 A, t_p = 10/1000 µs (1)		-	37	43	V
	t_p = 100 ns (TLP); $I_{\_TLP}$ = 16 A (1)	V_{C_TLP}	-	37	-	V
Dynamic resistance	t_p = 100 ns (TLP); $I_{\_TLP}$ = 20 A to 50 A (1)	r_{dyn}	-	0.36	-	Ω
Capacitance	At V_R = 0 V; f = 1 MHz	C_D	-	16	20	pF

Note

(1) Guaranteed by design; tested during device characterization

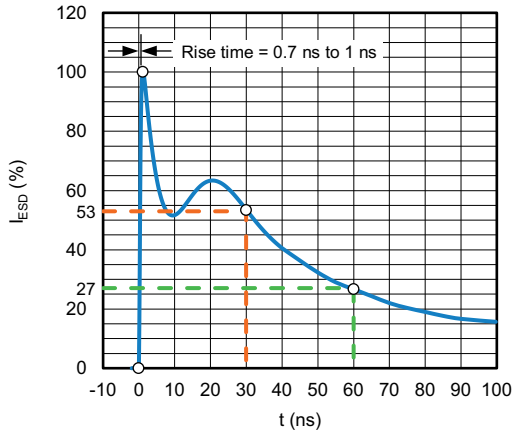


Fig. 1 - ESD Discharge Current Wave Form Acc. IEC 61000-4-2 (330 Ω / 150 pF)

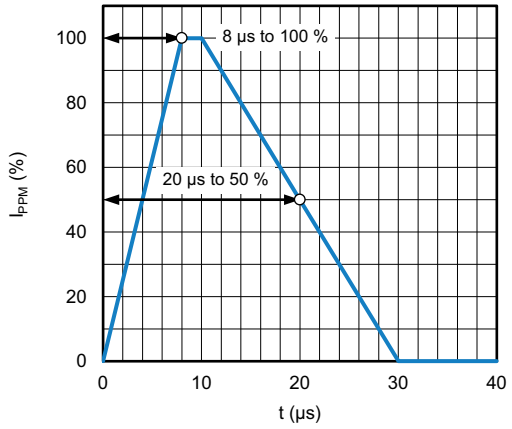


Fig. 2 - 8/20 µs Peak Pulse Current Wave Form Acc. IEC 61000-4-5

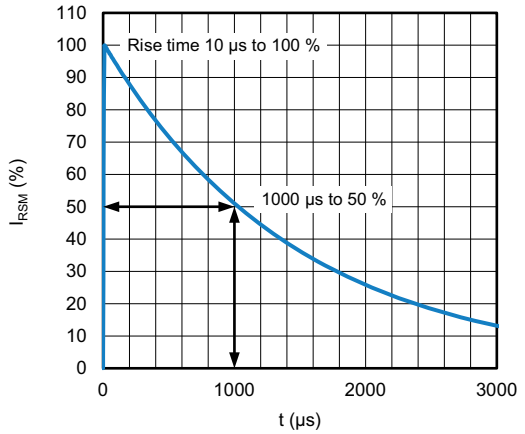


Fig. 3 - 10/1000 µs Peak Pulse Current Wave Form

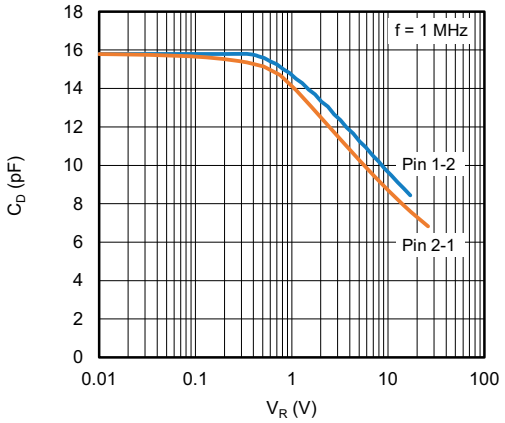


Fig. 4 - Typical Capacitance vs. Reverse Voltage

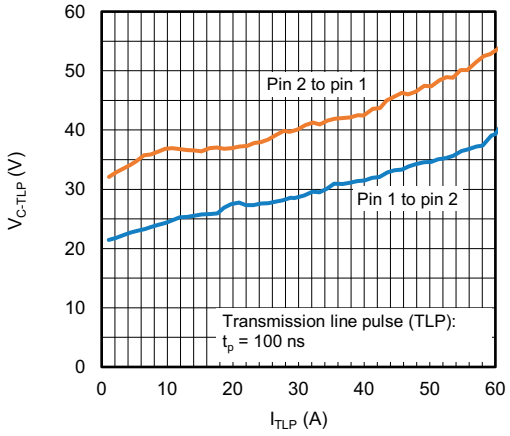


Fig. 5 - Typical Clamping Voltage vs. Peak Pulse Current

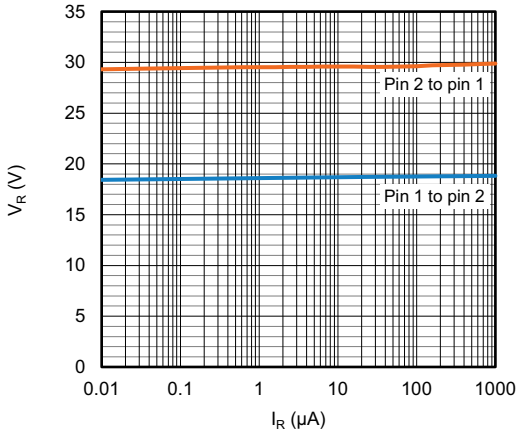


Fig. 6 - Typical Reverse Voltage vs. Reverse Current

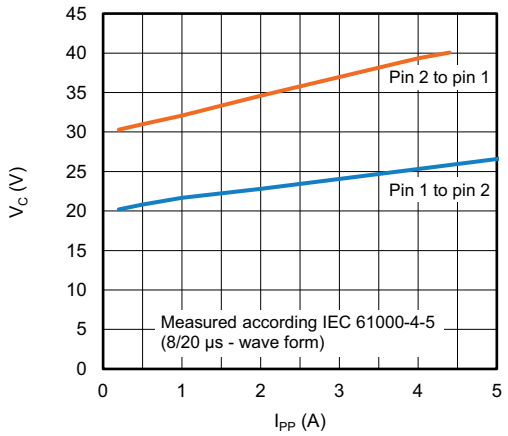


Fig. 7 - Typical Peak Clamping Voltage vs. Peak Pulse Current

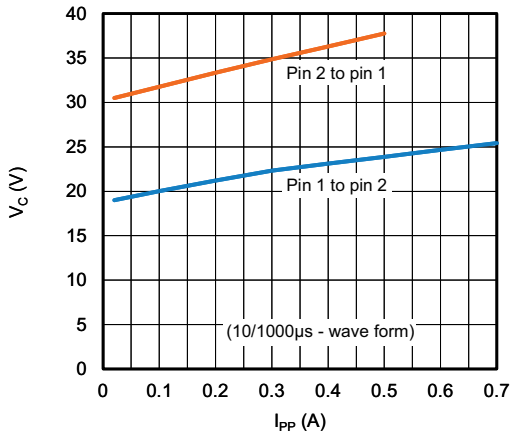
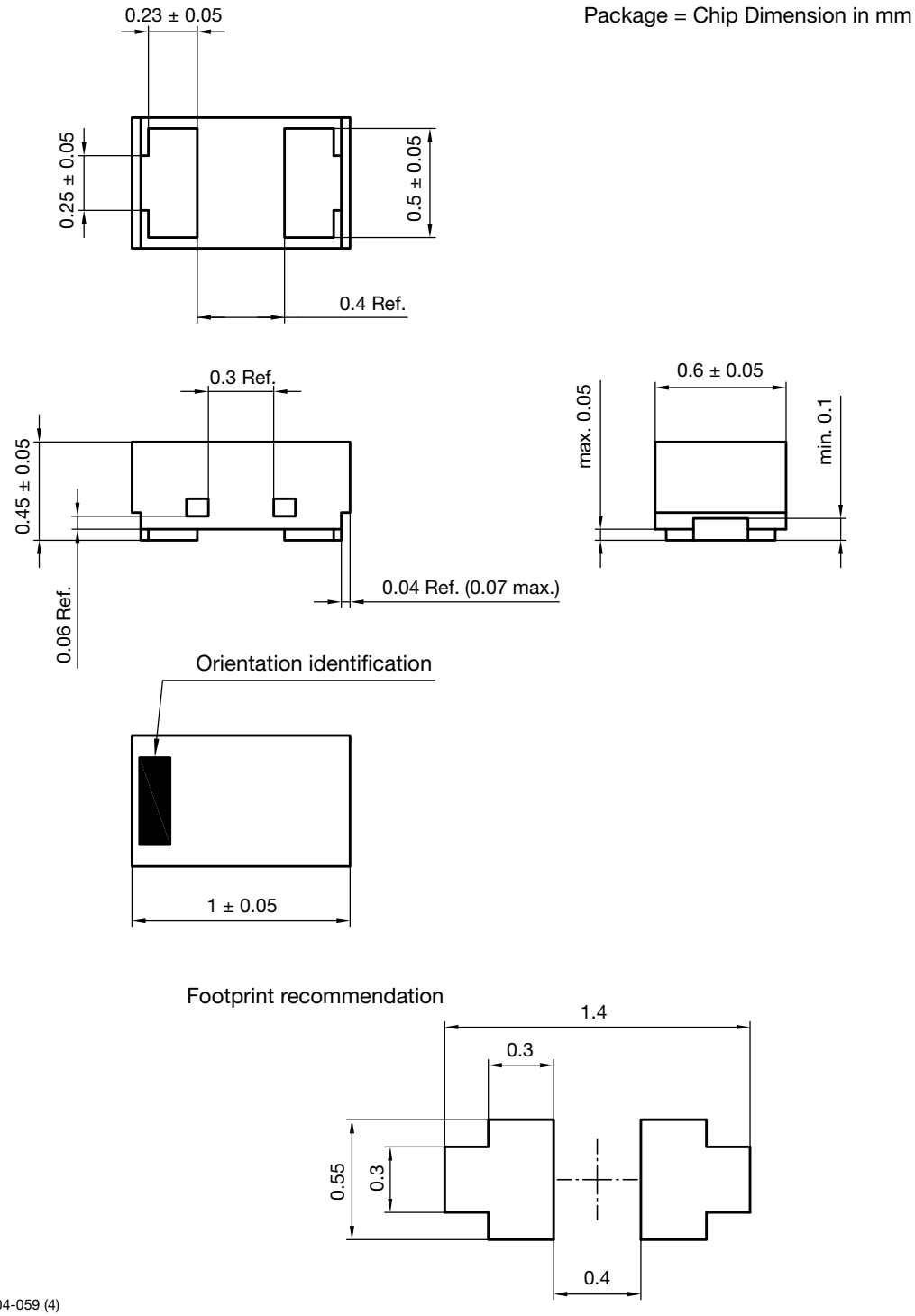


Fig. 8 - Typical Peak Clamping Voltage vs. Peak Pulse Current

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



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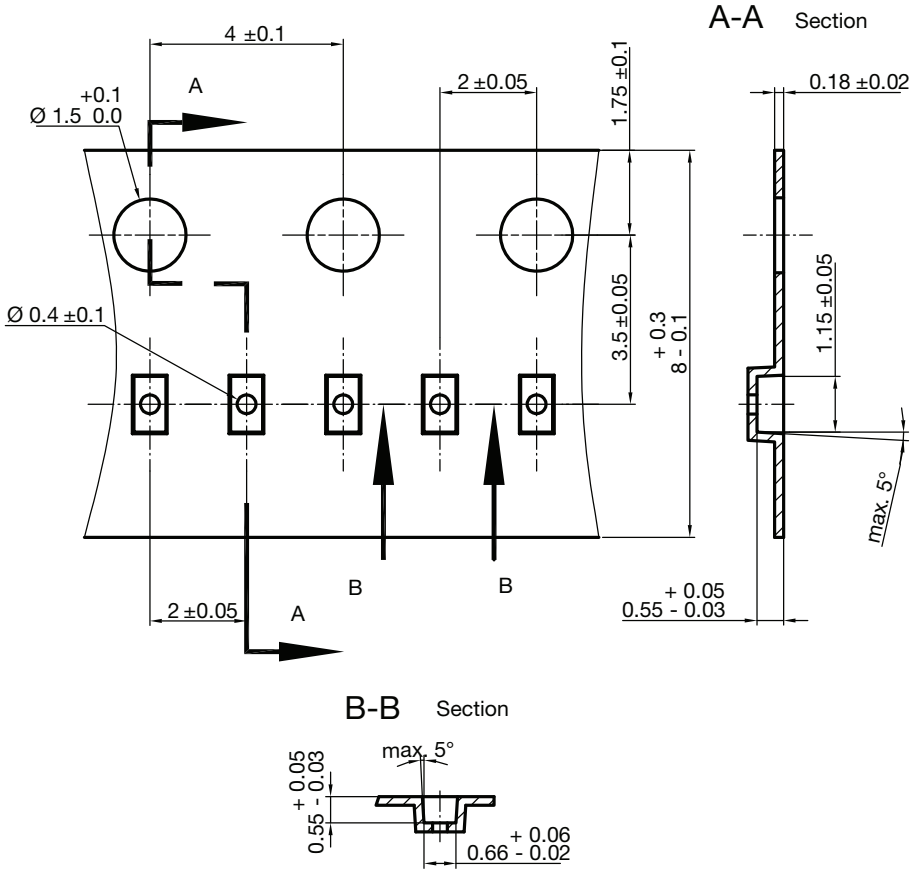
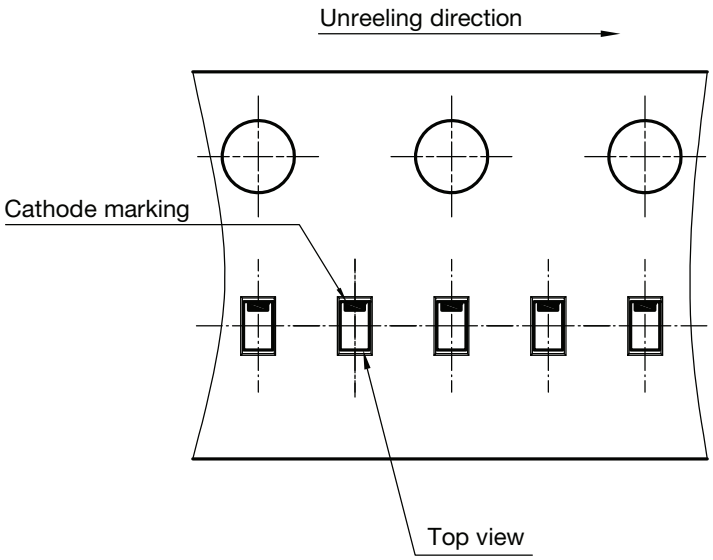
CARRIER TAPE DFN1006-2B



S8-V-3906.04-063 (4)
created 28.10.2019

surface resistance: 10^5 - 10^{11} $\frac{\text{OHMS}}{\text{SQ}}$
Cummulative tolerances of 10 sprocket holes is ± 0.2 mm

ORIENTATION IN CARRIER TAPE DFN1006-2B



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