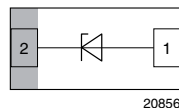


Single-Line ESD-Protection Diode in DFN1006-2A



20856



MARKING (example only)



Bar = cathode marking

X = date code

YY = type code (see table below)

LINKS TO ADDITIONAL RESOURCES



3D Models



Models



Application Notes

FEATURES

- Compact DFN1006-2A package
- High peak pulse power
 $P_{pp} (8/20 \mu s) = 260 \text{ W}$
 $P_{pp} (10/1000 \mu s) = 30 \text{ W}$
- Low package height < 0.5 mm
- 1-line unidirectional ESD-protection
- AEC-Q101 qualified available
- Working range 1 V to 34 V
- ESD immunity acc. IEC 61000-4-2 and ISO 10605
 $\pm 30 \text{ kV}$ contact discharge
 $\pm 30 \text{ kV}$ air discharge
- Lead plating: Sn (e3)
- soldering can be checked by standard vision inspection
- AOI = Automated Optical Inspection
- 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			ORDERING CODE (EXAMPLE)
		RoHS COMPLIANT + LEAD (Pb)-FREE TERMINATIONS	TIN PLATED	10K PER 7" REEL (8 mm TAPE)	
		GREEN		MOQ = 10K/BOX	
VESD05D1-HD1	-	G	3	-08	VESD05D1-HD1-G3-08
VESD05D1-HD1	H	G	3	-08	VESD05D1-HD1HG3-08

PACKAGE DATA

DEVICE NAME	PACKAGE NAME	TYPE CODE	WEIGHT	MOLDING COMPOUND FLAMMABILITY RATING	MOISTURE SENSITIVITY LEVEL	SOLDERING CONDITIONS
VESD01D1-HD1	DFN1006-2A	3G	0.83 mg	UL 94 V-0	MSL level 1 (according J-STD-020)	Peak temperature max. 260 °C
VESD03D1-HD1		3H				
VESD05D1-HD1		3J				
VESD08D1-HD1		3K				
VESD13D1-HD1		3L				
VESD14D1-HD1		3D				
VESD16D1-HD1		3N				
VESD23D1-HD1		3S				
VESD26D1-HD1		3O				
VESD29D1-HD1		3E				
VESD34D1-HD1		3P				

**ABSOLUTE MAXIMUM RATINGS VESD01D1-HD1**(T_{amb} = 25 °C, unless otherwise specified)

PARAMETER	TEST CONDITIONS	SYMBOL	VALUE	UNIT
Peak pulse current	t _p = 8/20 μs; acc. IEC 61000-4-5, single shot	I _{PPM}	30	A
Peak pulse power	t _p = 8/20 μs; acc. IEC 61000-4-5, single shot	P _{PP}	260	W
Peak pulse current	t _p = 10/1000 μs; single shot	I _{PPM}	5	A
Peak pulse power	t _p = 10/1000 μs; single shot	P _{PP}	30	W
ESD immunity	Contact discharge acc. IEC 61000-4-2 (150 pF / 330 Ω) and ISO10605 (330 pF / 330 Ω)	V _{ESD}	30	kV
	Contact discharge acc. IEC 61000-4-2 (150 pF / 330 Ω) and ISO10605 (330 pF / 330 Ω)		30	kV
Operating temperature	Junction temperature	T _J	-55 to +150	°C
Storage temperature	Ambient temperature	T _{stg}	-65 to +150	°C

ABSOLUTE MAXIMUM RATINGS VESD03D1-HD1(T_{amb} = 25 °C, unless otherwise specified)

PARAMETER	TEST CONDITIONS	SYMBOL	VALUE	UNIT
Peak pulse current	t _p = 8/20 μs; acc. IEC 61000-4-5, single shot	I _{PPM}	38	A
Peak pulse power	t _p = 8/20 μs; acc. IEC 61000-4-5, single shot	P _{PP}	260	W
Peak pulse current	t _p = 10/1000 μs; single shot	I _{PPM}	4.6	A
Peak pulse power	t _p = 10/1000 μs; single shot	P _{PP}	30	W
ESD immunity	Contact discharge acc. IEC 61000-4-2 (150 pF / 330 Ω) and ISO10605 (330 pF / 330 Ω)	V _{ESD}	30	kV
	Contact discharge acc. IEC 61000-4-2 (150 pF / 330 Ω) and ISO10605 (330 pF / 330 Ω)		30	kV
Operating temperature	Junction temperature	T _J	-55 to +150	°C
Storage temperature	Ambient temperature	T _{stg}	-65 to +150	°C

ABSOLUTE MAXIMUM RATINGS VESD05D1-HD1(T_{amb} = 25 °C, unless otherwise specified)

PARAMETER	TEST CONDITIONS	SYMBOL	VALUE	UNIT
Peak pulse current	t _p = 8/20 μs; acc. IEC 61000-4-5, single shot	I _{PPM}	23	A
Peak pulse power	t _p = 8/20 μs; acc. IEC 61000-4-5, single shot	P _{PP}	260	W
Peak pulse current	t _p = 10/1000 μs; single shot	I _{PPM}	2.8	A
Peak pulse power	t _p = 10/1000 μs; single shot	P _{PP}	30	W
ESD immunity	Contact discharge acc. IEC 61000-4-2 (150 pF / 330 Ω) and ISO10605 (330 pF / 330 Ω)	V _{ESD}	30	kV
	Contact discharge acc. IEC 61000-4-2 (150 pF / 330 Ω) and ISO10605 (330 pF / 330 Ω)		30	kV
Operating temperature	Junction temperature	T _J	-55 to +150	°C
Storage temperature	Ambient temperature	T _{stg}	-65 to +150	°C

ABSOLUTE MAXIMUM RATINGS VESD08D1-HD1(T_{amb} = 25 °C, unless otherwise specified)

PARAMETER	TEST CONDITIONS	SYMBOL	VALUE	UNIT
Peak pulse current	t _p = 8/20 μs; acc. IEC 61000-4-5, single shot	I _{PPM}	18	A
Peak pulse power	t _p = 8/20 μs; acc. IEC 61000-4-5, single shot	P _{PP}	260	W
Peak pulse current	t _p = 10/1000 μs; single shot	I _{PPM}	2.2	A
Peak pulse power	t _p = 10/1000 μs; single shot	P _{PP}	30	W
ESD immunity	Contact discharge acc. IEC 61000-4-2 (150 pF / 330 Ω) and ISO10605 (330 pF / 330 Ω)	V _{ESD}	30	kV
	Contact discharge acc. IEC 61000-4-2 (150 pF / 330 Ω) and ISO10605 (330 pF / 330 Ω)		30	kV
Operating temperature	Junction temperature	T _J	-55 to +150	°C
Storage temperature	Ambient temperature	T _{stg}	-65 to +150	°C

**ABSOLUTE MAXIMUM RATINGS VESD13D1-HD1**(T_{amb} = 25 °C, unless otherwise specified)

PARAMETER	TEST CONDITIONS	SYMBOL	VALUE	UNIT
Peak pulse current	t _p = 8/20 μs; acc. IEC 61000-4-5, single shot	I _{PPM}	12.5	A
Peak pulse power	t _p = 8/20 μs; acc. IEC 61000-4-5, single shot	P _{PP}	260	W
Peak pulse current	t _p = 10/1000 μs; single shot	I _{PPM}	1.4	A
Peak pulse power	t _p = 10/1000 μs; single shot	P _{PP}	30	W
ESD immunity	Contact discharge acc. IEC 61000-4-2 (150 pF / 330 Ω) and ISO10605 (330 pF / 330 Ω)	V _{ESD}	30	kV
	Contact discharge acc. IEC 61000-4-2 (150 pF / 330 Ω) and ISO10605 (330 pF / 330 Ω)		30	kV
Operating temperature	Junction temperature	T _J	-55 to +150	°C
Storage temperature	Ambient temperature	T _{stg}	-65 to +150	°C

ABSOLUTE MAXIMUM RATINGS VESD14D1-HD1(T_{amb} = 25 °C, unless otherwise specified)

PARAMETER	TEST CONDITIONS	SYMBOL	VALUE	UNIT
Peak pulse current	t _p = 8/20 μs; acc. IEC 61000-4-5, single shot	I _{PPM}	11	A
Peak pulse power	t _p = 8/20 μs; acc. IEC 61000-4-5, single shot	P _{PP}	260	W
Peak pulse current	t _p = 10/1000 μs; single shot	I _{PPM}	1.3	A
Peak pulse power	t _p = 10/1000 μs; single shot	P _{PP}	30	W
ESD immunity	Contact discharge acc. IEC 61000-4-2 (150 pF / 330 Ω) and ISO10605 (330 pF / 330 Ω)	V _{ESD}	30	kV
	Contact discharge acc. IEC 61000-4-2 (150 pF / 330 Ω) and ISO10605 (330 pF / 330 Ω)		30	kV
Operating temperature	Junction temperature	T _J	-55 to +150	°C
Storage temperature	Ambient temperature	T _{stg}	-65 to +150	°C

ABSOLUTE MAXIMUM RATINGS VESD16D1-HD1(T_{amb} = 25 °C, unless otherwise specified)

PARAMETER	TEST CONDITIONS	SYMBOL	VALUE	UNIT
Peak pulse current	t _p = 8/20 μs; acc. IEC 61000-4-5, single shot	I _{PPM}	9.5	A
Peak pulse power	t _p = 8/20 μs; acc. IEC 61000-4-5, single shot	P _{PP}	260	W
Peak pulse current	t _p = 10/1000 μs; single shot	I _{PPM}	1.2	A
Peak pulse power	t _p = 10/1000 μs; single shot	P _{PP}	30	W
ESD immunity	Contact discharge acc. IEC 61000-4-2 (150 pF / 330 Ω) and ISO10605 (330 pF / 330 Ω)	V _{ESD}	30	kV
	Contact discharge acc. IEC 61000-4-2 (150 pF / 330 Ω) and ISO10605 (330 pF / 330 Ω)		30	kV
Operating temperature	Junction temperature	T _J	-55 to +150	°C
Storage temperature	Ambient temperature	T _{stg}	-65 to +150	°C

ABSOLUTE MAXIMUM RATINGS VESD23D1-HD1(T_{amb} = 25 °C, unless otherwise specified)

PARAMETER	TEST CONDITIONS	SYMBOL	VALUE	UNIT
Peak pulse current	t _p = 8/20 μs; acc. IEC 61000-4-5, single shot	I _{PPM}	6.5	A
Peak pulse power	t _p = 8/20 μs; acc. IEC 61000-4-5, single shot	P _{PP}	260	W
Peak pulse current	t _p = 10/1000 μs; single shot	I _{PPM}	0.8	A
Peak pulse power	t _p = 10/1000 μs; single shot	P _{PP}	30	W
ESD immunity	Contact discharge acc. IEC 61000-4-2 (150 pF / 330 Ω) and ISO10605 (330 pF / 330 Ω)	V _{ESD}	30	kV
	Contact discharge acc. IEC 61000-4-2 (150 pF / 330 Ω) and ISO10605 (330 pF / 330 Ω)		30	kV
Operating temperature	Junction temperature	T _J	-55 to +150	°C
Storage temperature	Ambient temperature	T _{stg}	-65 to +150	°C

**ABSOLUTE MAXIMUM RATINGS VESD26D1-HD1**(T_{amb} = 25 °C, unless otherwise specified)

PARAMETER	TEST CONDITIONS	SYMBOL	VALUE	UNIT
Peak pulse current	t _p = 8/20 μs; acc. IEC 61000-4-5, single shot	I _{PPM}	5.8	A
Peak pulse power	t _p = 8/20 μs; acc. IEC 61000-4-5, single shot	P _{PP}	260	W
Peak pulse current	t _p = 10/1000μs; single shot	I _{PPM}	0.7	A
Peak pulse power	t _p = 10/1000μs; single shot	P _{PP}	30	W
ESD immunity	Contact discharge acc. IEC 61000-4-2 (150 pF / 330 Ω) and ISO10605 (330 pF / 330 Ω)	V _{ESD}	30	kV
	Contact discharge acc. IEC 61000-4-2 (150 pF / 330 Ω) and ISO10605 (330 pF / 330 Ω)		30	kV
Operating temperature	Junction temperature	T _J	-55 to +150	°C
Storage temperature	Ambient temperature	T _{stg}	-65 to +150	°C

ABSOLUTE MAXIMUM RATINGS VESD29D1-HD1(T_{amb} = 25 °C, unless otherwise specified)

PARAMETER	TEST CONDITIONS	SYMBOL	VALUE	UNIT
Peak pulse current	t _p = 8/20 μs; acc. IEC 61000-4-5, single shot	I _{PPM}	5.4	A
Peak pulse power	t _p = 8/20 μs; acc. IEC 61000-4-5, single shot	P _{PP}	260	W
Peak pulse current	t _p = 10/1000μs; single shot	I _{PPM}	0.65	A
Peak pulse power	t _p = 10/1000μs; single shot	P _{PP}	30	W
ESD immunity	Contact discharge acc. IEC 61000-4-2 (150 pF / 330 Ω) and ISO10605 (330 pF / 330 Ω)	V _{ESD}	30	kV
	Contact discharge acc. IEC 61000-4-2 (150 pF / 330 Ω) and ISO10605 (330 pF / 330 Ω)		30	kV
Operating temperature	Junction temperature	T _J	-55 to +150	°C
Storage temperature	Ambient temperature	T _{stg}	-65 to +150	°C

ABSOLUTE MAXIMUM RATINGS VESD34D1-HD1(T_{amb} = 25 °C, unless otherwise specified)

PARAMETER	TEST CONDITIONS	SYMBOL	VALUE	UNIT
Peak pulse current	t _p = 8/20 μs; acc. IEC 61000-4-5, single shot	I _{PPM}	4.5	A
Peak pulse power	t _p = 8/20 μs; acc. IEC 61000-4-5, single shot	P _{PP}	260	W
Peak pulse current	t _p = 10/1000μs; single shot	I _{PPM}	0.54	A
Peak pulse power	t _p = 10/1000μs; single shot	P _{PP}	30	W
ESD immunity	Contact discharge acc. IEC 61000-4-2 (150 pF / 330 Ω) and ISO10605 (330 pF / 330 Ω)	V _{ESD}	30	kV
	Contact discharge acc. IEC 61000-4-2 (150 pF / 330 Ω) and ISO10605 (330 pF / 330 Ω)		30	kV
Operating temperature	Junction temperature	T _J	-55 to +150	°C
Storage temperature	Ambient temperature	T _{stg}	-65 to +150	°C

**ELECTRICAL CHARACTERISTICS VESD01D1-HD1**(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	line
Reverse stand off voltage	Max. reverse working voltage	V _{RWM}	-	-	1	V
Reverse voltage	I _R = 300 µA	V _R	1	-	-	V
Reverse current	V _R = 1 V	I _R	-	100	300	µA
Reverse breakdown voltage	I _R = 5 mA	V _{BR}	3	3.2	3.4	V
Reverse clamping voltage	t _p = 8/20 µs; I _{PP} = 30 A	V _C	-	6.75	8.6	V
	t _p = 10/1000 µs; I _{PP} = 5 A	V _C	-	5.1	6	V
Forward clamping voltage	t _p = 300 µs; I _{PP} = 1 A	V _F	-	0.9	1.5	V
	t _p = 8/20 µs; I _{PP} = 30 A	V _F	-	2.6	-	V
Dynamic resistance	t _p = 100 ns (TLP; pin 2-1)	r _{dyn}	-	0.054	-	Ω
Capacitance	f = 1 MHz; at V _R = 0 V	C _D	-	380	450	pF

ELECTRICAL CHARACTERISTICS VESD03D1-HD1(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	line
Reverse stand off voltage	Max. reverse working voltage	V _{RWM}	-	-	3	V
Reverse voltage	I _R = 100 µA	V _R	3	-	-	V
Reverse current	V _R = 3 V	I _R	-	20	100	µA
Reverse breakdown voltage	I _R = 5 mA	V _{BR}	4.45	4.7	4.95	V
Reverse clamping voltage	t _p = 8/20 µs; I _{PP} = 38 A	V _C	-	8.4	10.5	V
	t _p = 10/1000 µs; I _{PP} = 4.6 A	V _C	-	5.7	6.6	V
Forward clamping voltage	t _p = 300 µs; I _{PP} = 1 A	V _F	-	0.9	1.5	V
	t _p = 8/20 µs; I _{PP} = 38 A	V _F	-	3	-	V
Dynamic resistance	t _p = 100 ns (TLP; pin 2-1)	r _{dyn}	-	0.057	-	Ω
Capacitance	f = 1 MHz; at V _R = 0 V	C _D	-	305	370	pF

ELECTRICAL CHARACTERISTICS VESD05D1-HD1(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	line
Reverse stand off voltage	Max. reverse working voltage	V _{RWM}	-	-	5	V
Reverse voltage	I _R = 1 µA	V _R	5	-	-	V
Reverse current	V _R = 5 V	I _R	-	0.01	0.1	µA
Reverse breakdown voltage	I _R = 1 mA	V _{BR}	7.1	7.5	7.9	V
Reverse clamping voltage	t _p = 8/20 µs; I _{PP} = 23 A	V _C	-	11.2	12.8	V
	t _p = 10/1000 µs; I _{PP} = 2.8 A	V _C	-	9.2	10.8	V
Forward clamping voltage	t _p = 300 µs; I _{PP} = 1 A	V _F	-	0.9	1.5	V
	t _p = 8/20 µs; I _{PP} = 23 A	V _F	-	2.2	-	V
Dynamic resistance	t _p = 100 ns (TLP; pin 2-1)	r _{dyn}	-	0.062	-	Ω
Capacitance	f = 1 MHz; at V _R = 0 V	C _D	-	141	170	pF

**ELECTRICAL CHARACTERISTICS VESD08D1-HD1**(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	line
Reverse stand off voltage	Max. reverse working voltage	V _{RWM}	-	-	8	V
Reverse voltage	I _R = 0.1 µA	V _R	8	-	-	V
Reverse current	V _R = 8 V	I _R	-	0.01	0.1	µA
Reverse breakdown voltage	I _R = 1 mA	V _{BR}	9.4	9.85	10.3	V
Reverse clamping voltage	t _p = 8/20 µs; I _{PP} = 18 A	V _C	-	13.9	16.5	V
	t _p = 10/1000 µs; I _{PP} = 2.2 A	V _C	-	12.4	13.9	V
Forward clamping voltage	t _p = 300 µs; I _{PP} = 1 A	V _F	-	0.9	1.5	V
	t _p = 8/20 µs; I _{PP} = 18 A	V _F	-	1.9	-	V
Dynamic resistance	t _p = 100 ns (TLP; pin 2-1)	r _{dyn}	-	0.079	-	Ω
Capacitance	f = 1 MHz; at V _R = 0 V	C _D	-	103	125	pF

ELECTRICAL CHARACTERISTICS VESD13D1-HD1(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	line
Reverse stand off voltage	Max. reverse working voltage	V _{RWM}	-	-	13	V
Reverse voltage	I _R = 0.1 µA	V _R	13	-	-	V
Reverse current	V _R = 13 V	I _R	-	0.01	0.1	µA
Reverse breakdown voltage	I _R = 1 mA	V _{BR}	14.3	15	15.8	V
Reverse clamping voltage	t _p = 8/20 µs; I _{PP} = 12.5 A	V _C	-	20.8	23.5	V
	t _p = 10/1000 µs; I _{PP} = 1.4 A	V _C	-	19	23	V
Forward clamping voltage	t _p = 300 µs; I _{PP} = 1 A	V _F	-	0.9	1.5	V
	t _p = 8/20 µs; I _{PP} = 12.5 A	V _F	-	1.6	-	V
Dynamic resistance	t _p = 100 ns (TLP; pin 2-1)	r _{dyn}	-	0.09	-	Ω
Capacitance	f = 1 MHz; at V _R = 0 V	C _D	-	72	86	pF

ELECTRICAL CHARACTERISTICS VESD14D1-HD1(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	line
Reverse stand off voltage	Max. reverse working voltage	V _{RWM}	-	-	14	V
Reverse voltage	I _R = 0.1 µA	V _R	14	-	-	V
Reverse current	V _R = 14 V	I _R	-	0.01	0.1	µA
Reverse breakdown voltage	I _R = 1 mA	V _{BR}	15.2	16	16.8	V
Reverse clamping voltage	t _p = 8/20 µs; I _{PP} = 11 A	V _C	-	20.8	24	V
	t _p = 10/1000 µs; I _{PP} = 1.3 A	V _C	-	19.6	23	V
Forward clamping voltage	t _p = 300 µs; I _{PP} = 1 A	V _F	-	0.9	1.5	V
	t _p = 8/20 µs; I _{PP} = 11 A	V _F	-	1.6	-	V
Dynamic resistance	t _p = 100 ns (TLP; pin 2-1)	r _{dyn}	-	0.09	-	Ω
Capacitance	f = 1 MHz; at V _R = 0 V	C _D	-	87	77	pF

**ELECTRICAL CHARACTERISTICS VESD16D1-HD1**(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	line
Reverse stand off voltage	Max. reverse working voltage	V _{RWM}	-	-	16	V
Reverse voltage	I _R = 0.1 μA	V _R	16	-	-	V
Reverse current	V _R = 16 V	I _R	-	0.01	0.1	μA
Reverse breakdown voltage	I _R = 1 mA	V _{BR}	17.1	18	18.9	V
Reverse clamping voltage	t _p = 8/20 μs; I _{PP} = 9.5 A	V _C	-	24	28	V
	t _p = 10/1000 μs; I _{PP} = 1.2 A	V _C	-	22.2	25.4	V
Forward clamping voltage	t _p = 300 μs; I _{PP} = 1 A	V _F	-	0.9	1.5	V
	t _p = 8/20 μs; I _{PP} = 9.5 A	V _F	-	1.5	-	V
Dynamic resistance	t _p = 100 ns (TLP; pin 2-1)	r _{dyn}	-	0.086	-	Ω
Capacitance	f = 1 MHz; at V _R = 0 V	C _D	-	60	72	pF

ELECTRICAL CHARACTERISTICS VESD23D1-HD1(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	line
Reverse stand off voltage	Max. reverse working voltage	V _{RWM}	-	-	23	V
Reverse voltage	I _R = 0.1 μA	V _R	23	-	-	V
Reverse current	V _R = 23 V	I _R	-	0.01	0.1	μA
Reverse breakdown voltage	I _R = 1 mA	V _{BR}	25.65	27	28.35	V
Reverse clamping voltage	t _p = 8/20 μs; I _{PP} = 6.5 A	V _C	-	35	40	V
	t _p = 10/1000 μs; I _{PP} = 0.8 A	V _C	-	33	38	V
Forward clamping voltage	t _p = 300 μs; I _{PP} = 1 A	V _F	-	0.9	1.5	V
	t _p = 8/20 μs; I _{PP} = 6.5 A	V _F	-	1.4	-	V
Dynamic resistance	t _p = 100 ns (TLP; pin 2-1)	r _{dyn}	-	0.12	-	Ω
Capacitance	f = 1 MHz; at V _R = 0 V	C _D	-	42	50	pF

ELECTRICAL CHARACTERISTICS VESD26D1-HD1(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	line
Reverse stand off voltage	Max. reverse working voltage	V _{RWM}	-	-	26	V
Reverse voltage	at I _R = 0.1 μA	V _R	26	-	-	V
Reverse current	at V _R = 26 V	I _R	-	< 0.01	0.1	μA
Reverse breakdown voltage	at I _R = 1 mA	V _{BR}	28.5	30	31.5	V
Reverse clamping voltage	t _p = 8/20 μs; I _{PP} = 5.8 A	V _C	-	39	45	V
	t _p = 10/1000 μs; I _{PP} = 0.7 A	V _C	-	36.5	43.5	V
Forward clamping voltage	t _p = 300 μs; I _{PP} = 1 A	V _F	-	0.9	1.5	V
	t _p = 8/20 μs; I _{PP} = 5.8 A	V _F	-	1.3	-	V
Dynamic resistance	t _p = 100 ns (TLP; pin 2-1)	r _{dyn}	-	0.17	-	Ω
Capacitance	f = 1 MHz; at V _R = 0 V	C _D	-	38	45	pF

**ELECTRICAL CHARACTERISTICS VESD29D1-HD1**(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	line
Reverse stand off voltage	Max. reverse working voltage	V _{RWM}	-	-	29	V
Reverse voltage	I _R = 0.1 μA	V _R	29	-	-	V
Reverse current	V _R = 29 V	I _R	-	< 0.01	0.1	μA
Reverse breakdown voltage	I _R = 1 mA	V _{BR}	31.35	33	34.65	V
Reverse clamping voltage	t _p = 8/20 μs; I _{PP} = 5.4 A	V _C	-	43.5	49	V
	t _p = 10/1000 μs; I _{PP} = 0.65 A	V _C	-	40.5	47	V
Forward clamping voltage	t _p = 300 μs; I _{PP} = 1 A	V _F	-	0.9	1.5	V
	t _p = 8/20 μs; I _{PP} = 5.4 A	V _F	-	1.3	-	V
Dynamic resistance	t _p = 100 ns (TLP; pin 2-1)	r _{dyn}	-	0.12	-	Ω
Capacitance	f = 1 MHz; at V _R = 0 V	C _D	-	35	42	pF

ELECTRICAL CHARACTERISTICS VESD34D1-HD1(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	line
Reverse stand off voltage	Max. reverse working voltage	V _{RWM}	-	-	34	V
Reverse voltage	I _R = 0.1 μA	V _R	34	-	-	V
Reverse current	V _R = 34 V	I _R	-	< 0.01	0.1	μA
Reverse breakdown voltage	I _R = 1 mA	V _{BR}	37	39	41	V
Reverse clamping voltage	t _p = 8/20 μs; I _{PP} = 4.5 A	V _C	-	51	59	V
	t _p = 10/1000 μs; I _{PP} = 0.54 A	V _C	-	48	56	V
Forward clamping voltage	t _p = 300 μs; I _{PP} = 1 A	V _F	-	0.9	1.5	V
	t _p = 8/20 μs; I _{PP} = 4.5 A	V _F	-	1.2	-	V
Dynamic resistance	t _p = 100 ns (TLP; pin 2-1)	r _{dyn}	-	0.27	-	Ω
Capacitance	f = 1 MHz; at V _R = 0 V	C _D	-	31	37	pF

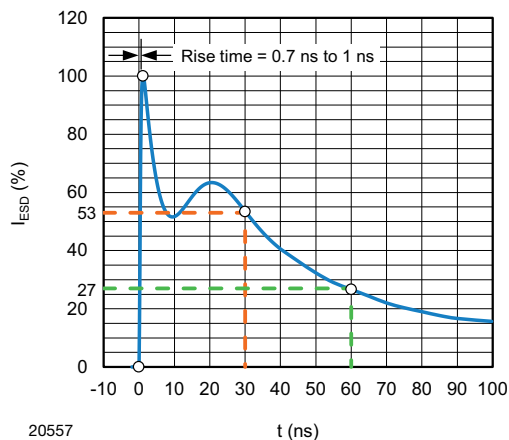


Fig. 1 - ESD Discharge Current Wave Form acc. IEC 61000-4-2 (330 Ω / 150 pF)

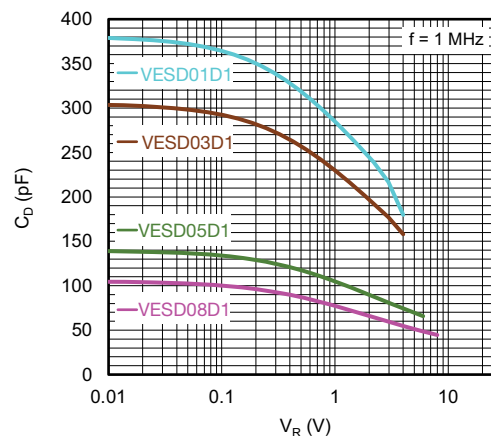


Fig. 4 - Typical Capacitance vs. Reverse Voltage

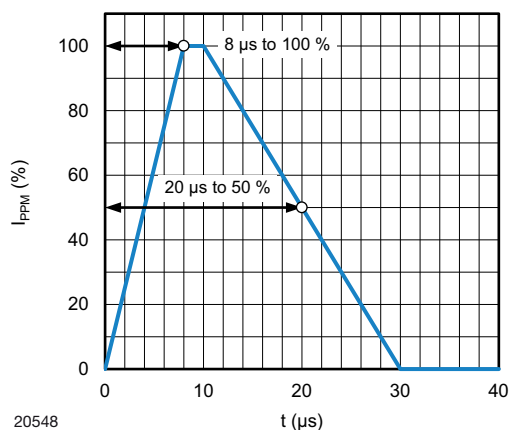


Fig. 2 - 8/20 μ s Peak Pulse Current Wave Form acc. IEC 61000-4-5

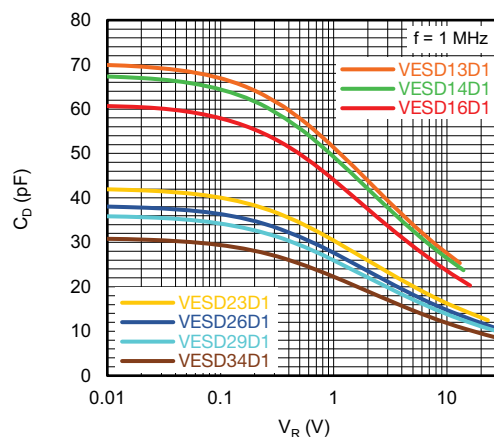


Fig. 5 - Typical Capacitance vs. Reverse Voltage

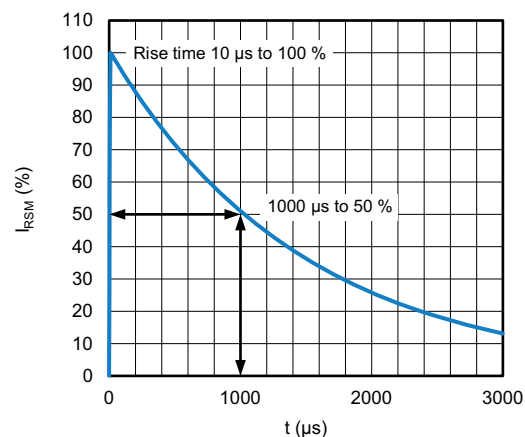


Fig. 3 - 10/1000 μ s peak pulse current wave form

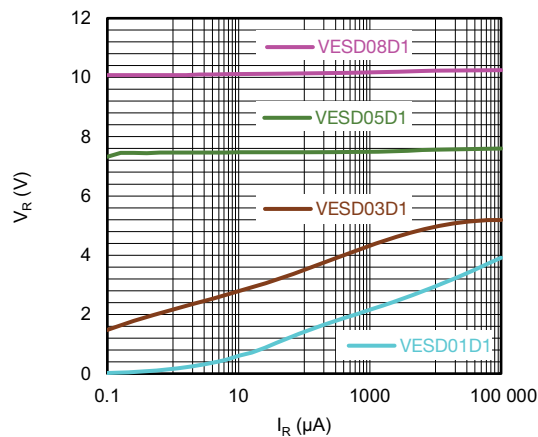


Fig. 6 - Typical Reverse Voltage vs. Reverse Current

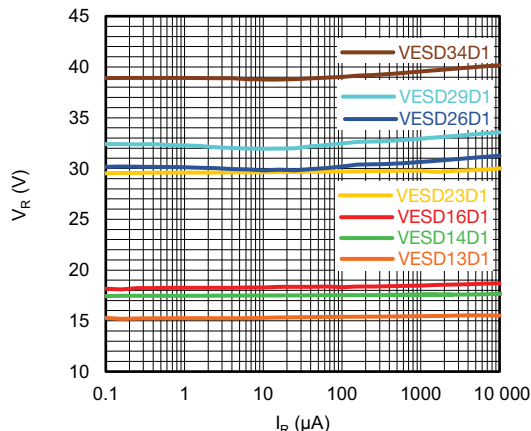


Fig. 7 - Typical Reverse Voltage vs. Reverse Current

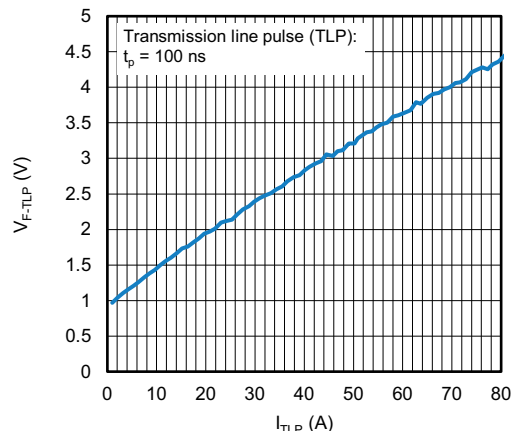


Fig. 10 - Typical Forward Voltage vs. Peak Pulse Current

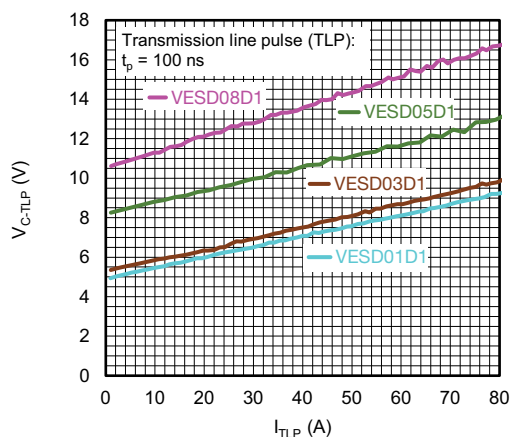


Fig. 8 - Typical Clamping Voltage vs. Peak Pulse Current

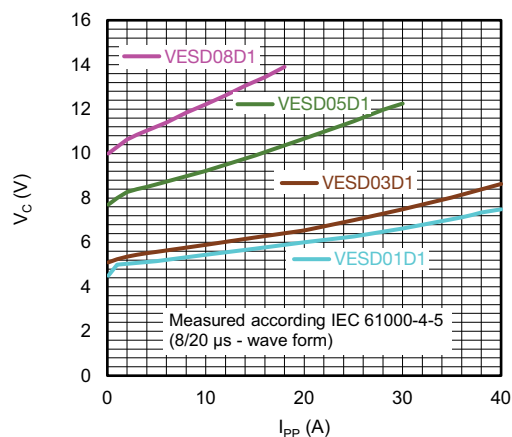


Fig. 11 - Typical Peak Clamping Voltage vs. Peak Pulse Current

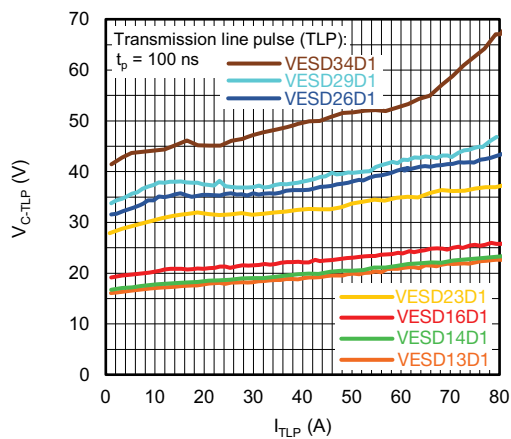


Fig. 9 - Typical Clamping Voltage vs. Peak Pulse Current

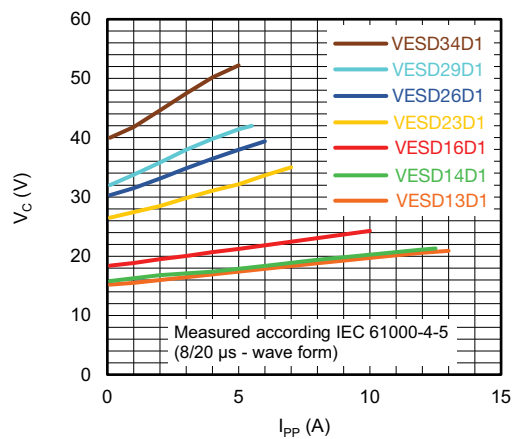


Fig. 12 - Typical Peak Clamping Voltage vs. Peak Pulse Current

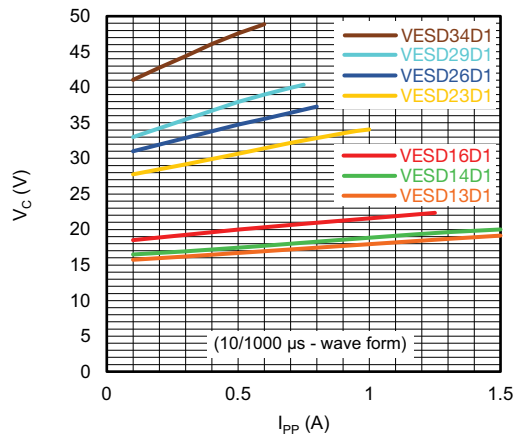


Fig. 13 - Typical Peak Clamping Voltage vs. Peak Pulse Current

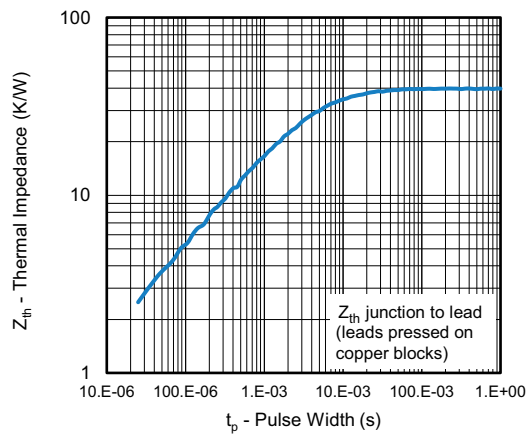
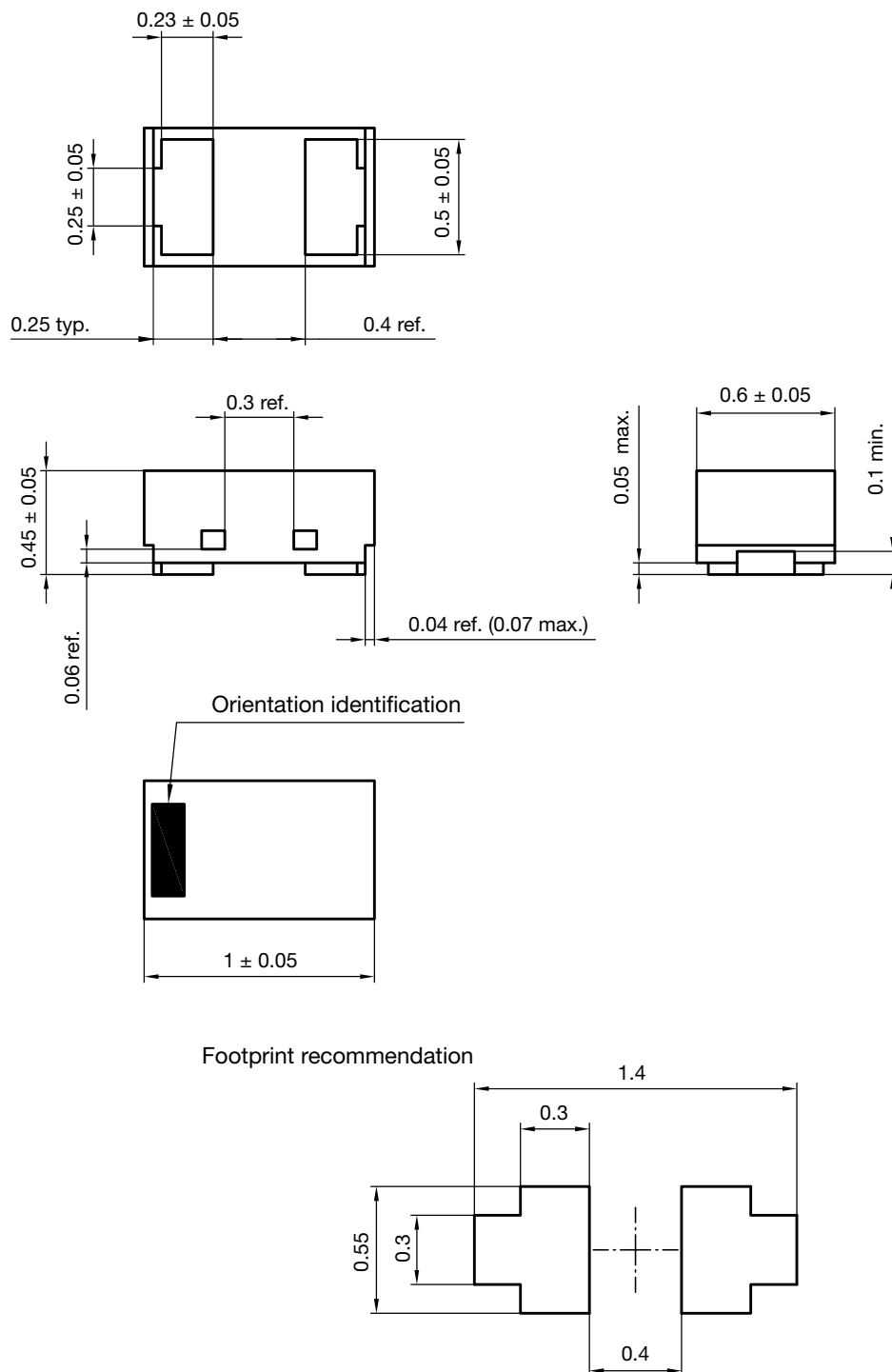


Fig. 14 - Thermal Impedance vs. Time



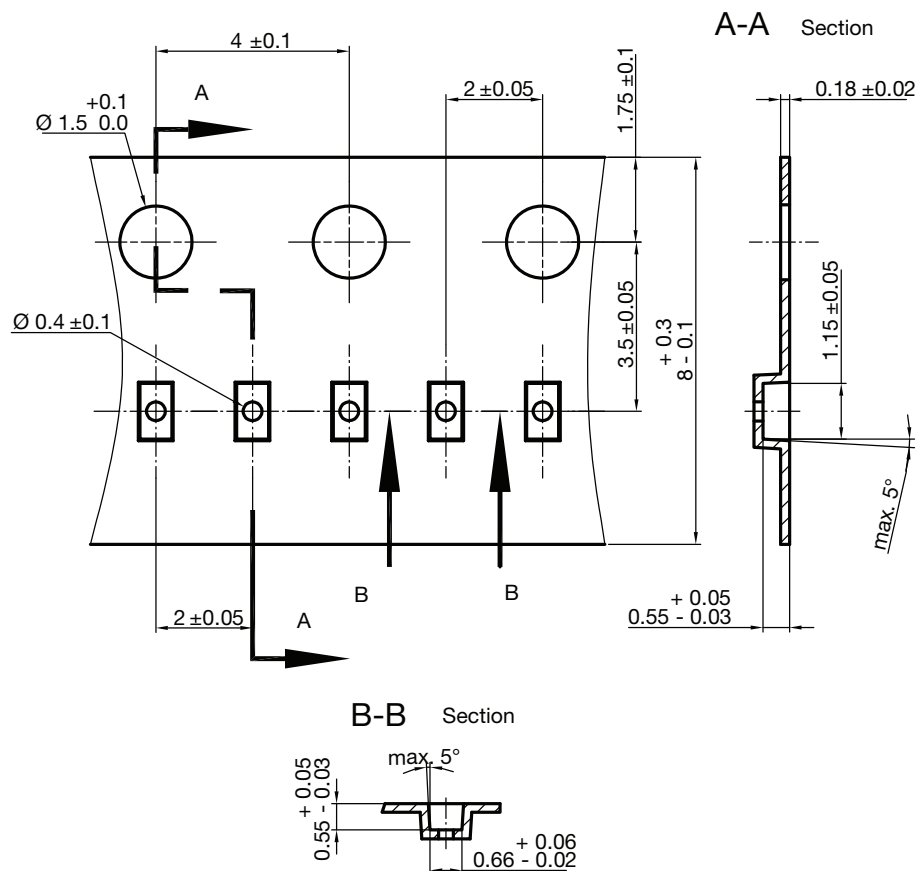
PACKAGE DIMENSIONS in millimeters (Inches): DFN1006-2A



Document no.: S8-V-3906.04-059 (4)
Created - Date: 11-Jul-2018
Rev.6 - Date: 12-Nov-2024

23191

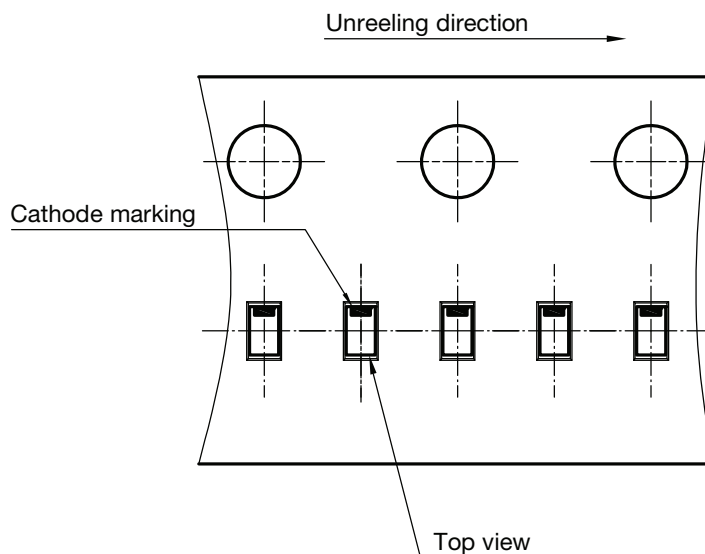
CARRIER TAPE DFN1006-2A



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

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

ORIENTATION IN CARRIER TAPE DFN1006-2A



S8-V-3906.04-064 (4)
created 28.10.2019



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