1- Line Bidirectional ESD Protection Diode

General description

Femtofarad bidirectional ElectroStatic Discharge (ESD) protection diode in a leadless ultra small DFN1006 Surface-Mounted Device (SMD) plastic package designed to protect one signal line from the damage caused by ESD and other transients. The combination of extremely low capacitance, high ESD maximum rating and ultra small package makes the device ideal for high-speed data line protection and antenna protection applications.

Features and benefits

- Bidirectional ESD protection of one line
- Femtofarad capacitance: Cj = 0.33pF (Typ)
- Ultra low leakage current: nA Level
- Response time is typically < 1 ns
- IEC 61000-4-2; level 4 (ESD)

Application information

- USB3.0
- 10/100/1000 Mbit/s Ethernet
- SATA and eSATA
- Communication systems
- High- speed data lines
- Computers and peripherals
- HDMI
- Portable electronics
- Cellular handsets and accessories
- Antenna protection

Ordering information

Device	Package	Packaging
PWESD-5VDDC	DFN1006-2L	10000/Tape & Reel

Schematic & Pin configuration

Simplified outline	Graphic symbol
	

Maximum Ratings

(T_{OP} = 25 °C, unless otherwise specified)

Parameter	Symbol	Value	Unit
Peak Pulse Power (Tp = 8/20μs)	P_{PPM}	84	W
Rated Peak Pulse Current (Tp = 8/20μs)	I_{PPM}	4	A
Maximum lead temperature for soldering during 10s	T_L	260	°C
Storage Temperature Range	T_{stg}	-55 to +150	°C
Operating Temperature Range	T_{OP}	-40 to +125	°C
Maximum junction temperature	T_j	150	°C
ESD voltage IEC 61000-4-2 (air discharge)	V_{ESD}	30	kV
ESD voltage IEC 61000-4-2 (contact discharge)	V_{ESD}	20	kV

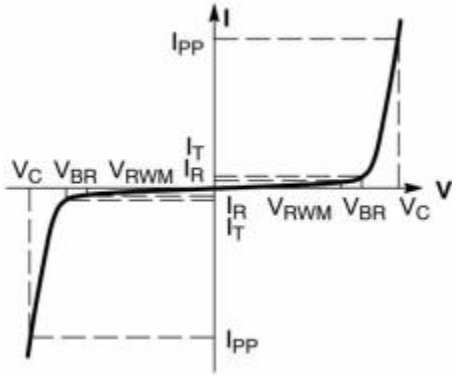
Electrical Characteristics

(T_{OP} = 25 °C, unless otherwise specified)

Parameter	Symbol	Min	Typ	Max	Unit	Condition
Reverse Working Voltage	V_{RWM}	--	--	5.0	V	
Breakdown Voltage	V_{BR}	6.8	--	9.0	V	I_T=1mA
Leakage Current ILeak	I_R	--	--	100	nA	V_{RWM}=5V
Clamping Voltage	V_C	--	19.5	21.0	V	I_{PP}=4A,T_p=8/20μs
Junction Capacitance	C_j	--	0.35	0.40	pF	V_R=0V, f=1MHz

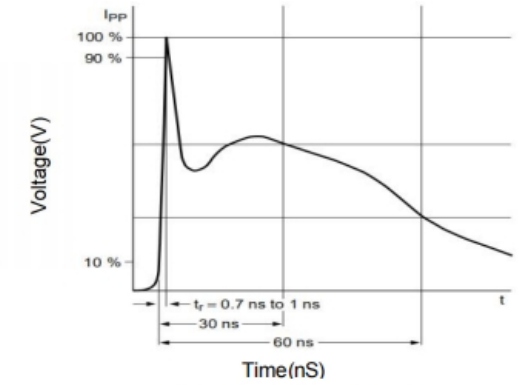
Portion Electronics Parameter

Symbol	Parameter
I_{PP}	Maximum Reverse Peak Pulse Current
V_C	Clamping Voltage @ I_{PP}
V_{RWM}	Working Peak Reverse Voltage
I_R	Maximum Reverse Leakage Current @ V_{RWM}
I_T	Test Current
V_{BR}	VBR Breakdown Voltage @ I_T

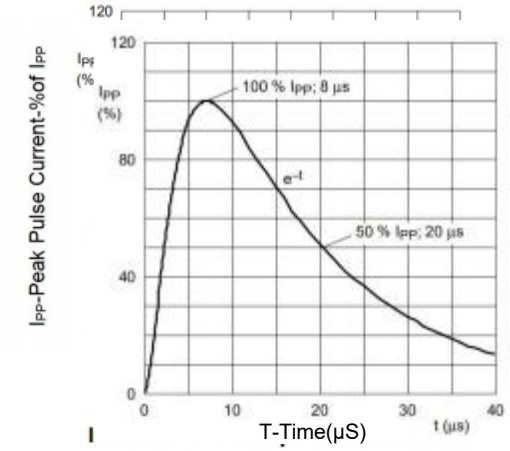


Typical Performance Characteristics

(T_A=25℃ unless otherwise Specified)



IEC61000-4-2 Pulse Waveform



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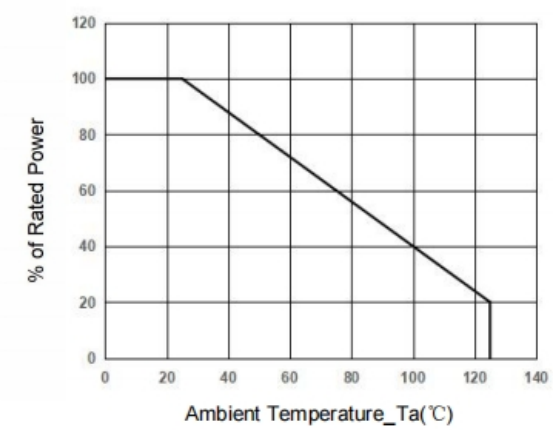
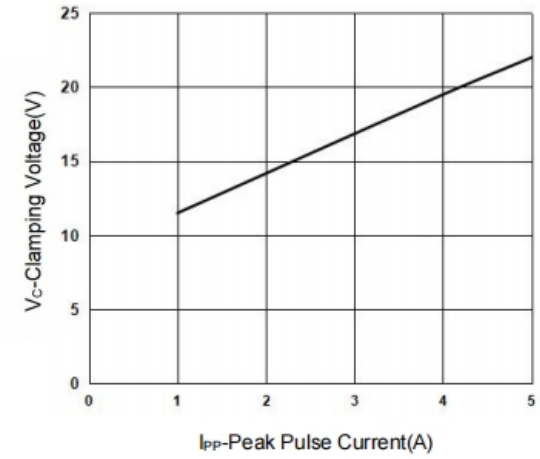


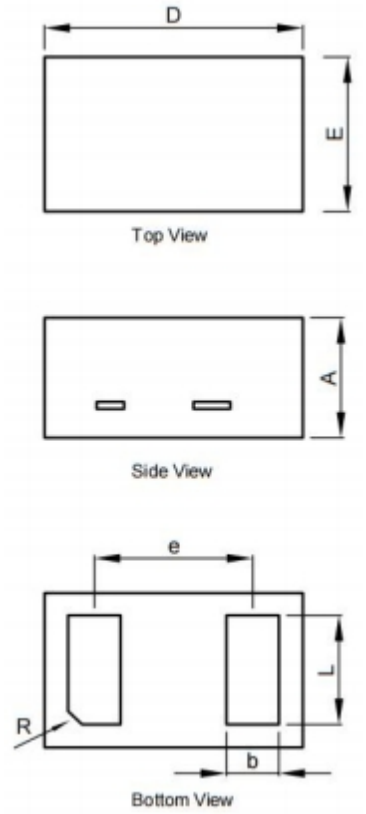
Power Derating Curve



Clamping Voltage vs. Peak Pulse Current

Package Outline Dimensions

DFN1006-2L



Dimensions In Millimet			
Symbol	Min	Typ	Max
A	0.45	0.50	0.55
D	0.95	1.00	1.05
E	0.55	0.60	0.65
b	0.20	0.25	0.30
L	0.45	0.50	0.55
e		0.675	
R	0.07	0.10	0.13

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