

1-Line Bidirectional ESD Protection Diode



General description

Ultra low capacitance bidirectional ElectroStatic Discharge (ESD) protection diode in a ultra-small and flat lead DFN1006-2L plastic package designed to protect one signal line from the damage caused by ESD and other transients.

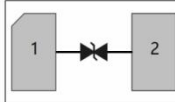
Features and benefits

- Reverse stand-off voltage: 5.0V Max
- Ultra Low Capacitance 0.3pF
- Low leakage current: nA Level
- IEC 61000-4-2 (ESD Air): $\pm 30\text{kV}$
- IEC 61000-4-2 (ESDContact): $\pm 30\text{kV}$
- IEC61000-4-5(Lightning 8/20 μS): 5.5A

Application information

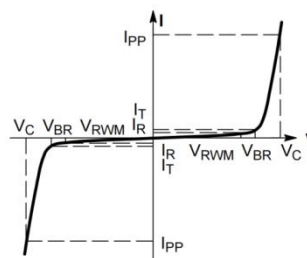
- High- speed data lines
- Smart phones
- USB Ports
- Wireless Systems
- Ethernet 10/100/1000 Base T
- Computers and peripherals

Schematic & Pin configuration

Simplified outline	Graphic symbol
	

Portion Electronics Parameter

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



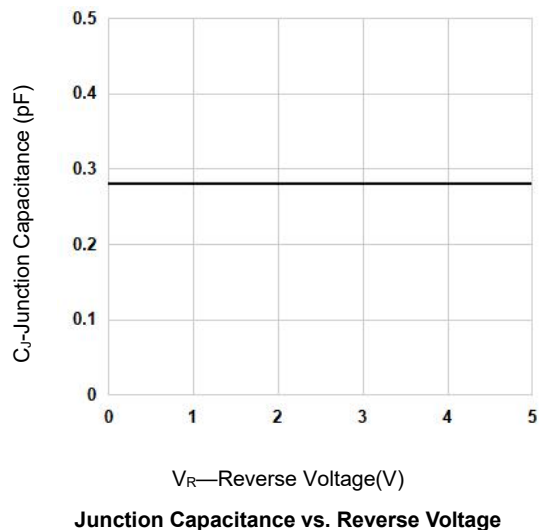
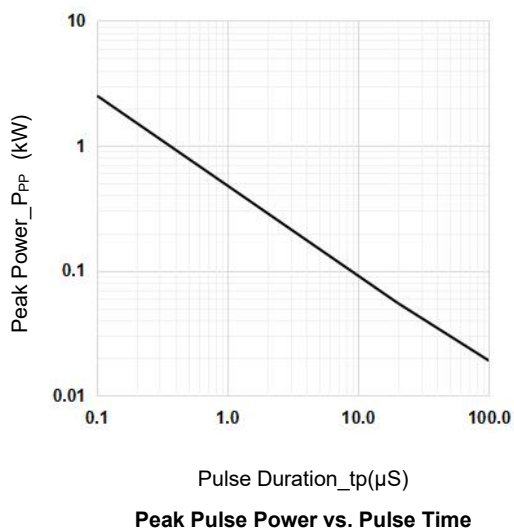
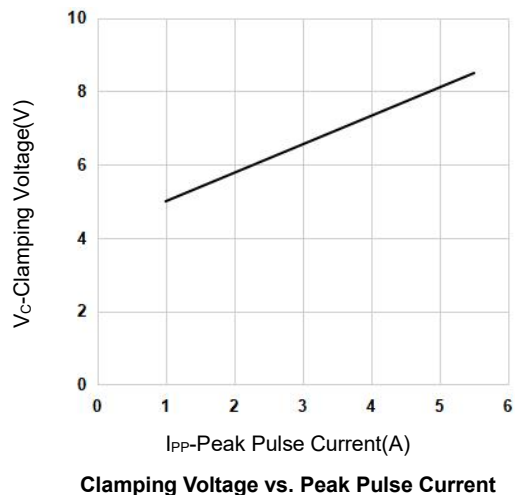
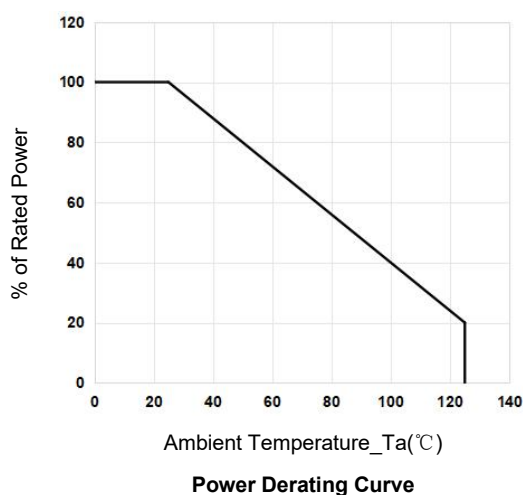
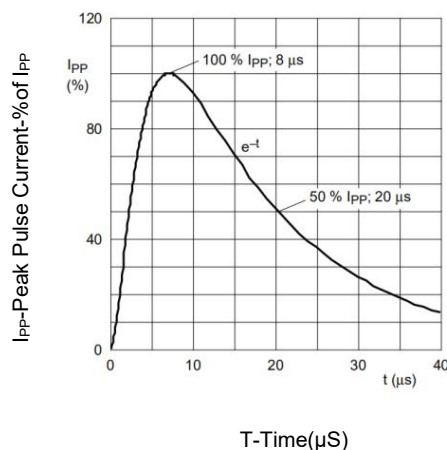
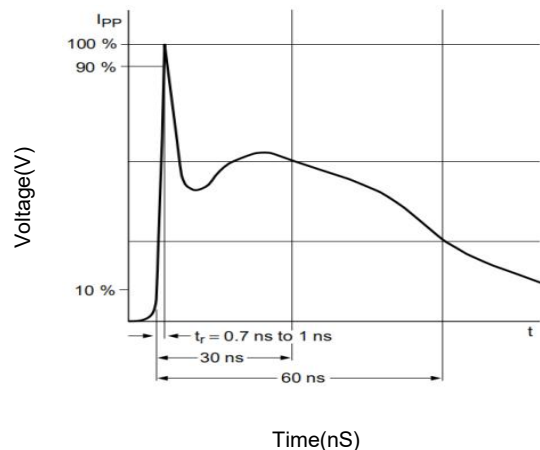
Maximum Ratings ($T_A = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)

Parameter	Symbol	Value	Unit
Peak Pulse Power ($T_p = 8/20\mu\text{s}$)	P_{PPM}	55	W
Rated Peak Pulse Current ($T_p = 8/20\mu\text{s}$)	I_{PPM}	5.5	A
ESD voltage IEC 61000-4-2 (air discharge)	V_{ESD}	30	kV
ESD voltage IEC 61000-4-2 (contact discharge)	V_{ESD}	30	kV
Maximum lead temperature for soldering during 10s	T_L	260	$^{\circ}\text{C}$
Storage Temperature Range	T_{stg}	-55 to +150	$^{\circ}\text{C}$
Operating Temperature Range	T_J	-40 to +125	$^{\circ}\text{C}$

Electrical Characteristics ($T_A = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)

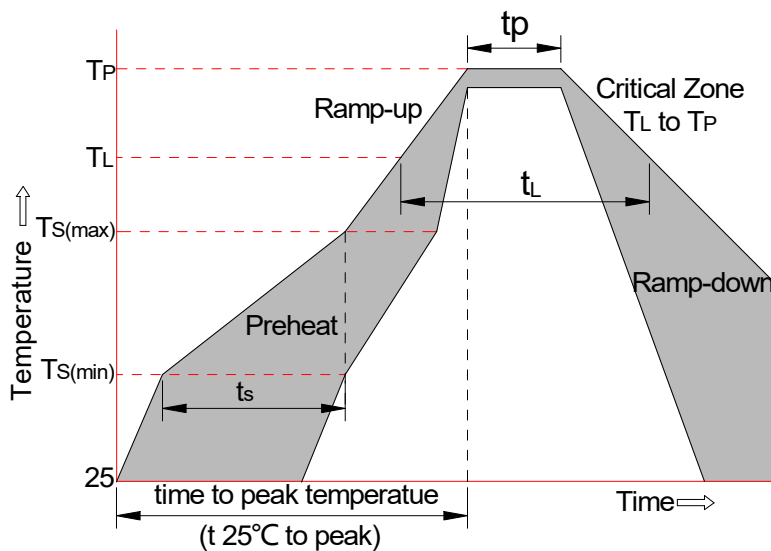
Parameter	Symbol	Min	Typ	Max	Unit	Condition
Reverse Working Voltage	V_{RWM}	--	--	5.0	V	
Breakdown Voltage	V_{BR}	6.5	--	8.5	V	$I_T = 1\text{mA}$
Leakage Current I_{Leak}	I_R	--	--	100	nA	$V_{RWM} = 5.0\text{V}$
Clamping Voltage	V_C	--	5.0	7.0	V	$I_{PP} = 1\text{A}, T_p = 8/20\mu\text{s}$
Clamping Voltage	V_C	--	8.5	10.0	V	$I_{PP} = 5.5\text{A}, T_p = 8/20\mu\text{s}$
Junction Capacitance	C_j	--	0.30	0.40	pF	$V_R = 0\text{V}, f = 1\text{MHz}$

Typical Performance Characteristics ($T_A=25^{\circ}\text{C}$ unless otherwise Specified)

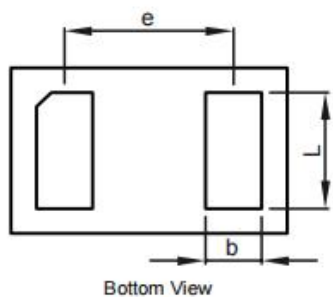
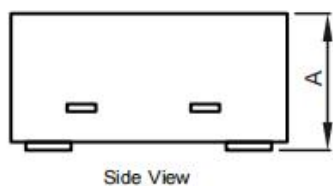
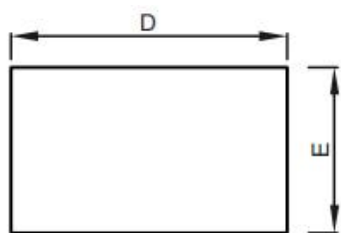


Soldering Parameters

Reflow Condition		Pb-Free Assembly
Pre-heat	-Temperature Min ($T_{s(min)}$)	+150°C
	-Temperature Max($T_{s(max)}$)	+200°C
	-Time (Min to Max) (t_s)	60-180 secs.
Average ramp up rate (Liquid us Temp (T_L) to peak)		3°C/sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3°C/sec. Max
Reflow	-Temperature(T_L)(Liquid us)	+217°C
	-Temperature(t_L)	60-150 secs.
Peak Temp (T_p)		+260(+0/-5)°C
Time within 5°C of actual Peak Temp (t_p)		30 secs. Max
Ramp-down Rate		6°C/sec. Max
xTime 25°C to Peak Temp (T_P)		8 min. Max
Do not exceed		+260°C

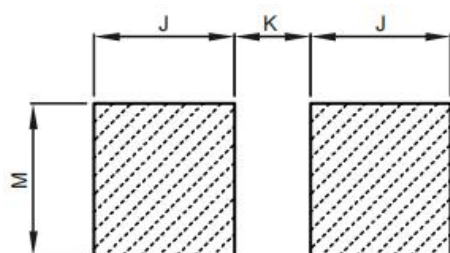


Package Outline Dimensions (DFN1006-2L)



SYMBOL	MILLIMETERS		
	MIN	TYP	MAX
A	0.440	0.475	0.500
D	0.950	1.000	1.050
E	0.550	0.600	0.650
b	0.200	0.250	0.300
L	0.450	0.500	0.550
e	0.650BSC		

Soldering Footprint (mm)



SYMBOL	MILLIMETERS	
	MIN	MAX
J	0.50	0.60
K	0.25	0.35
M	0.55	0.65