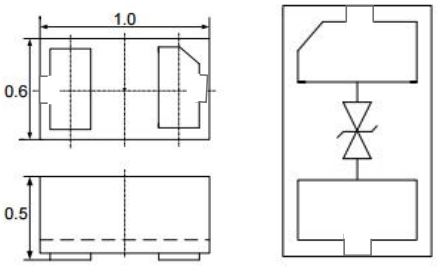
Description

The CLAMP0521P is designed with WPMTEK Punch-Through process TVS technology to protect voltage sensitive components from ESD. Excellent clamping capability, low leakage, and fast response time provide best in class protection on designs that are exposed to ESD. Because of its small size, it is suited for use in cellular phones, MP3 players, digital cameras and many other portable applications where board space comes at a premium. Also because of its low capacitance, it is suited for use in high frequency designs such as USB 2.0 high speed, USB 3.0 super speed, VGA, DVI, HDMI, eSATA and other high speed line applications. It has been specifically designed to protect sensitive components which are connected to data and transmission lines from overvoltage caused by ESD(electrostatic discharge), and EFT (electrical fast transients). .

Features

- Ultra small package: 1.0x0.6x0.5mm
- Ultra low capacitance: 0.3pF typical
- No insertion loss to 3.0GHz
- Working voltage: 5V
- Low clamping voltage
- 2-pin leadless package
- Complies with following standards:
  – IEC 61000-4-2 (ESD) immunity test Air discharge: ±15kV
  Contact discharge: ±8kV
  – IEC61000-4-5 (Lightning) 4A (8/20μs)
- RoHS Compliant

Dimensions & Symbol（Unit: mm Max）



Mechanical Characteristics

- Package: DFN1006-2 (1.0×0.6×0.5mm)
- Lead Finish: NiPdAu
- Case Material: “Green” Molding Compound.
- Moisture Sensitivity: Level 3 per J-STD-020
- Terminal Connections: See Diagram Below
- Marking Information: See Below

Applications

- High Speed Line :USB1.0/2.0/3.0/3.1, VGA, DVI.SDI
- High Definition Multi-Media Interface (HDMI1.3/1.4/2.0）
- Serial and Parallel Ports
- Notebooks, Desktops, Servers
- Peripherals
- Cellular handsets and accessories
- Portable instrumentation

Marking information

Details marking code reference specification of approval

Ordering Information

Part Number	Packaging	Reel Size
CLAMP0521P	10000/Tape & Reel	7 inch

Absolute maximum ratings (T_A=25ºC, RH=45%-75%, unless otherwise noted)

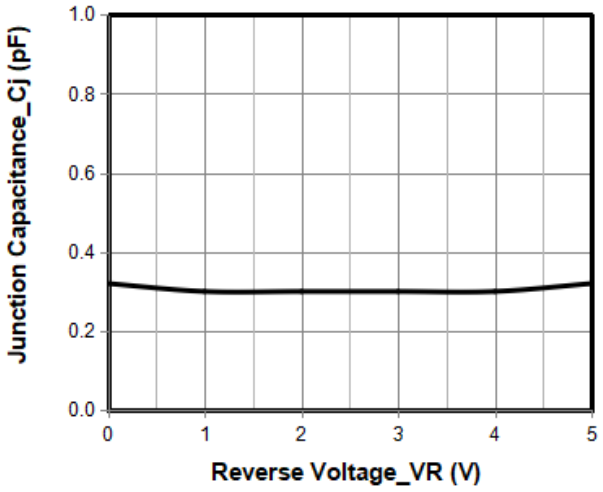
Parameter	Symbol	Value	Unit
Peak Pulse Power (tp=8/20μs waveform)	P_{ppp}	100	W
ESD per IEC 61000−4−2 (Air) ESD per IEC 61000−4−2 (Contact)	V_{ESD}	±25 ±22	kV
Operating Temperature Range	T_J	−55 to +125	°C
Storage Temperature Range	Tstg	−55 to +150	°C

Electrical characteristics (T_A=25℃)

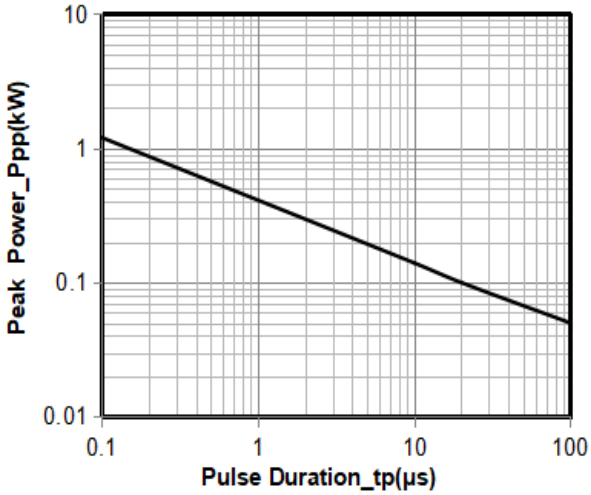
Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	V_{RWM}			5	V	
Breakdown Voltage	V_{BR}	6		10	V	I_T = 1mA
Reverse Leakage Current	I_R			0.2	μA	V_{RWM} = 5.0V
Clamping Voltage	V_C			12	V	I_{PP} = 1A (8 x 20μs pulse)
Clamping Voltage	V_C			25	V	I_{PP} = 4A (8 x 20μs pulse)
Junction Capacitance	C_J		0.3	0.5	pF	VR = 0V, f = 1MHz

Typical Performance Characteristics (T_A=25°C unless otherwise Specified)

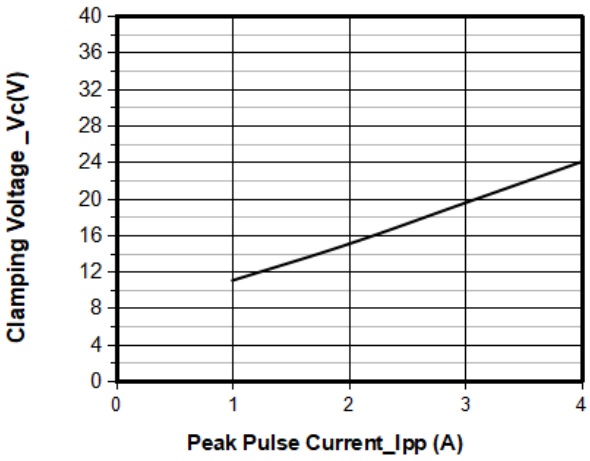
Typical Performance Characteristics (TA=25°C unless otherwise Specified)



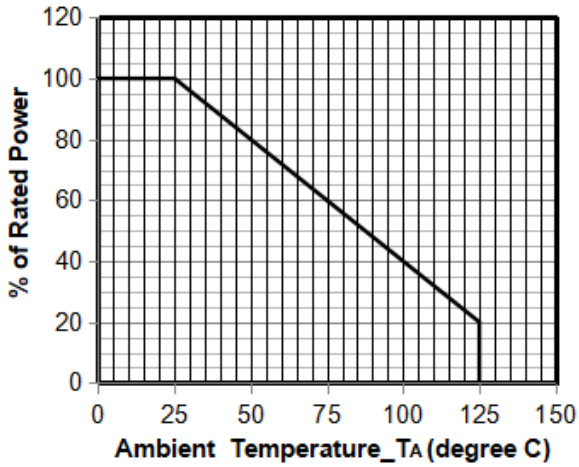
Junction Capacitance vs. Reverse Voltage



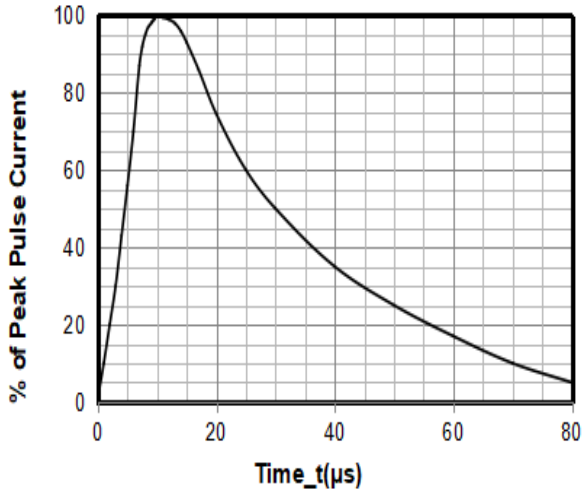
Peak Pulse Power vs. Pulse Time



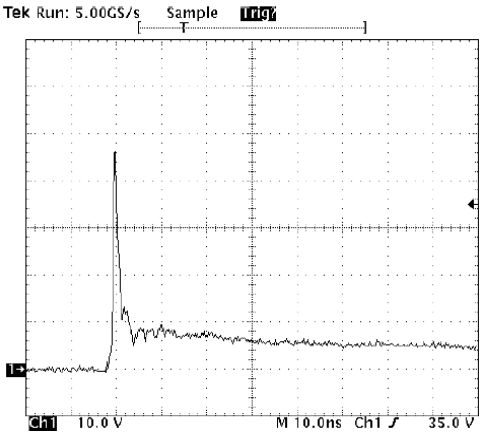
Clamping Voltage vs. Peak Pulse Current



Power Derating Curve



8 X 20μs Pulse Waveform

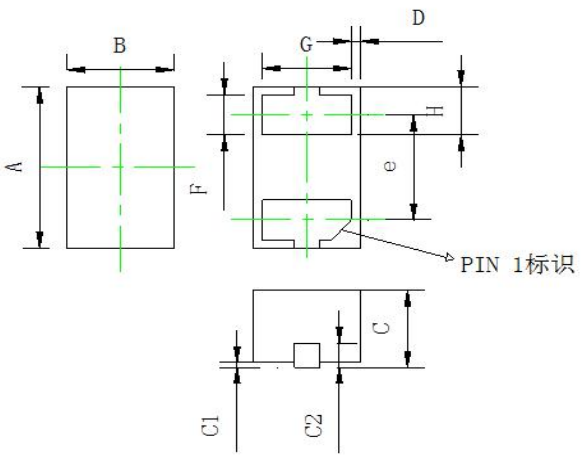


Note：Data is taken with a 10x attenuator

ESD Clamping Voltage

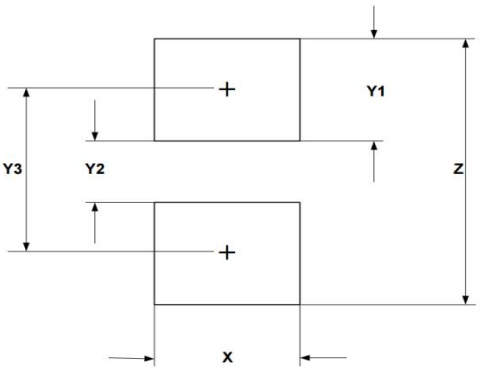
8 kV Contact per IEC61000−4−2

Package mechanical data



SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	0.95	1.00	1.05
B	0.55	0.60	0.65
C	0.40	0.45	0.50
C1			0.05
D	0.02	0.05	0.08
e		0.65 BSC	
F	0.20	0.25	0.30
G	0.45	0.50	0.55
H	0.27	0.30	0.33
C2	0.13	0.15	0.17

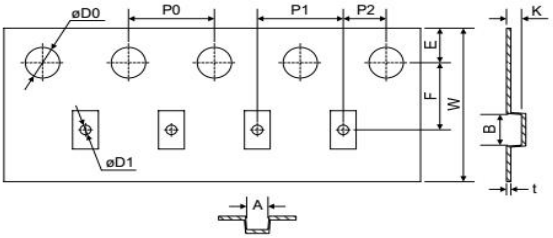
Suggested Land Pattern



SYM	DIMENSIONS	
	MILLIMETERS	INCHES
X	0.60	0.024
Y1	0.50	0.020
Y2	0.30	0.012
Y3	0.80	0.032
Z	1.30	0.052

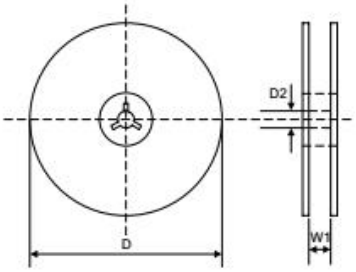
Tape Specification - DFN1006（mm）

W	8.0±0.1
P1	2.0±0.1
A	0.7±0.05
B	1.15±0.05
K	0.57±0.03



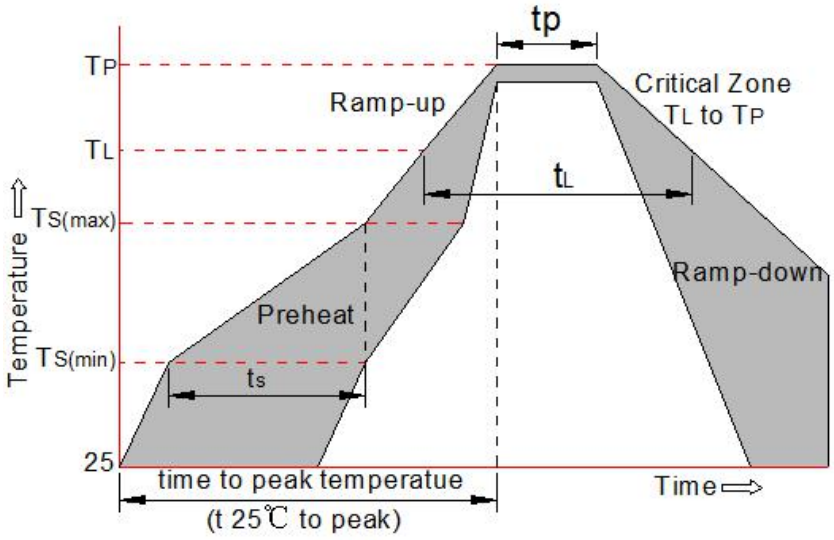
Reel Specification - DFN1006（mm）

W1	8.6
D	180.0±1.0
D2	24±1.0



Soldering parameters

Reflow Condition		Pb-Free assembly (see FIG.2)
Pre Heat	-Temperature Min ($T_{s(min)}$)	+150℃
	-Temperature Max($T_{s(max)}$)	+200℃
	-Time (Min to Max) (ts)	60-180 secs.
Average ramp up rate (Liquid us Temp (T_L) to peak)		3℃/sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3℃/sec. Max
Reflow	-Temperature(T_L) (Liquid us)	+217℃
	-Temperature(t_L)	60-150 secs.
Peak Temp (T_p)		+260(+0/-5)℃
Time within 5℃ of actual Peak Temp (t_p)		30 secs. Max
Ramp-down Rate		6℃/sec. Max
Time 25℃ to Peak Temp (T_P)		8 min. Max
Do not exceed		+260℃



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