

### DFN1006 Plastic-Encapsulate ESD Protection Diodes

## DESCRIPTION

ESD0801PB is a low-capacitance Transient Voltage Suppressor (TVS) designed to provide electrostatic discharge (ESD) protection for data, control or power lines. With maximum capacitance of 15pF, ESD0801PB is designed to protect parasitic-sensitive systems against over-voltage and over-current transient events. It complies with IEC 61000-4-2 (ESD), Level 4 ( $\pm 15\text{kV}$  air,  $\pm 8\text{kV}$  contact discharge), IEC 61000-4-4 (electrical fast transient - EFT) (40A, 5/50 ns), very fast charged device model (CDM) ESD and cable discharge event (CDE), etc.

ESD0801PB uses ultra-small DFN1006 package. Each ESD0801PB device can protect one data line. It offers system designers flexibility to protect single data line where space is a premium concern.

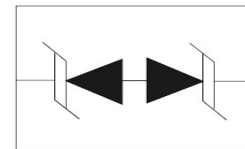
## Features

- ◆ Transient protection for high-speed data lines
- ◆ IEC61000-4-2 (ESD)  $\pm 15\text{kV}$  (air),  $\pm 8\text{kV}$  (contact)
- ◆ IEC61000-4-4 (EFT) 40A (5/50ns)  
Cable Discharge Event (CDE)
- ◆ Package optimized for high-speed lines
- ◆ Low clamping voltage
- ◆ Low Capacitance
- ◆ Low leakage current
- ◆ Each I/O pin can withstand over 1000 ESD strikes for  $\pm 8\text{kV}$  contact discharge

## Pin Configuration



## Circuit Diagram



## Applications

- ◆ Portable Electronics
- ◆ Desktops, Servers and Notebooks
- ◆ Cellular Phones
- ◆ MP3 Ports
- ◆ Subscriber Identity Module (SIM) card
- ◆ Digital Ports

## Mechanical Characteristics

- ◆ Package: DFN1006
- ◆ Flammability Rating: UL 94V-0
- ◆ Packaging: Tape and Reel
- ◆ High temperature soldering guaranteed:  
260 °C/10s
- ◆ Marking: PB
- ◆ MSL3

## Absolute Maximum Ratings (T<sub>A</sub>=25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
ESD per IEC 61000-4-2 (Air)	V <sub>ESD</sub>	$\pm 25$	kV
ESD per IEC 61000-4-2 (Contact)		$\pm 20$	
Peak Pulse Power(tp=8/20us waveform)	P <sub>PP</sub>	60	W
Operating Temperature	T <sub>J</sub>	-55 to +125	°C
Storage Temperature Range	T <sub>STG</sub>	-55 to +150	°C
Lead Solder Temperature – Maximum (10 Second Duration)	T <sub>L</sub>	260(10 sec.)	°C

The above data are for reference only.

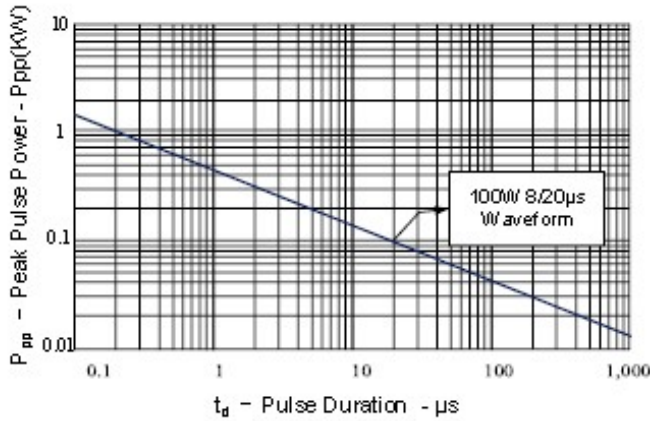
**Electrical Characteristics** ( $T_A=25^{\circ}\text{C}$  unless otherwise specified)

Symbol	Param	Test Condition	Min	Typ	Max	Units
$V_{RWM}$	Reverse Working Voltage				5.0	V
$V_{BR}$	Reverse Breakdown Voltage	$I_T = 1\text{mA}$	5.6			V
$I_R$	Reverse Leakage Current	$V_{RWM} = 5\text{V}$			1	$\mu\text{A}$
$I_{PP}$	Peak Pulse Current	$t_P = 8/20\mu\text{s}$			4	A
$V_C$	Clamping Voltage	$I_{PP} = 1\text{A}, t_p = 8/20\mu\text{s}$			9.5	V
		$I_{PP} = 4\text{A}, t_p = 8/20\mu\text{s}$			15	V
$C_J$	Junction Capacitance	$V_R = 0\text{V}, f = 1\text{MHz}$		8	15	pF

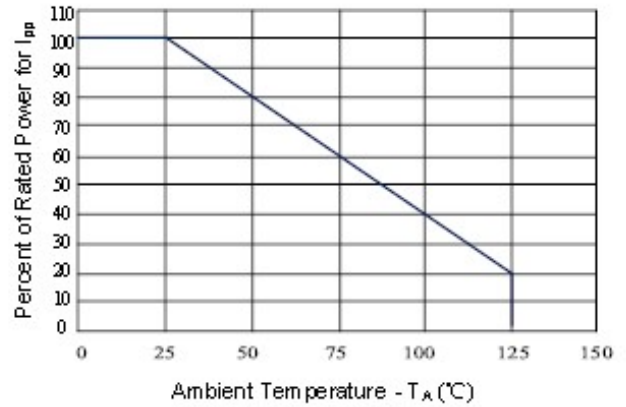
The above data are for reference only.

### ELECTRICAL CHARACTERISTICS CURVE

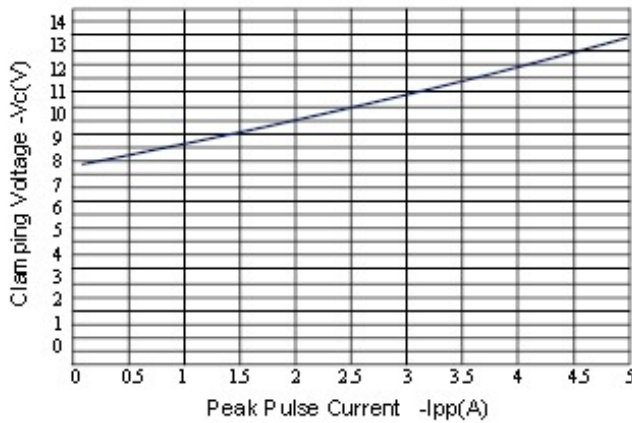
**Figure 1: Peak Pulse Power Vs Pulse Time**



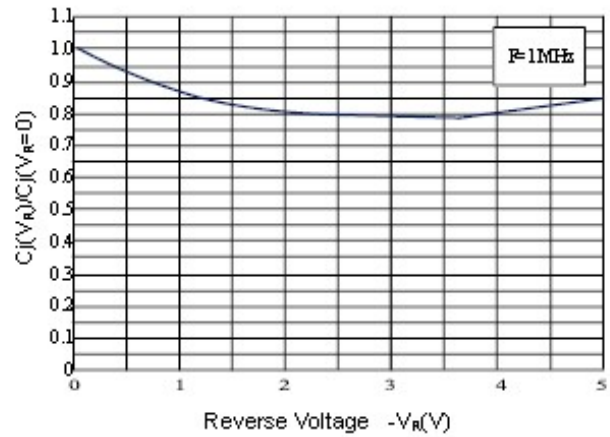
**Figure 2: Power Derating Curve**



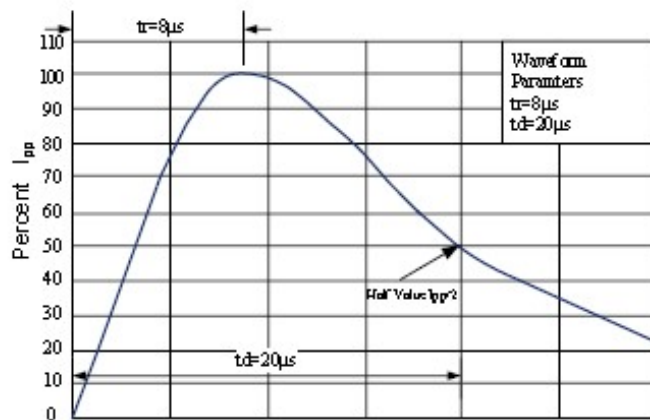
**Figure 3: Clamping Voltage vs. Peak Pulse Current**



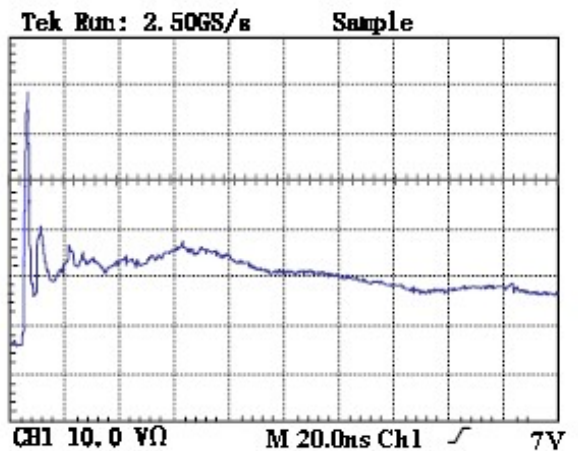
**Figure 4: Normalized Junction Capacitance vs. Reverse Voltage**



**Figure 5: Pulse Waveform**



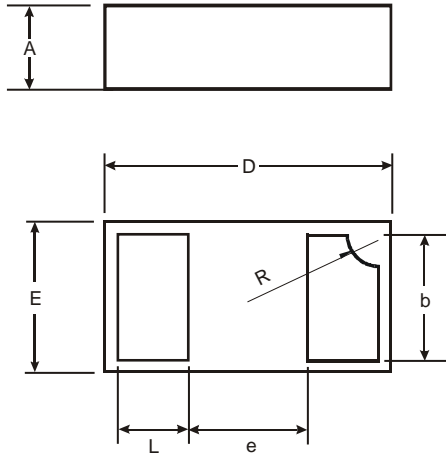
**Figure 6: ESD Clamping (8kV Contact per IEC 61000-4-2)**



The above data are for reference only.

### Outlitne Drawing

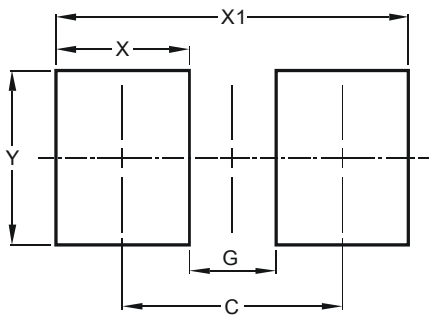
#### DFN1006 Package Outline Dimensions



DFN1006			
Dim	Min	Max	Typ
A	0.45	0.55	0.50
b	0.45	0.55	0.50
D	0.95	1.05	1.00
E	0.55	0.65	0.60
e	-	-	0.40
L	0.20	0.30	0.25
R	0.07	0.17	0.12

**All Dimensions in mm**

### Suggested Pad Layout



Dimensions	Value (in mm)
C	0.90
G	0.40
X	0.50
X1	1.10
Y	0.50

**Note:**

1. Controlling dimension: in/millimeters.
2. General tolerance:  $\pm 0.05\text{mm}$ .
3. The pad layout is for reference purposes only.

### PACKAGE SPECIFICATIONS

Package	Reel Size	Reel DIA. (mm)	Q'TY/Reel (pcs)	Box Size (mm)	QTY/Box (pcs)	Carton Size (mm)	Q'TY/Carton (pcs)
DFN1006	7'	178	10,000	210×210×205	100,000	445×445×230	400,000