ESD0521P

Low Capacitance ESD Protection Diodes

DFN1006 Plastic-Encapsulate ESD Protection Diodes

DESCRIPTION

ESD0521P is a low-capacitance Transient Voltage Suppressor (TVS) designed to provide electrostatic discharge (ESD) protection for high-speed data interfaces. With capacitance of 0.5pF, ESD0521P 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(±8kV contact,±15kV air 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.

ESD0521P uses ultra-small DFN1006 package. Each ESD0521P device can protect one high-speed data line. It offers system designers flexibility to protect single data line where space is a premium concern. The combined features of low capacitance, ultra-small size and high ESD robustness make ESD0521P ideal for high-speed data port and high-frequency line applications, such as cellular phones and HD visual devices.

Features

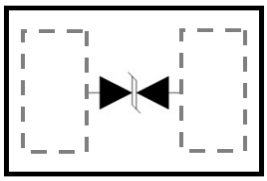
- Transient protection for high speed data lines
- IEC61000-4-2 (ESD) ±20kV (Contact)
  ±20kV (Air)
  IEC 61000-4-4 (EFT) 40A (5/50 ns)
  Cable Discharge Event (CDE)
- Package optimized for high-speed lines
- Ultra-small package (1.0mm×0.6mm×0.5mm)
- Protects one data, control line
- Low clamping voltage
- Low capacitance: 0.5pF
- Low leakage current

Applications

- SerialATA
- Desktops, Servers and Notebooks
- Cellular Phones
- MDDI Ports
- USB Data Line Protection
- Display Ports
- Digital Visual Interfaces (DVI)

Pin Configuration

RoHS COMPLIANT



Circuit Diagram

Mechanical Characteristics

- Package: DFN1006
- Flammability Rating: UL 94V-0
- Packaging: Tape and Reel
- High temperature soldering guaranted: 260℃/10s
- Marking: 21

Absolute Maximum Ratings (T_A=25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
ESD per IEC 61000−4−2 (Air) ESD per IEC 61000−4−2 (Contact)	V_{ESD}	± 20 ± 20	kV
Peak Pulse Power(tp=8/20us waveform)	P_{PP}	100	W
Operating Temperature	T_{OPT}	−55 to +125	°C
Storage Temperature Range	T_{STG}	−55 to +150	°C

The above data are for reference only.

Electrical Characteristics (T_A=25°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 = 1mA	6.0			V
I_R	Reverse Leakage Current	V_{RWM} = 5V			100	nA
V_C	Clamping Voltage	I_{PP} = 1A, t_p = 8/20μs			13	V
		I_{PP} = 4A, t_p = 8/20μs		18	25	V
C_J	Junction Capacitance	V_R = 0V, f = 1MHz			0.50	pF

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ELECTRICAL CHARACTERISTICS CURVE

Fig 1 Power Derating Curve

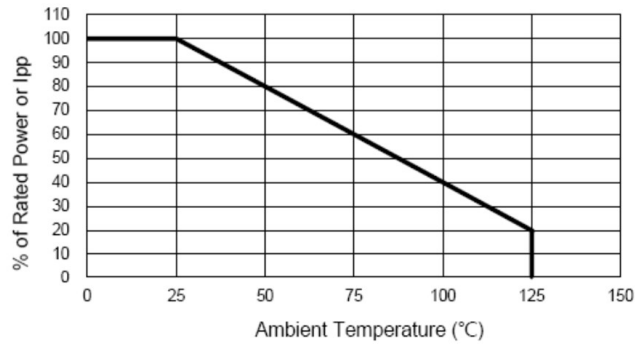


Fig 2 Clamping Voltage vs Peak Pulse Current

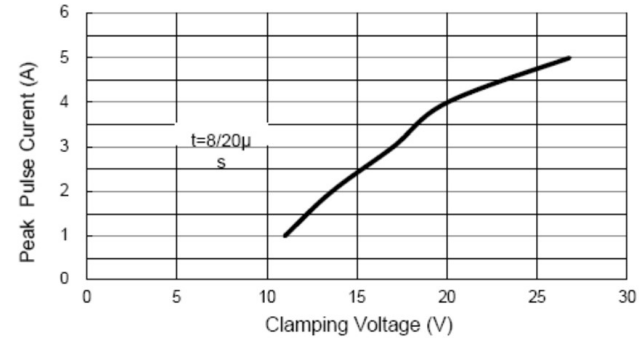


Fig 3 Voltage Sweeping

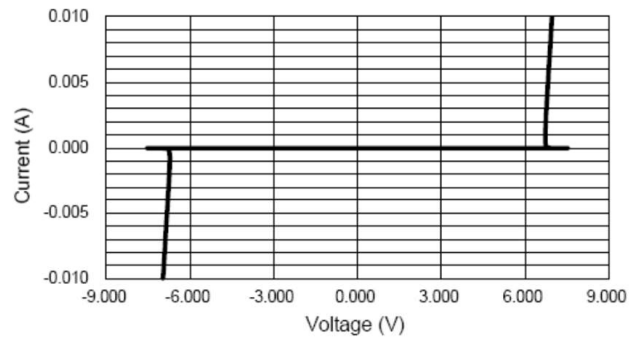


Fig 4 Voltage vs Capacitance

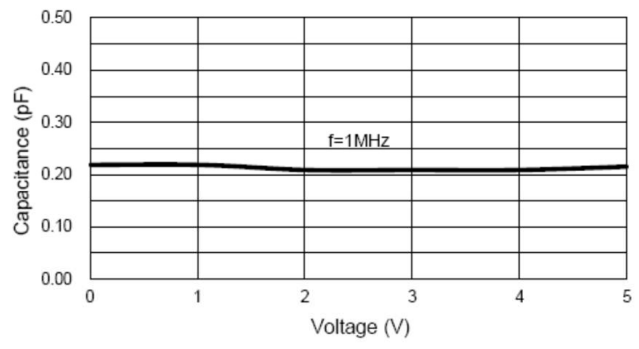


Fig 5 ESD Clamping
(+8kV Contact per IEC 61000-4-2)

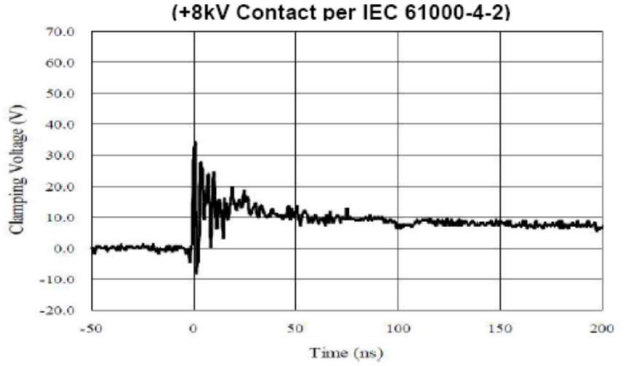


Fig 6 ESD Clamping
(-8kV Contact per IEC 61000-4-2)

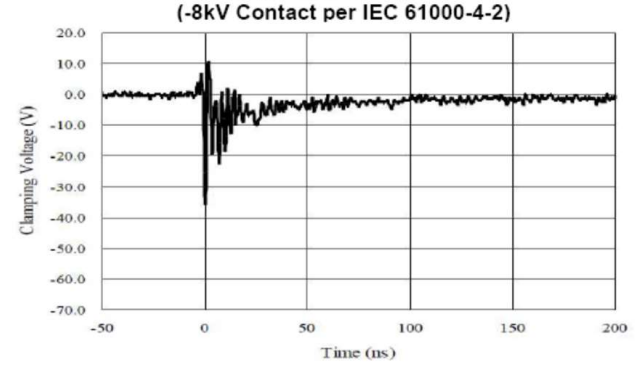
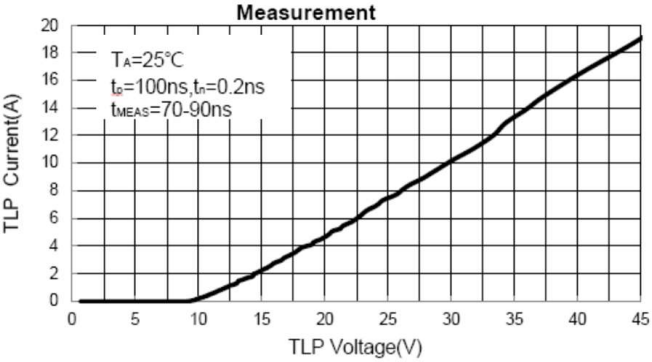


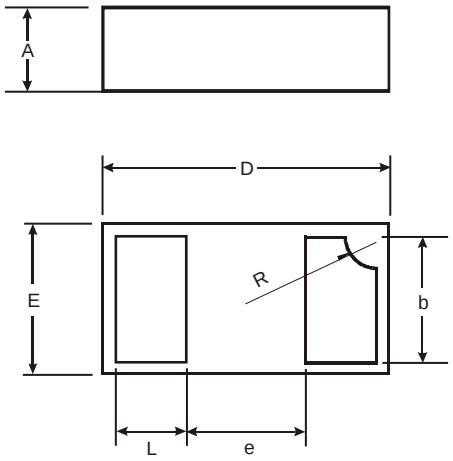
Fig7 Transmission Line Pulsing (TLP)
Measurement



The above data are for reference only.

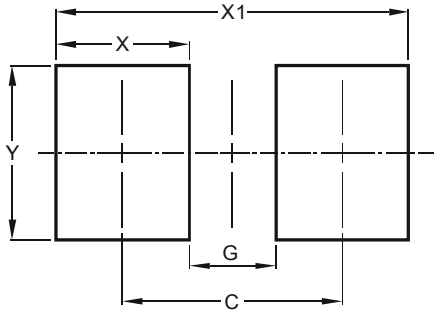
Outlitne Drawing

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: ±0.05mm.
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