



ESD0301PBC

Low Capacitance TVS/ESD Protection Diodes

Description

ESD0301PBC 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, ESD0301PBC 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.

ESD0301PBC uses ultra-small DFN1006 package. Each ESD0301PBC device can protect one data line. It offers system designers flexibility to protect single data line where space is a premium concern.

Ordering Information

- Device: ESD0301PBC
- Package: DFN1006
- Marking: F3
- Material: Halogen free
- Packing: Tape & Reel
- Quantity per reel: 10,000 pcs

Pin Configuration



Features

- Transient protection for high-speed data lines
- IEC61000-4-2(ESD) $\pm 30\text{kV}$ (air)
 $\pm 30\text{kV}$ (contact)
- IEC61000-4-4(EFT)40A(5/50ns)
Cable Discharge Event(CDE)
- Package optimized for high-speed lines
- Ultra-small package(1.0mmx0.6mmx0.4mm)
- Protects one data, control or power line
- Low capacitance: 15pF(Maximum)
- Low leakage current
- Low clamping voltage

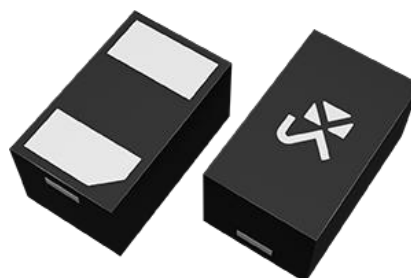
Mechanical Data

- DFN1006 package
- Flammability Rating: UL 94V-0
- High temperature soldering guaranteed: $260^{\circ}\text{C}/10\text{s}$
- Packaging: Tape and Reel
- Reel size: 7 inch

Applications

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

Circuit Diagram





ESD0301PBC

Maximum Rating

Parameter	Symbol	Value	Unit
ESD per IEC 61000-4-2(Air)	V_{ESD}	± 30	kV
ESD per IEC 61000-4-2(Contact)		± 30	
Peak Pulse Power(8/20 μ s)	P_{PP}	84	W
Operating Temperature	T_{OPT}	-55~+125	$^{\circ}C$
Storage Temperature	T_{STG}	-55~+150	$^{\circ}C$

Electrical Characteristics ($T_A=25^{\circ}C$)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Reverse Working Voltage	V_{RWM}				3.3	V
Reverse Breakdown Voltage	V_{BR}	$I_T=1mA$	3.6			V
Reverse Leakage Current	I_R	$V_{RWM}=3.3V$			0.5	μA
Clamping Voltage	V_C	$I_{PP}=1A, t_p=8/20\mu s$			5.6	V
		$I_{PP}=7A, t_p=8/20\mu s$			12	V
Junction Capacitance	C_J	$V_R=0V, f=1MHz$		13	15	pF

Typical Characteristics

Fig 1 8/20 μ s Waveform per IEC61000-4-5

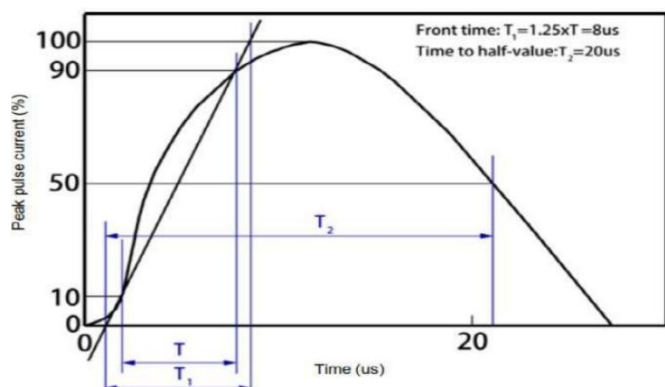
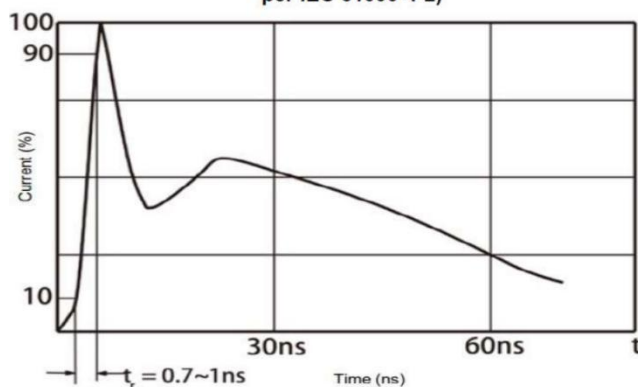


Fig 2 Contact Discharge Current Waveform per IEC 61000-4-2)





ESD0301PBC

Fig 3 Power Derating Curve

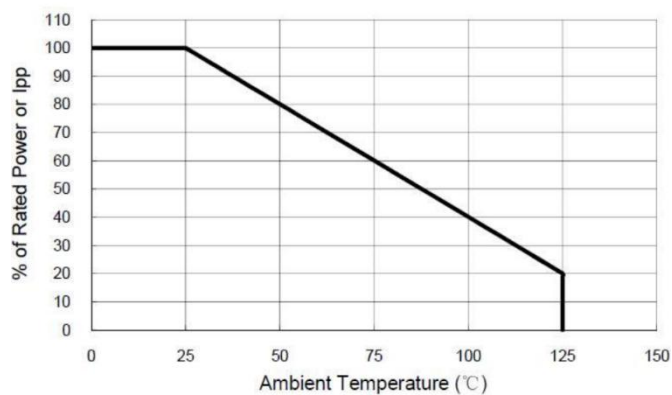


Fig 4 Voltage vs Capacitance

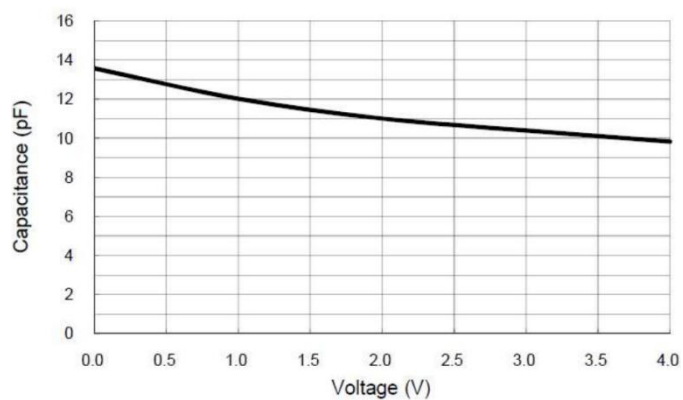


Fig 5 Transmission Line Pulsing (TLP) Measurement

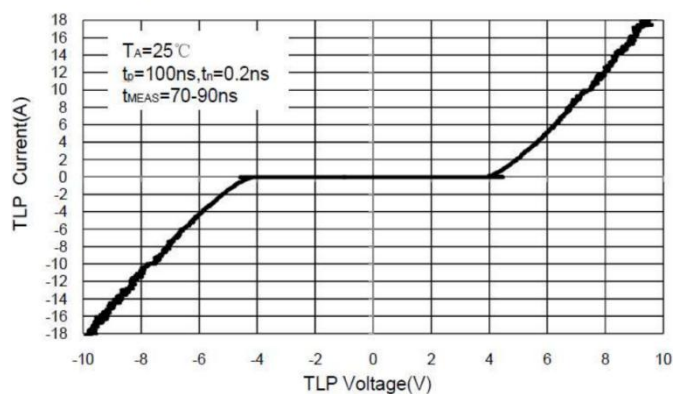
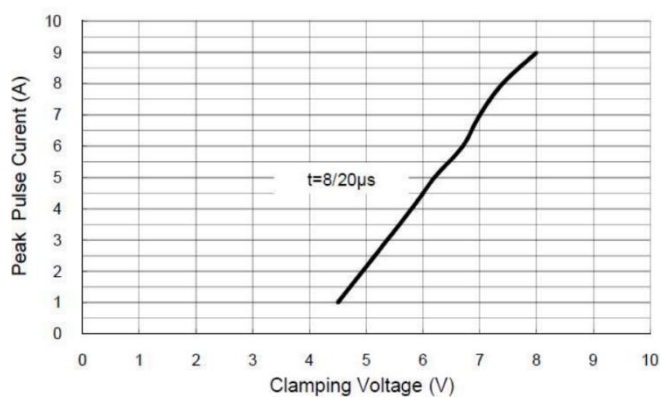


Fig 6 Clamping Voltage vs Peak Pulse Current

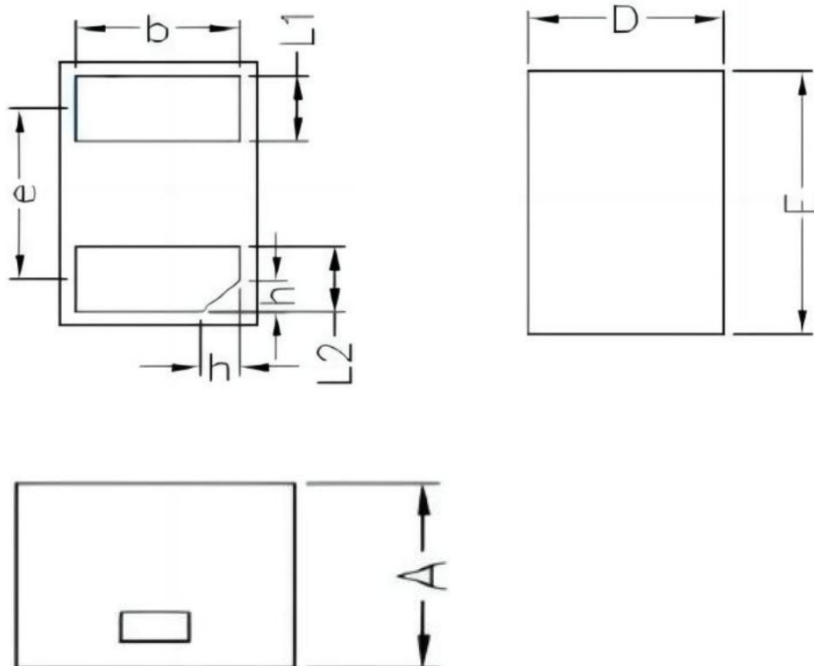




Package Information

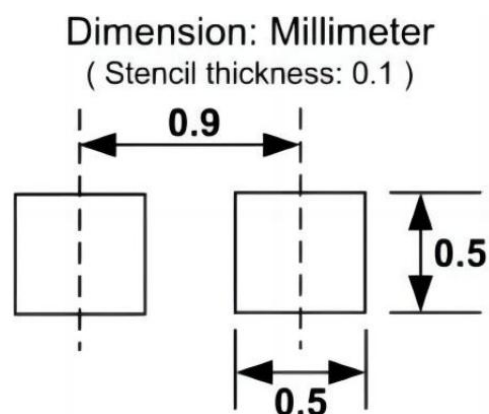
DFN1006

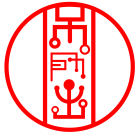
Dimensions in mm



Symbol	Dimensions In Millimeters		
	Min	Nom	Max
D	0.55	0.60	0.65
E	0.95	1.00	1.05
L1	0.20	0.25	0.30
L2	0.20	0.25	0.30
b	0.45	0.50	0.55
e	0.65 BSC		
A	0.45	0.50	0.55
h	0.07	0.12	0.17

Soldering Footprint





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