ESD0301BL

Ultra Low Capacitance ESD Protection Diode

Description

ESD0301BL is a low-capacitance Transient Voltage Suppressor (TVS) designed to provide electrostatic discharge (ESD) protection for high-speed data interfaces. With typical capacitance of 0.5pF, ESD0301BL 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 (±15kV air, ±8kV 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.

ESD0301BL uses ultra-small DFN1006 package. Each ESD0301BL 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 ESD0301BL 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) ±15kV(air)
  ±8kV(contact)
- IEC61000-4-4(EFT)40A(5/50ns)
- 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 capacitance:0.5pF(Typical)
- Low leakage current

Mechanical Data

- DFN1006 package
- Flammability Rating: UL 94V-0
- Packaging: Tape and Reel
- High temperature soldering guaranteed: 260°C/10s
- Reel size: 7 inch

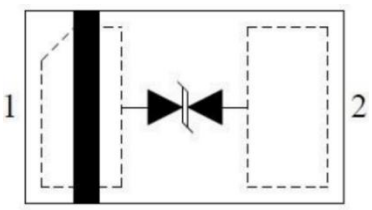
Ordering Information

- Device:ESD0301BL
- Package:DFN1006
- Marking:S8
- Material:Halogen free
- Packing:Tape & Reel
- Quantity per reel:10,000pcs

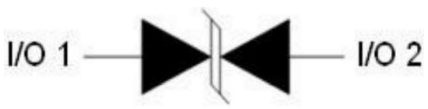
Applications

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

Pin Configuration



Circuit Diagram



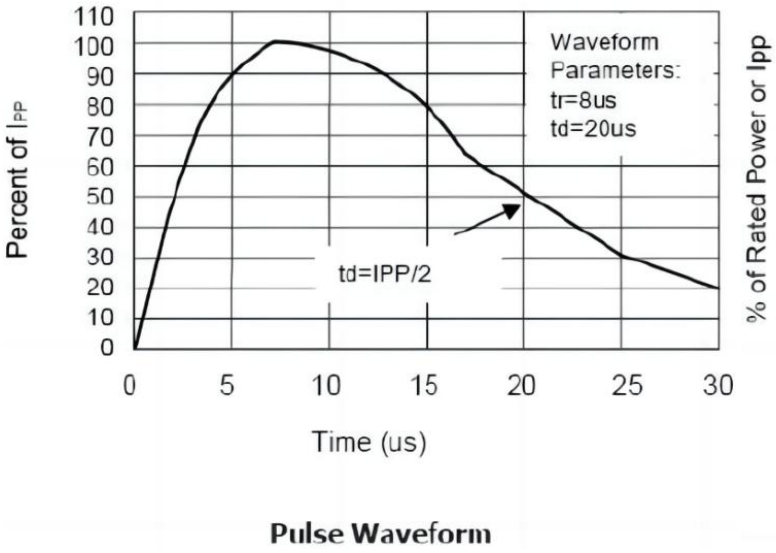
Absolute Maximum Rating

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

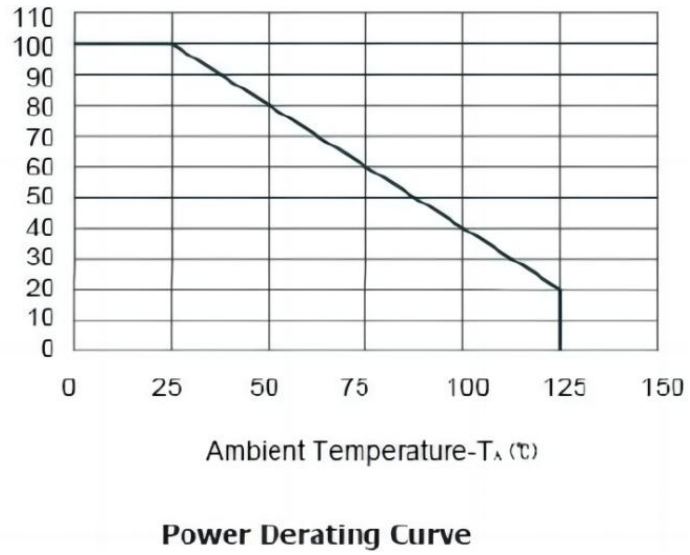
Electrical Characteristics (T_A=25℃)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Reverse Working Voltage	V_{RWM}				3.3	V
Reverse Breakdown Voltage	V_{BR}	I_T=1mA	4.2			V
Reverse Leakage Current	I_R	V_{RWM}=3.3V			100	nA
Clamping Voltage	V_C	I_{PP}=1A,t_P=8/20μs			12	V
		I_{PP}=4A,t_P=8/20μs			21	V
Junction Capacitance	C_J	V_R=0V,f=1MHz		0.5		pF

Typical Characteristics



Pulse Waveform

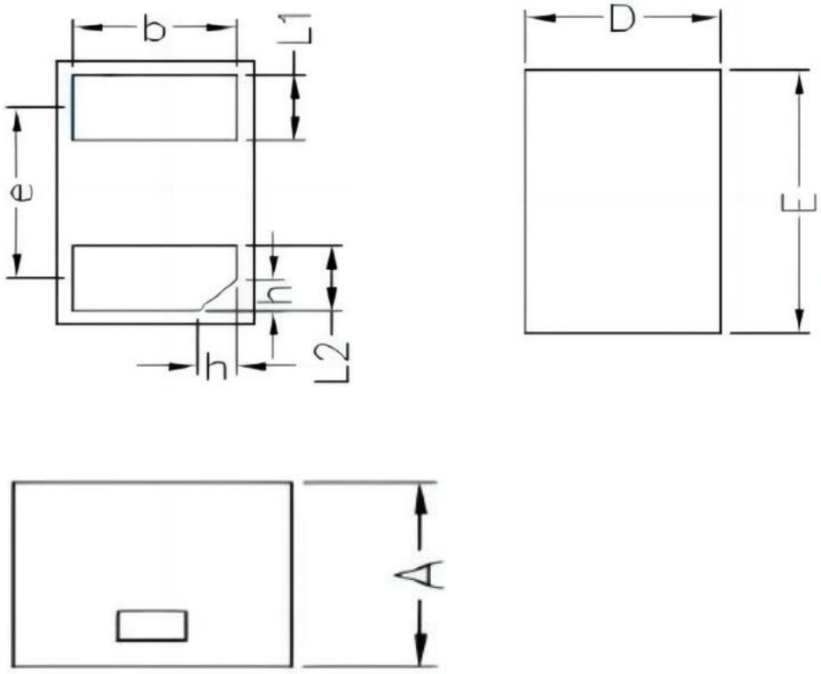


Power Derating Curve

Package Information

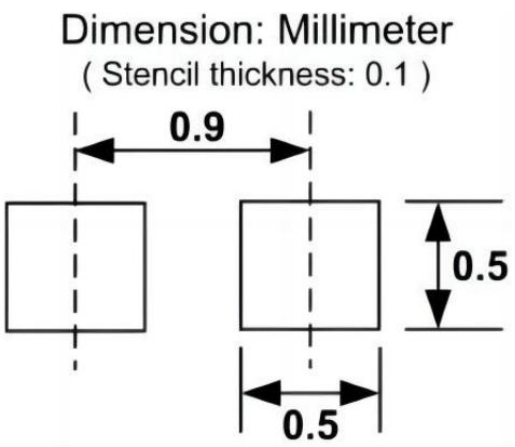
DFN1006

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



Shikues Disclaimer

1.Accuracy of Information and Right to Modify

The information provided in this document is for reference only. Shikues reserves the right to make changes to this document and to the specifications of the products described herein at any time, without prior notice, for the purpose of improving reliability, function, design, or for any other reason. It is the customer's responsibility to obtain and verify the latest product information and specifications before making any final design, procurement, or usage decisions.

2.No Warranty

Shikues makes no express or implied warranties, representations, or guarantees regarding the suitability of its products for any particular purpose.

Shikues assumes no liability for any assistance provided or for the design of customer products. All products are supplied "as is."

3.Intended Use and Limitation of Liability

The products described in this document are intended for use in general-purpose electronic devices. They are neither designed nor tested nor authorized for use in transportation equipment or applications requiring high reliability. Unless expressly authorized in writing by Shikues, these products must not be used as critical components in life-support systems or any applications where failure could directly pose a risk to human life (including, but not limited to, medical devices, transportation systems, aerospace equipment, nuclear facilities, and safety-critical systems).

Shikues assumes no responsibility or liability for any consequences arising from the use of its products in unauthorized or unintended applications.

Neither Shikues nor its representatives shall be held liable for any resulting damages.

4.Intellectual Property

This document does not grant any express or implied license—whether by estoppel, implication, or otherwise—to use any intellectual property rights of Shikues.