

Ultra Low Capacitance ESD Protection Diode

Description

ESD0501BL 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, ESD0501BL 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.

ESD0501BL uses ultra-small DFN1006 package. Each ESD0501BL 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 ESD0501BL ideal for high-speed data port and high-frequency line applications, such as cellular phones and HD visual devices.

Ordering Information

Device: ESD0501BL
Package: SOD-882
Marking: 5BL
Material: Halogen free
Packing: Tape & Reel
Quantity per reel: 10,000 pcs

Features

Transient protection for high-speed data lines
IEC 61000-4-2 (ESD) $\pm 15\text{kV}$ (Air)
 $\pm 8\text{kV}$ (Contact)
IEC 61000-4-4 (EFT) 40A (5/50 ns)
Cable Discharge Event (CDE)
Package optimized for high-speed lines
Ultra-small package (1.0mm \times 0.6mm \times 0.5mm)
Protects one data, control line
Low capacitance: 0.5pF (Typical)
Low leakage current
Low clamping voltage

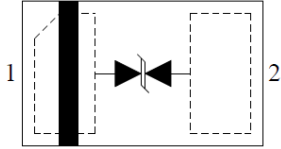
Mechanical Data

SOD-882 package
Flammability Rating: UL 94V-0
Packaging: Tape and Reel
High temperature soldering guaranteed: 260 $^{\circ}\text{C}$ /10s
Reel size: 7 inch

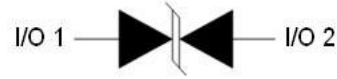
Applications

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

Pin Configuration



Circuit Diagram



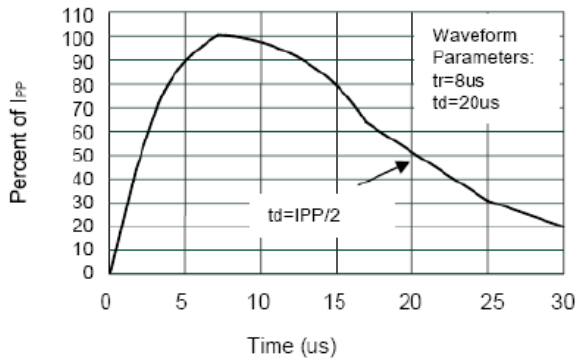
Absolute Maximum Rating

Symbol	Parameter	Value	Units
V_{ESD}	ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact)	± 20 ± 20	kV
P_{PP}	Peak Pulse Power (8/20 μ s)	88	W
T_{OPT}	Operating Temperature	-55~125	$^{\circ}$ C
T_{STG}	Storage Temperature	-55~150	$^{\circ}$ C

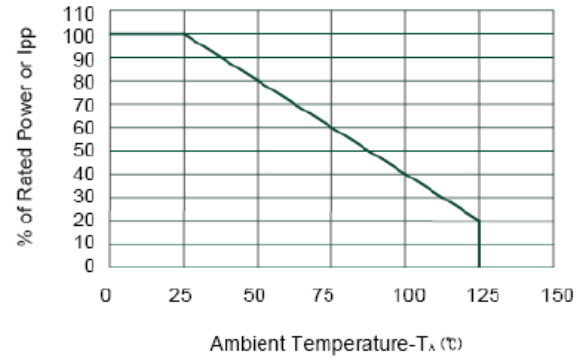
Electrical Characteristics($T_{amb}=25^{\circ}$ C)

Symbol	Parameter	Test Condition	Min	Typ	Max	Units
V_{RWM}	Reverse Working Voltage				5.0	V
V_{BR}	Reverse Breakdown Voltage	$I_T = 1\text{mA}$	6.0			V
I_R	Reverse Leakage Current	$V_{RWM} = 5\text{V}$			100	nA
V_C	Clamping Voltage	$I_{PP} = 1\text{A}, t_p = 8/20\mu\text{s}$			13	V
		$I_{PP} = 4\text{A}, t_p = 8/20\mu\text{s}$			22	V
C_J	Junction Capacitance	$V_R = 0\text{V}, f = 1\text{MHz}$		0.5		pF

Electrical Characteristics Curve

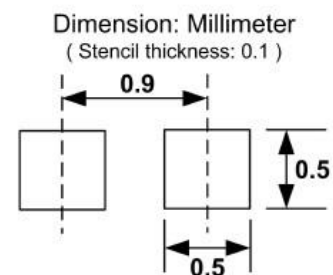
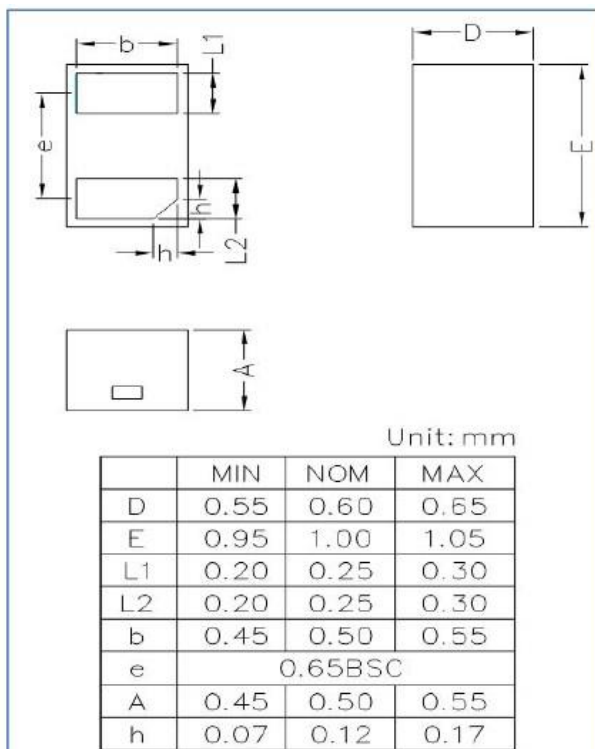


Pulse Waveform



Power Derating Curve

SOD-882 Package Outline Dimensions



Soldering Footprint