

## Ultra Low Capacitance TVS/ESD Protection Diode

### DESCRIPTION

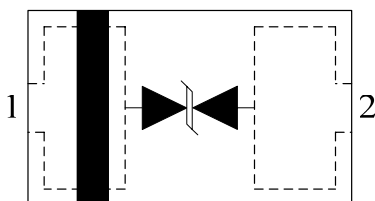
TEP0801SLC is a low-capacitance Transient Voltage Suppressor (TVS) designed to provide electrostatic discharge (ESD) protection for high-speed data interfaces. With typical capacitance of 0.35pF only, TEP0801SLC is designed to protect parasitic-sensitive systems against over-voltage and over-current 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.

TEP0801SLC uses ultra-small DFN1006 package. Each TEP0801SLC 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 TEP0801SLC ideal for high-speed data port and high-frequency line (e.g., USB 2.0 & antenna line) applications, such as cellular phones and HD visual devices.

### ORDERING INFORMATION

- ✧ Device: TEP0801SLC
- ✧ Package: DFN1006
- ✧ Marking: S
- ✧ Material: Halogen free
- ✧ Packing: Tape & Reel
- ✧ Quantity per reel: 10,000pcs

### PIN CONFIGURATION



### 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 $\times$ 0.4mm)
- ✧ Protects one data, control or power line
- ✧ Low capacitance: 0.35pF (Typical)
- ✧ Low leakage current: 10nA @ VRWM (Typical)
- ✧ Low clamping voltage

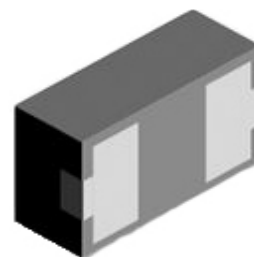
### MACHANICAL DATA

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

### APPLICATIONS

- ✧ Serial ATA
- ✧ Desktops, Servers and Notebooks
- ✧ Cellular Phones
- ✧ MDDI Ports
- ✧ USB2.0 Power and Data Line Protection
- ✧ Display Ports
- ✧ Digital Visual Interfaces (DVI)

### PACKAGE OUTLINE



**ABSOLUTE MAXIMUM RATING**

Symbol	Parameter	Value	Units
$V_{ESD}$	ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact)	$\pm 17$ $\pm 12$	kV
$T_{OPT}$	Operating Temperature	-55/+125	°C
$T_{STG}$	Storage Temperature	-55/+150	°C

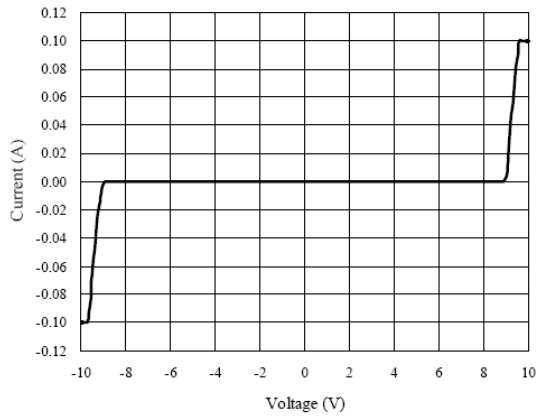
**ELECTRICAL CHARACTERISTICS ( $T_{amb}=25^{\circ}C$ )**

Symbol	Parameter	Test Condition	Min	Typ	Max	Units
$V_{RWM}$	Reverse Working Voltage				5.0	V
$V_{BR}$	Reverse Breakdown Voltage	$I_T = 1mA$	6.0	8.8	11	V
$I_R$	Reverse Leakage Current	$V_{RWM} = 5V$		0.01	1.0	$\mu A$
$V_{C1}$	Clamping Voltage 1	$I_{PP} = 1A, t_p = 8/20\mu s$			12	V
$V_{C2}$	Clamping Voltage 2	$I_{PP} = 2A, t_p = 8/20\mu s$			14	V
$C_J$	Junction Capacitance	$V_R = 0V, f = 1MHz$		0.35	0.50	pF

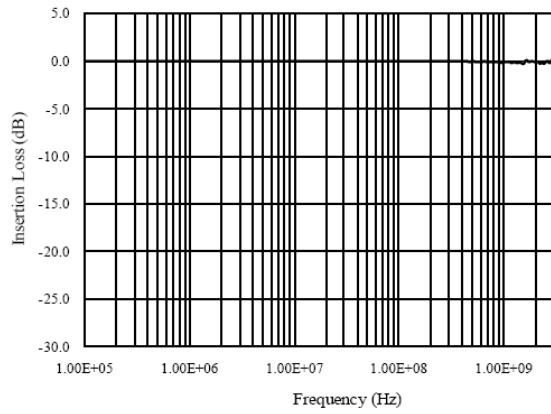
# RATING AND CHARACTERISTIC CURVES ( TEP0801SLC )

## ELECTRICAL CHARACTERISTICS CURVE

### Voltage Sweeping of I/O to I/O

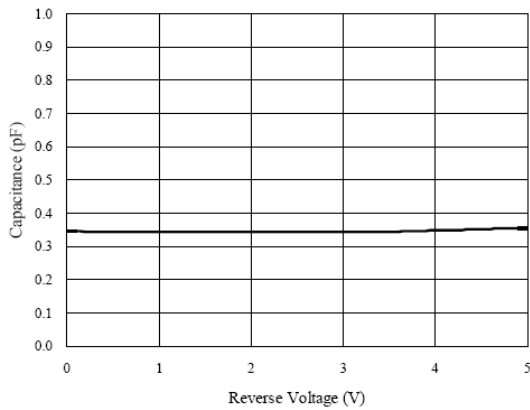


### Insertion Loss S21 of I/O to I/O

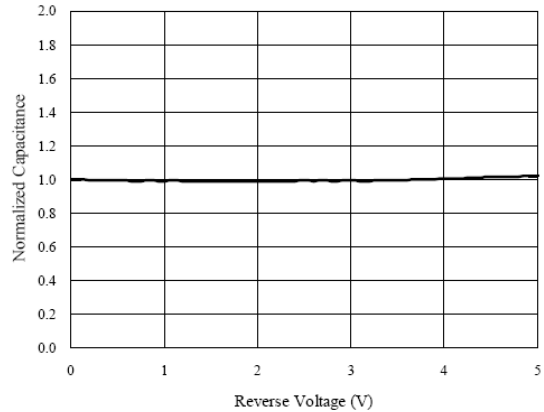


## Capacitance vs. Voltage of I/O to I/O (f = 1MHz)

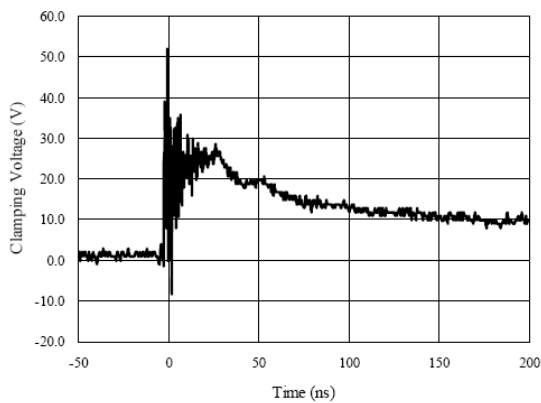
### Capacitance vs. Reverse Voltage



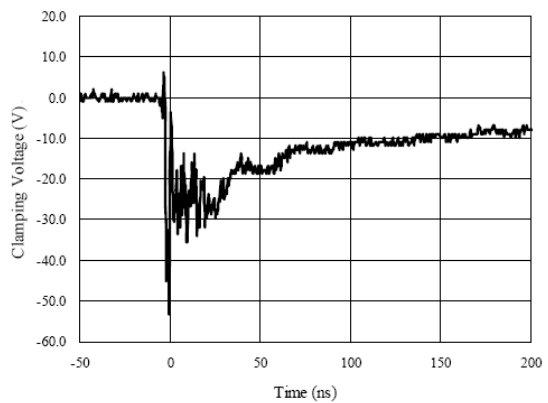
### Normalized Capacitance vs. Reverse Voltage



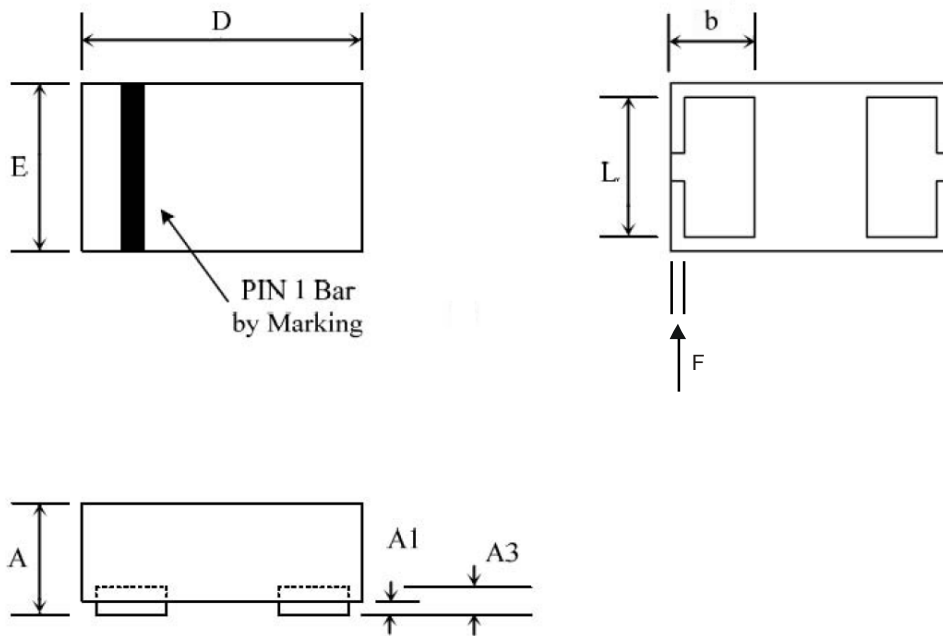
### ESD Clamping of I/O to I/O (+8kV Contact per IEC 61000-4-2)



### ESD Clamping of I/O to I/O (-8kV Contact per IEC 61000-4-2)



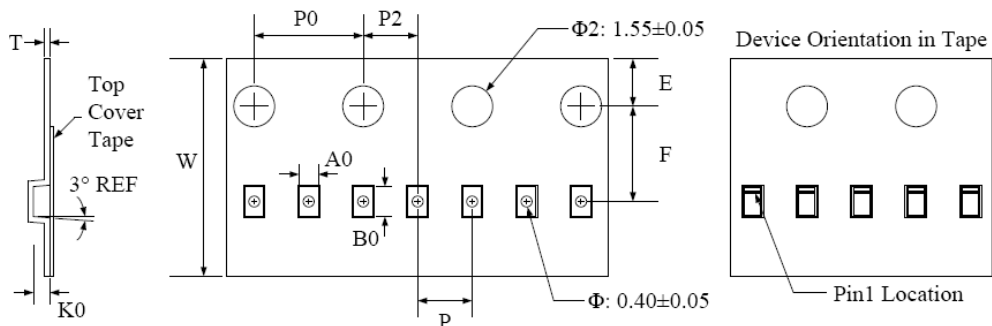
## DFN1006 PACKAGE OUTLINE DIMENSIONS



**Package Dimensions (Controlling dimensions are in millimeters)**

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Minimum	Maximum	Minimum	Maximum
A	0.400	0.550	0.016	0.022
A1	0.000	0.050	0.000	0.002
A3	0.125 REF		0.005 REF	
D	0.950	1.050	0.037	0.041
E	0.550	0.650	0.022	0.026
F	0.050	0.150	0.002	0.006
L	0.450	0.550	0.018	0.022
b	0.250	0.400	0.100	0.016

## Carrier Tape



Symbol	W	A0	B0	K0	E	F	P	P0	P2	T
Dimensions (mm)	8.00±0.1	0.7±0.05	1.15±0.05	0.55±0.05	1.75±0.1	3.5±0.05	2.0±0.1	4.0±0.1	2.0±0.05	0.2±0.05

## Packing Quantity

Reel		Inner Box		Carton	
Size	Quantity Per Reel	Size	Quantity Per Reel	Size	Quantity Per Reel
7 (inch)	10,000pcs	210*208*203 (mm)	150,000pcs	440*440*230 (mm)	600,000pcs
7 (inch)	10,000pcs	183*188*80 (mm)	60,000pcs	386*265*215 (mm)	360,000pcs

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