

Ultra Low Capacitance ESD Protection Diode

DESCRIPTION

TEP0521CD 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, TEP0521CD 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.

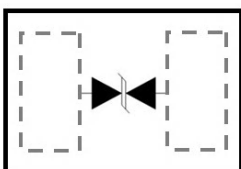
TEP0521CD uses ultra-small DFN1006 package.

Each TEP0521CD 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 TEP0521CD ideal for high-speed data port and high-frequency line applications, such as cellular phones and HD visual devices.

ORDERING INFORMATION

- ✧ Device: TEP0521CD
- ✧ Package: DFN1006
- ✧ Marking: 2BL
- ✧ 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) $\pm 30\text{kV}$ (Contact)
 $\pm 30\text{kV}$ (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 \times 0.6mm \times 0.5mm)
- ✧ Protects one data, control line
- ✧ Low capacitance: 0.5pF (Typical)
- ✧ Low leakage current
- ✧ Low clamping voltage

MACHANICAL DATA

- ✧ DFN1006 package
- ✧ Flammability Rating: UL 94V-0
- ✧ Packaging: Tape and Reel
- ✧ High temperature soldering guaranteed:
260°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)

PACKAGE OUTLINE



ABSOLUTE MAXIMUM RATING

| Symbol | Parameter | Value | Units |
|-----------|---------------------------------|----------|--------------|
| V_{ESD} | ESD per IEC 61000-4-2 (Contact) | ± 30 | kV |
| | ESD per IEC 61000-4-2 (Air) | ± 30 | |
| P_{PP} | Peak Pulse Power (8/20 μ s) | 240 | 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 |
| | | $I_{PP} = 8\text{A}$, $t_p = 8/20\mu\text{s}$ | | | 30 | V |
| C_J | Junction Capacitance | $V_R = 0\text{V}$, $f = 1\text{MHz}$ | | 0.5 | 0.8 | pF |

RATING AND CHARACTERISTICS CURVES (TEP0521CD)

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

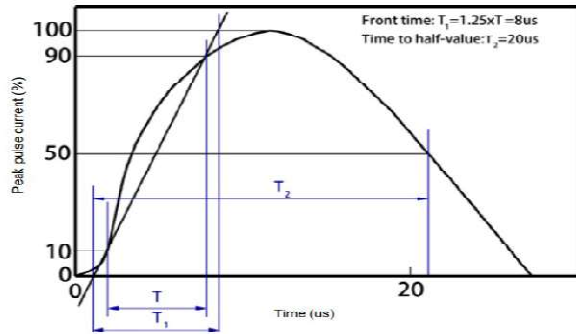


Fig 2 Contact Discharge Current Waveform per IEC 61000-4-2)

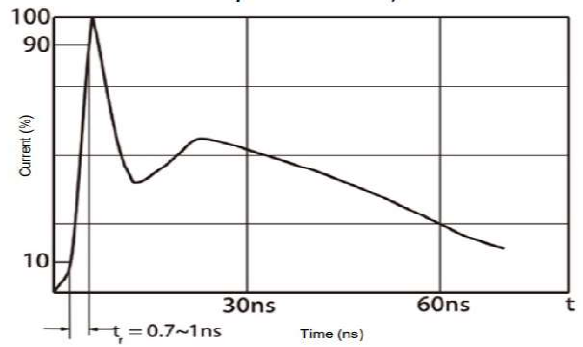


Fig 3 Voltage vs Capacitance

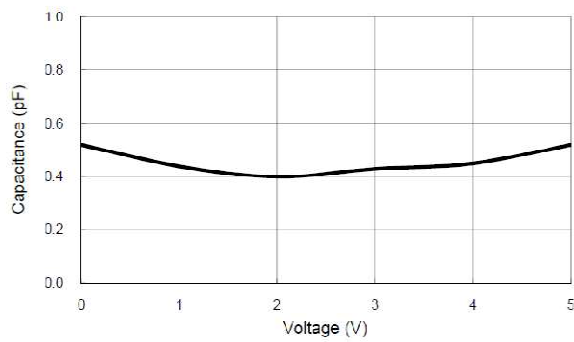
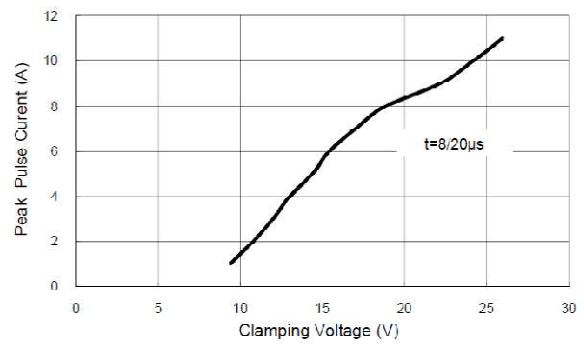
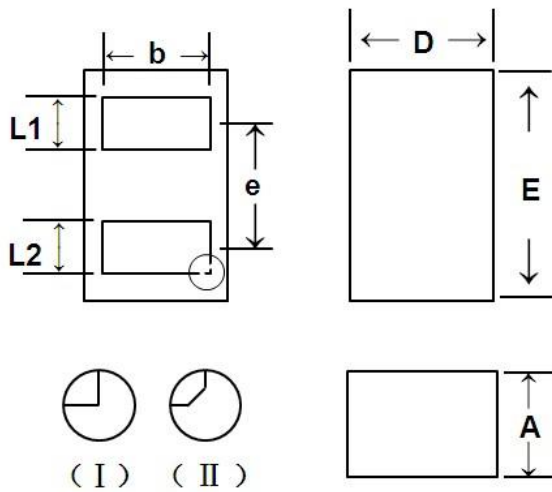


Fig 4 Clamping Voltage vs Peak Pulse Current

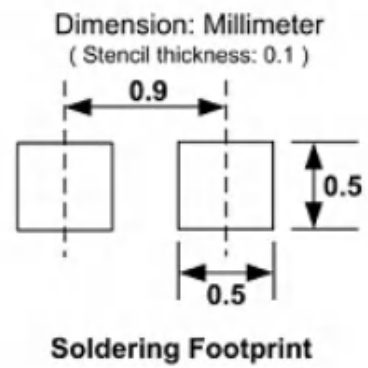


DFN1006 PACKAGE OUTLINE DIMENSIONS



NOTE: ALL DIMENSIONS IN MM

| | 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 |
| A | 0.45 | 0.50 | 0.55 |
| b | 0.45 | 0.50 | 0.55 |
| e | | 0.64BSC | |



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