

Low Capacitance TVS/ESD Protection Diode

DESCRIPTION

TEP0801LC is a low-capacitance Transient Voltage Suppressor (TVS) designed to provide electrostatic discharge (ESD) protection for data, control or power lines. With typical capacitance of 12pF only, TEP0801LC 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.

TEP0801LC uses ultra-small DFN1006 package. Each TEP0801LC 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: TEP0801LC
- ◇ Package: DFN1006
- ◇ Marking: FM (F means Part no; M means the date code which is the assembly month in three years, changing as (1~9, 0, A~Z))
- ◇ Material: Halogen free
- ◇ Packing: Tape & Reel
- ◇ Quantity per reel: 10,000pcs

CIRCUIT DIAGRAM



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*0.6mm*0.4mm)
- ◇ Protects one data, control or power line
- ◇ Low capacitance: 12pF (Typical)
- ◇ Low leakage current: 100nA @ V_{RWM} (Typical)
- ◇ Low clamping voltage
- ◇ Each I/O pin can withstand over 1000 ESD strikes for $\pm 8\text{kV}$ contact discharge

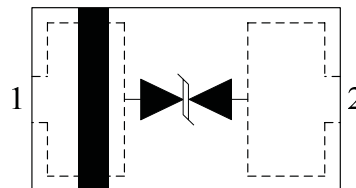
MACHANICAL DATA

- ◇ 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

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

PIN CONFIGURATION



ABSOLUTE MAXIMUM RATING

Symbol	Parameter	Value	Units
V_{ESD}	ESD per IEC 61000-4-2 (Air)	± 30	kV
	ESD per IEC 61000-4-2 (Contact)	± 30	
T_{OPT}	Operating Temperature	-55/+125	$^{\circ}C$
T_{STG}	Storage Temperature	-55/+150	$^{\circ}C$

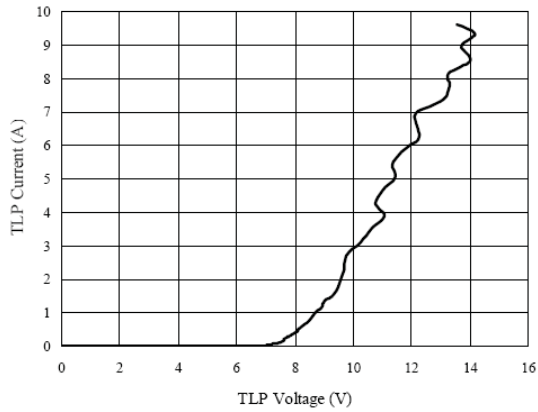
ELECTRICAL CHARACTERISTICS ($T_{amb}=25^{\circ}C$)

Symbol	Parameter	Test Condition	Min	Typ	Max	Units
V_{RWM}	Reverse Working Voltage				5.0	V
V_{BR}	Reverse Breakdown Voltage	$I_T = 1mA$	5.5	6.0	8.0	V
I_R	Reverse Leakage Current	$V_{RWM} = 5V$		0.1	1.0	μA
V_{C1}	Clamping Voltage 1	$I_{PP} = 1A, t_p = 8/20\mu s$			10	V
V_{C2}	Clamping Voltage 2	$I_{PP} = 4A, t_p = 8/20\mu s$			15	V
C_J	Junction Capacitance	$V_R = 0V, f = 1MHz$		12		pF

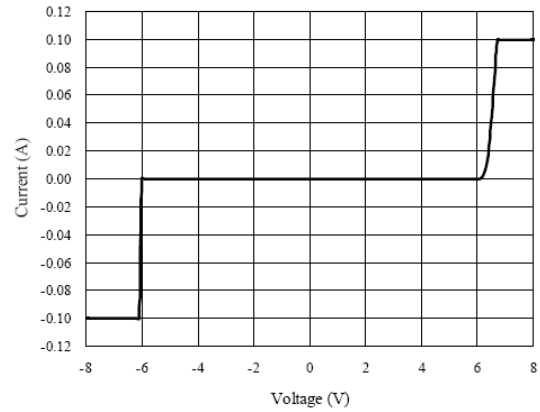
RATING AND CHARACTERISTIC CURVES (TEP0801LC)

ELECTRICAL CHARACTERISTICS CURVE

TLP Measurement of I/O_1 to I/O_2

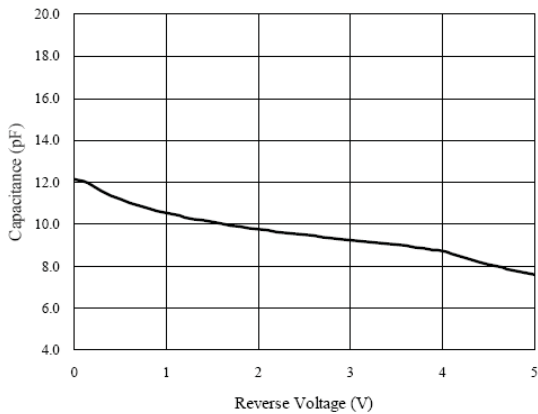


Voltage Sweeping of I/O_1 to I/O_2

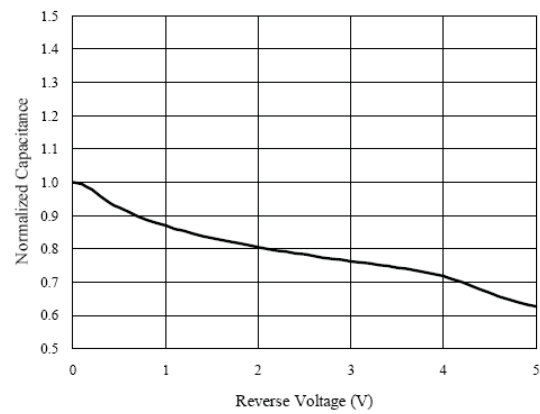


Capacitance vs. Voltage of I/O_1 to I/O_2 (f = 1MHz)

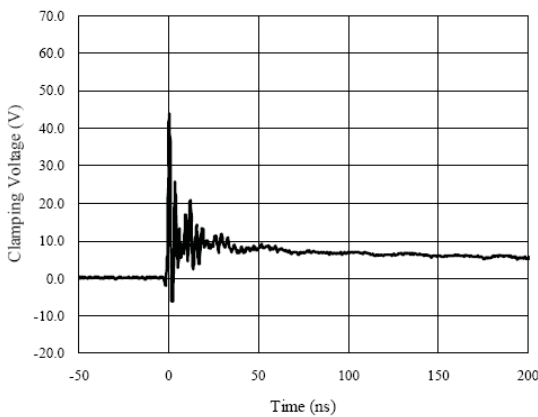
Capacitance vs. Reverse Voltage



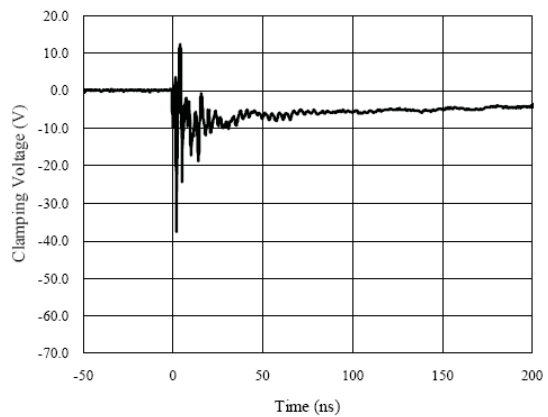
Normalized Capacitance vs. Reverse Voltage



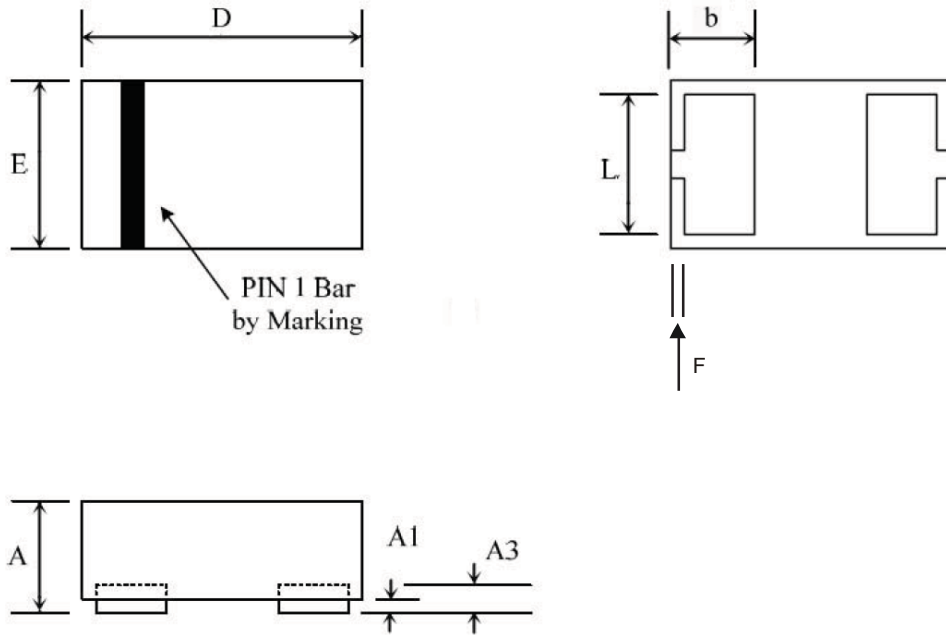
ESD Clamping of I/O_1 to I/O_2 (+8kV Contact per IEC 61000-4-2)



ESD Clamping of I/O_1 to I/O_2 (-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
F	0.050	0.150	0.002	0.006
E	0.550	0.650	0.022	0.026
L	0.450	0.550	0.018	0.022
b	0.250	0.400	0.100	0.016

DISCLAIMER NOTICE

Rectron Inc reserves the right to make changes without notice to any product specification herein, to make corrections, modifications, enhancements or other changes. Rectron Inc or anyone on its behalf assumes no responsibility or liability for any errors or inaccuracies. Data sheet specifications and its information contained are intended to provide a product description only. "Typical" parameters which may be included on RECTRON data sheets and/ or specifications can and do vary in different applications and actual performance may vary over time. Rectron Inc does not assume any liability arising out of the application or use of any product or circuit.

Rectron products are not designed, intended or authorized for use in medical, life-saving implant or other applications intended for life-sustaining or other related applications where a failure or malfunction of component or circuitry may directly or indirectly cause injury or threaten a life without expressed written approval of Rectron Inc. Customers using or selling Rectron components for use in such applications do so at their own risk and shall agree to fully indemnify Rectron Inc and its subsidiaries harmless against all claims, damages and expenditures.