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CMTLDF02C120BFE

Low Capacitance TVS Protection

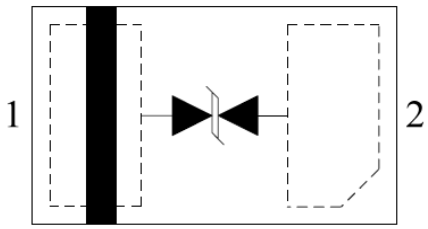
◆ DESCRIPTIONS

CMTLDF02C120BFE 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,CMTLDF02C120BFE 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.

CMTLDF02C120BFE uses ultra-small uDFN-2L package. Each CMTLDF02C120BFE device can protect one data line. It offers system designers flexibility to protect single data line where space is a premium concern.

◆ Circuit Diagram

◆ Pin Configuration



uDFN-2L
(Top View)

◆ FEATURES

1、Transient protection for high-speed data lines
IEC 61000-4-2 (ESD) ±15kV (Air)
±8kV (Contact)
IEC 61000-4-4 (EFT) 40A (5/50 ns)
Cable Discharge Event (CDE)
2、Package optimized for high-speed lines
3、Ultra-small package (1.0mm×0.6mm×0.55mm)
4、Protects one data, control or power line
5、Low capacitance: 12pF (Typical)
6、Low leakage current: 0.1μA @ VRWM (Typical)
7、Low clamping voltage
8、Each I/O pin can withstand over 1000 ESD strikes for ±8kV contact discharge

◆ Applications

1、Portable Electronics
2、Desktops, Servers and Notebooks
3、Cellular Phones
4、MP3 Ports
5、Digital Camera Ports
6、Subscriber Identity Module (SIM) card

◆ Mechanical Characteristics

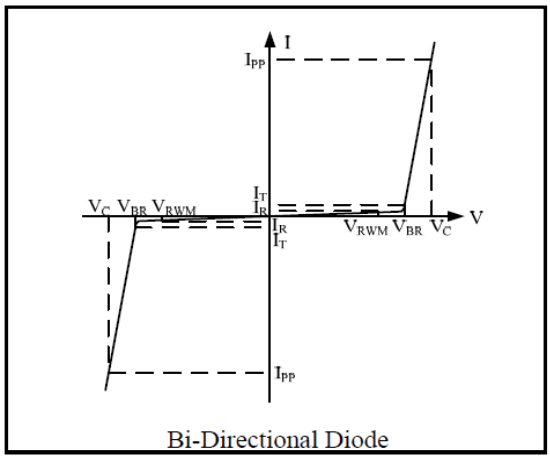
1、uDFN-2L package
2、Flammability Rating: UL 94V-0
3、Marking: Part number, date code
4、Packaging: Tape and Reel

◆ Absolute Maximum Rating

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

◆ Electrical Characteristics (T = 25℃)

Symbol	Parameter
V_{RWM}	Nominal Reverse Working Voltage
I_R	Reverse Leakage Current @ V_{RWM}
V_{BR}	Reverse Breakdown Voltage @ I_T
I_T	Test Current for Reverse Breakdown
V_C	Clamping Voltage @ I_{PP}
I_{PP}	Peak Pulse Current
C_{ESD}	Parasitic Capacitance
V_R	Reverse Voltage
f	Small Signal Frequency

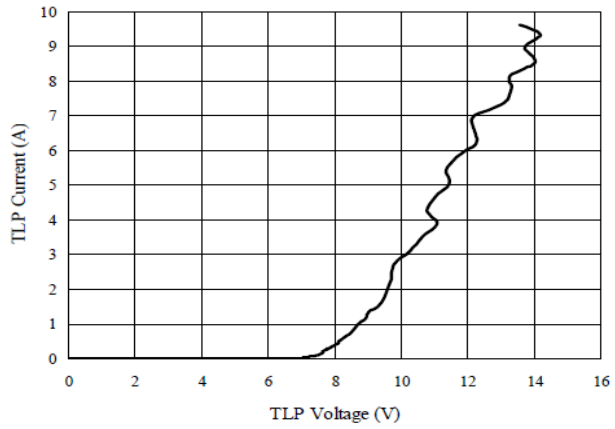


Bi-Directional Diode

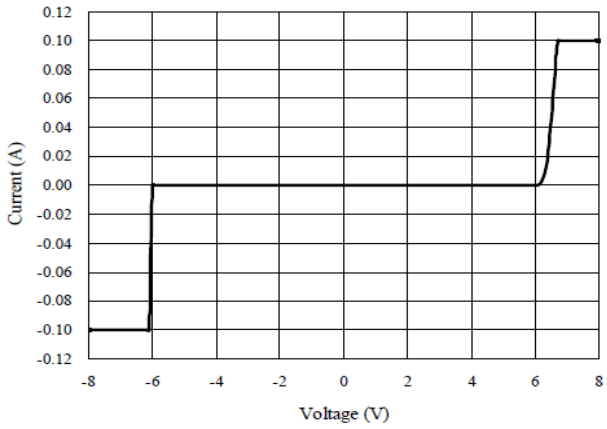
Symbol	Test Condition	Minimum	Typical	Maximum	Units
V_{RWM}		-	-	5.0	V
I_R	V_{RWM} = 5V, T = 25℃ Between I/O and I/O	-	0.1	1.0	μA
V_{BR}	I_T = 1mA Between I/O and I/O	5.5	6.0	8.0	V
V_C	I_{PP} = 1A, tp = 8/20μs Between I/O and I/O	-	-	10	V
V_C	I_{PP} = 2A, tp = 8/20μs Between I/O and I/O	-	-	15	V
C_{ESD}	V_R = 0V, f = 1MHz Between I/O and I/O	-	12	-	pF

◆ TYPICAL ELECTRICAL CHARACTERISTICS CURVE

TLP Measurement of I/O_1 to I/O_2

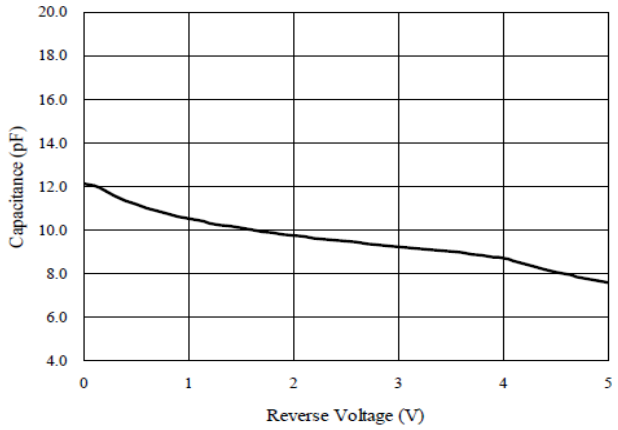


Voltage Sweeping of I/O_1 to I/O_2

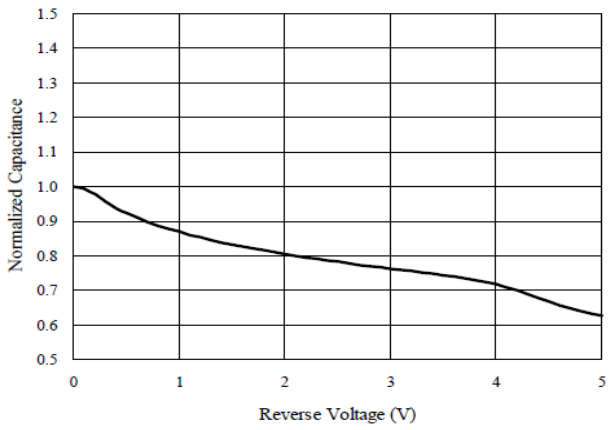


Capacitance vs. Voltage of I/O_1 to I/O_2 (f = 1MHz)

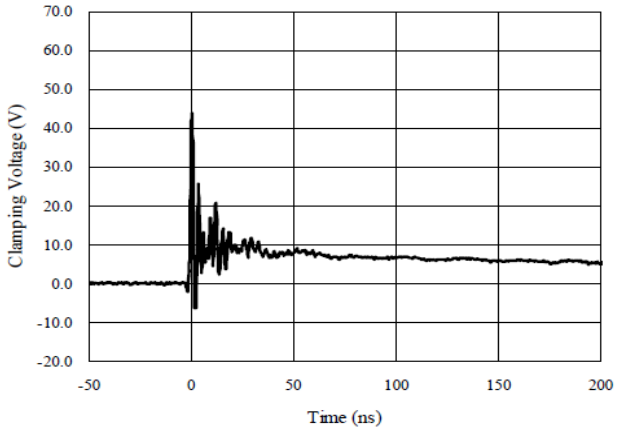
Capacitance *vs.* Reverse Voltage



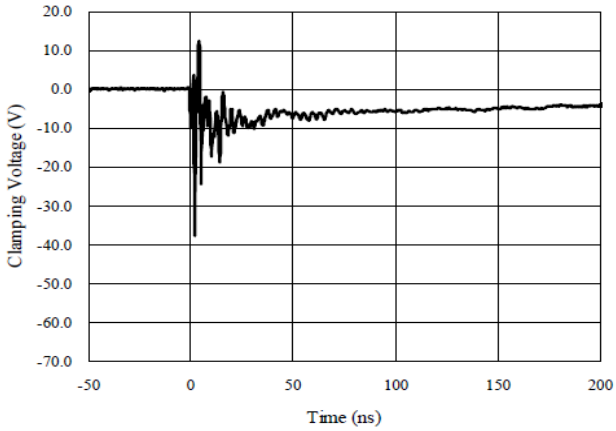
Normalized Capacitance *vs.* Reverse Voltage



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)

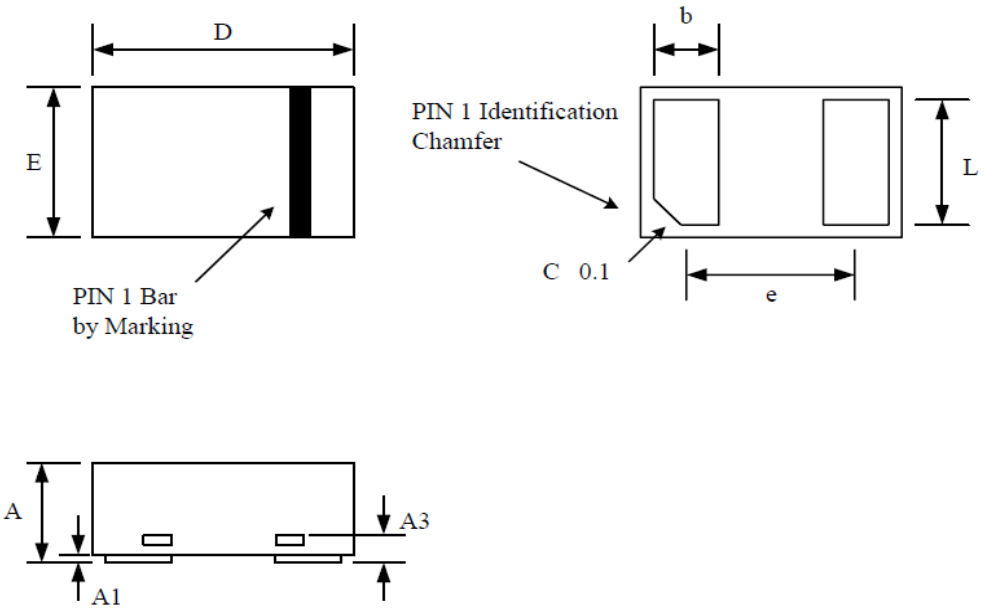


◆ PACKAGE OUTLINE

1、uDFN-2L package

2、2 leads, very small package

3、MSL - 1



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
b	0.200	0.300	0.008	0.012
e	0.650 BSC		0.026 BSC	
L	0.450	0.550	0.018	0.022