



Features

- ❑ Transient protection for high-speed data lines
 - IEC 61000-4-2 (ESD) $\pm 30\text{kV}$ (Air)
 - $\pm 30\text{kV}$ (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×0.55mm)
- ❑ Protects one data, control or power line
- ❑ Low capacitance: 15pF (Typical)
- ❑ Low leakage current: $0.1\mu\text{A}$ @ V_{RWM} (Maximum)
- ❑ Low clamping voltage
- ❑ Each I/O pin can withstand over 1000 ESD strikes for $\pm 8\text{kV}$ contact discharge
- ❑ ROHS compliant

Description

TT0701MB 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 15pF only, TT0701MB 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.

TT0701MB uses ultra-small uDFN-2L package. Each TT0701MB device can protect one data line. It offers system designers flexibility to protect single data line where space is a premium concern.

Applications

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

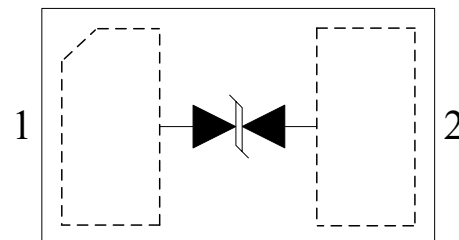
Mechanical Characteristics

- ❑ uDFN-2L package
- ❑ Flammability Rating: UL 94V-0
- ❑ Packaging: Tape and Reel

Circuit Diagram



Pin Configuration



uDFN-2L
(Top View)

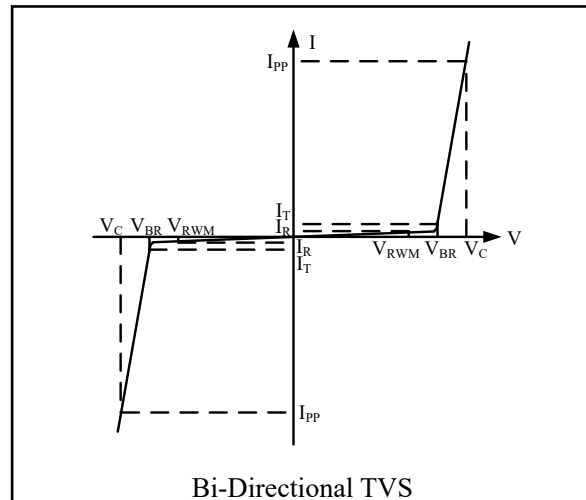


Absolute Maximum Rating

Symbol	Parameter	Value	Units
P_{PP}	Peak Pulse Power (8/20 μ s)	72	W
I_{PP}	Peak Pulse Current($t_p=8/20\mu$ s)	6	A
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	$^{\circ}$ C
T_{STG}	Storage Temperature	-55/+150	$^{\circ}$ C

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

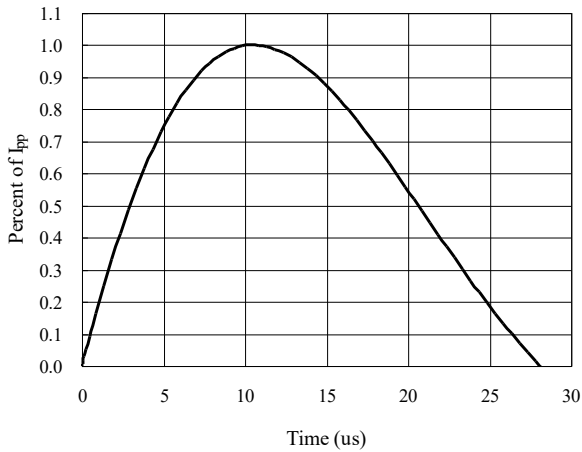
Symbol	Parameter
V_{RWM}	Nominal Reverse Working Voltage
I_R	Reverse Leakage Current @ V_{RWM}
V_{BR}	Reverse Breakdown Voltage @ I_T
I_T	Test Current for Reverse Breakdown
V_C	Clamping Voltage @ I_{PP}
I_{PP}	Maximum Peak Pulse Current
C_{ESD}	Parasitic Capacitance
V_R	Reverse Voltage
f	Small Signal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



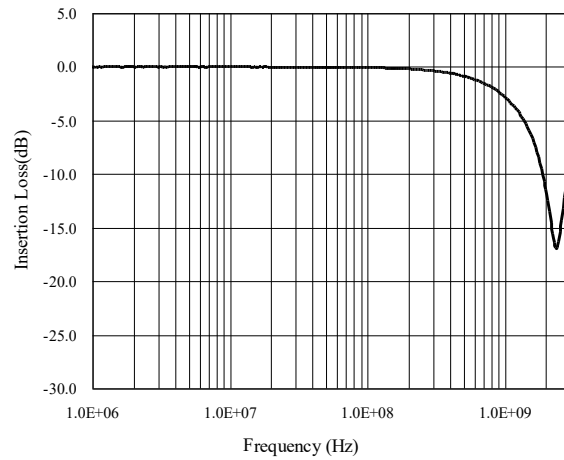
Symbol	Test Condition	Minimum	Typical	Maximum	Units
V_{RWM}				7.0	V
I_R	$V_{RWM} = 7V, T = 25^{\circ}C$ Between I/O_1 and I/O_2			0.1	μ A
V_{BR}	$I_T = 1mA$ Between I/O_1 and I/O_2	7.6		9.0	V
V_C	$I_{PP} = 1A, t_p = 8/20\mu$ s Between I/O_1 and I/O_2		9.0	12	V
V_C	$I_{PP} = 6A, t_p = 8/20\mu$ s Between I/O_1 and I/O_2		12	16	V
C_{ESD}	$V_R = 0V, f = 1MHz$ Between I/O_1 and I/O_2		15		pF



8/20 μ s Pulse Waveform

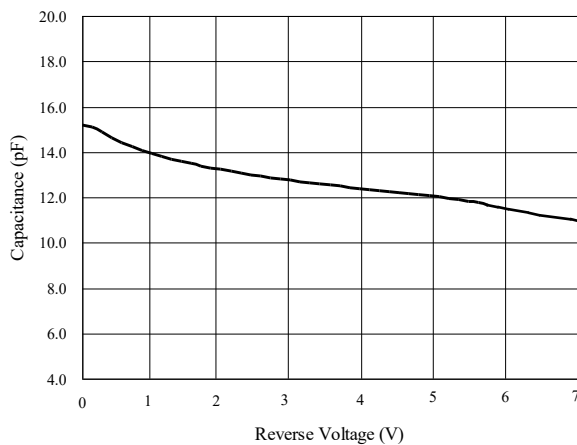


Insertion Loss S21

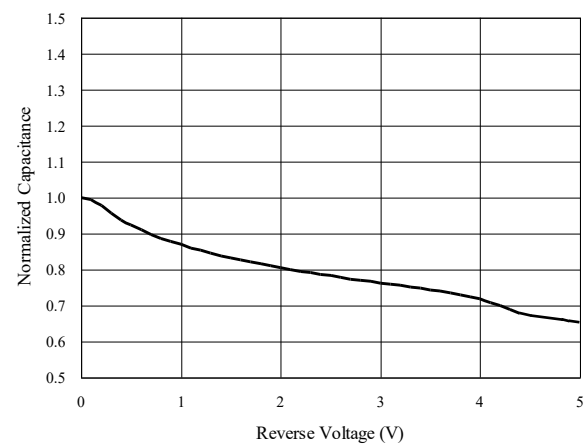


Capacitance vs. Voltage of I/O_1 to I/O_2 (f = 1MHz)

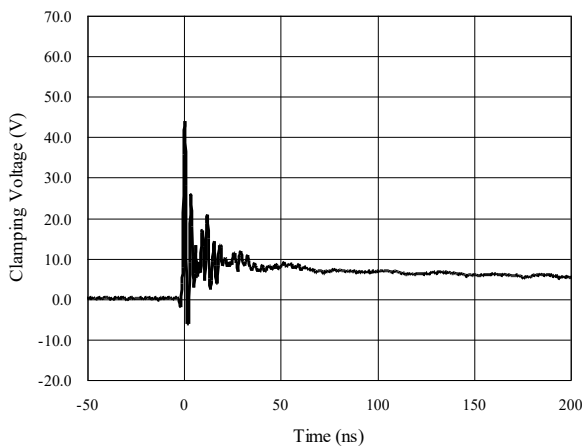
Capacitance vs. Reverse Voltage



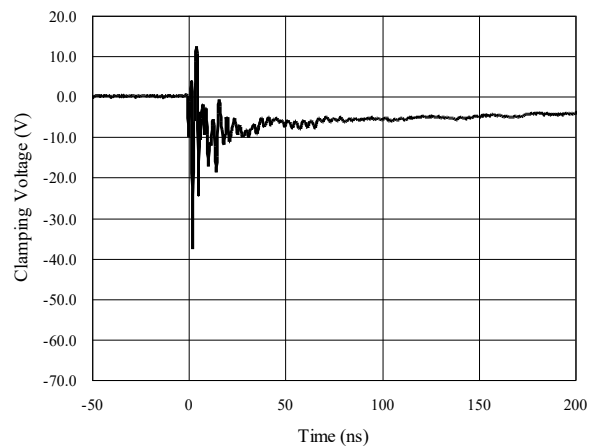
Normalized Capacitance vs. Reverse Voltage



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



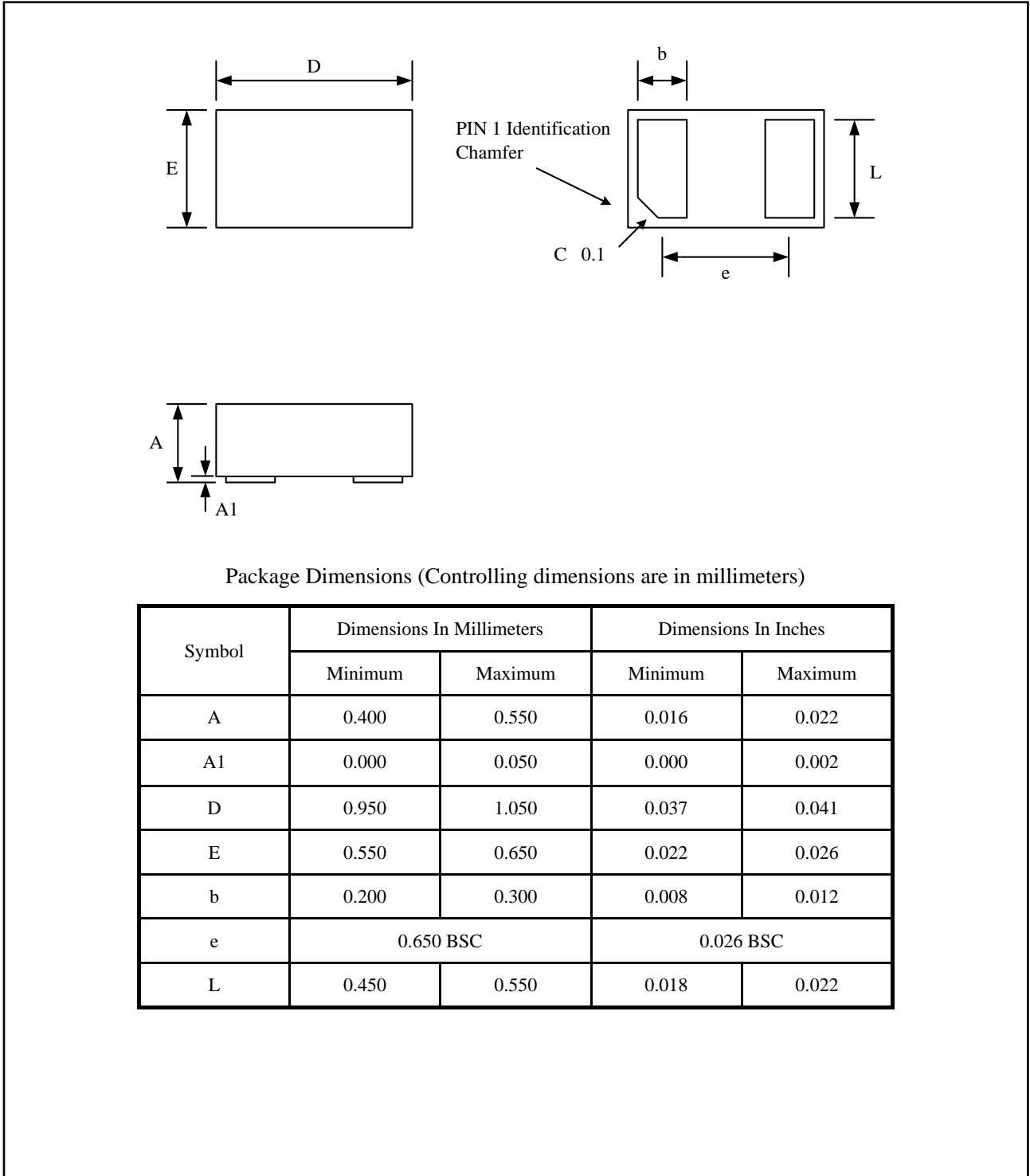
ESD Clamping of I/O_1 to I/O_2 (-8kV Contact per IEC 61000-4-2)





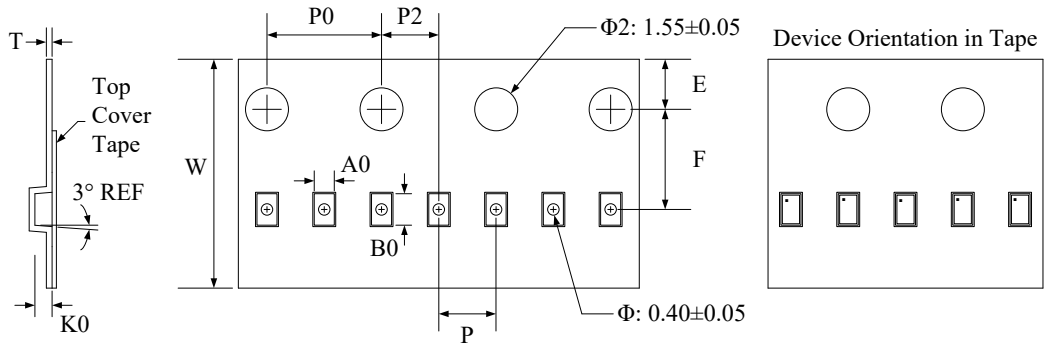
Package Outline

- DFN1006-2L Package
- MSL-1

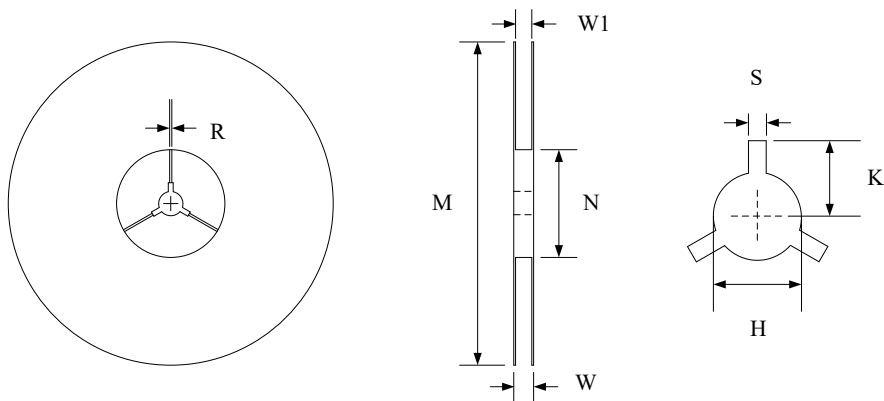




Tape and Reel Specification



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



Symbol	Reel Size	M	N	W	W1	H	S	K	R
Dimensions (mm)	Φ178	178.0±1.0	60.0±1.0	11.5±0.5	9.0±0.5	13.0±0.5	2.0±0.1	11.0±0.2	1.0±0.05



Marking Codes



Note:

(1) "PD" is part number, fixed

Ordering Information

Part Number	Working Voltage	Quantity Per Reel	Reel Size
TT0701MB	7V	10,000	7 Inch