Features

- Transient protection for high-speed data lines
  - IEC 61000-4-2 (ESD) ±25kV (Air)
  - ±17kV (Contact)
  - IEC 61000-4-4 (EFT) 40A (5/50 ns)
  - Cable Discharge Event (CDE)
- Package optimized for high-speed lines
- Ultra-small package (0.6mm×0.3mm×0.3mm)
- Protects one data, control or power line
- Low capacitance: 10 pF(Maximum)
- Low leakage current: 0.1μA @ V_{RWM} (Typical)
- Low clamping voltage
- Each I/O pin can withstand over 1000 ESD strikes for ±8kV contact discharge
- ROHS compliant

Description

TT1201MAX is a low-capacitance Transient Voltage Suppressor (TVS) designed to provide electrostatic discharge (ESD) protection for high-speed data interfaces. With maximum capacitance of 10 pF, TT1201MAX 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.

TT1201MAX uses ultra-small DFN0603 package. Each TT1201MAX device can protect one data line. It offers system designers flexibility to protect single data line where space is a premium concern.

Applications

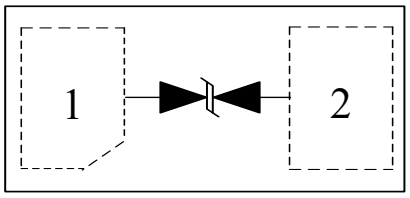
- Serial ATA
- PCI Express
- Desktops, Servers and Notebooks
- Cellular Phones
- MDDI Ports
- Display Ports
- Digital Visual Interfaces (DVI)

Mechanical Characteristics

- DFN0603-2L package
- Flammability Rating: UL 94V-0
- Marking: Part number
- Packaging: Tape and Reel

Circuit Diagram

Pin Configuration



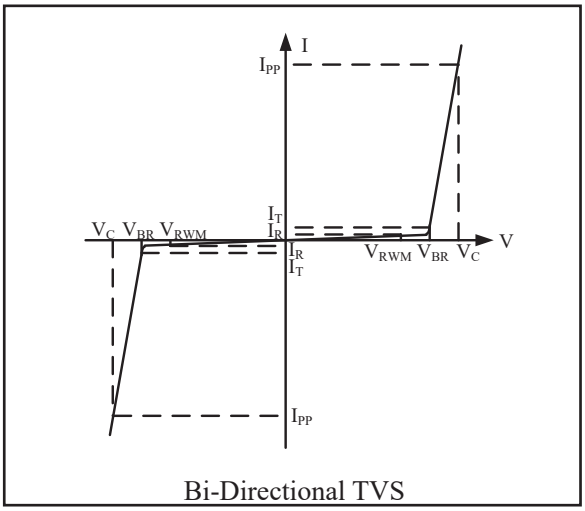
DFN0603
(Top View)

Absolute Maximum Rating

Symbol	Parameter	Value	Units
V_{ESD}	ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact)	±25 ±17	kV
T_{OPT}	Operating Temperature	-55/+125	″C
T_{STG}	Storage Temperature	-55/+150	″C

Electrical Characteristics (T = 25″C)

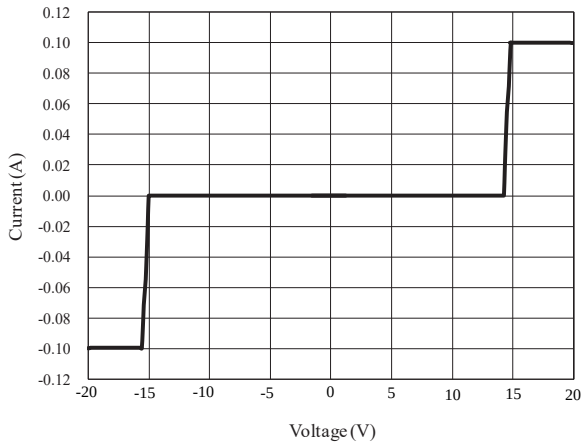
Symbol	Parameter
V_{RWM}	Nominal Reverse Working Voltage
I_R	Reverse Leakage Current @ V_{RWM}
V_{BR}	Reverse Breakdown Voltage @ I_T
I_T	Test Current for Reverse Breakdown
V_C	Clamping Voltage @ I_{PP}
I_{PP}	Peak Pulse Current
C_{ESD}	Parasitic Capacitance
V_R	Reverse Voltage
f	Small Signal Frequency



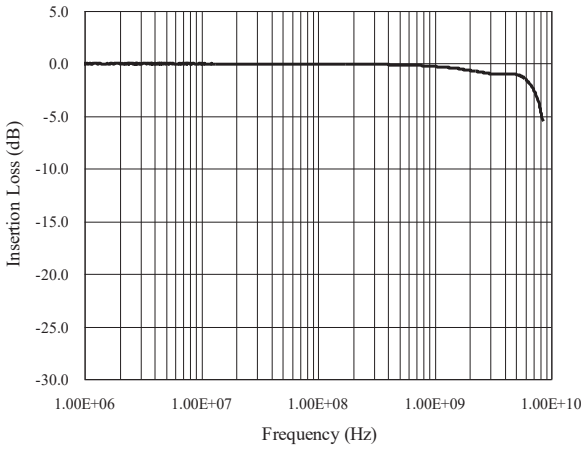
Bi-Directional TVS

Symbol	Test Condition	Minimum	Typical	Maximum	Units
V_{RWM}				12.0	V
I_R	V_{RWM} = 12V, T = 25″C Between I/O and I/O		0.1	0.5	uA
V_{BR}	I_T = 1mA Between I/O and I/O	13.3			V
V_C	I_{PP} = 1A, t_p = 8/20μs Between I/O and I/O		18	22	V
V_C	I_{PP} = 8.0A, t_p=100ns(1)		21.5		V
	I_{PP} = 16.0A, t_p=100ns(1)		26.5		V
R_{dyn}	I_{PP} = 12.0A, t_p = 100ns(1)		0.63		Ω
C_{ESD}	V_R = 0V, f = 1MHz Between I/O and I/O		5		pF

Voltage Sweeping of I/O to I/O

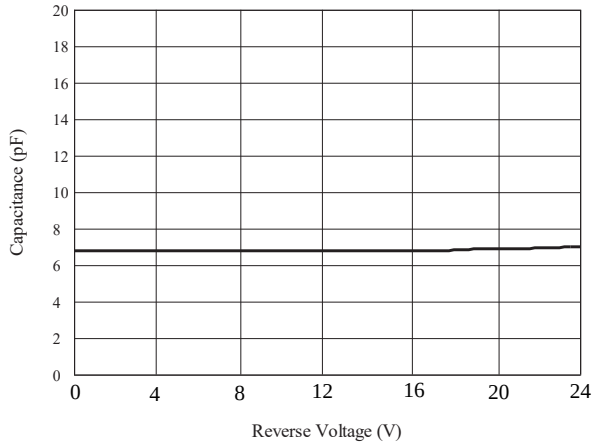


Insertion Loss S21 of I/O to I/O

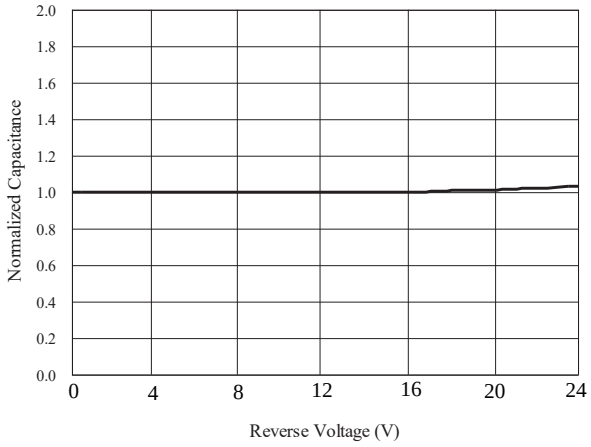


Capacitance vs. Voltage of I/O to I/O (f = 1MHz)

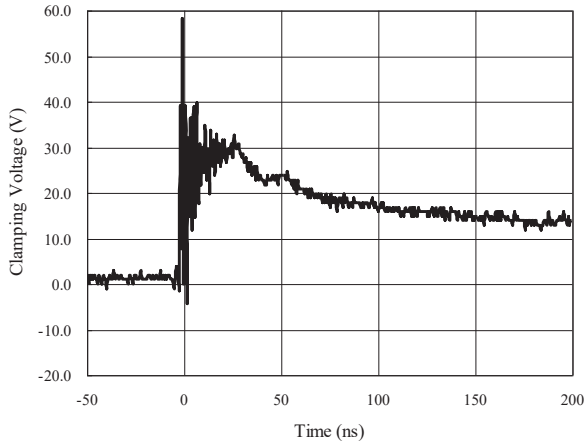
Capacitance *vs.* Reverse Voltage



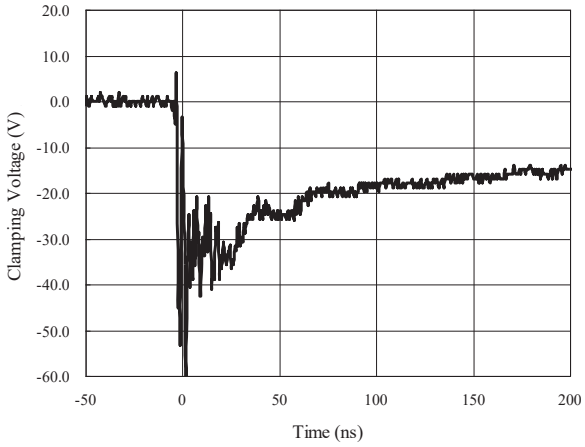
Normalized Capacitance *vs.* Reverse Voltage



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

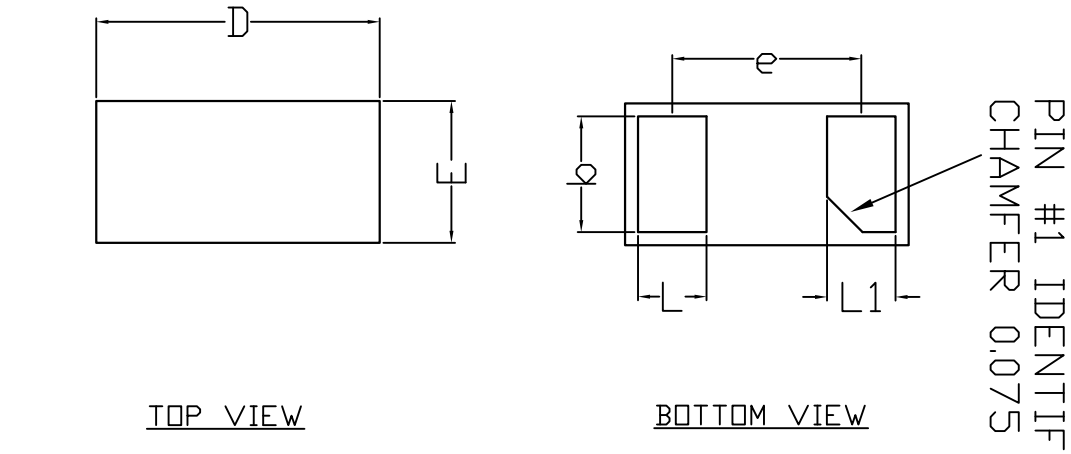


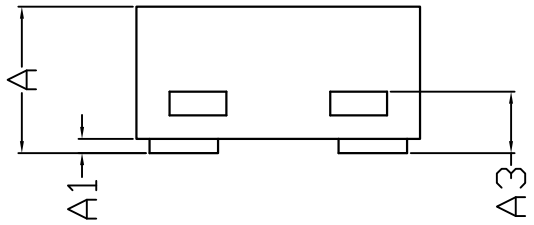
ESD Clamping of I/O to I/O (-8kV Contact per IEC 61000-4-2)



Package Outline

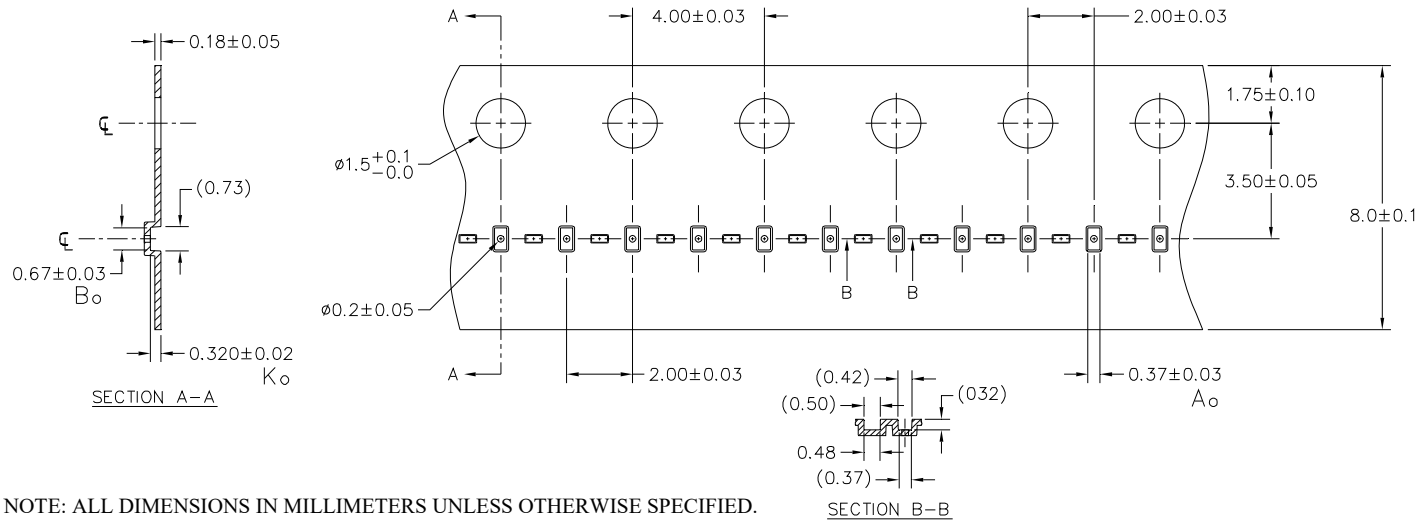
- DFN0603 package
- 2 leads
- MSL-1





COMMON DIMENSIONS(MM)			
PKG.	X3-EXTREME THIN		
REF.	MIN.	NOM.	MAX
A	>0.23	-	0.33
A1	0.00	-	0.05
A3	0.102REF.		
D	0.55	0.60	0.65
E	0.25	0.30	0.35
b	0.215	0.245	0.275
L	0.115	0.145	0.175
L1	0.115	0.145	0.175
e	0.40BSC		

Carries Tape Specification



NOTE: ALL DIMENSIONS IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.

A0	B0	K0
0.37 +/-0.03	0.67 +/-0.03	0.32 +/-0.02 mm

Note: All dimensions in mm unless otherwise specified

Marking Codes

BM

Ordering Information

Part Number	Working Voltage	Quantity Per Reel	Reel Size
TT1201MAX	12V	10,000	7 Inch

Note:
(1) "BM" is part number.