

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 (0.6mm×0.3mm×0.3mm)
- ❑ Protects one data, control or power line
- ❑ Low capacitance: 15pF (Maximum)
- ❑ Low leakage current: 0.01μA @ V_{RWM} (Typical)
- ❑ Low clamping voltage
- ❑ Each I/O pin can withstand over 1000 ESD strikes for $\pm 8\text{kV}$ contact discharge
- ❑ Green Part

Description

TT0501NA is a low-capacitance Transient Voltage Suppressor (TVS) designed to provide electrostatic discharge (ESD) protection for high-speed data interfaces. With maximum capacitance of 15pF only, TT0501NA 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.

TT0501NA uses ultra-small DFN0603 package. Each TT0501NA device can protect one data line . It offers system designers flexibility to protect single data line where space is a premium concern.

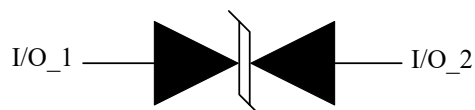
Applications

- ☐ Portable Electronics
- ☐ Desktops, Servers and Notebooks
- ☐ Cellular Phones
- ☐ MP3 Ports
- ☐ Digital Camera Ports

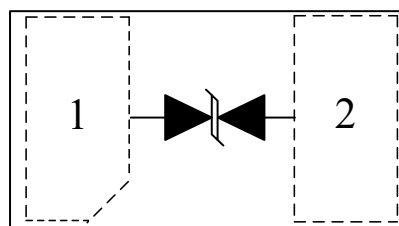
Mechanical Characteristics

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

Circuit Diagram



Pin Configuration



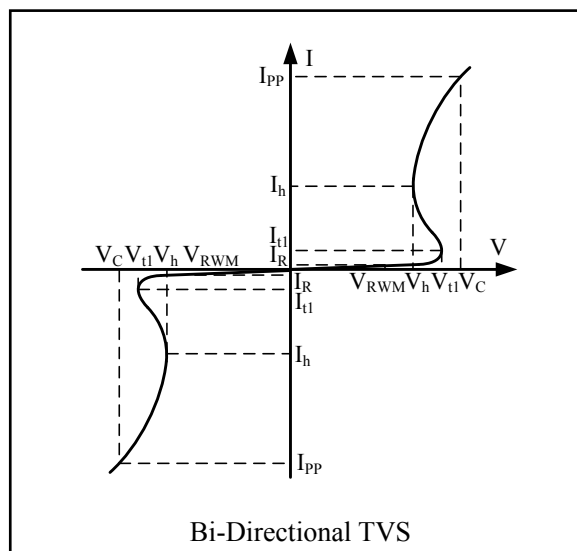
DFN0603-2L
(Top View)

Absolute Maximum Rating

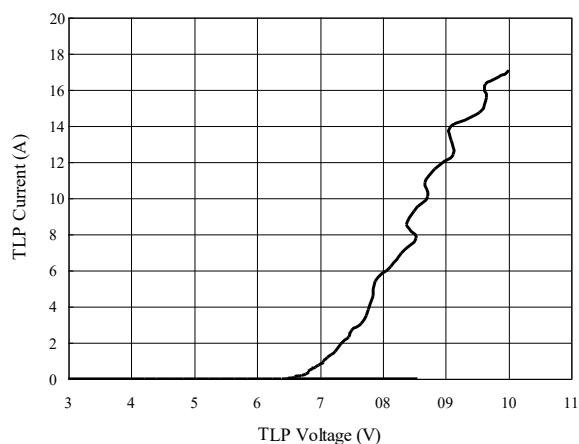
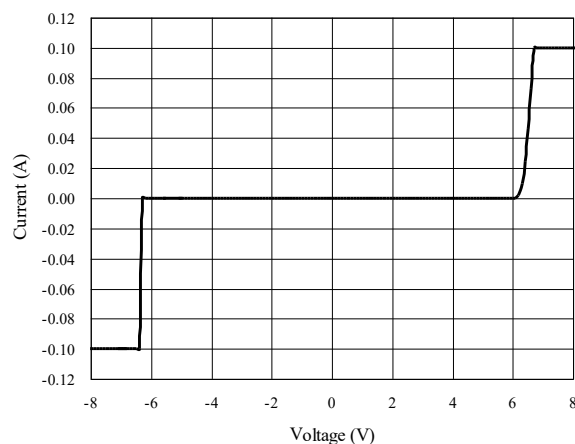
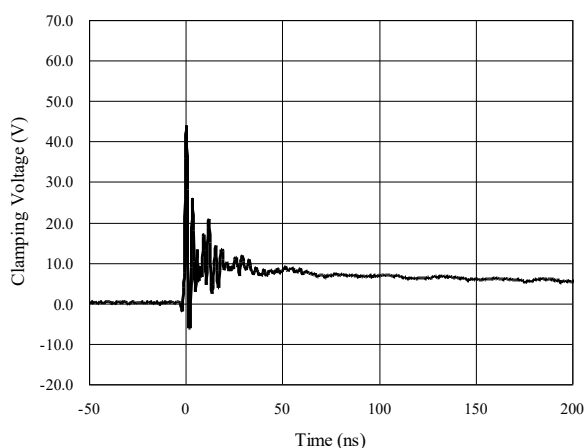
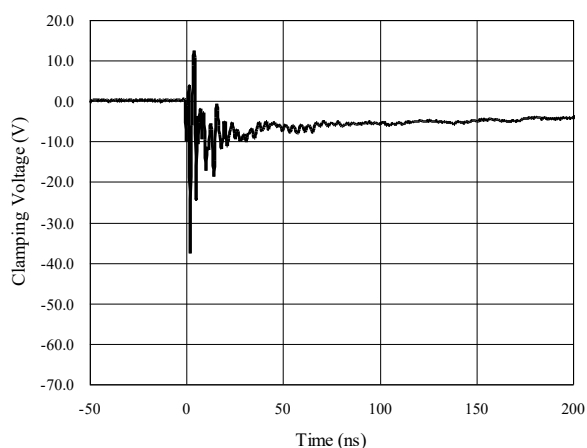
Symbol	Parameter	Value	Units
P_{PP}	Peak Pulse Power (8/20 μ s)	60	W
I_{PP}	Peak Pulse Current($t_p=8/20\mu s$)	8	A
V_{ESD}	ESD per IEC 61000-4-2(Air) ESD per IEC 61000-4-2 (Contact)	± 30 ± 30	kV
T_{OPT}	Operating Temperature	-55/+125	°C
T_{STG}	Storage Temperature	-55/+150	°C

Electrical Characteristics (T = 25°C)

Symbol	Parameter
V_{RWM}	Nominal Reverse Working Voltage
I_R	Reverse Leakage Current @ V_{RWM}
V_{tl}	Trigger Voltage
I_{tl}	Trigger Current @ V_{tl}
V_h	Holding Voltage
I_h	Holding Current @ V_h
V_C	Clamping Voltage @ I_{PP}
V_{CR}	Reverse Clamping Voltage @ I_{PP}
I_{PP}	Maximum Peak Pulse Current
C_{ESD}	Parasitic Capacitance

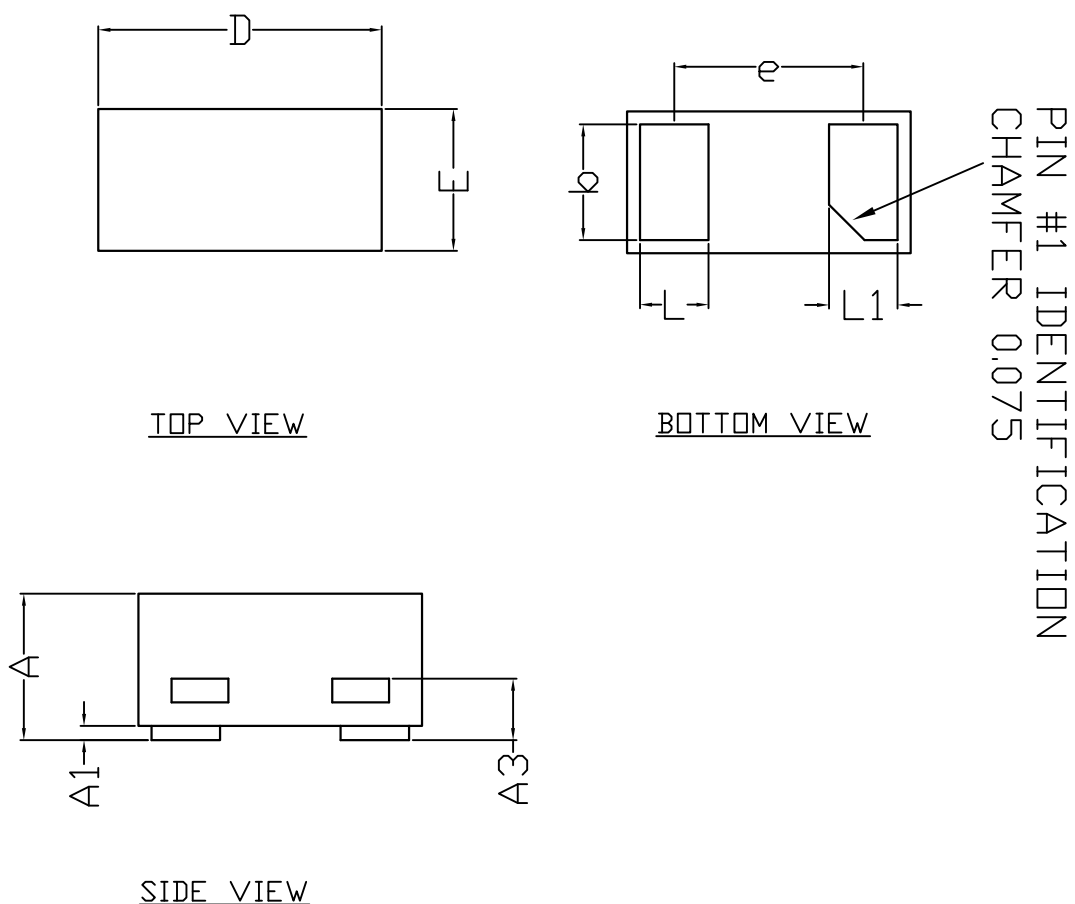


Symbol	Test Condition	Minimum	Typical	Maximum	Units
V_{RWM}				5.0	V
I_R	$V_{RWM} = 5.0V, T = 25^\circ C$		0.01	0.1	μA
V_{tl}	$I_{tl} = 10nA$	6.0		7.0	V
V_h	$I_h = 50mA$	5.5			V
V_C	$I_{PP} = 1A, t_p = 8/20\mu s$		6.0		V
V_C	$I_{PP} = 8A, t_p = 8/20\mu s$			8.5	V
C_{ESD}	$V_R = 0V, f = 1MHz$			18	pF

TLP Measurement of I/O_1 to I/O_2

Voltage Sweeping of I/O_1 to I/O_2

**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)**


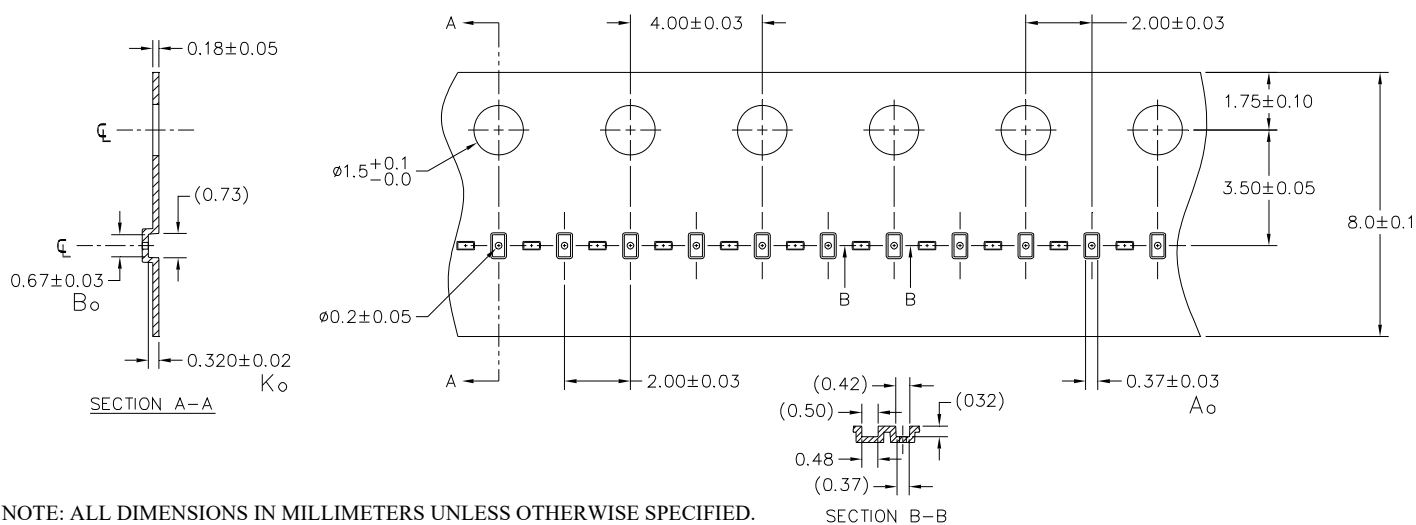
Package Outline

- ☐ 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



Ordering Information

Part Number	Qty per Reel	Reel Size
TT0501NA	10, 000	7 inch

Note:

- (1) “5N” is part number, fixed