

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: 12pF (Typical)
- ❑ Low leakage current: $0.1\mu\text{A}$ @ V_{RWM} (Typical)
- ❑ Low clamping voltage
- ❑ Each I/O pin can withstand over 1000 ESD strikes for $\pm 8\text{kV}$ contact discharge
- ❑ ROHS compliant

Description

TT0501MAX is a low-capacitance Transient Voltage Suppressor (TVS) designed to provide electrostatic discharge (ESD) protection for high-speed data interfaces. With typical capacitance of 12pF only, TT0501MA 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.

TT0501MAX uses ultra-small DFN0603 package. Each TT0501MA 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

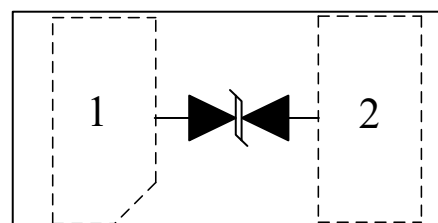
Mechanical Characteristics

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

Circuit Diagram



Pin Configuration



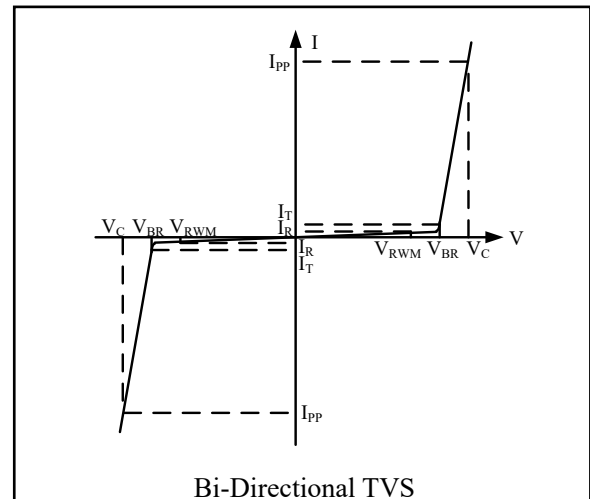
DFN0603
(Top View)

Absolute Maximum Rating

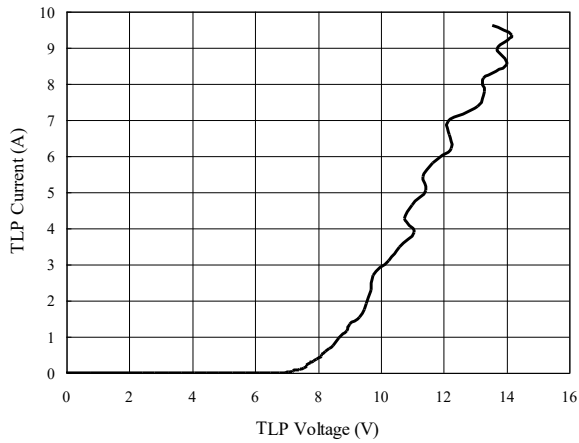
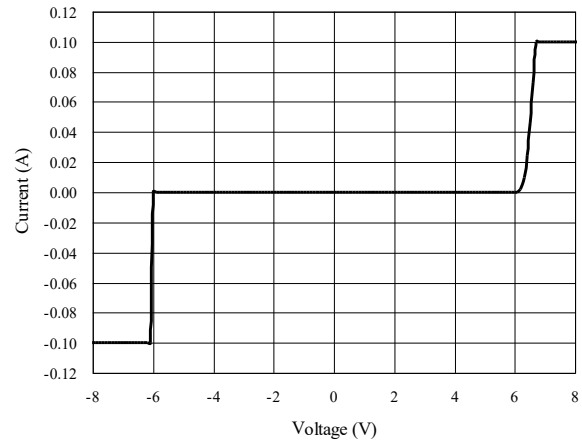
Symbol	Parameter	Value	Units
I_{PP}	Peak Pulse Current (8/20 μ s)	4	A
P_{PK}	Peak Pulse Power (8/20 μ s)	60	Watts
V_{ESD}	ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact)	± 30 ± 30	kV
T_{OPT}	Operating Temperature	-55 to +150	$^{\circ}$ C
T_{STG}	Storage Temperature	-55 to +150	$^{\circ}$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

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

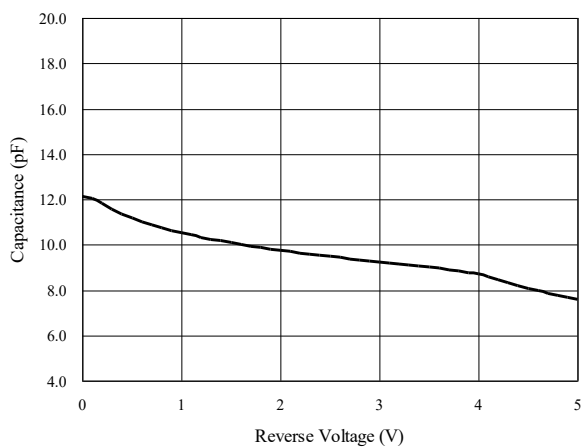
Symbol	Parameter
V_{RWM}	Nominal Reverse Working Voltage
I_R	Reverse Leakage Current @ V_{RWM}
V_{BR}	Reverse Breakdown Voltage @ I_T
I_T	Test Current for Reverse Breakdown
V_C	Clamping Voltage @ I_{PP}
I_{PP}	Maximum Peak Pulse Current
C_{ESD}	Parasitic Capacitance
V_R	Reverse Voltage
f	Small Signal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



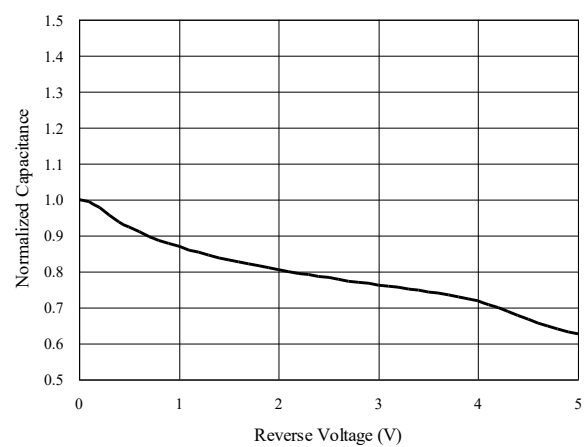
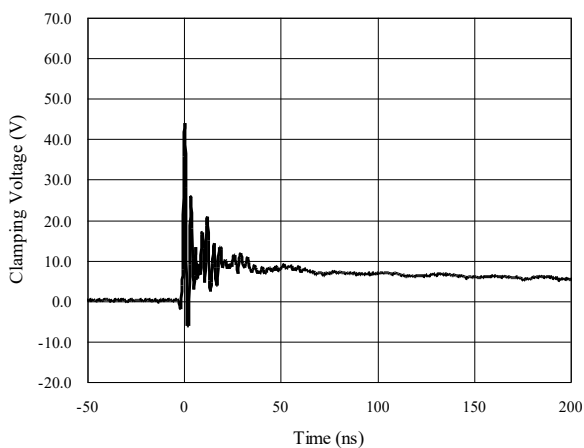
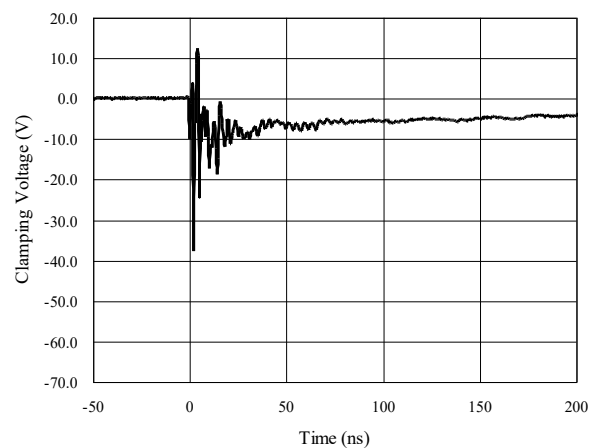
Symbol	Test Condition	Minimum	Typical	Maximum	Units
V_{RWM}				5.0	V
I_R	$V_{RWM} = 5V, T = 25^{\circ}C$ Between I/O_1 and I/O_2		0.1	1.0	μ A
V_{BR}	$I_T = 1mA$ Between I/O_1 and I/O_2	5.5	6.0	8.0	V
V_C	$I_{PP} = 1A, t_p = 8/20\mu s$ Between I/O_1 and I/O_2			10	V
V_C	$I_{PP} = 4A, t_p = 8/20\mu s$ Between I/O_1 and I/O_2			15	V
C_{ESD}	$V_R = 0V, f = 1MHz$ Between I/O_1 and I/O_2	10	12	15	pF

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

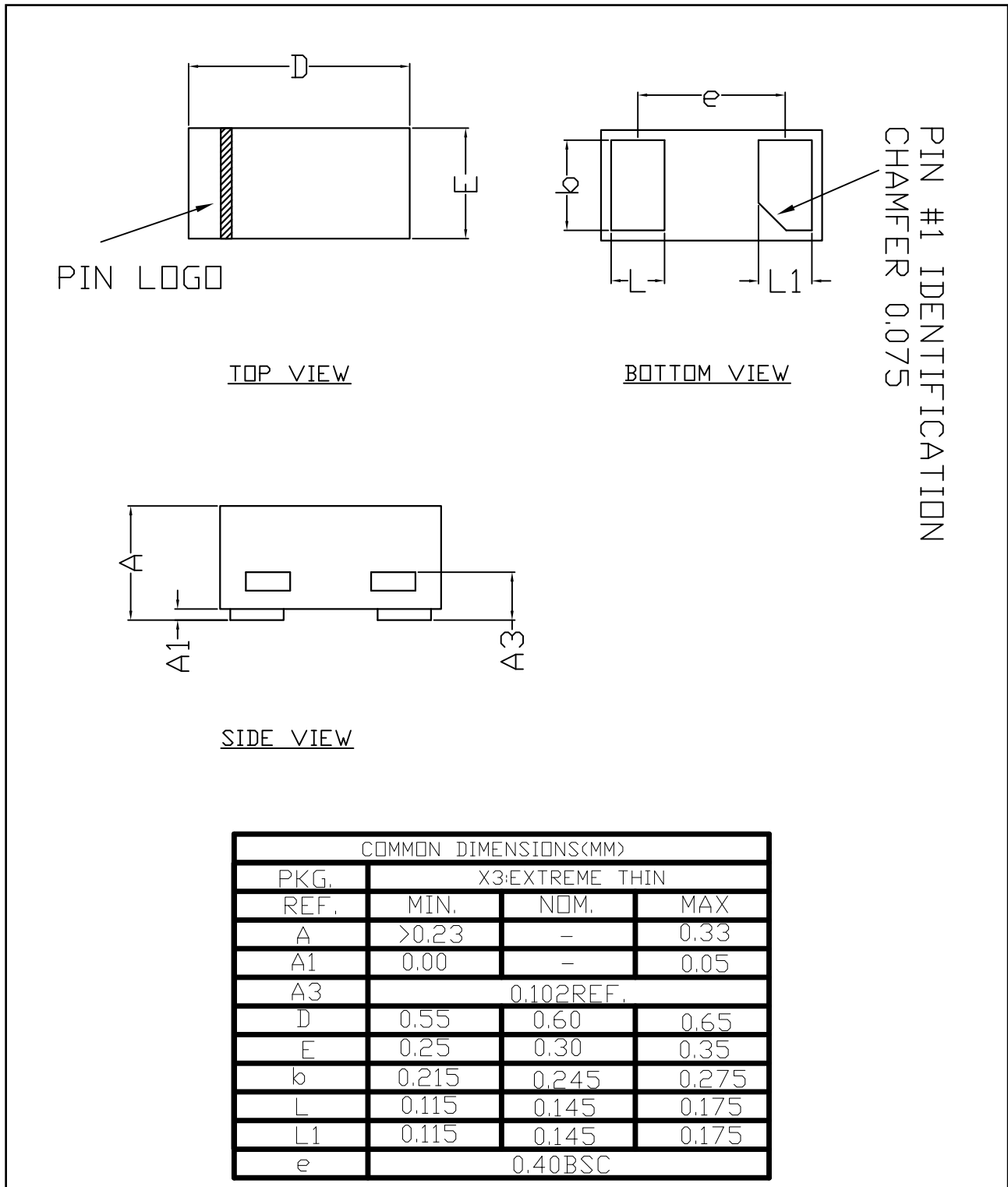


Normalized Capacitance vs. Reverse Voltage

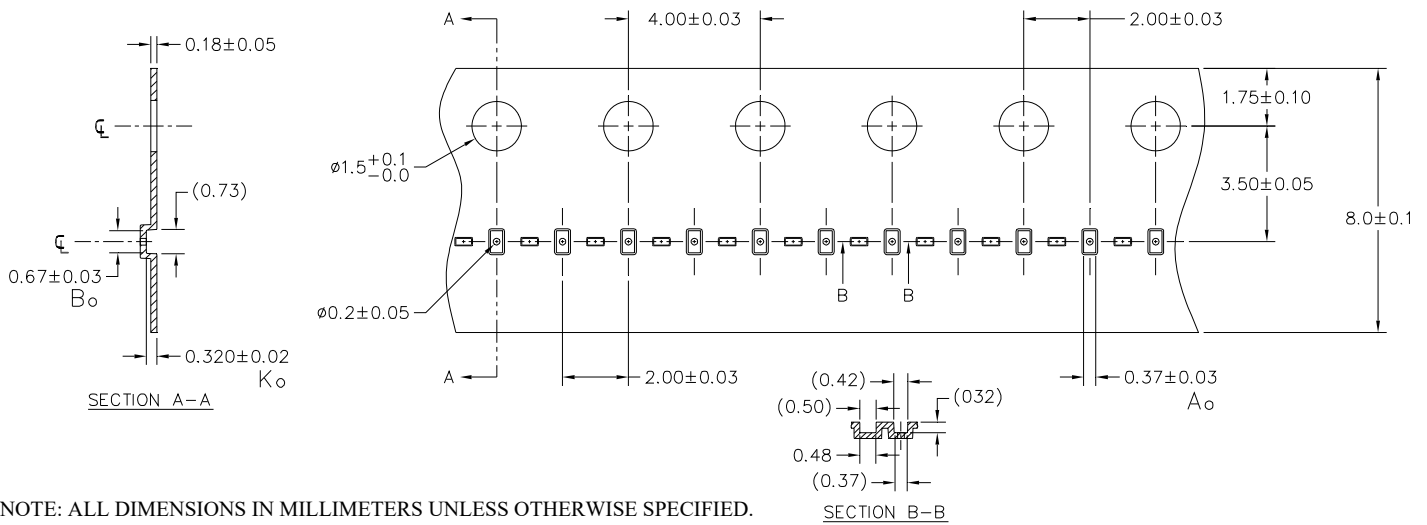

**ESD Clamping of I/O_1 to I/O_2
(+8kV Contact per IEC 61000-4-2)**

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


Package Outline

- DFN0603 package
- 2 leads
- MSL-1



Carries Tape Specification

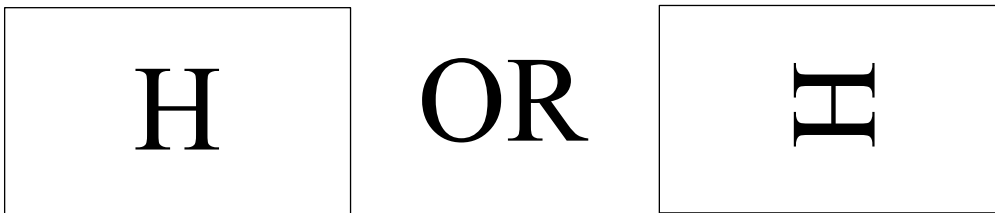


NOTE: ALL DIMENSIONS IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.

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



Note:

- (1) "H" is part number, fixed

Ordering Information

Part Number	Qty per Reel	Reel Size
TT0501MAX	10,000	7 inch

TT0501MAX are trademarks of TITAN MICRO Corporation.

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for [ESD Suppressors / TVS Diodes](#) category:

Click to view products by [Shenzhen JingYang](#) manufacturer:

Other Similar products are found below :

[60KS200C](#) [D18V0L1B2LP-7B](#) [D5V0F4U5P5-7](#) [NTE4902](#) [P4KE27CA](#) [P6KE11CA](#) [P6KE8.2A](#) [SA60CA](#) [SA64CA](#) [SMBJ12CATR](#)
[SMBJ33CATR](#) [SMBJ6.5A](#) [SMBJ8.0A](#) [ESD101-B1-02ELS E6327](#) [ESD112-B1-02EL E6327](#) [ESD7451N2T5G](#) [19180-510](#) [CPDT-5V0USP-](#)
[HF](#) [3.0SMCJ33CA-F](#) [3.0SMCJ36A-F](#) [HSPC16701B02TP](#) [JANTX1N6126A](#) [D3V3Q1B2DLP3-7](#) [D55V0M1B2WS-7](#) [SCM1293A-04SO](#)
[ESD200-B1-CSP0201 E6327](#) [SM12-7](#) [CEN955 W/DATA](#) [VESD12A1A-HD1-GS08](#) [CPDQC5V0-HF](#) [D1213A-01LP4-7B](#) [ESD101-B1-02EL](#)
[E6327](#) [AOZ8808DI-03](#) [5KP15A](#) [5KP48A](#) [5KP90A](#) [ESD3V3D7-TP](#) [15KPA36A-LF](#) [P4KE56CA](#) [P4KE68A](#) [P4KE91CATR](#) [P6KE120A](#)
[P6KE13CA](#) [P6KE43CA](#) [P6KE6.8CA](#) [P6KE8.2](#) [P6SMBJ20CA](#) [JANTX1N6072A](#) [SR2835ESKG](#) [SA90CA](#)