

Features

- 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)
- Package optimized for high-speed lines
- Ultra-small package (0.6mm×0.3mm×0.3mm)
- Protects one data, control or power line
- Low capacitance: 4.0 pF (Typical)
- Low leakage current: 0.1uA @ V_{RWM} (Typical)
- Low clamping voltage
- Each I/O pin can withstand over 1000 ES
D strikes for ±8kV contact discharge
- ROHS compliant

Description

TT2401MAX is a low-capacitance Transient Voltage Suppressor (TVS) designed to provide electrostatic discharge (ESD) protection for high-speed data interfaces. With typical capacitance of 4.0 pF only, TT2401MAX 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.

TT2401MAX uses ultra-small DFN0603 package. Each TT2401MAX device can protect one high-speed 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)

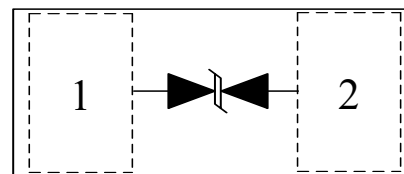
Mechanical Characteristics

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

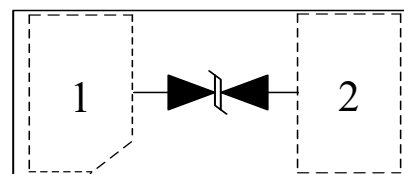
7 fW jh8 jU fUa



D]b'7 cbZ[i fU]cb



OR



DFN0603-2L
(Top View)

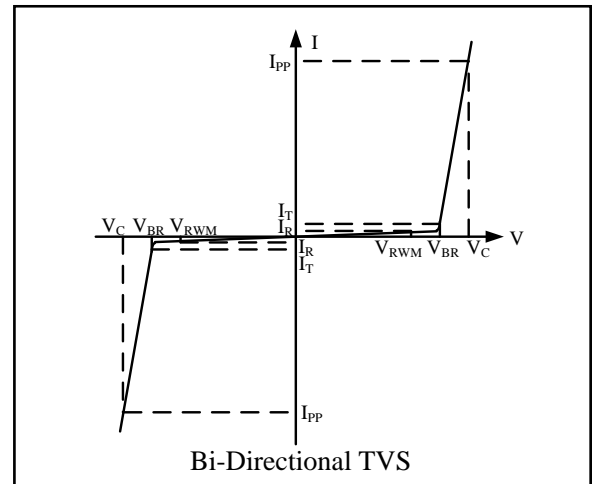
service@jy-electronics.com.cn

Absolute Maximum Rating

Symbol	Parameter	Value	Units
I_{PP}	Peak Pulse Current (8/20 μ s)	1	A
P_{PK}	Peak Pulse Power (8/20 μ s)	30	W
V_{ESD}	ESD per IEC61000-4-2 (Air)	± 10	kV
	ESD per IEC61000-4-2 (Contact)	± 10	
HBM	Human body model	± 2500	V
CDM	Charged device model	± 1000	V
MM	Machine model	± 200	V
T_{OPT}	Operating Temperature	-55/+125	$^{\circ}$ C
T_{STG}	Storage Temperature	-55/+150	$^{\circ}$ C

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

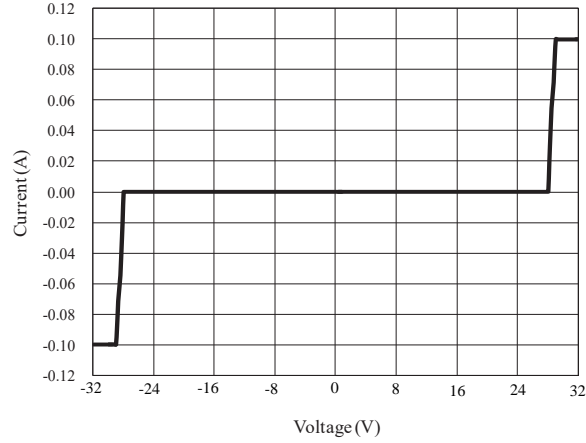
Symbol	Parameter
V_{RWM}	Nominal Reverse Working Voltage
I_R	Reverse Leakage Current @ V_{RWM}
V_{BR}	Reverse Breakdown Voltage @ I_T
I_T	Test Current for Reverse Breakdown
V_C	Clamping Voltage @ I_{PP}
I_{PP}	Maximum Peak Pulse Current
C_{ESD}	Parasitic Capacitance
V_R	Reverse Voltage
f	Small Signal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



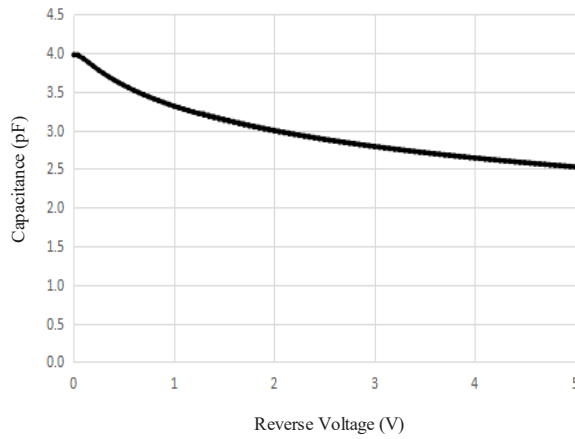
Symbol	Test Condition	Minimum	Typical	Maximum	Units
V_{RWM}				24.0	V
I_R	$V_{RWM} = 24V, T = 25^{\circ}C$ Between I/O and I/O		0.1	1.0	μ A
V_{BR}	$I_T = 1mA$ Between I/O and I/O	26			V
V_C	$I_{PP} = 1A, t_p = 8/20\mu s$ Between I/O and I/O			40	V
C_{ESD}	$V_R = 0V, f = 1MHz$ Between I/O and I/O		4	6	pF



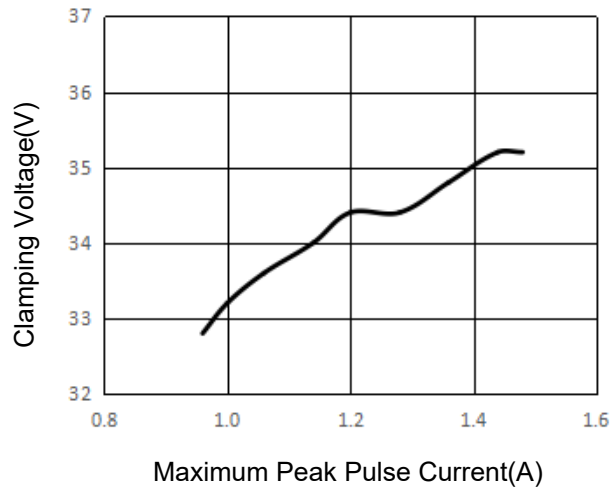
Reverse Current vs. Reverse Voltage



Capacitance vs. Reverse Voltage

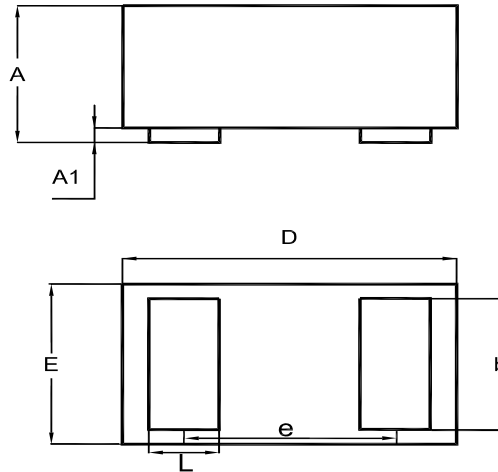


Clamping Voltage vs. Maximum Peak Pulse Current



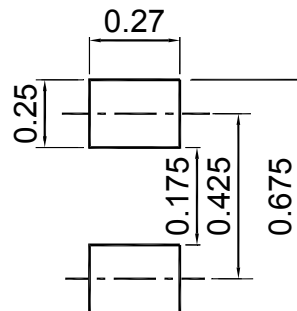
Package Outline

- DFN0603-2L package
- MSL-1



UNIT	A	A1	b	D	E	e	L
mm	0.27	0	0.21	0.57	0.28	0.355	0.14
	0.33	0.025	0.29	0.65	0.35		0.22

Recommended Soldering Footprint

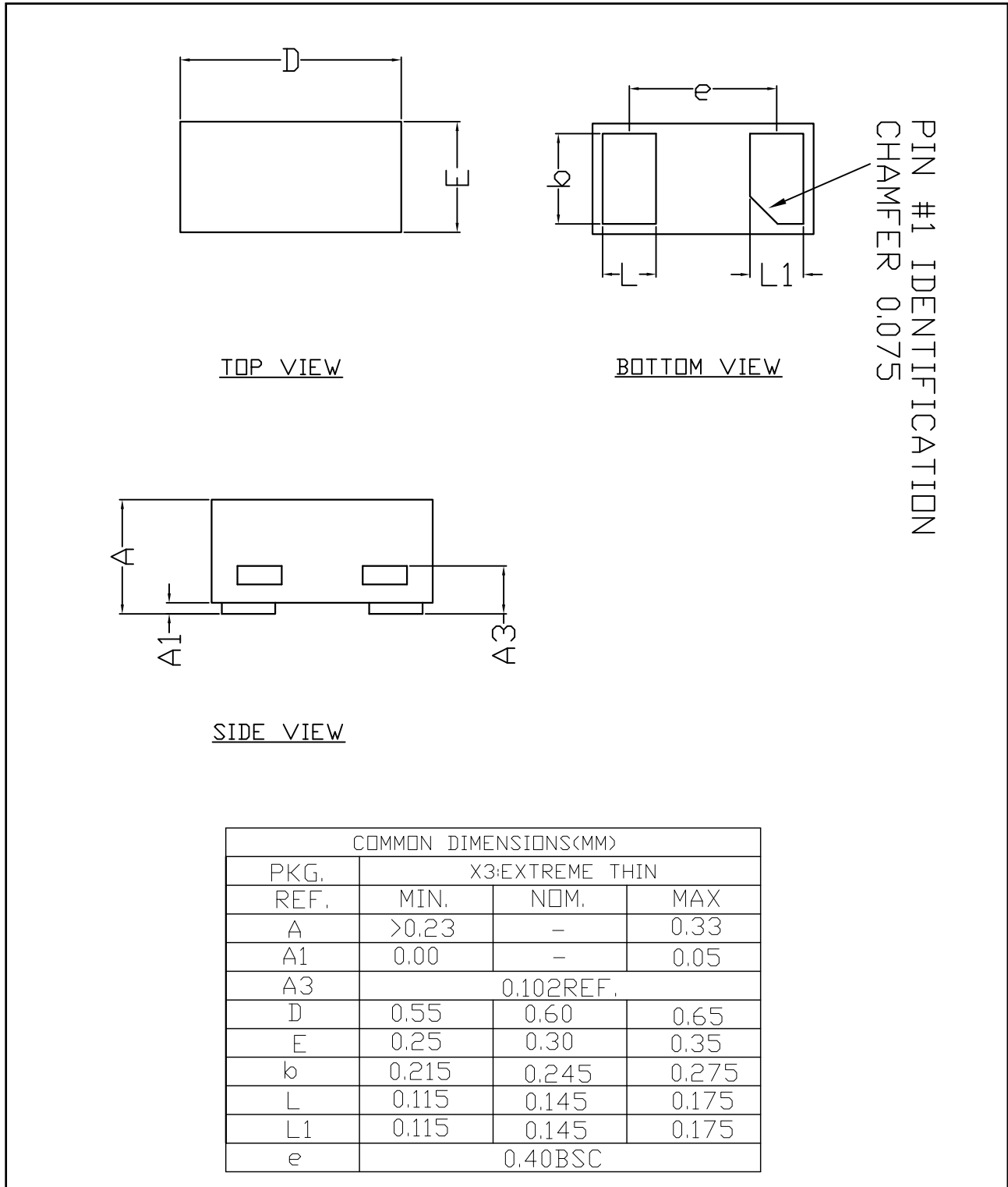


Packing information

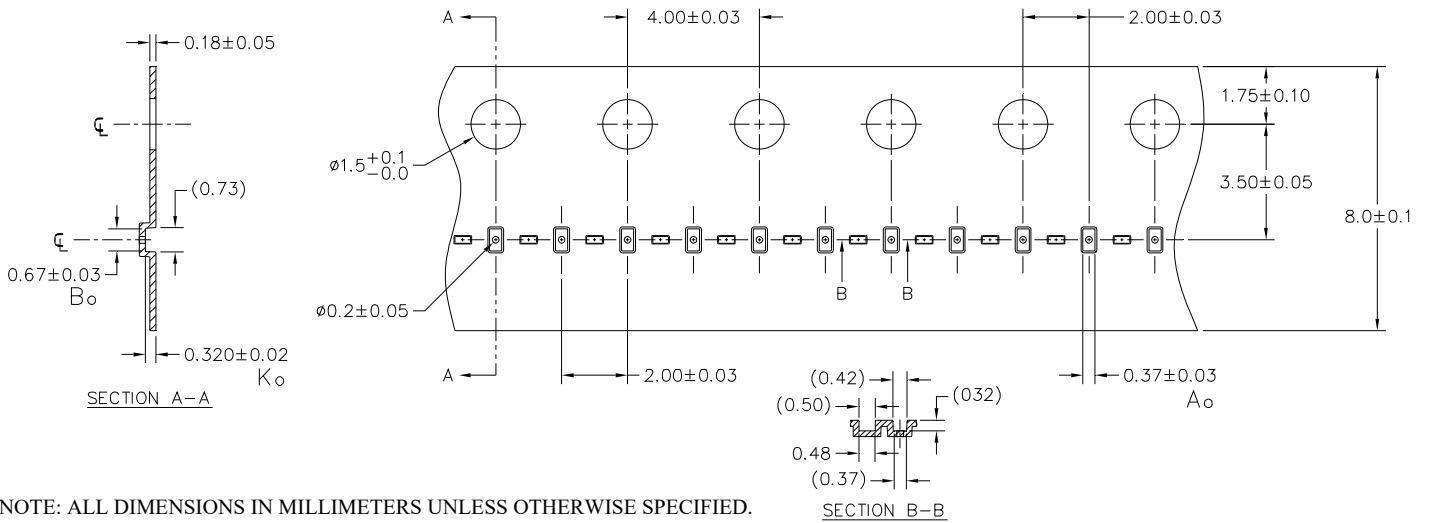
Package	Tape Width (mm)	Pitch		Reel Size		Per Reel Packing Quantity
		mm	inch	mm	inch	
DFN0603	8	4 ± 0.1	0.157 ± 0.004	178	7	10,000

Package Outline

- DFN0603 package
- 2 leads
- MSL-1



Carries Tape Specification



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) “EM” is part number.

Ordering Information

Part Number	Working Voltage	Quantity Per Reel	Reel Size
TT2401MAX	24V	10,000	7 Inch