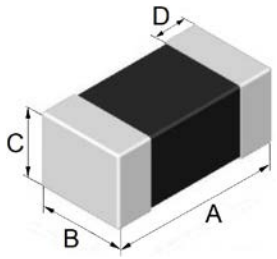
SMD Transient Voltage Suppressors TVSD0402SSXF-Series

1. Dimension



Series	A (mm)	B (mm)	C (mm)	D (mm)
0402	1.00±0.05	0.60±0.05	0.50±0.05	0.20±0.05

2. Part Numbering

TVSD	0402	SSX	F	050	-	300	P	□
A	B	C	D	E		F	G	H

A: Series	TVS Diode
B: Dimension	
C: Category Code	Standard Surge Protection
D: Product Grade	General Grade
E: Voltage Code	050=Reverse Working Voltage 5V
F: Characteristic Code	300=Parasitic Capacitance 30 pF
G: Characteristic Unit Code	P＝pF
H: Inner Code	

3. Features

1. Transient protection for high-speed data lines.
   IEC61000-4-2 (ESD) ±30KV (air)
   ±30KV (contact)
   IEC61000-4-4 (EFT) 40A (5/50ns)
   Cable discharge event (CDE).
   AEC-Q101 qualified
2. Package optimized for high-speed lines.
3. Ultra-small package (1.0mmX0.6mmX0.5mm)
4. Protects one data, controller or power line.
5. Low leakage current: 1nA @V_{RWM} (typical)
6. Low clamping voltage
7. Each I/O pin can withstand over 1000 ESD strikes for ±8KV contact discharge.

4. Applications

1. Cellular handsets
2. Computers and peripherals
3. Notebooks
4. Camera

5. Absolute Maximum Ratings(Ta=25℃)

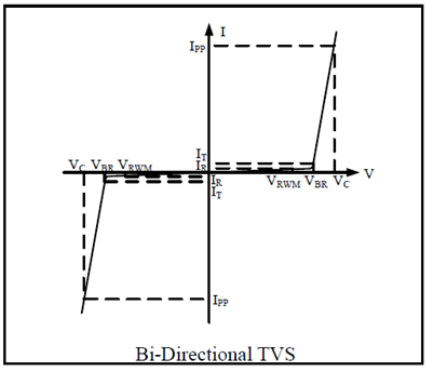
TAI-TECH Part Number	Peak pulse power (t_p=8/20μs) P_{PK} (W)	Peak pulse current (t_p=8/20μs) I_{PP} (A)	ESD per IEC61000-4-2 (air) V_{ESD} (KV)	ESD per IEC61000-4-2 (contact) V_{ESD} (KV)
TVSD0402SSXF050-300P	200	18	±30	±30

Note:

1. Operating temperature range: -55~125℃
2. Storage temperature range: -55~150℃

6. Electrical Characteristics(Ta=25℃)

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



Bi-Directional TVS

TAI-TECH Part Number	Working peak reverse voltage V_{RWM} (V)	Maximum reverse leakage (@V_{RWM}, 25℃) (between I/O_1 and I/O_2) I_R (μA)	Breakdown voltage (@I_T=1mA) (between I/O_1 and I/O_2) V_{BR} (V)	Clamping voltage (@I_{PP}=16A, t_p=100ns, TLP) V_{CL} (V)	Clamping voltage (@V_{ESD}=8KV) V_{CL} (V)
TVSD0402SSXF050-300P	5	Typ. 0.001 (Max. 0.08)	Typ. 6.0 (Min. 5.1)	Max. 11	Max. 11

TAI-TECH Part Number	Maximum clamping voltage (@I_{PP}=1A,t_p=8/20μs) (between I/O_1 and I/O_2) V_C (V)	Maximum clamping voltage (@I_{PP}=18A, t_p=8/20μs) (between I/O_1 and I/O_2) V_C (V)	Parasitic capacitance (@V_R=0V, f=1MHz) (between I/O_1 and I/O_2) C_{ESD} (pF)	ESD dynamic resistance (TLP, tp=100ns, I/O to GND) R_{DYN} (Ω)
TVSD0402SSXF050-300P	Max. 7	Max. 11	Typ. 32.0	0.1

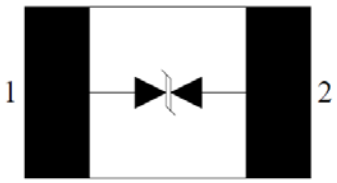
7. Mechanical Characteristics

1. Case: 0402
2. Flammability rating: UL 94V-0
3. Packaging: tape and reel
4. Polarity: bidirectional

Circuit Diagram



Pin Configuration

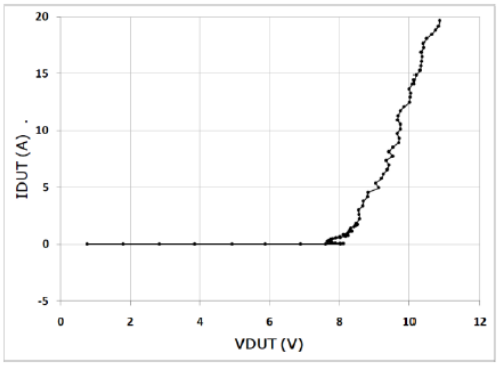


0402
(TOP View)

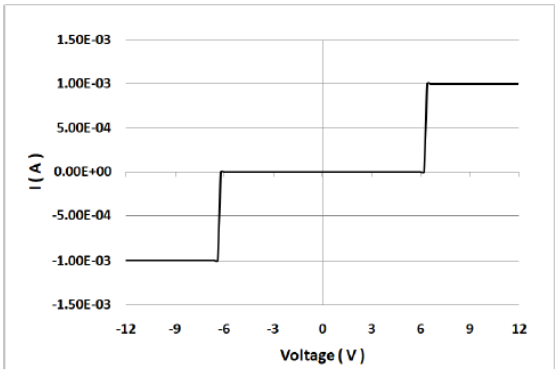
8. Rating and Characteristic Curves

TVSD0402SSXF050-300P

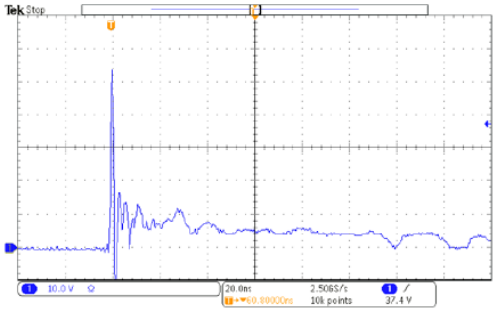
TLP Measurement



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)

