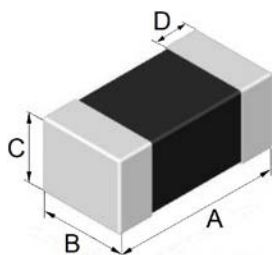


SMD Transient Voltage Suppressors

TVSD0402SSYF-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 SSY F 3R3 - 0R5 P □

A B C D E F G H

A: Series	TVS Diode
B: Dimension	
C: Category Code	Standard PHY Surge Platform
D: Product Grade	General Grade
E: Voltage Code	3R3=Reverse Working Voltage 3.3V
F: Characteristic Code	0R5=Parasitic Capacitance 0.5 pF
G: Characteristic Unit Code	P=pF
H: Inner Code	

3. Features

- Transient protection for high-speed data lines.
IEC61000-4-2 (ESD) ±30KV (air) @ TVSD0402SSYF050-1R5P
±30KV (contact) @ TVSD0402SSYF050-1R5P
±20KV (air) @ TVSD0402SSYF3R3-0R5P
±20KV (contact) @ TVSD0402SSYF3R3-0R5P
IEC61000-4-4 (EFT) 20A (5/50ns)
Cable discharge event (CDE).
- Package optimized for high-speed lines.
- Ultra-small package (1.0mm×0.6mm×0.5mm)
- Protects one data, controller or power line.
- Ultra-low capacitance
- Low leakage current: 1nA @V_{RWM} (typical)
- Low clamping voltage
- Each I/O pin can withstand over 1000 ESD strikes for ±8KV contact discharge.

4. Absolute Maximum Ratings(Ta=25°C)

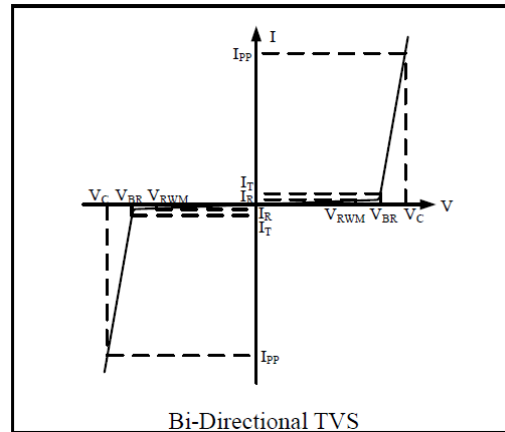
TAI-TECH Part Number	Peak pulse power (t _p =8/20μs) P _{PK} (W)	Peak pulse current (t _p =8/20μs) I _{PP} (A)	ESD per IEC61000-4-2 (air) V _{ESD} (KV)	ESD per IEC61000-4-2 (contact) V _{ESD} (KV)
TVSD0402SSYF050-1R5P	300	15	±30	±30
TVSD0402SSYF3R3-0R5P	84	12	±20	±20

Note:

- Operating temperature range: -55~125°C
- Storage temperature range: -55~150°C

5. Electrical Characteristics(Ta=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}	Maximum Peak Pulse Current
C_{ESD}	Parasitic Capacitance
V_R	Reverse Voltage
f	Small Signal Frequency



TAI-TECH Part Number	Working peak reverse voltage V_{RWM} (V)	Maximum reverse leakage (@ V_{RWM} , 25°C) (between I/O_1 and I/O_2) I_R (μ A)	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)
TVSD0402SSYF050-1R5P	5	Typ. 0.001 (Max. 0.1)	Typ. 8.0 (Min. 5.8)	Max. 12	Max. 12
TVSD0402SSYF3R3-0R5P	3.3	Typ. 0.001 (Max. 0.08)	Typ. 7.0 (Min. 6.0)	Max. 7	Max. 7

TAI-TECH Part Number	Maximum clamping voltage (@ $I_{PP}=1A$, $t_p=8/20\mu s$) (between I/O_1 and I/O_2) V_C (V)	Maximum clamping voltage ($t_p=8/20\mu s$) (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, $t_p=100ns$, I/O to GND) R_{DYN} (Ω)
TVSD0402SSYF050-1R5P	Max. 9	Max. 20@ $I_{PP}=15A$	Typ. 1.35 (Max. 1.6)	-
TVSD0402SSYF3R3-0R5P	Max. 7	Max. 7@ $I_{PP}=12A$	Typ. 0.5	0.25

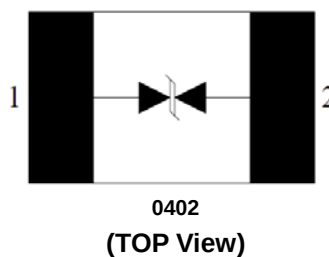
6. Mechanical Characteristics

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

Circuit Diagram

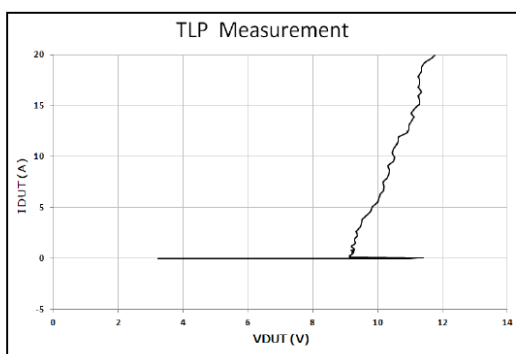
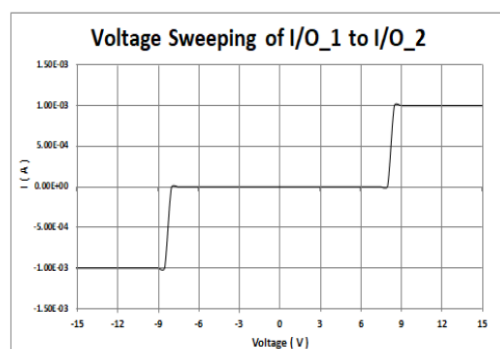
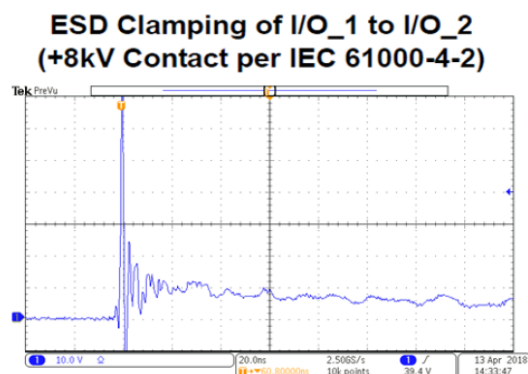
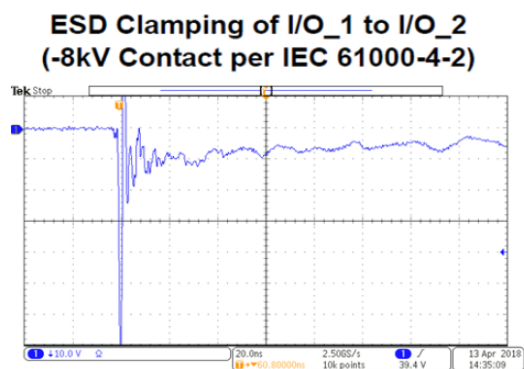
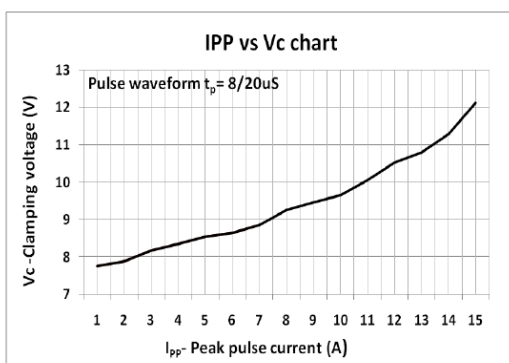
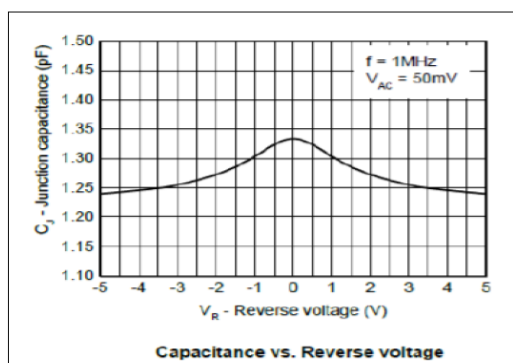


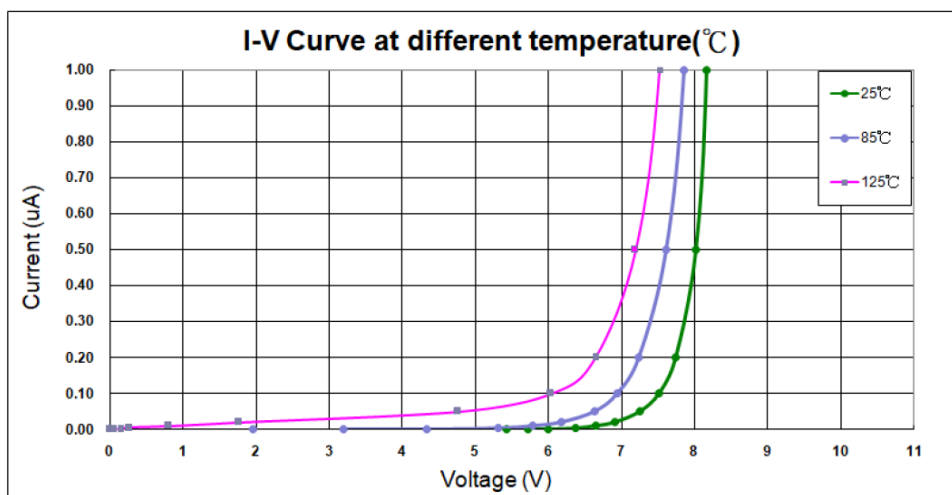
Pin Configuration



7. Rating and Characteristic Curves

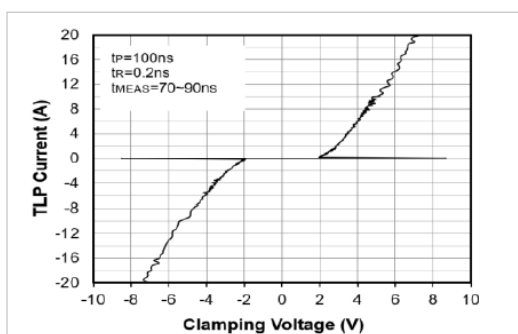
TVSD0402SSYF050-1R5P



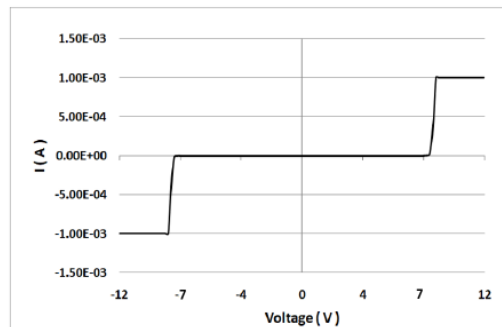


TVSD0402SSYF3R3-0R5P

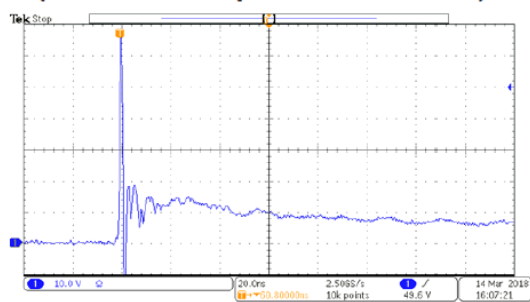
TLP Measurement



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)

