

## Transient Voltage ESD Suppressor TVSA Series



### Description

Cooper Bussmann® TVSA Series of transient voltage suppressors are designed to protect electronic circuits from ESD damage. With its small, standardized 0201 and 0402 sizes, it's easy to implement them into any circuit board design.

### Features

- Silicon based chip
- Low capacitance to meet the needs for high speed single transient voltage protection
- Provides ESD protection with fast response time (<1ns) allowing equipment to pass IEC 61000-4-2 level 4 test
- Low profile designs for board space savings
- Low leakage current reduces power consumption
- Low clamping voltage
- Solid-state silicon-avalanche technology
- Lead free, halogen free and RoHS compliant for global applications

### Applications

- Computers and peripherals
- Digital still cameras
- Cell phones
- PDAs
- DVD Players
- MP3/Multimedia players
- A-V Equipment
- External storage
- DSL Modems
- Set top boxes
- Docking systems

### Part Numbering System: TVSA 04 V05 C006



### Packaging

- Size 0201: 15,000 pieces per reel - EIA (EIAJ)
- Size 0402: 10,000 pieces per reel - EIA (EIAJ)

### Specifications

Part Number	Size	Stand-Off Voltage	Breakdown Voltage	Clamping Voltage At I <sub>peak</sub> = 1A	Capacitance pF	ESD Air/Contact (kV)	Leakage Current (typical)
TVSA02V05C004	0201	5	10	17	4	15/8	< 10nA
TVSA04V05C006	0402	5	10	17	6	15/8	< 10nA

Stand-off Voltage - Maximum DC operating voltage the diode can maintain and not exceed 1µA leakage current.

Breakdown Voltage - Measured at any I/O pin to ground at 1mA DC current.

Clamping Voltage - Maximum peak voltage across the diode with 8/20µs waveform and 1A pulse current.

Capacitance - Device capacitance measured with zero volt bias at 1MHz.

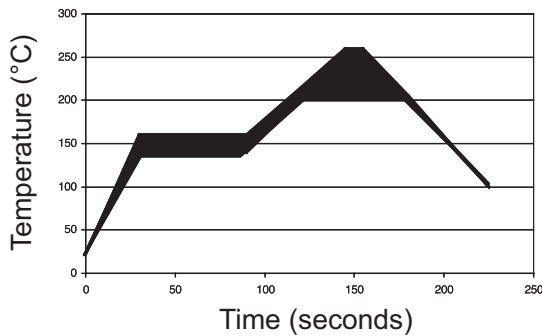
ESD Air/Contact - Voltages tested to IEC 61000-4-2.

### Environmental Specifications

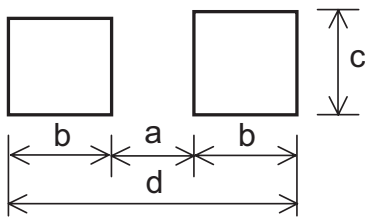
Characteristic	Value
Bias Humidity:	+40°C, 90% RH for 1000 hours
Thermal Shock:	-40°C to +85°C, 30 minute cycle, 5 cycles
Operating Temperature Range:	-40°C to +85°C
Storage Temperature Range:	-40°C to +85°C

### Soldering Recommendations

- Compatible with lead and lead-free solder reflow processes
- Peak reflow temperatures and durations:
  - IR Reflow = 260°C max for 30 sec. max.
  - Wave Solder = 260°C max. for 10 sec. max.
- Recommended IR Reflow Profile:

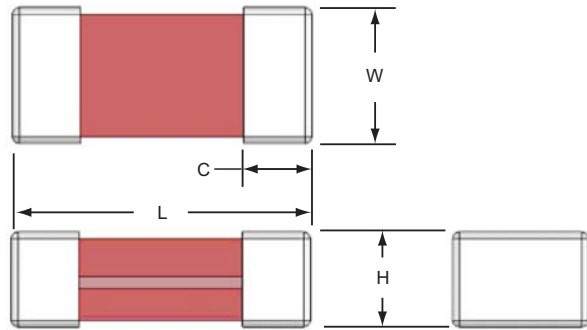


### Recommended Pad Layout - mm (in)



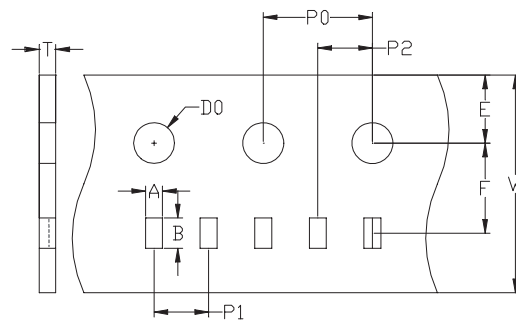
Size	a	b	c	d
0201	0.23 (0.009)	0.30 (0.012)	0.45 (0.018)	0.83 (0.033)
0402	0.51 (0.020)	0.61 (0.024)	0.51 (0.020)	1.70 (0.067)

### Dimensions - mm



Size	L	W	H	C
0201	0.60±0.05	0.30±0.05	0.30±0.05	0.20±0.10
0402	1.00±0.15	0.50±0.10	0.50±0.10	0.25±0.15

### Tape Packaging Specifications - mm



0201 Carrier Dimensions									
A	B	W	E	F	P0	P1	P2	D0	T
0.37 ±0.03	0.69 ±0.03	8.0 ±0.1	1.75 ±0.05	3.5 ±0.05	4.0 ±0.1	2.0 ±0.05	2.0 ±0.05	1.55 ±0.05	0.42 ±0.03
0402 Carrier Dimensions									
0.58 ±0.03	1.2 ±0.03	8.0 ±0.1	1.75 ±0.05	3.5 ±0.05	4.0 ±0.1	2.0 ±0.05	2.0 ±0.05	1.55 ±0.05	0.60 ±0.03

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