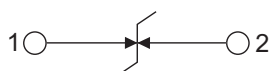


# TVSA

## Transient voltage ESD suppressor



Surface Mount Device

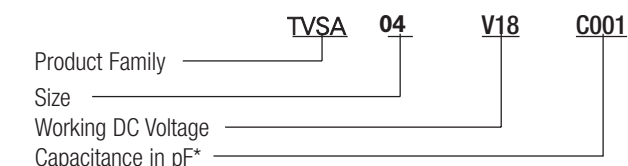
Equivalent Circuits

### Applications

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

### Product features

- Lead free, halogen free and RoHS compliant for global applications
- Single-line, bi-directional device for placement flexibility
- 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



\* Part numbers use "R" to denote decimal point for decimal values of pico farads.

### 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 $I_{peak} = 1A$ | 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 1mA 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 8/20ms waveform and 1A pulse current.

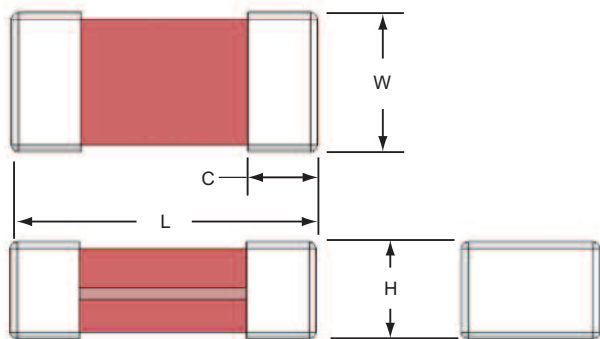
Capacitance - Device capacitance measured with zero volt bias at 1MHz.

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



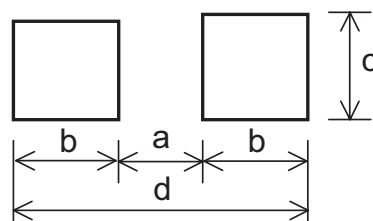
Powering Business Worldwide

## Dimensions - mm



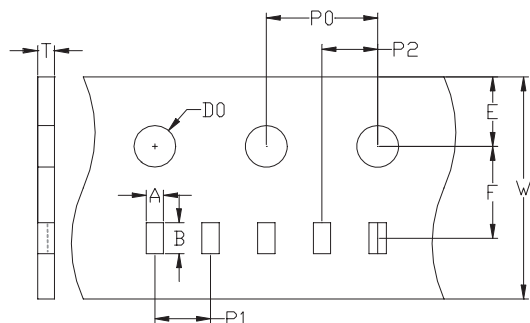
| Size | L         | W         | H         | C         |
|------|-----------|-----------|-----------|-----------|
| 0201 | 0.60±0.05 | 0.30±0.05 | 0.30±0.05 | 0.20±0.10 |
| 0402 | 1.00±0.15 | 0.50±0.10 | 0.50±0.10 | 0.25±0.15 |

## Recommended Pad Layout - mm (in)



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

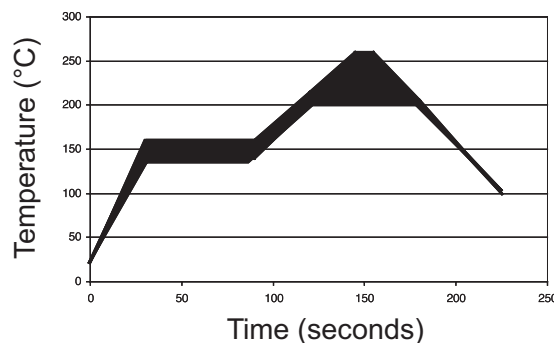
## Tape Packaging Specifications - mm



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

## 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:



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