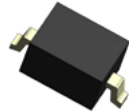


STS321XXBXX1

TVS Diode ESD suppressor



Product features

- 400 Watts peak pulse power per line ($t_p = 8/20 \mu s$)
- Protects one bi-directional I/O line
- Low clamping voltage
- Low leakage current
- Meets moisture sensitivity level (MSL) 3
- Molding compound flammability rating: UL 94V-0
- Termination finish: Tin

Applications

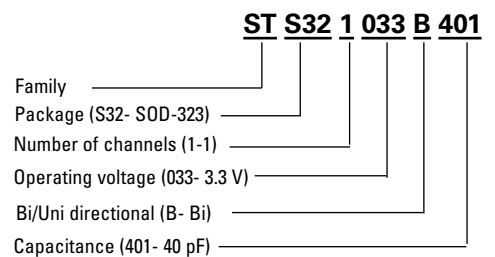
- Cellular handsets and accessories
- Microprocessor based equipment
- Portable electronics
- Notebooks, desktops, and servers
- Portable instrumentation
- Peripherals
- Pagers

Environmental compliance and general specifications

- IEC61000-4-2 (ESD)
 - Up to ± 30 kV (air)
 - Up to ± 30 kV (contact)
- IEC61000-4-5 (Lightning) Up to 22 A (8/20 μs)



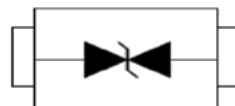
Ordering part number



Pin out/functional diagram



SOD-323



Pin Configuration

Absolute maximum ratings

(+25 °C, RH=45%-75%, unless otherwise noted)

| Parameter | Symbol | Value | Unit |
|---|-----------|-------------------|------|
| Peak pulse power dissipation on 8/20 μ s waveform | P_{PP} | 400 | W |
| ESD per IEC 61000-4-2 (Air) | V_{ESD} | +/-30 | kV |
| ESD per IEC 61000-4-2 (Contact) | | +/-30 | |
| Lead soldering temperature | T_L | +260 (10 seconds) | °C |
| Operating junction temperature range | T_J | -55 to +125 | °C |
| Storage temperature range | T_{STG} | -55 to +150 | °C |

Electrical characteristics

(+25 °C)

STS321033B401

| Parameter | Test condition | Minimum | Typical | Maximum | Symbol (Units) |
|---------------------------|--|---------|---------|---------|------------------|
| Reverse working voltage | - | - | - | 3.3 | V_{RWM} (V) |
| Reverse breakdown voltage | $I_T = 1$ mA | 3.6 | - | - | V_{BR} (V) |
| Reverse leakage current | $V_{RWM} = 3.3$ V | - | - | 1 | I_R (μ A) |
| Clamping voltage | $I_{PP} = 30$ A, $t_p = 8/20$ μ s | - | - | 15 | V_C (V) |
| Junction capacitance | $V_{RWM} = 0$ V, $f = 1$ MHz | - | 40 | 60 | C_J (pF) |

STS321050B331

| Parameter | Test condition | Minimum | Typical | Maximum | Symbol (Units) |
|---------------------------|--|---------|---------|---------|------------------|
| Reverse working voltage | - | - | - | 5 | V_{RWM} (V) |
| Reverse breakdown voltage | $I_T = 1$ mA | 5.5 | - | - | V_{BR} (V) |
| Reverse leakage current | $V_{RWM} = 5$ V | - | - | 1 | I_R (μ A) |
| Clamping voltage | $I_{PP} = 1$ A, $t_p = 8/20$ μ s | - | - | 9 | V_C (V) |
| | $I_{PP} = 22$ A, $t_p = 8/20$ μ s | - | - | 18 | V_C (V) |
| Junction capacitance | $V_{RWM} = 0$ V, $f = 1$ MHz | - | 33 | 75 | C_J (pF) |

STS321120B301

| Parameter | Test condition | Minimum | Typical | Maximum | Symbol (Units) |
|---------------------------|--|---------|---------|---------|------------------|
| Reverse working voltage | - | - | - | 12 | V_{RWM} (V) |
| Reverse breakdown voltage | $I_T = 1$ mA | 13.3 | - | - | V_{BR} (V) |
| Reverse leakage current | $V_{RWM} = 12$ V | - | - | 1 | I_R (μ A) |
| Clamping voltage | $I_{PP} = 1$ A, $t_p = 8/20$ μ s | - | - | 19 | V_C (V) |
| | $I_{PP} = 12$ A, $t_p = 8/20$ μ s | - | - | 33 | V_C (V) |
| Junction capacitance | $V_{RWM} = 0$ V, $f = 1$ MHz | - | 30 | 45 | C_J (pF) |

STS321150B351

| Parameter | Test condition | Minimum | Typical | Maximum | Symbol (Units) |
|---------------------------|--|---------|---------|---------|------------------|
| Reverse working voltage | - | - | - | 15 | V_{RWM} (V) |
| Reverse breakdown voltage | $I_T = 1$ mA | 16.7 | - | - | V_{BR} (V) |
| Reverse leakage current | $V_{RWM} = 15$ V | - | - | 1 | I_R (μ A) |
| Clamping voltage | $I_{PP} = 1$ A, $t_D = 8/20$ μ s | - | - | 23 | V_C (V) |
| | $I_{PP} = 10$ A, $t_D = 8/20$ μ s | - | - | 33 | V_C (V) |
| Junction capacitance | $V_{RWM} = 0$ V, $f = 1$ MHz | - | 35 | 40 | C_J (pF) |

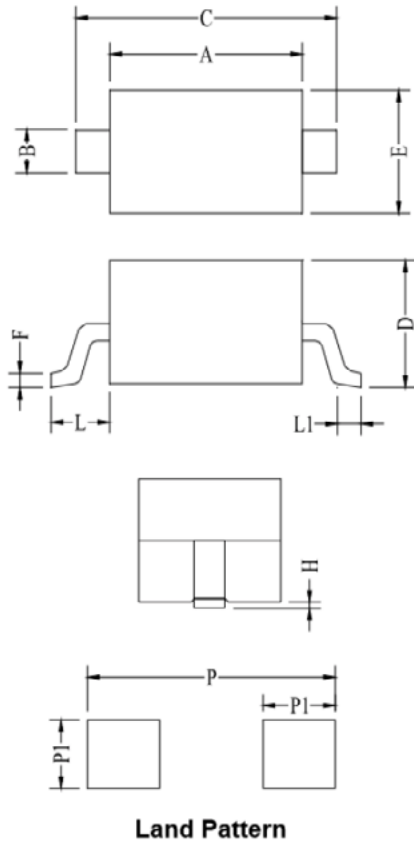
STS321240B301

| Parameter | Test condition | Minimum | Typical | Maximum | Symbol (Units) |
|---------------------------|---|---------|---------|---------|------------------|
| Reverse working voltage | - | - | - | 24 | V_{RWM} (V) |
| Reverse breakdown voltage | $I_T = 1$ mA | 26.7 | - | - | V_{BR} (V) |
| Reverse leakage current | $V_{RWM} = 24$ V | - | - | 1 | I_R (μ A) |
| Clamping voltage | $I_{PP} = 1$ A, $t_D = 8/20$ μ s | - | - | 40 | V_C (V) |
| | $I_{PP} = 8$ A, $t_D = 8/20$ μ s | - | - | 50 | V_C (V) |
| Junction capacitance | $V_{RWM} = 0$ V, $f = 1$ MHz | - | 30 | 35 | C_J (pF) |

STS321360B141

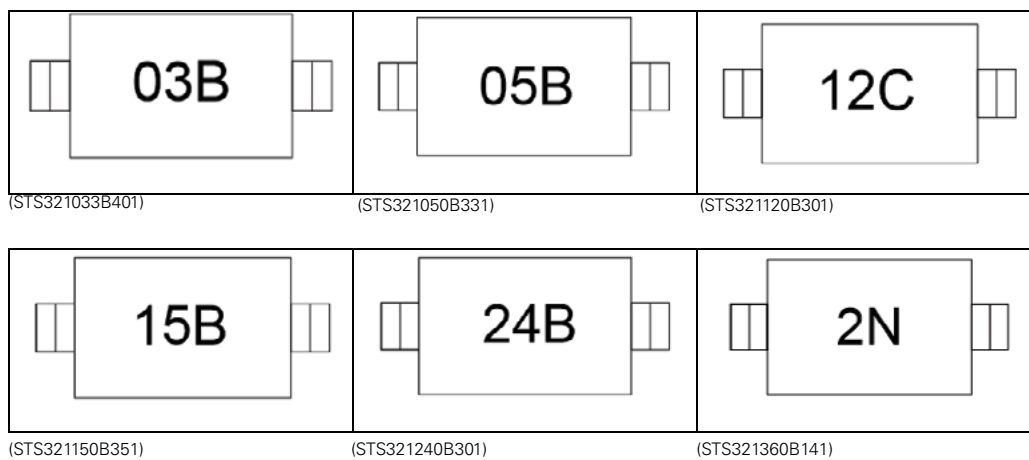
| Parameter | Test condition | Minimum | Typical | Maximum | Symbol (Units) |
|---------------------------|---|---------|---------|---------|------------------|
| Reverse working voltage | - | - | - | 36 | V_{RWM} (V) |
| Reverse breakdown voltage | $I_T = 1$ mA | 40 | 42 | 47.6 | V_{BR} (V) |
| Reverse leakage current | $V_{RWM} = 36$ V | - | - | 0.2 | I_R (μ A) |
| Clamping voltage | $I_{PP} = 1$ A, $t_D = 8/20$ μ s | - | 45 | 60 | V_C (V) |
| | $I_{PP} = 6$ A, $t_D = 8/20$ μ s | - | 60 | 70 | V_C (V) |
| Junction capacitance | $V_{RWM} = 0$ V, $f = 1$ MHz | - | 14 | 25 | C_J (pF) |

Mechanical parameters, pad layout- mm/inches



| Dimension | Millimeters | | Inches | |
|-----------|-------------|---------|-----------|---------|
| | Minimum | Maximum | Minimum | Maximum |
| A | 1.60 | 1.80 | 0.063 | 0.071 |
| B | 0.25 | 0.35 | 0.010 | 0.014 |
| C | 2.50 | 2.75 | 0.098 | 0.108 |
| D | 0.00 | 1.00 | 0.000 | 0.039 |
| E | 1.20 | 1.40 | 0.047 | 0.055 |
| F | 0.08 | 0.15 | 0.003 | 0.006 |
| L | 0.475 REF | | 0.019 REF | |
| L1 | 0.25 | 0.40 | 0.010 | 0.016 |
| H | 0.00 | 0.10 | 0.000 | 0.004 |
| P | 3.00 | | 0.118 | |
| P1 | 0.80 | | 0.031 | |

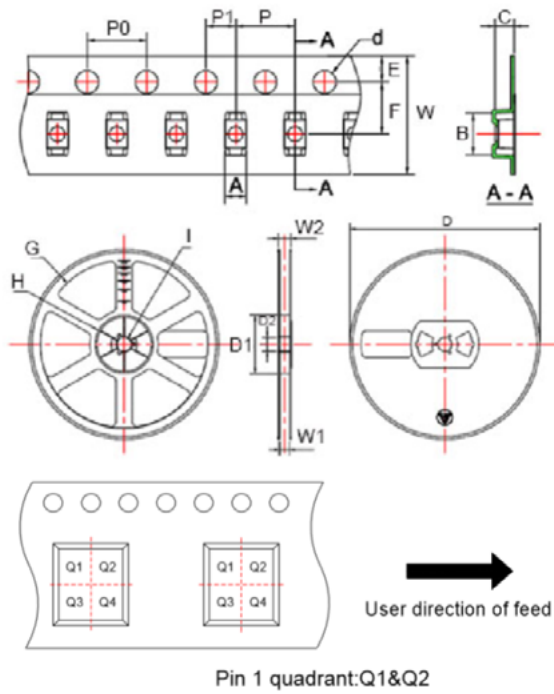
Part marking



Packaging information mm/inches

Drawing not to scale.

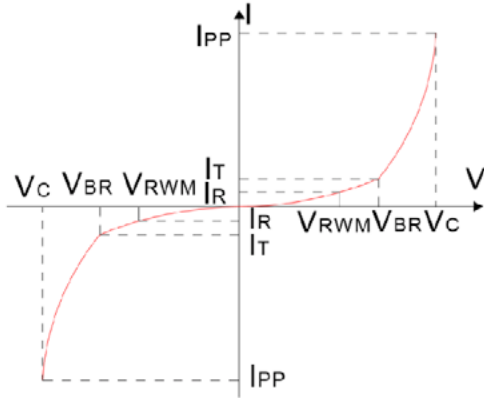
Supplied in tape and reel packaging, 3,000 parts per 7" diameter reel (EIA-481 compliant)



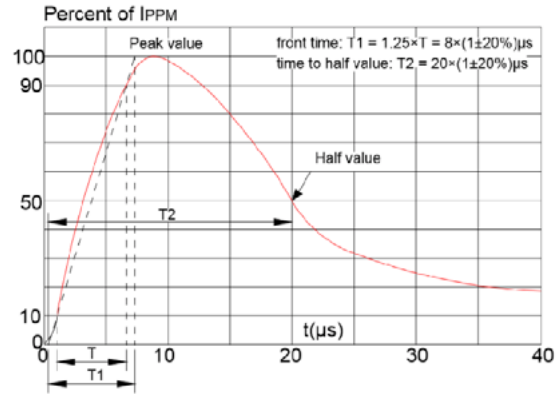
| Symbol | Millimeters | Inches |
|--------|---------------|--------------------|
| A | 1.46±0.05 | 0.057±0.002 |
| B | 2.90±0.05 | 0.114±0.002 |
| C | 1.25±0.05 | 0.049±0.002 |
| d | ∅1.50±0.1 | ∅0.059±0.004 |
| E | 1.75±0.1 | 0.069±0.004 |
| F | 3.50±0.1 | 0.138±0.004 |
| P0 | 4.0±0.1 | 0.157±0.004 |
| P | 4.0±0.1 | 0.157±0.004 |
| P1 | 2.0±0.1 | 0.079±0.004 |
| W | 8.00+0.3/-0.1 | 0.315+0.012/-0.004 |
| D | ∅178.0±2 | ∅7.008±0.079 |
| D1 | 54.40±1 | 2.142±0.039 |
| D2 | 13.0±1 | 0.512±0.039 |
| G | R78.0±1 | R3.071±0.039 |
| H | R25.60±1 | R1.008±0.039 |
| I | R6.50±1 | R0.256±0.039 |
| W1 | 9.50±1 | 0.374±0.039 |
| W2 | 12.30±1 | 0.484±0.039 |

Ratings and V-I characteristic curves (+25 °C unless otherwise noted)

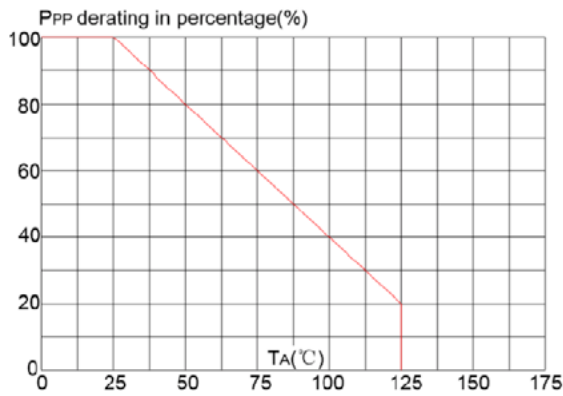
V- I curve characteristics (Bi-directional)



Pulse waveform (8/20 μ s)



Pulse derating curve



ESD waveform

