

## Transient Voltage Suppressor

### Features

- IEC 61000-4-2(ESD)  $\pm 30\text{KV}$ (air),  $\pm 30\text{KV}$ (contact)
- IEC61000-4-5(Lightning) 18A (8/20 $\mu\text{S}$ )
- IEC61000-4-4(EFT)40A(5/50nS)
- 360 Watts peak pulse power ( $t_p=8/20\mu\text{S}$ )
- Ultra low capacitance: 100pF maximum
- Low clamping voltage
- Moisture sensitivity level: Level 1
- Weight 5.0 mg
- Small package: SOD323

### Exterior



SOD323

### Application information

- DC power port

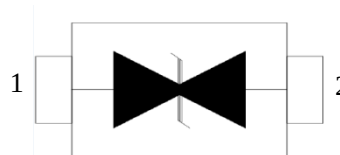
### Package (top view)



### Agency Approvals

| Icon                                                                                | Description                        |
|-------------------------------------------------------------------------------------|------------------------------------|
| <b>RoHS</b>                                                                         | Compliance with 2011/65/EU         |
| <b>HF</b>                                                                           | Compliance with IEC61249-2-21:2003 |
|  | Mean lead free                     |

### Schematic



### Part Number and Electrical Parameter

| Part Number | $I_{\text{DRM}}@V_{\text{DRM}}$ |   | $V_{\text{BR}}^{①}@I_{\text{R}}$ |    | $V_{\text{c}}@I_{\text{pp}}^{②}$ |   | $V_{\text{c}}@I_{\text{pp}}^{②}$ |    | $C_{\text{o}}^{③}$ |
|-------------|---------------------------------|---|----------------------------------|----|----------------------------------|---|----------------------------------|----|--------------------|
|             | $\mu\text{A}$                   | V | V                                | mA | V                                | A | V                                | A  | pF                 |
|             | MAX                             |   | MIN                              |    | MAX                              |   | MAX                              |    | MAX                |
| BV-D308ZCA  | 1                               | 8 | 8.5                              | 1  | 13.4                             | 1 | 20                               | 18 | 100                |

Absolute maximum ratings measured at  $T = 25^{\circ}\text{C}$  RH = 45%-75% (unless otherwise noted).

①  $V_{\text{BR}}$  is measured at  $I_{\text{R}}=1\text{mA}$

② Surge Waveform: 8/20 $\mu\text{S}$

③ Off-state capacitance is measured in  $V_{\text{DC}}=0\text{V}$ ,  $V_{\text{RMS}}=0.3\text{V}$ ,  $f=1\text{MHz}$

## Transient Voltage Suppressor

### Part Numbering System

BV D3 08 Z C A  
(1) (2) (3) (4) (5) (6)

- (1) Bencent Transient Voltage Suppressor
- (2) Package: SOD323
- (3) Off-state Voltage: 8V
- (4) Normal Capacitance
- (5) Bi-directional
- (6) Bencent internal code

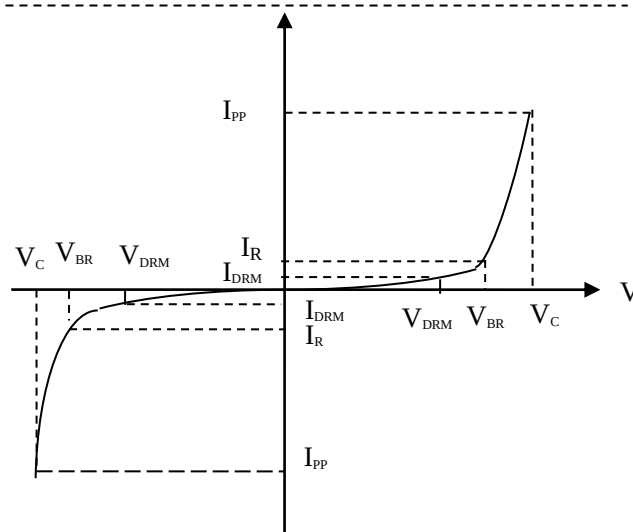
### Mark



2C: Part Number

### V-I Curve

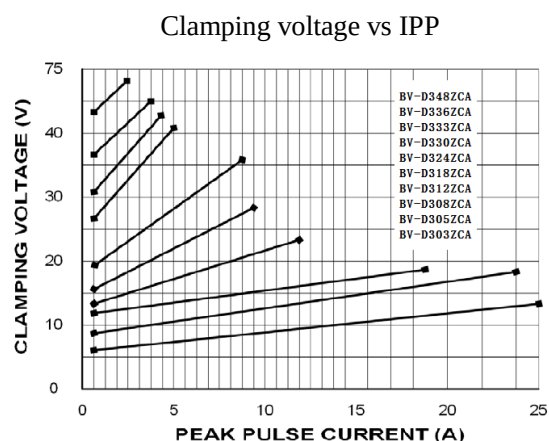
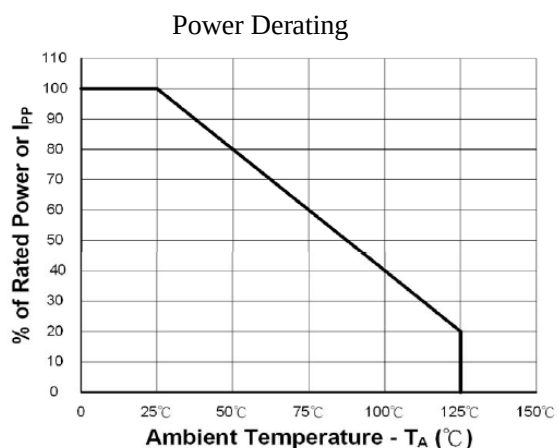
| Parameters | Definition                   |
|------------|------------------------------|
| $V_C$      | Clamping voltage             |
| $I_{PP}$   | Surge waveform 8/20 $\mu$ s  |
| $V_{DRM}$  | Stand-off Voltage            |
| $V_{BR}$   | Breakdown Voltage            |
| $I_{DRM}$  | Reverse Leakage Current      |
| $I_R$      | Test current                 |
| $P_{PP}$   | Peak Pulse Power Dissipation |



### Thermal Considerations

| symbol | Parameter                            | Value       | Unit               |
|--------|--------------------------------------|-------------|--------------------|
| $T_J$  | Operating Junction Temperature Range | -40 to +125 | $^{\circ}\text{C}$ |
| $T_S$  | Storage Temperature Range            | -55 to +150 | $^{\circ}\text{C}$ |

### Typical Characteristics



## Transient Voltage Suppressor

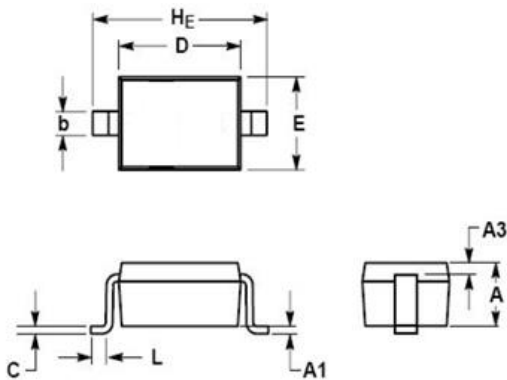
Version: A1 2019-12-02

### Environmental Characteristics

| Testing items                        | Technical standards                                                                             |
|--------------------------------------|-------------------------------------------------------------------------------------------------|
| High temperature Reverse Bias Test   | Temperature: $150\pm 3^{\circ}\text{C}$ Bias= $80\%V_{\text{DRM}}$<br>Time:168H                 |
| High Temperature Life Test           | Temperature: $150^{\circ}\text{C}$<br>Time:168H                                                 |
| High-low Temperature Cycle test      | Temperature: From $-40^{\circ}\text{C}$ to $125^{\circ}\text{C}$<br>Dwell time : 30min,10cycles |
| High Temperature &High Humidity Test | Temperature: $85^{\circ}\text{C}$ Humidity:85%<br>Time:168H                                     |
| Pressure cooker Test                 | Temperature: $121^{\circ}\text{C}$ , 2atm. Humidity:100%<br>Time:24H                            |
| Resistance of soldering heat         | Temperature: $260\pm 5^{\circ}\text{C}$<br>Time of dip soldering: 10s, 3times                   |

Note: The above testing items can be specified by customer's special request

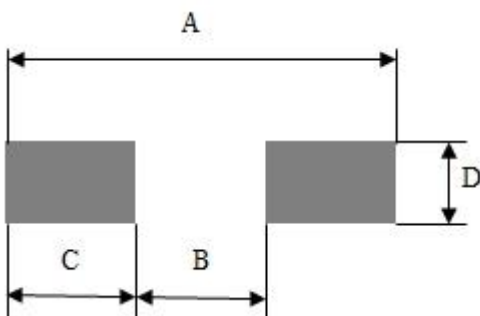
### Product Dimensions



**SOD323**

| REF | mm        | inch        |
|-----|-----------|-------------|
| A   | 1.10(max) | 0.043(max)  |
| A1  | 0.00~0.10 | 0.000~0.004 |
| A3  | 0.15REF   | 0.006REF    |
| b   | 0.25~0.45 | 0.01~0.018  |
| C   | 0.08~0.15 | 0.003~0.006 |
| D   | 1.60~1.80 | 0.063~0.071 |
| E   | 1.15~1.45 | 0.045~0.057 |
| L   | 0.10~0.40 | 0.004~0.016 |
| HE  | 2.30~2.70 | 0.091~0.106 |

### Recommended Soldering Pad



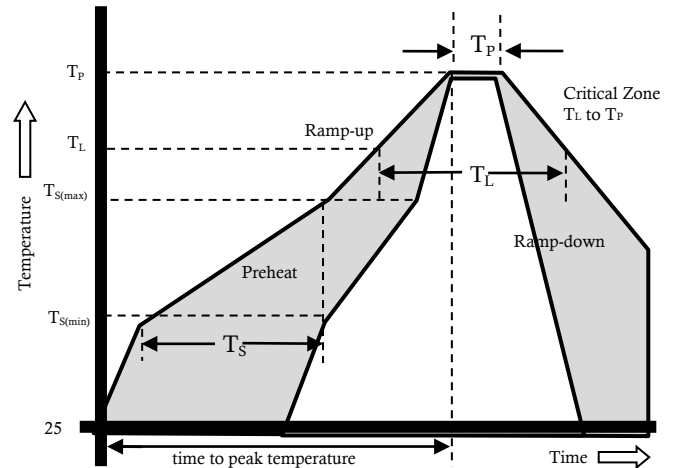
| REF | mm   | inch  |
|-----|------|-------|
| A   | 3.2  | 0.126 |
| B   | 1.08 | 0.043 |
| C   | 1.06 | 0.042 |
| D   | 0.54 | 0.021 |

## Transient Voltage Suppressor

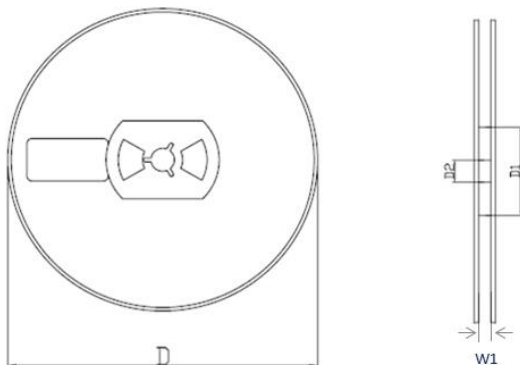
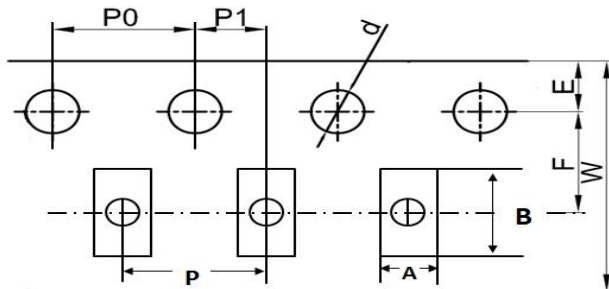
Version: A1 2019-12-02

### Reflow Profile

| Reflow Condition                                                         |                                          | Pb-Free assembly |
|--------------------------------------------------------------------------|------------------------------------------|------------------|
| Pre Heat                                                                 | Temperature Min                          | 150°C            |
|                                                                          | Temperature Max                          | 200°C            |
|                                                                          | Time (min to max)                        | 60 – 180 secs    |
| Average ramp up rate (Liquid) T <sub>amp</sub> (T <sub>L</sub> ) to peak |                                          | 3°C/s max        |
| T <sub>S</sub> (max) to T <sub>L</sub> - Ramp-up Rate                    |                                          | 3°C/s max        |
| Reflow                                                                   | - Temperature (T <sub>L</sub> ) (Liquid) | 217°C            |
|                                                                          | - Temperature (T <sub>L</sub> )          | 60 – 150 secs    |
| Peak Temperature (T <sub>P</sub> )                                       |                                          | 260±0/-5 °C      |
| Time within 5°C of actual peak Temperature (T <sub>P</sub> )             |                                          | 30secs           |
| Ramp-down Rate                                                           |                                          | 6°C/s max        |
| Time 25°C to peak Temperature (T <sub>P</sub> )                          |                                          | 8 mins max.      |
| Do not exceed                                                            |                                          | 260°C            |



### Package Reel Information



| REF | mm            | inch           |
|-----|---------------|----------------|
| A   | 1.46+/-0.20   | 0.057+/-0.008  |
| B   | 3.10+/-0.30   | 0.122+/-0.012  |
| d   | 1.50+0.1/-0   | 0.059+0.004/-0 |
| D   | 178.00+/-2.00 | 7.008+/-0.079  |
| D1  | 55.00+/-3.00  | 2.165+/-0.118  |
| D2  | 13.00+/-0.50  | 0.512+/-0.020  |
| E   | 1.75+/-0.10   | 0.069+/-0.004  |
| F   | 3.50+/-0.20   | 0.138+/-0.008  |
| P   | 4.00+/-0.20   | 0.157+/-0.008  |
| P0  | 4.00+/-0.20   | 0.157+/-0.008  |
| P1  | 2.00+/-0.20   | 0.079+/-0.008  |
| W   | 8.00+/-0.20   | 0.315+/-0.008  |
| W1  | 8.60+/-1.00   | 0.339+/-0.039  |

| OUTLINE | REEL (PCS) | PER CARTON (PCS) | REEL DIAMETERS (mm) | CARTON SIZE(mm) |     |     |
|---------|------------|------------------|---------------------|-----------------|-----|-----|
|         |            |                  |                     | L               | W   | H   |
| TAPING  | 3,000      | 90,000           | 178                 | 390             | 370 | 220 |