

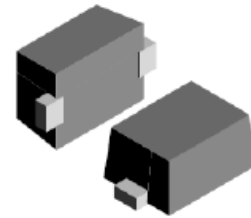
## Transient Voltage Suppressor

Version: A0 2022-07-29

### Features

- IEC 61000-4-2(ESD)±30KV(air), ±30KV(contact)
- IEC61000-4-5(Lightning) 6A (8/20μS)
- 60Watts peak pulse power (tp=8/20μS)
- Low operating voltage and low clamping
- Moisture sensitivity level: Level 1
- Small package:SOD923

### Exterior



### Application information

- Cell Phone
- PDA
- Notebook
- Digital Cameras
- Portable Instrumentation
- Audio and video equipment

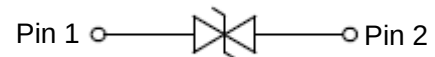
### Package (top view)



### 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 Symbol



### Part Number and Electrical Parameter

| Part Number | IDRM@VDRM |     | VBR <sup>①</sup> @IR |    | Vc@Ipp <sup>②</sup> |   | Vc@Ipp <sup>③</sup> |   | R <sub>DYN</sub> @TLP <sup>③</sup> | Vc@Ipp TLP <sup>③</sup> |    | Co <sup>④</sup> |     |
|-------------|-----------|-----|----------------------|----|---------------------|---|---------------------|---|------------------------------------|-------------------------|----|-----------------|-----|
|             | μA        | V   | V                    | mA | V                   | A | V                   | A | Ω                                  | V                       | A  | pF              |     |
|             | MAX       |     | MIN                  |    | MAX                 |   | MAX                 |   | TYP                                | TYP                     |    | TYP             | MAX |
| BV-D903ZCB  | 0.1       | 3.3 | 3.5                  | 1  | 7                   | 1 | 10                  | 6 | 0.18                               | 8.4                     | 16 | 15              | 18  |

Absolute maximum ratings measured at T= 25°C RH = 45%-75% (unless otherwise noted).

① V<sub>BR</sub> is measured at I<sub>R</sub>=1mA

② Surge Waveform: 8/20μS.

③ TLP parameter: Z<sub>0</sub> = 50Ω, tp = 100ns, tr = 1ns, RDYN is calculated from 4A to16A

④ Off-state capacitance is measured in V<sub>DC</sub>=0V, V<sub>RMS</sub>=0.3V, f=1MHz

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### Part Numbering System

Mark

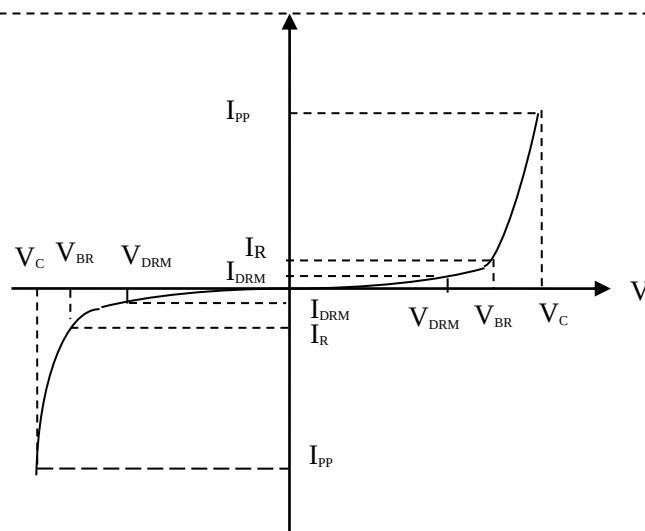
BV D9 03 Z C B  
(1) (2) (3) (4) (5) (6)

- (1) Bencent Transient Voltage Suppressor
- (2) Package: SOD923
- (3) Stand-off Voltage: 3.3V
- (4) Normal Capacitance
- (5) Bidirectional
- (6) Bencent internal Code



### V-I Curve

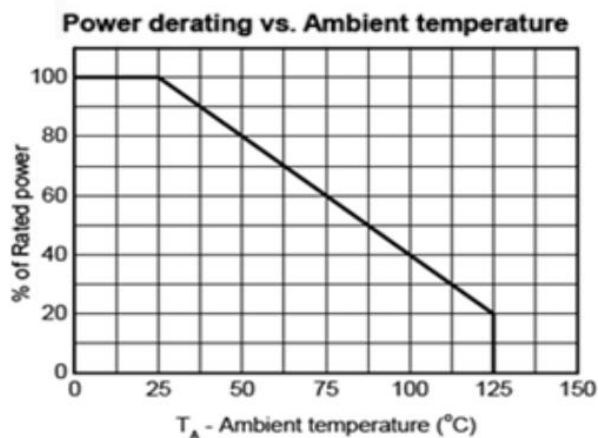
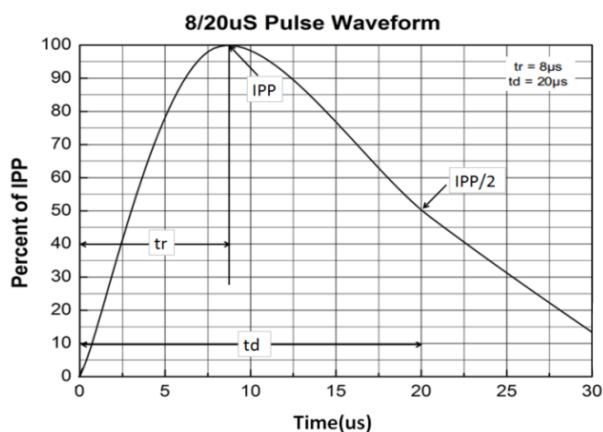
| Parameters | Definition                   |
|------------|------------------------------|
| $V_C$      | Clamping voltage             |
| $I_{pp}$   | Peak pulse current           |
| $V_{DRM}$  | Stand-off Voltage            |
| $V_{BR}$   | Breakdown Voltage            |
| $I_{DRM}$  | Reverse Leakage 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 +150 | °C   |
| $T_S$  | Storage Temperature Range            | -40 to +150 | °C   |

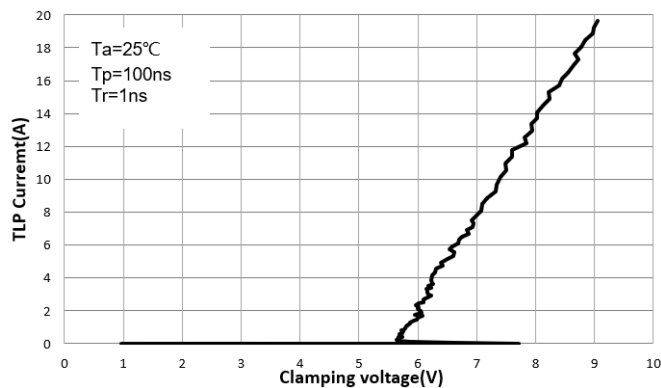
### Typical Characteristics



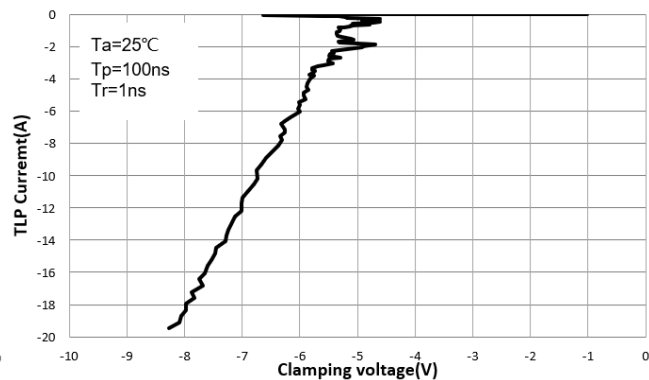
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TLP IV curve Pin1 to Pin2



TLP IV curve Pin2 to Pin1

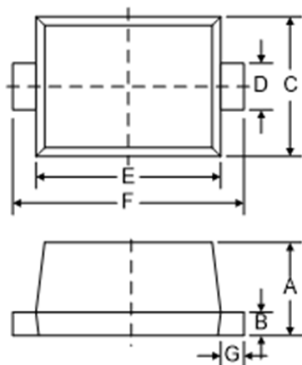


## Environmental Characteristics

| Testing items                        | Technical standards                                                      |
|--------------------------------------|--------------------------------------------------------------------------|
| HAST                                 | Temperature: 130±2℃ Bias=80%V <sub>DRM</sub> .Humidity:85±5%<br>Time:96H |
| High Temperature Storage Test        | Temperature: 150℃<br>Time:1000H                                          |
| High-low Temperature Cycle test      | Temperature: From -55℃ to125℃<br>Dwell time : 30min,1000cycles           |
| High Temperature &High Humidity Test | Temperature: 85℃Humidity:85%<br>Time:1000H                               |
| Pressure cooker Test                 | Temperature: 121℃, 2atm. Humidity:100%<br>Time:96H                       |
| Resistance of soldering heat         | Temperature: 260±5℃<br>Time of dip soldering: 10s, 3times                |

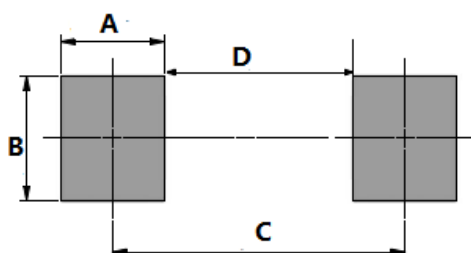
Note: The above testing items can be specified by customer's special request

## Product Dimensions



| REF | Millimeters |      | Inches |       |
|-----|-------------|------|--------|-------|
|     | Min.        | Max. | Min.   | Max.  |
| A   | 0.39        | 0.45 | 0.014  | 0.017 |
| B   | 0.06        | 0.2  | 0.003  | 0.007 |
| C   | 0.55        | 0.65 | 0.022  | 0.026 |
| D   | 0.15        | 0.3  | 0.006  | 0.010 |
| E   | 0.7         | 0.9  | 0.030  | 0.034 |
| F   | 0.90        | 1.10 | 0.036  | 0.044 |
| G   | 0.05        | 0.15 | 0.002  | 0.006 |

## Recommended Soldering Pad



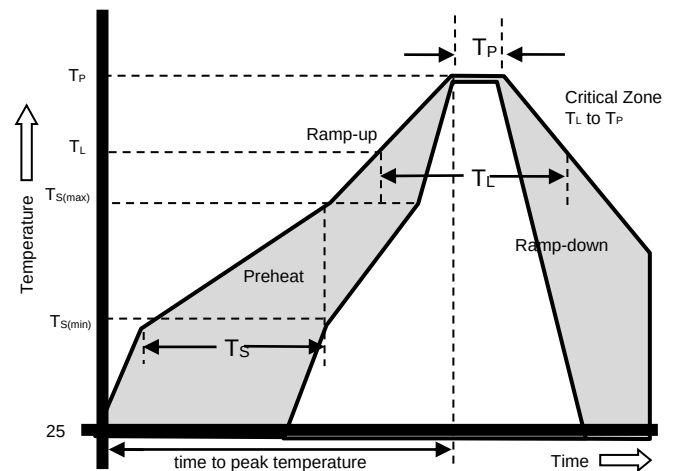
| REF | mm     | inch  |
|-----|--------|-------|
| A   | 0.45   | 0.012 |
| B   | 0.45   | 0.016 |
| C   | 0.9    | 0.035 |
| D   | 0.6BSC | 0.024 |

## Transient Voltage Suppressor

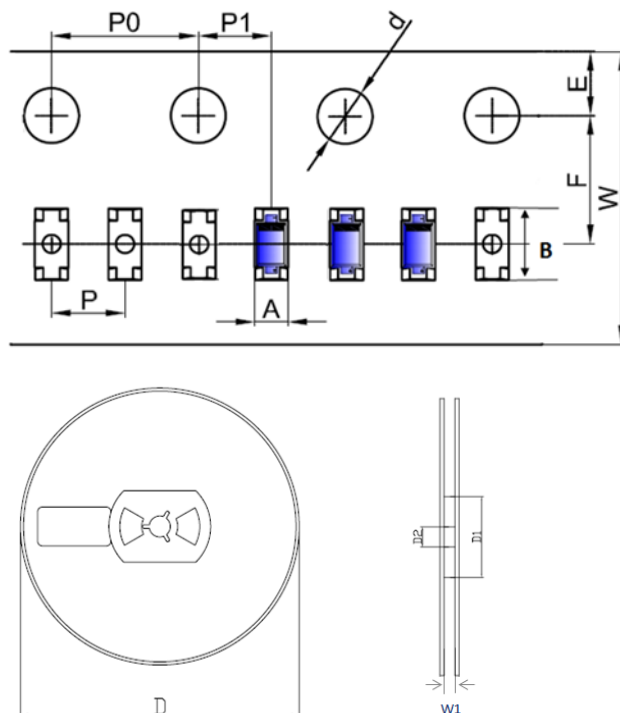
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### Reflow Profile

| Reflow Condition                                                         |                                          | Pb-Free assembly |
|--------------------------------------------------------------------------|------------------------------------------|------------------|
| Pre Heat                                                                 | Temperature Min                          | 150°C            |
|                                                                          | Temperature Max                          | 200°C            |
|                                                                          | Time (Min toMax)                         | 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   | 0.75+/-0.10   | 0.030+/-0.004  |
| B   | 1.2+/-0.10    | 0.047+/-0.004  |
| 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   | 2.00+/-0.20   | 0.079+/-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  | 8,000      | 240,000          | 178                 | 380             | 220 | 205 |