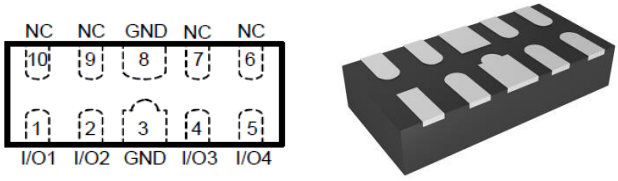
## Transient Voltage Suppressor

Version: A2 2018-03-12

### Features

- IEC 61000-4-2(ESD)±15KV(air), ±8KV(contact)
- ESD Maximum ±17KV (air), ±12KV (contact)
- IEC61000-4-4 (EFT) 40A (5/50ns)
- IEC61000-4-5 (Lightning) 4 A (8/20us)
- 150Watts peak pulse power per line (tp=8/20μS)
- Low capacitance: 0.5 pF typical (I/O to I/O)
- Low operating voltage: 5V
- Low clamping voltage
- Moisture sensitivity level: level 1
- Weight 15 mg (Approximate)
- Small package: DFN2510-10L

### Exterior




DFN2510-10L

### Application Information

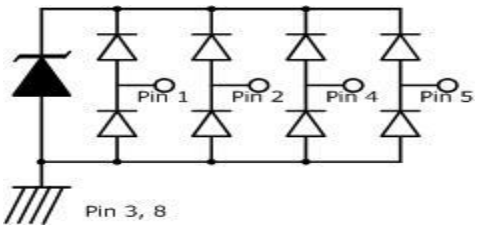
- High Definition Multi-Media Interface (HDMI)
- Digital Visual Interface (DVI)
- Unified Display Interface (UDI)
- Display Port
- MDDI Ports
- PCI Express
- Serial ATA

### Package (top view)


### Agency Approvals

| Icon | Description |
|---|---|
| RoHS | Compliance with 2011/65/EU |
| HF | Compliance withIEC61249-2-21:2003 |
| Pb | Mean lead free |

### Schematic




### Part Number and Electrical Parameter

| Part Number | Mark | $I_{DRM}$@ $V_{DRM}$ | | $V_{BR}$①@ $I_R$ | | Vc@Ipp② | | Vc@Ipp② | | CO③ | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | μA | V | V | mA | V | A | V | A | pF I/O-I/O | pF I/O-GND |
| | | MAX | | MIN | | MAX | | MAX | | MAX | MAX |
| BV_ULC0524P | P524 | 5 | 5 | 6 | 1 | 15 | 1 | 25 | 4 | 0.8 | 1.3 |

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

① $V_{BR}$ is measured at $I_R$=1mA

② Surge Waveform: 8/20μ S.

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

**Transient Voltage Suppressor**

## Part Numbering System

BV ULC0524P
(1) (2)

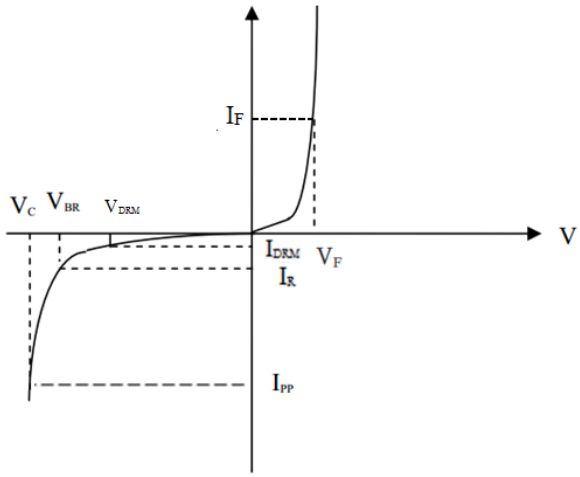
(1) Bencent Transient Voltage Suppressor
(2) Series: ULC0524P etc.

## Mark


P524: Part Number

## V-I Curve

| Parameters | Definition |
|---|---|
| $V_C$ | Clamping Voltage |
| $I_{pp}$ | Surge waveform8/20μ s |
| $V_{DRM}$ | Stand-off Voltage |
| $V_{BR}$ | Breakdown Voltage |
| $I_{DRM}$ | Reverse Leakage Current |
| $I_R$ | Test Current |
| Ppp | Peak Pulse Power Dissipation |




## Thermal Considerations

| symbol | Parameter | Value | Unit |
|---|---|---|---|
| $T_J$ | Operating Junction Temperature Range | -55 to +150 | ℃ |
| $T_S$ | Storage Temperature Range | -55 to +150 | ℃ |

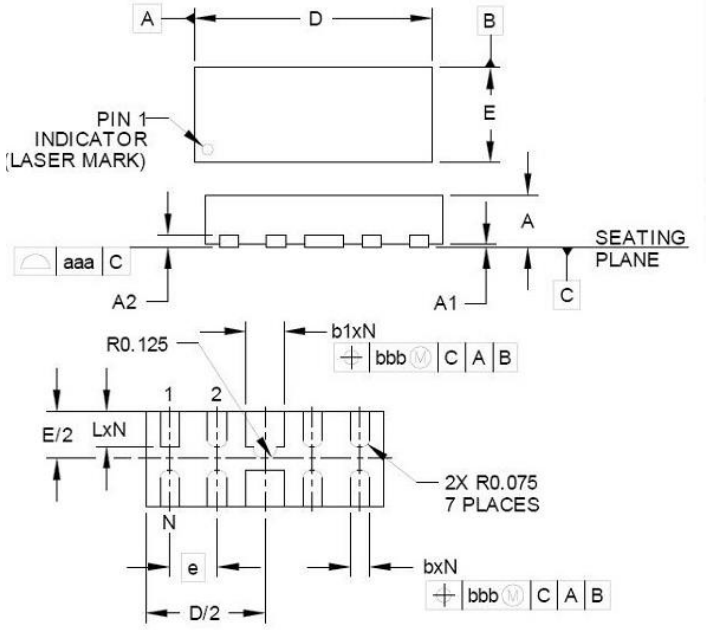
## Environmental Characteristics

| Testing items | Technical standards |
|---|---|
| High temperature Reverse Bias Test | Temperature: 150±3℃ Bias=80%$V_{DRM}$<br>Time: 168H |
| High Temperature Life Test | Temperature: 150℃<br>Time: 168H |
| High-low Temperature Cycle test | Temperature: From -40℃ to125℃<br>Dwell time: 30min, 10-100cycles |
| High Temperature &High Humidity Test | Temperature: 85℃ Humidity: 85%<br>Time: 168H |
| Pressure cooker Test | Temperature: 121℃, 2atm. Humidity: 100%<br>Time: 24H-168H |
| Resistance of soldering heat | Temperature: 260±5℃<br>Time of dip soldering: 10s, 3times |

Note: The above testing items can be specified by customers by contacting Bencent service

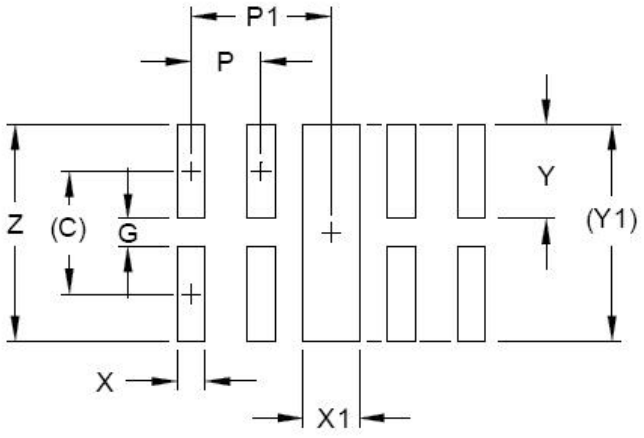
**Transient Voltage Suppressor**

## Product Dimensions




| REF | mm | inch |
|---|---|---|
| A | 0.50±0.05 | 0.020±0.002 |
| A1 | 0.03±0.03 | 0.001±0.001 |
| A2 | 0.13（Max） | 0.005（Max） |
| b | 0.20±0.05 | 0.008±0.002 |
| b1 | 0.40±0.05 | 0.016±0.002 |
| D | 2.50±0.10 | 0.098±0.004 |
| E | 1.00±0.10 | 0.039±0.004 |
| e | 0.50 | 0.020 |
| L | 0.38±0.05 | 0.015±0.002 |

## Recommended Soldering Pad




| REF | mm | inch |
|---|---|---|
| C | 0.875 | 0.034 |
| G | 0.20 | 0.008 |
| P | 0.50 | 0.020 |
| P1 | 1.00 | 0.039 |
| X | 0.20 | 0.008 |
| X1 | 0.40 | 0.016 |
| Y | 0.65 | 0.026 |
| Y1 | 1.55 | 0.061 |
| Z | 1.55 | 0.061 |

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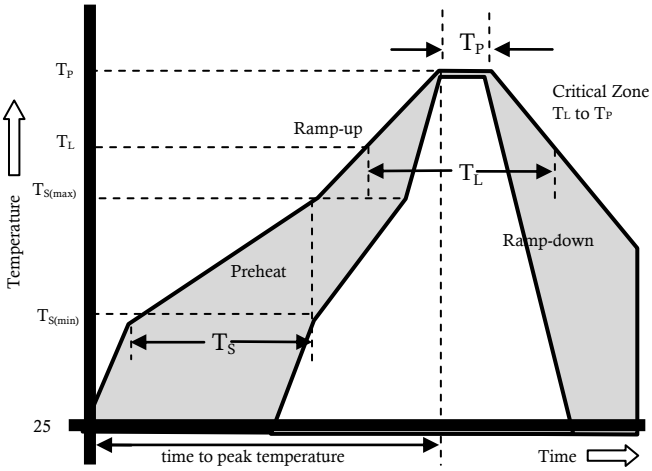
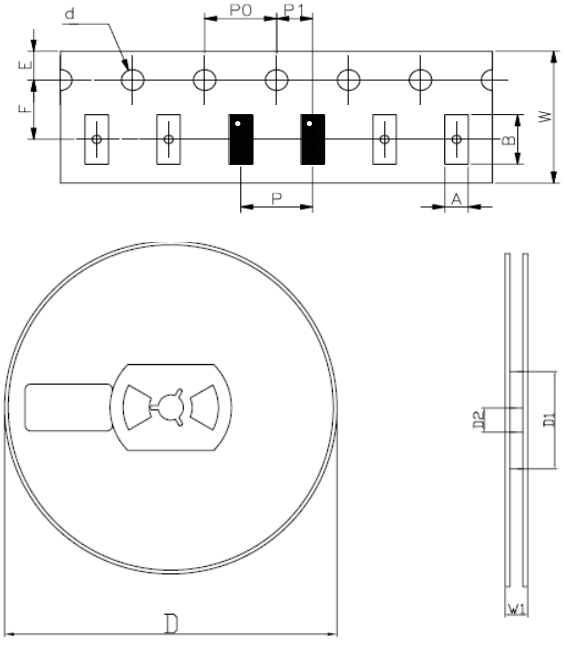
## Reflow Profile

| 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) Tamp ($T_L$) to peal | | 3°C/s max |
| $T_S$(max) to $T_L$ - Ramp-up Rate | | 3°C/s max |
| Reflow | - Temperature ($T_L$) (Liquid) | 217°C |
| | - Temperature ($T_L$) | 60 – 150 secs |
| Peak Temperature ($T_P$) | | 260+0/-5 °C |
| Time within 5°C of actual peak Temperature ($T_P$) | | 8– 15secs |
| Ramp-down Rate | | 6°C/s max |
| Time 25°C to peak Temperature ($T_P$) | | 8 mins Max. |
| Do not exceed | | 260°C |




## Package Reel Information




| REF | mm | inch |
|---|---|---|
| A | 1.2+/-0.1 | 0.047+/-0.004 |
| B | 2.7+/-0.1 | 0.106+/-0.004 |
| d | 1.50+0.1/-0 | 0.059+0.004/-0 |
| D | 178+/-1.0 | 7.01+/-0.039 |
| D1 | 55+/-3 | 2.165+/-0.118 |
| D2 | 13+/-0.5 | 0.512+/-0.020 |
| E | 1.75+/-0.1 | 0.069+/-0.004 |
| F | 3.6+/-0.2 | 0.138+/-0.008 |
| P | 4.0+/-0.2 | 0.158+/-0.008 |
| P0 | 4.0+/-0.2 | 0.158+/-0.008 |
| P1 | 2.0+/-0.2 | 0.079+/-0.008 |
| W | 8.0+/-0.2 | 0.315+/-0.008 |
| W1 | 14.4+/-0.5 | 0.567+/-0.020 |

| Outline | Reel (pcs) | Per Carton (pcs) | Reel Diameters (mm) | Carton Size(mm) | | |
|---|---|---|---|---|---|---|
| | | | | L | W | H |
| Taping | 3,000 | 90,000 | 177 | 390 | 370 | 220 |

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