

## Transient Voltage Suppressor

### 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

### Application Information

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

### Agency Approvals

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

### Part Number and Electrical Parameter

Part Number	Mark	I <sub>DRM</sub> @ V <sub>DRM</sub>		V <sub>BR</sub> <sup>①</sup> @ I <sub>R</sub>		V <sub>c</sub> @I <sub>pp</sub> <sup>②</sup>		V <sub>c</sub> @I <sub>pp</sub> <sup>②</sup>		CO <sup>③</sup>	
		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

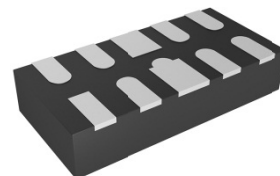
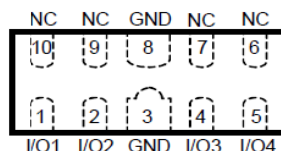
Absolute maximum ratings measured at T<sub>A</sub>= 25°C RH = 45%-75% (unless otherwise noted).

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

② Surge Waveform: 8/20 μ S.

③ Off-state capacitance is measured in V<sub>DC</sub>=0V, V<sub>RMS</sub>=1V, f=1MHz.

### Exterior

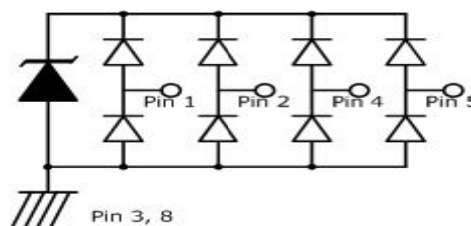


DFN2510-10L

### Package (top view)



### Schematic



## Transient Voltage Suppressor

Version: A1 2014-03-26

Part Numbering System

Mark

BV ULC0524P

(1) (2)

(1) Bencent Transient Voltage Suppressor

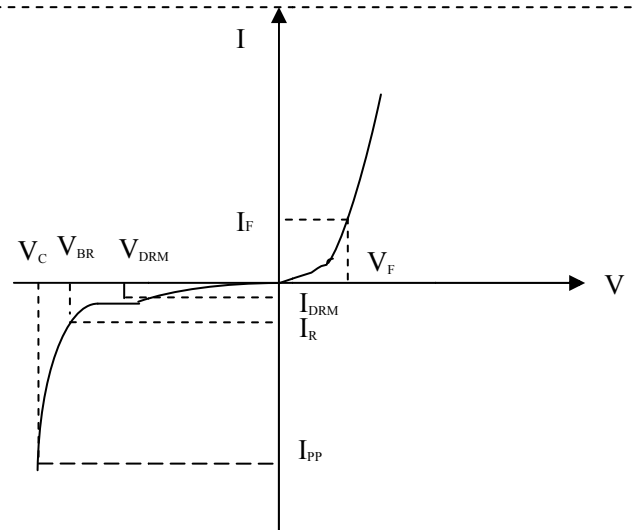
(2) Series:ULC0524P etc.



P524: 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	-55 to +150	$^{\circ}$ C
$T_S$	Storage Temperature Range	-55 to +150	$^{\circ}$ C

### Environmental Characteristics

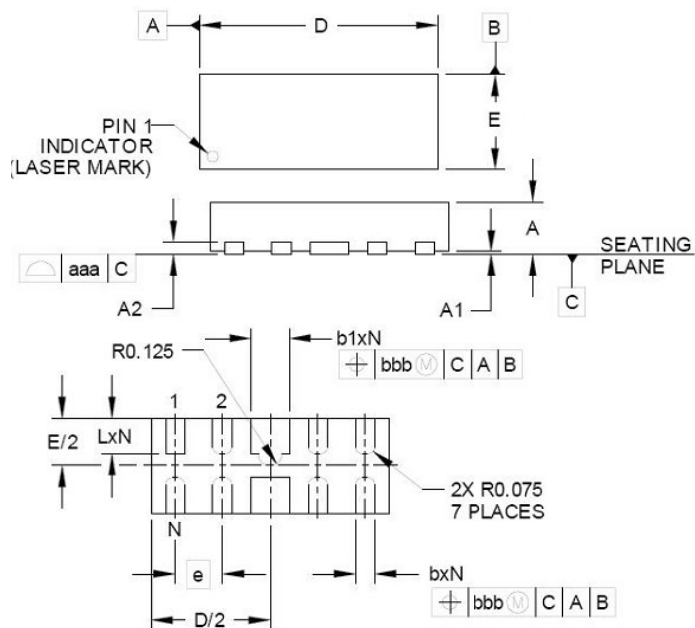
Testing items	Technical standards
High temperature Reverse Bias Test	Temperature: $150 \pm 3^{\circ}$ C Bias=80% $V_{DRM}$ Time:168H
High Temperature Life Test	Temperature: $150^{\circ}$ C Time:168H
High-low Temperature Cycle test	Temperature: From $-40^{\circ}$ C to $125^{\circ}$ C Dwell time : 30min,10-100cycles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

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

Transient Voltage Suppressor

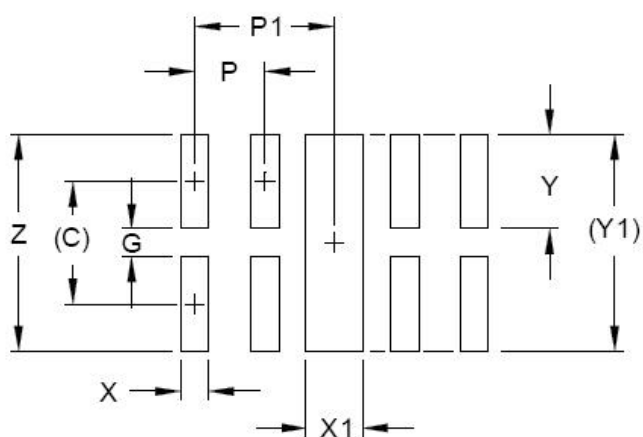
Version: A1 2014-03-26

Product Dimensions



REF	mm	inch
A	0.58±0.08	0.023±0.003
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



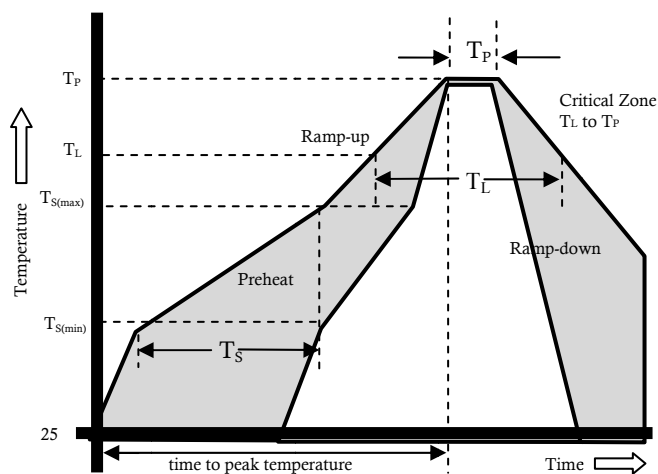
REF	mm	inch
C	0.875	0.034
G	0.20	0.008
P	0.50	0.020
P1	1.00	0.039
X	0.20	0.008
X1	0.40	0.016
Y	0.65	0.026
Y1	1.55	0.061
Z	1.55	0.061

**Transient Voltage Suppressor**

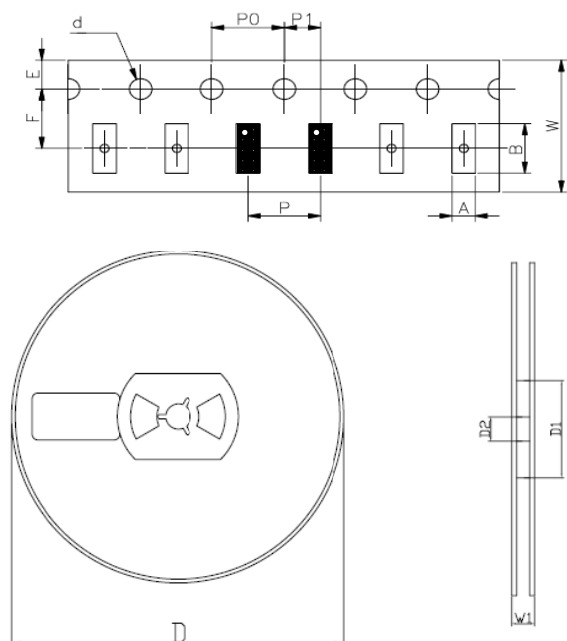
Version: A1 2014-03-26

**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> )		8– 15secs
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	1.3+/-0.1	0.051+/-0.004
B	3.0+/-0.1	0.354+/-0.004
d	1.25+/-0.1	0.049+/-0.004
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