

Transient Voltage Suppressor

Version: A1 2019-12-02

Features

- IEC 61000-4-2(ESD): $\pm 30\text{KV}$ (air), $\pm 30\text{KV}$ (contact)
- IEC61000-4-4 (EFT) 40A (5/50ns)
- IEC61000-4-5 (Surge) 10A (8/20 μ s)
- 100Watts peak pulse power (tp=8/20 μ S)
- Low clamping voltage
- Moisture sensitivity level: Level 1
- Weight 5.0 mg
- Small package: SOD323

Exterior



SOD323

Application information

- Portable instruments
- Desktops, Servers and Notebooks
- Cellular Phones
- MP3 Players
- Keypads, Side Keys
- USB2.0 Data Line Protection

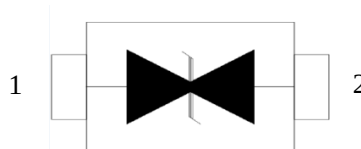
Package (top view)



Agency Approvals

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

Schematic



Part Number and Electrical Parameter

Part Number	$I_{\text{DRM}}@V_{\text{DRM}}$		$V_{\text{TR}}^{\text{①}}@I_{\text{TR}}$		$V_{\text{SB}}^{\text{①}}@I_{\text{SB}}$		$V_{\text{c}}@I_{\text{pp}}^{\text{②}}$		$V_{\text{c}}@I_{\text{pp}}^{\text{②}}$		$C_{\text{o}}^{\text{③}}$	
	μA	V	V	mA	V	mA	V	A	V	A	pF	
	MAX		MIN		MIN		MAX		MAX		TYP	MAX
BV-D32.5UCA	0.5	2.5	2.8	1	2.6	50	5	1	10	10	3	5

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

① V_{TR} is measured at $I_{\text{TR}}=1\text{mA}$, V_{SB} is measured at $I_{\text{SB}}=50\text{mA}$, pin1 to pin2 and pin2 to pin1

② Surge Waveform: 8/20 μs , pin1 to pin2 and pin2 to pin1

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 2.5 U C A
(1) (2) (3) (4) (5) (6)

- (1) Bencent Transient Voltage Suppressor
- (2) Package:SOD323
- (3) Off-state Voltage: 2.5V
- (4) Low capacitance
- (5) Bi-directional
- (6) Bencent internal code

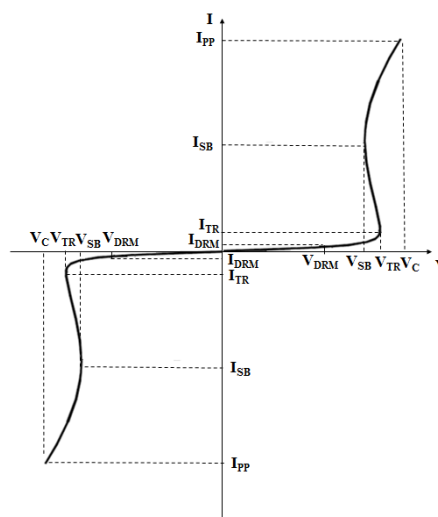
V-I Curve

Parameters	Definition
V_C	Clamping voltage
I_{PP}	Surge waveform 8/20 μ s
V_{DRM}	Stand-off Voltage
V_{TR}	Trigger Voltage
V_{SB}	Snapback Voltage
I_{DRM}	Reverse Leakage Current
I_{TR}	Test current
I_{SB}	Test current
P_{PP}	Peak Pulse Power Dissipation

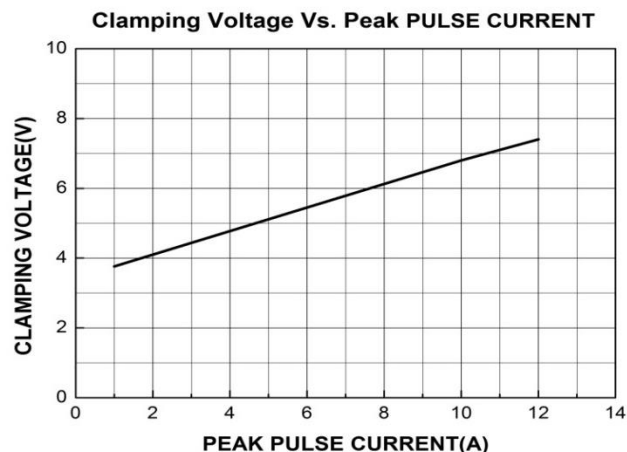
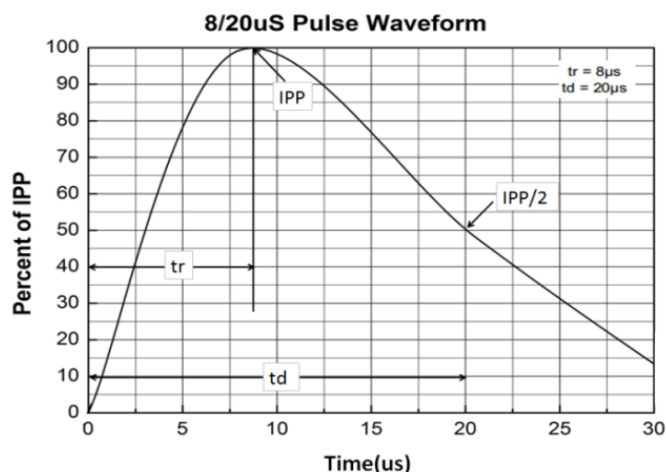
Mark



ZC: Part Number



Typical Characteristics



Thermal Considerations

symbol	Parameter	Value	Unit
T_J	Operating Junction Temperature Range	-45 to +125	$^{\circ}\text{C}$
T_S	Storage Temperature Range	-55 to +150	$^{\circ}\text{C}$

Transient Voltage Suppressor

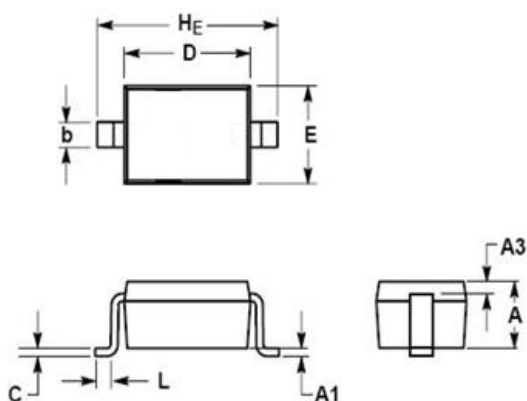
Version: A1 2019-12-02

Environmental Characteristics

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

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

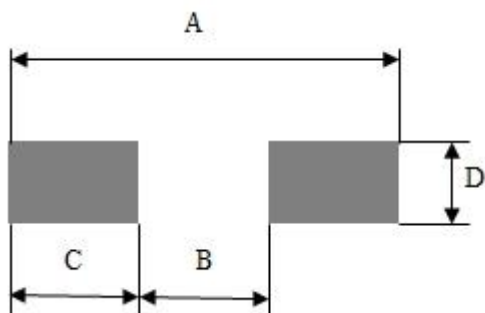
Product Dimensions



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



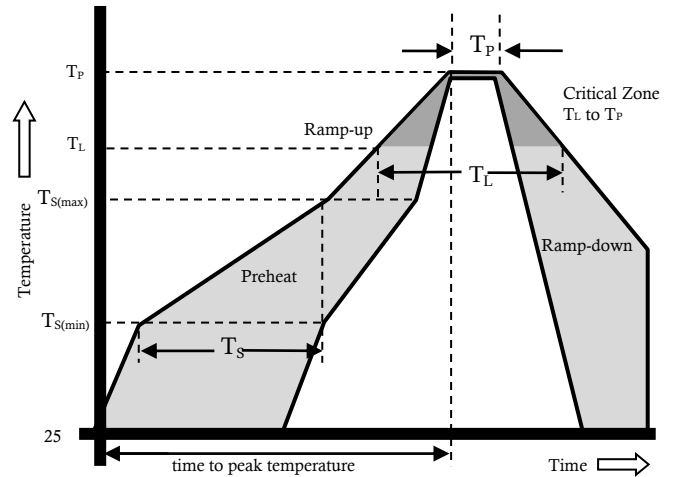
REF	mm	inch
A	3.2	0.126
B	1.08	0.043
C	1.06	0.042
D	0.54	0.021

Transient Voltage Suppressor

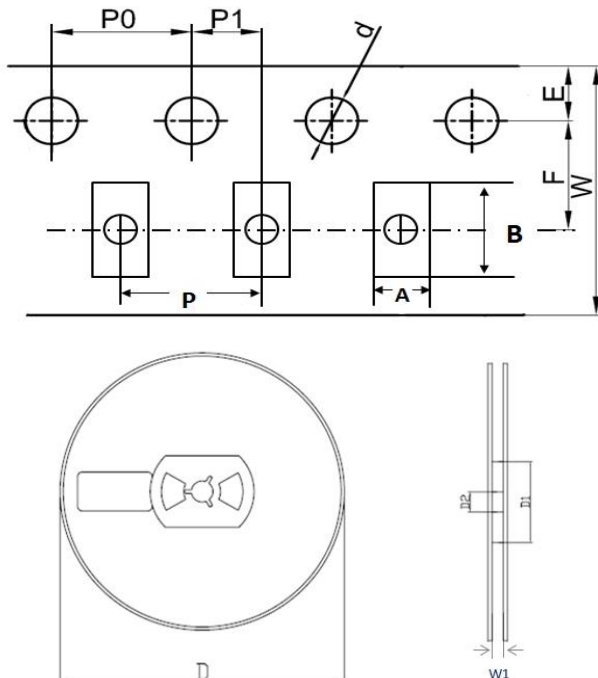
Version: A1 2019-12-02

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(Liquidus Temp(T_L) to peak)		3°C/sec. Max.
Ts(max) to T_L - Ramp-up Rate		3°C/sec. Max.
Reflow	- Temperature (T_L) (Liquidus)	+217°C
	- Temperature (T_L)	60 – 150 secs.
Peak Temp (T_P)		+(260+0/-5) °C
Time within 5°C of actual Peak Temp (T_P)		25 secs.
Ramp-down Rate		6°C/sec. Max.
Time 25°C to peak Temp (T_P)		8 min. 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	9.50+/-1.00	0.374+/-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