

Transient Voltage Suppressor

Version: A2 2019-12-02

Features

- IEC 61000-4-2(ESD) $\pm 30\text{KV}$ (air), $\pm 30\text{KV}$ (contact)
- IEC61000-4-5(Lightning) 130A (8/20 μs)
- 1820 Watts peak pulse power ($t_p=8/20\mu\text{ s}$)
- Low clamping voltage
- Small package: SOD323
- Moisture sensitivity level: Level 1
- Weight approx. 5.0 mg

Exterior



SOD323

Application information

- Cellular Phones
- DC power line

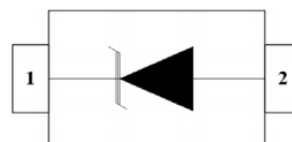
Package (top view)



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	$I_{\text{DRM}}@V_{\text{DRM}}$		$V_{\text{BR}}^{①}@I_{\text{R}}$		$V_{\text{c}}@I_{\text{pp}}^{②}$		$V_{\text{c}}@I_{\text{pp}}^{②}$		$\text{Co}^{③}$
	μA	V	V	mA	V	A	V	A	pF
	MAX		MIN		TYP		MAX		MAX
BV-D305ZH	1	5	6	1	11	100	14	130	2000

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

① V_{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 $V_{\text{DC}}=0\text{V}$, $V_{\text{RMS}}=1\text{V}$, $f=1\text{MHz}$

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Part Numbering System

Mark

BV D3 05 Z H
(1) (2) (3) (4) (5)

(1) Bencent Transient Voltage Suppressor

(2) Package: SOD323

(3) Off-state Voltage: 5V

(4) Normal Capacitance

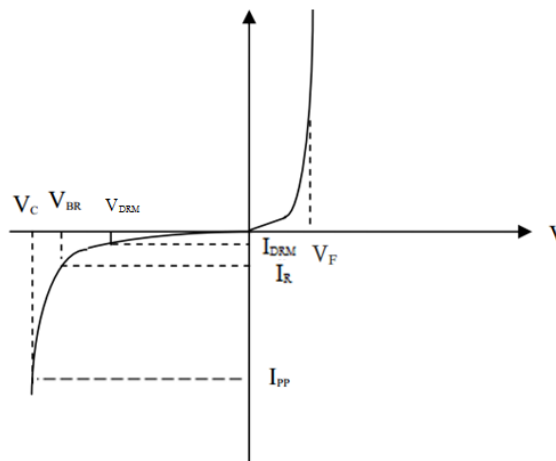
(5) Bencent internal code



U5H: Part Number

V-I Curve

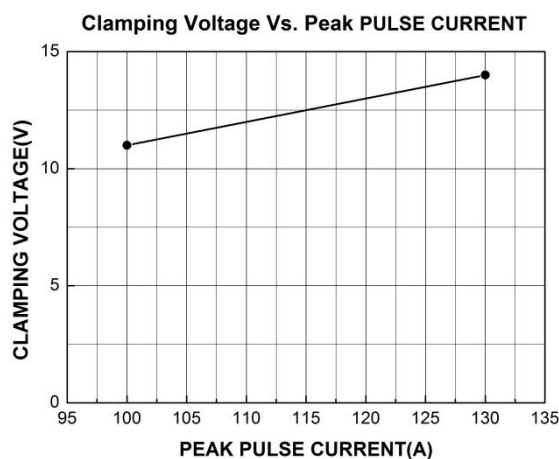
Parameters	Definition
VC	Clamping voltage
Ipp	Surge waveform 8/20μ s
VDRM	Stand-off Voltage
VBR	Breakdown Voltage
IDRM	Reverse Leakage Current
IR	Test current
PPP	Peak Pulse Power Dissipation



Thermal Considerations

symbol	Parameter	Value	Unit
T _J	Operating Junction Temperature Range	-40 to +125	°C
T _S	Storage Temperature Range	-55 to +150	°C

Typical Characteristics



Transient Voltage Suppressor

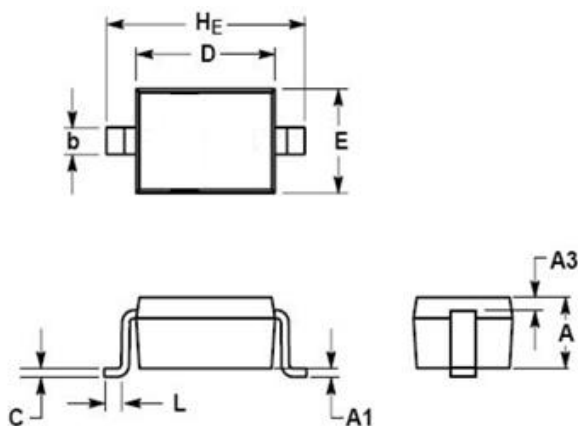
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Environmental Characteristics

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,10cycles
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

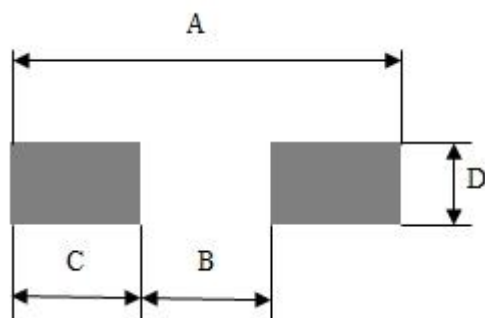
Product Dimensions



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
H_E	2.30~2.70	0.091~0.106

SOD323

Recommended Soldering Pad



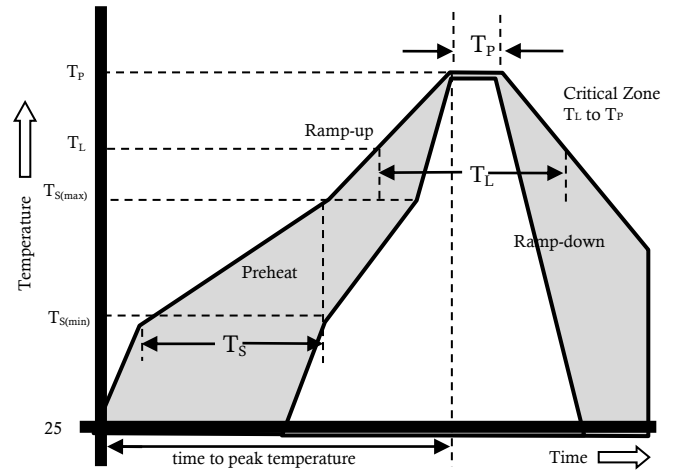
REF	mm	inch
A	3.2	0.126
B	1.08	0.043
C	1.06	0.042
D	0.54	0.021

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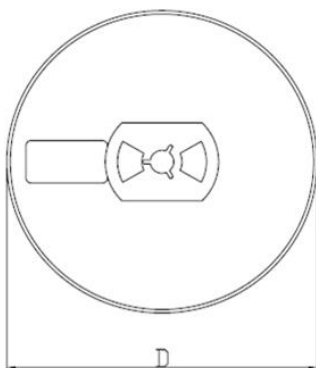
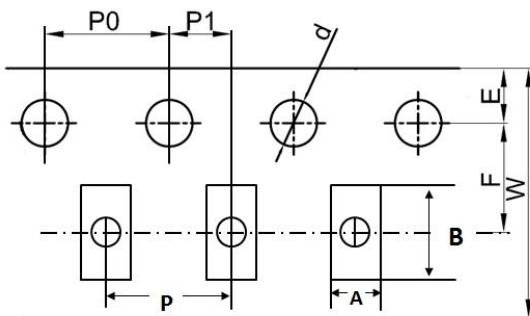
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Reflow Profile

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) T _{amp} (TL) to peak		3°C/s max
TS(max) to TL - Ramp-up Rate		3°C/s max
Reflow	- Temperature (TL) (Liquid)	217°C
	- Temperature (TL)	60 – 150 secs
Peak Temperature (TP)		260±0/-5 °C
Time within 5°C of actual peak Temperature (TP)		30secs
Ramp-down Rate		6°C/s max
Time 25°C to peak Temperature (TP)		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