

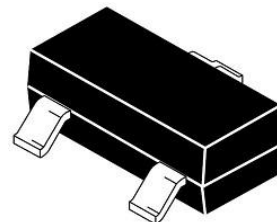
Transient Voltage Suppressor

Version: A0 2017-03-08

Features

- IEC61000-4-2(ESD) $\pm 25\text{KV}$ (air) , $\pm 15\text{KV}$ (contact)
- IEC61000-4-5(Lightning) 4A (8/20 μS)
- IEC61000-4-4(EFT)40A(5/50nS)
- 240 Watts peak pulse power per Line(tp=8/20 μS)
- Protects two Bi-directional I/O lines
- Low clamping voltage
- Moisture sensitivity level: Level 1
- Weight 8 mg(Approximate)

Exterior

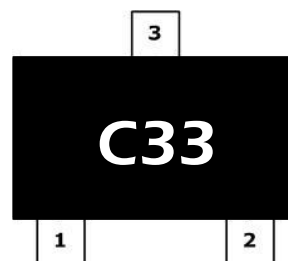


SOT-23

Application Information

- DC power

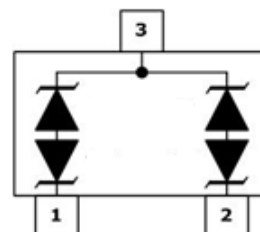
Package (top view)



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	$I_{\text{DRM}}@V_{\text{DRM}}$		$V_{\text{BR}}^{\text{①}}@I_{\text{R}}$		$V_{\text{C}}@I_{\text{PP}}^{\text{②}}$		$V_{\text{C}}@I_{\text{PP}}^{\text{②}}$		$C_{\text{O}}^{\text{③}}$
	μA	V	V	mA	V	A	V	A	pF
	MAX		MIN		MAX		MAX		MAX
BV-T333Z2CA	1.0	33.0	34.6	1.0	58.0	1.0	60.0	4.0	30

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

① V_{BR} is measured at $I_{\text{R}} = 1\text{mA}$, Pin 3 to 1,2

② Surge Waveform: 8/20 μS , Pin 3 to 1,2

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

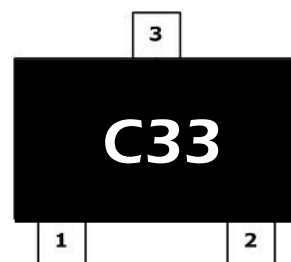
Transient Voltage Suppressor

Part Numbering System

BV T3 33 Z 2 C A
(1) (2) (3) (4) (5) (6) (7)

- (1) Bencent Transient Voltage Suppressor
- (2) Package: SOT23
- (3) Stand-off Voltage: 33V
- (4) Normal Capacitance
- (5) 2 Lines protection
- (6) Bidirectional
- (7) Bencent internal code

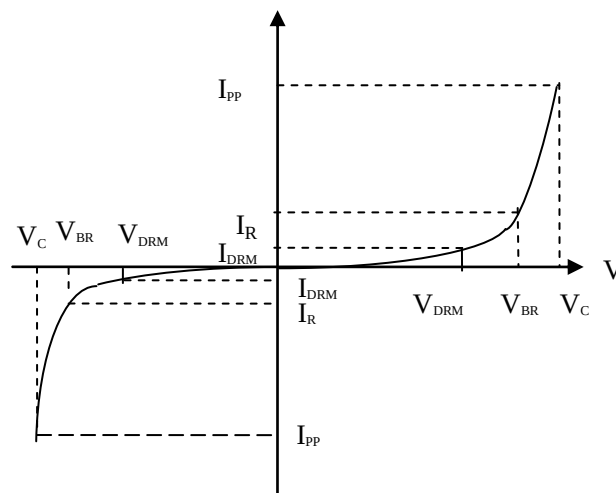
Mark



C33: Part Number

V-I Curve

Parameters	Definition
V_C	Clamping voltage
I_{PP}	Surge waveform 8/20μ 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	-40 to +125	°C
T_S	Storage Temperature Range	-55 to +150	°C

Typical Characteristics

Figure 1. Power Detating

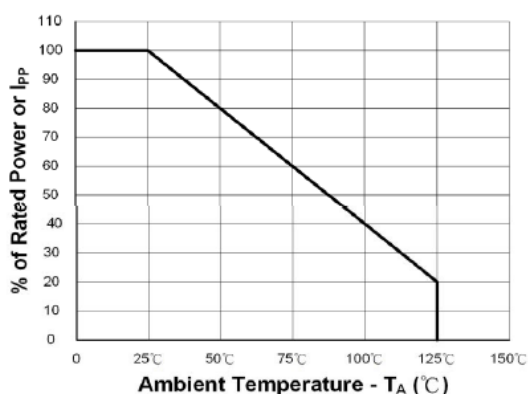
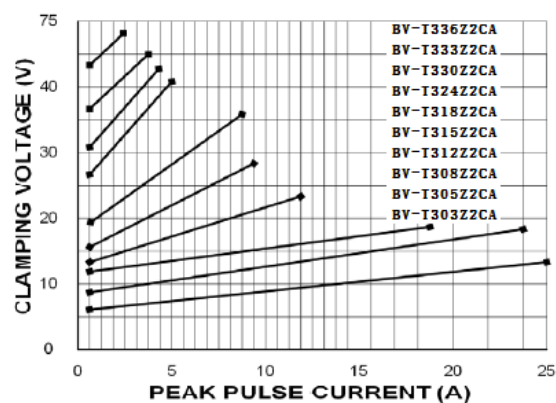


Figure 2. Clamping Voltage vs. Peak



Transient Voltage Suppressor

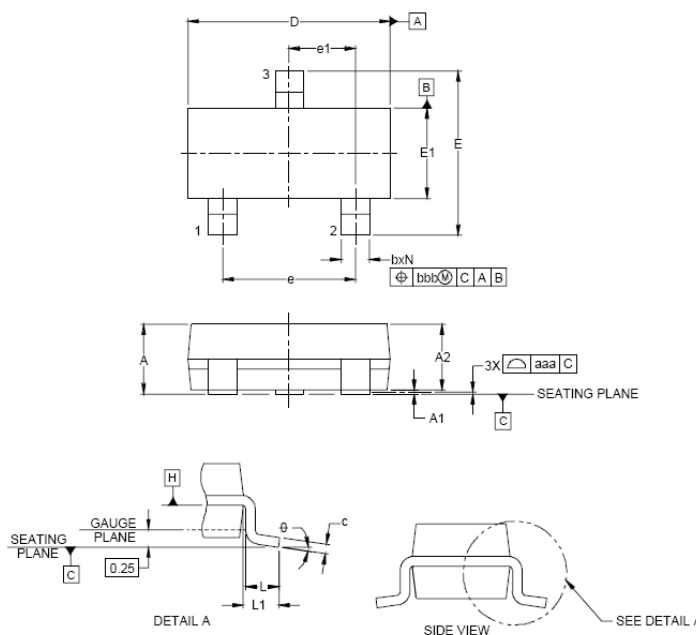
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Environmental Characteristics

Testing items	Technical standards
High temperature Reverse Bias Test	Temperature: $150\pm 3^{\circ}\text{C}$ 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

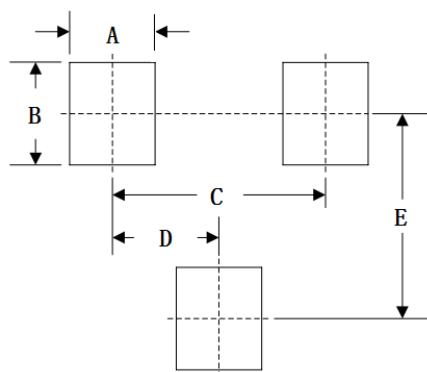
Note: The above testing items can be specified by customer's special request

Product Dimensions



REF	mm	inch
A	0.9~1.12	0.035~0.044
A1	0.1 max	0.004 max
A2	0.88~1.02	0.035~0.040
b	0.3~0.5	0.012~0.02
c	0.08~0.18	0.003~0.007
D	2.8~3.0	0.11~0.118
E	2.25~2.55	0.089~0.1
E1	1.2~1.4	0.047~0.055
L	0.3~0.5	0.012~0.02
L1	0.5~0.6	0.02~0.024
e	1.9	0.075
e1	0.95	0.037
θ	8 degree(Max)	

Recommended Soldering Pad



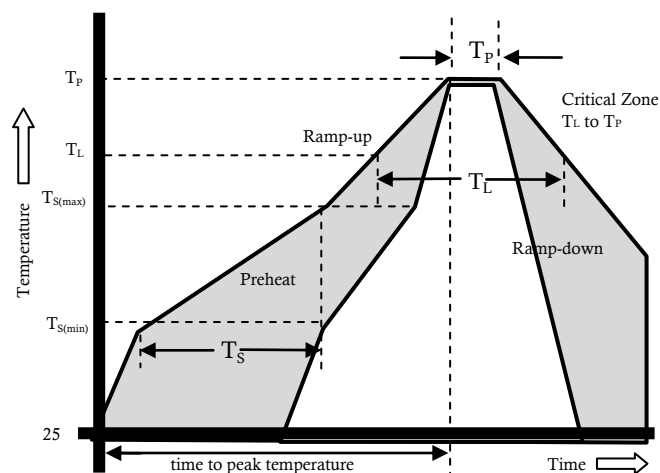
REF	mm	inch
A	0.8	0.031
B	0.9	1.535
C	1.9	0.075
D	0.95	0.037
E	1.8	0.071

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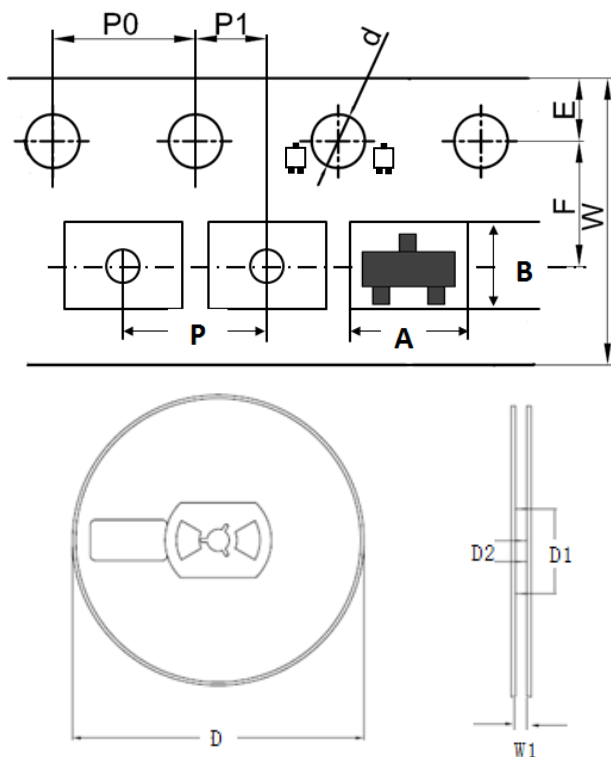
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Reflow Profile

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) 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)		25secs
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	3.10+/-0.2	0.122+/-0.008
B	2.9+/-0.2	0.114+/-0.008
d	1.5+0.1/-0	0.059+0.004/-0
D	178+/-2.0	7.008+/-0.079
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	3.5+/-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	8.6+/-0.1	0.339+/-0.004

Outline	Reel (pcs)	Per Carton (pcs)	Reel Diameters (mm)	Carton Size(mm)		
				L	W	H
Taping	3,000	90,000	178	390	370	220