

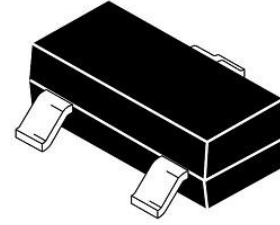
Transient Voltage Suppressor

Version: A2 2024-1-18

Features

- IEC61000-4-2(ESD)±25KV(air),±20KV(contact)
- IEC61000-4-5(Lightning) 4A (8/20uS)
- IEC61000-4-4(EFT) 40A (5/50nS)
- 60 Watts peak pulse power per Line (tp=8/20μS)
- Low clamping voltage
- Weight 8 mg (Approximate)
- Moisture sensitivity level: Level 1

Exterior

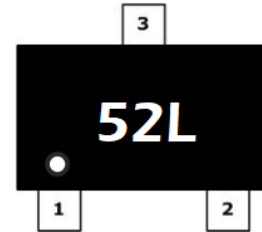


SOT-23

Application Information

- Serial SATA
- Desktops, Servers and Notebooks
- PCI Express
- MDDI Ports
- USB Data Line Protection
- Display Ports
- DVI

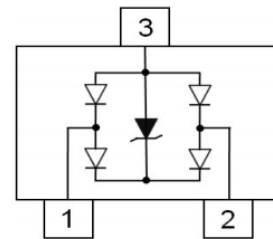
Package (top view)



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 _{DRM} @V _{DRM}		V _{BR} ^① @I _R		V _c @I _{pp} ^②		V _c @I _{pp} ^②		Co ^③	Co ^④
	μA	V	V	mA	V	A	V	A	pF	pF
	MAX		MIN		MAX		MAX		TYP	TYP
BV-T305U2A	0.1	5	6	1	10	1	15	4	0.2	0.4

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

① V_{BR} is measured at I_R=1mA, Pin 1, 2 to 3

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

③ Off-state capacitance is measured in V_{DC}=0V, V_{RMS}=0.3V, f=1MHz, between Pin 1 and 2

④ Off-state capacitance is measured in V_{DC}=0V, V_{RMS}=0.3V, f=1MHz, between Pin 1 and 3, between pin 2 and 3

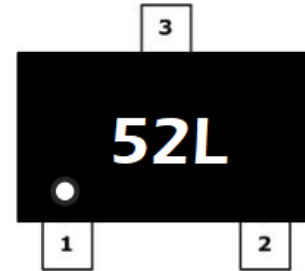
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Part Numbering System

Mark

BV T3 05 U 2 A
(1) (2) (3) (4) (5) (6)

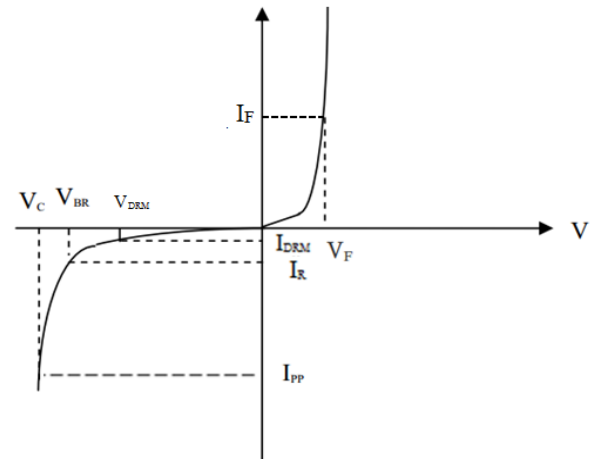
- (1) Bencent Transient Voltage Suppressor
- (2) Package: SOT23
- (3) Stand-off Voltage: 5V
- (4) Low Capacitance
- (5) 2 Lines protection (Polarity omitted)
- (6) Bencent internal code



52L: Part Number

V-I Curve

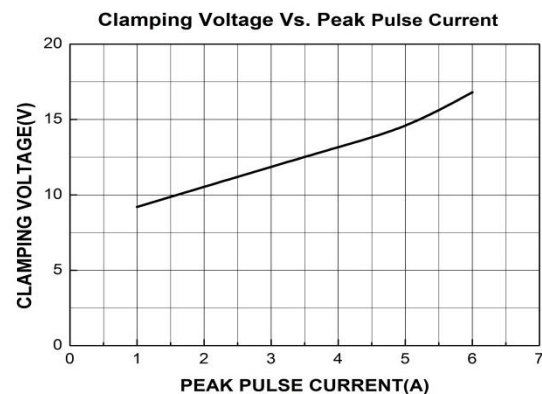
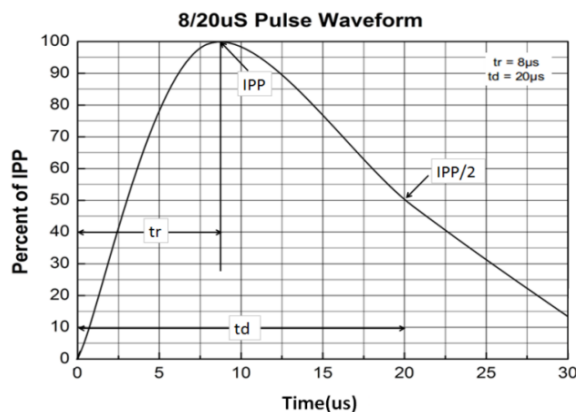
Parameters	Definition
V_C	Clamping Voltage
I_{pp}	Surge Waveform 8/20 μ s
V_{DRM}	Stand-off Voltage
I_{DRM}	Reverse Leakage Current
V_{BR}	Breakdown Voltage
I_R	Test Current
V_F	Forward Voltage
I_F	Test Current
P_{pp}	Peak Pulse Power Dissipation



Thermal Considerations

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

Typical Characteristics



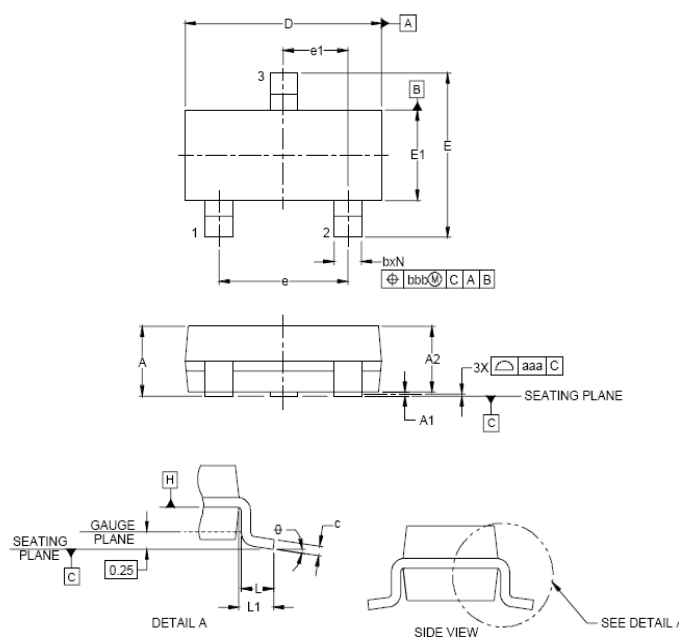
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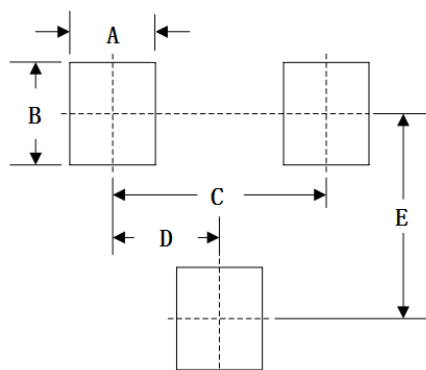
Environmental Characteristics

Testing items	Technical standards
High temperature Reverse Bias Test	Temperature: $125\pm3^{\circ}\text{C}$ Bias= $80\%V_{\text{DRM}}$ Time:168H
High Temperature Life Test	Temperature: 150°C Time:168H
High-low Temperature Cycle test	Temperature: From -55°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: $260\pm5^{\circ}\text{C}$ 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	2.80~3.05	0.11~0.120
E	2.10~2.65	0.083~0.104
E1	1.20~1.40	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


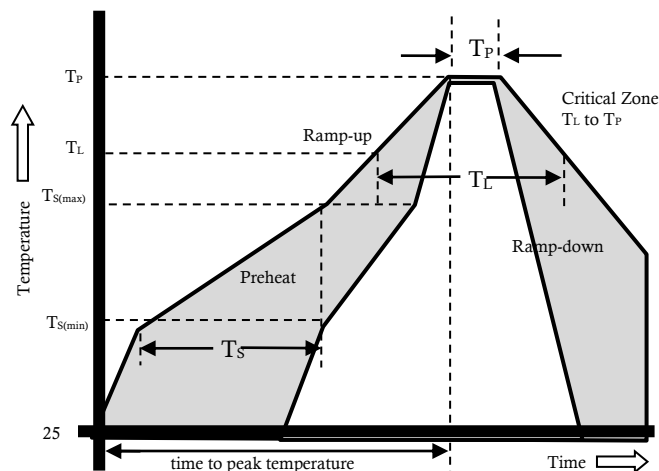
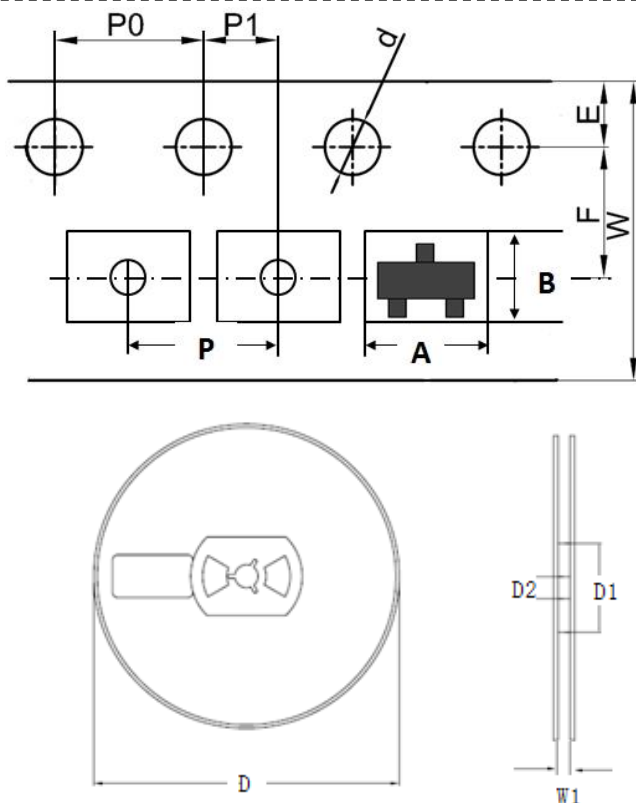
REF	mm	inch
A	0.8	0.031
B	0.9	1.535
C	1.9	0.075
D	0.95	0.037
E	1.8	0.071

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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)		3°C/s max
Tamp (T _L) to peal		
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	9.5+/-1	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	380	220	205