

Transient Voltage Suppressor

Version: A4 2023-6-1

Features

- IEC 61000-4-2(ESD)±30KV(air), ±30KV(contact)
- IEC61000-4-5(Lightning) 8A (8/20μS)
- IEC61000-4-4(EFT) 40A (5/50nS)
- 96Watts peak pulse power (tp=8/20μS)
- Low clamping voltage
- Weight approx. 1.0 mg
- Moisture sensitivity level: Level 1
- V_{SB} min value 5.3V
- Small package: DFN1006-2L

Exterior



DFN1006-2L

Application information

- Smart Phone and Tablet PC
- TV and Set Top Box
- Wearable Devices
- PDA

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	
	μA	V	V	mA	V	A	V	A
BV-FA05ZCT	MAX		MIN		MAX		MAX	
	0.5	5	5.3	1	9	1	12.0	8
	Co ^③		R _{DYN} @TLP ^④		V _c @I _{pp} TLP ^④		ESD Contact mode ^⑤	
	pF		Ω		V	A	V	kV
	TYP	MAX	TYP		TYP		TYP	
	15	18	0.18		9.5	16	8.8	6

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

① V_{BR} is measured at I_R=1mA

② Surge Waveform: 8/20μS.

③ Off-state capacitance is measured in VDC=0V, VRMS=0.3V, f=1MHz

④ TLP parameter: Z₀ = 50Ω, t_p = 100ns, t_r = 1ns, R_{DYN} is calculated from 4A to 16A.

⑤ Contact discharge mode, according to IEC61000-4-2

Transient Voltage Suppressor

Part Numbering System

Mark

BV FA 05 Z C T
(1) (2) (3) (4) (5) (6)

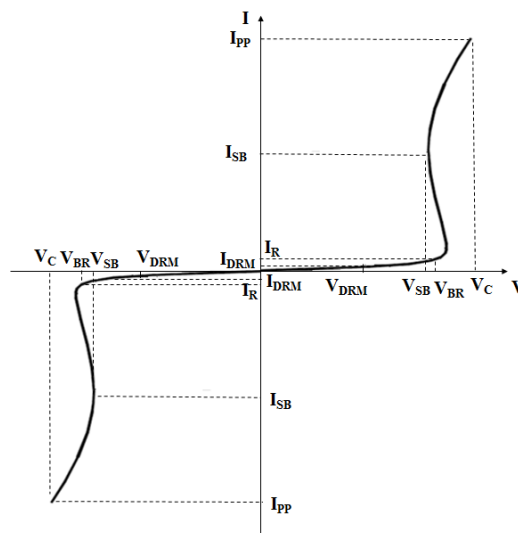
- (1) Bencent Transient Voltage Suppressor
- (2) Package:DFN1006-2L
- (3) Off-state Voltage: 5V
- (4) Normal Capacitance
- (5) Bidirectional
- (6) Bencent internal code

5A

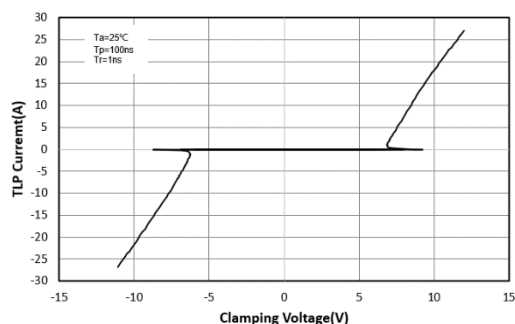
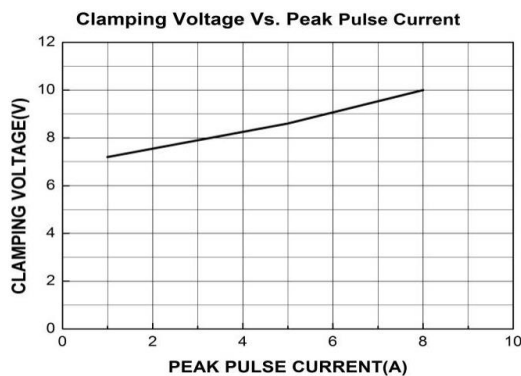
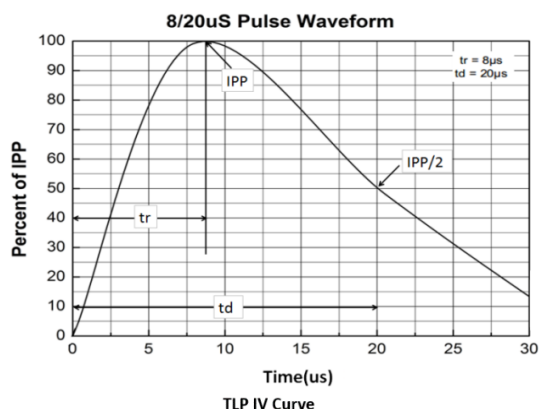
5A: Part Number

V-I Curve

Parameters	Definition
V_C	Clamping voltage
I_{PP}	Surge waveform 8/20us
V_{DRM}	Stand-off Voltage
V_{BR}	Breakdown Voltage
I_{DRM}	Reverse Leakage Current
I_R	Test current
V_{SB}	Snapback voltage
I_{SB}	Test current
P_{pp}	Peak Pulse Power Dissipation



Typical Characteristics



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Version: A4 2023-6-1

Thermal Considerations

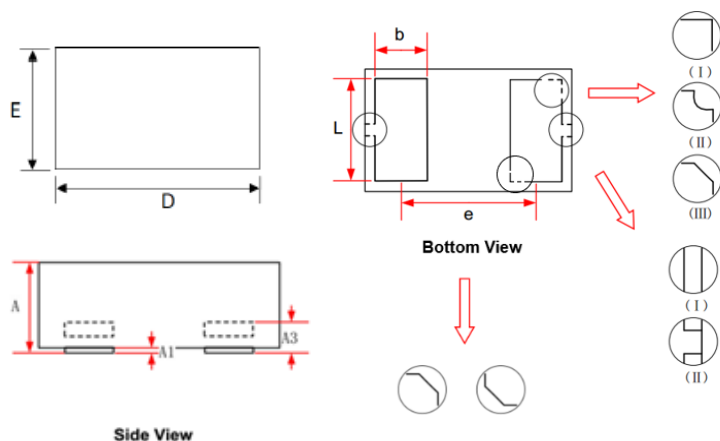
symbol	Parameter	Value	Unit
T_J	Operating Junction Temperature Range	-55 to +125	°C
T_S	Storage Temperature Range	-55 to +150	°C

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 -55°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

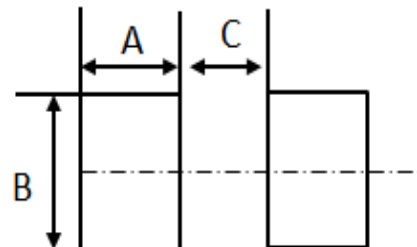


REF [∘]	mm [∘]	inch [∘]
A [∘]	0.35~0.55 [∘]	0.014~0.022 [∘]
A1 [∘]	0.00~0.05 [∘]	0.000~0.002 [∘]
A3 [∘]	0.125REF [∘]	0.005REF [∘]
D [∘]	0.95~1.10 [∘]	0.037~0.043 [∘]
E [∘]	0.55~0.70 [∘]	0.022~0.028 [∘]
L [∘]	0.45~0.55 [∘]	0.018~0.022 [∘]
e [∘]	0.65BSC [∘]	0.026BSC [∘]
b [∘]	0.15~0.35 [∘]	0.006~0.014 [∘]

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Version: A4 2023-6-1

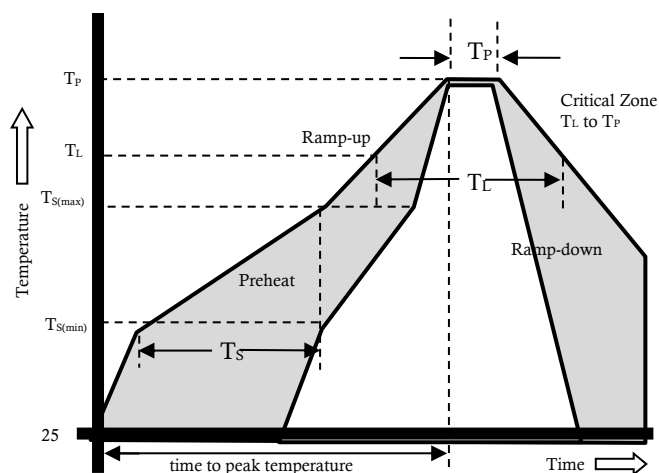
Recommended Soldering Pad



REF	mm	inch
A	0.35	0.014
B	0.60	0.024
C	0.35	0.014

Reflow Profile

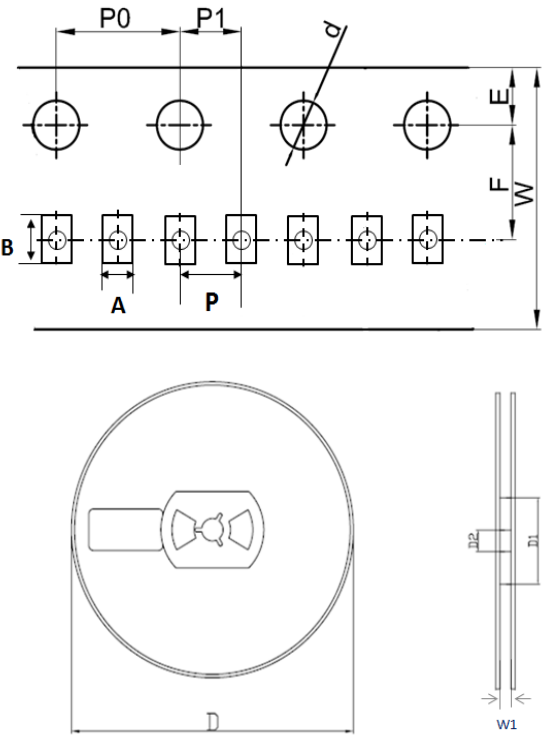
Reflow Condition		Pb-Free assembly
Pre Heat	Temperature Min	150°C
	Temperature Max	200°C
	Time (min to max)	60 – 180 secs
Average ramp up rate (Liquid) T _{amp} (T _L) to peak		3°C/s max
T _{S(max)} to T _L - Ramp-up Rate		3°C/s max
Reflow	- Temperature (T _L) (Liquid)	217°C
	- Temperature (T _L)	60 – 150 secs
Peak Temperature (T _P)		260+0/-5 °C
Time within 5°C of actual peak Temperature (T _P)		30secs
Ramp-down Rate		6°C/s max
Time 25°C to peak Temperature (T _P)		8 mins max.
Do not exceed		260°C



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Package Reel Information



REF	mm	inch
A	0.70+/-0.05	0.028+/-0.002
B	1.15+/-0.05	0.045+/-0.002
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	2.00+/-0.20	0.079+/-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	10,000	300,000	178	390	370	220