

Transient Voltage Suppressor

Version: A0 2023-2-13

Features

- IEC 61000-4-2 (ESD) $\pm 20\text{KV}$ (air), $\pm 20\text{KV}$ (contact)
- IEC 61000-4-4 (EFT) 40A (5/50 ns, IO to GND)
- IEC61000-4-5(Lightning Max) 4A (8/20uS, IO to GND)
- 60Watts max peak pulse power (8/20uS, IO to GND)
- Low capacitance: 0.25pF (Typical, IO to IO)
- Low clamping voltage
- Small package: DFN1006-3L

Exterior



DFN1006-3L

Application Information

- Serial ATA
- PCI Express
- Desktops, Servers and Notebooks
- Cellular Phones
- MDDI Ports
- USB2.0 Power and Data Line Protection
- USB3.0
- Display Ports
- Digital Visual Interfaces (DVI)

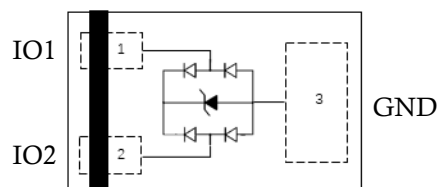
Package (top view)



Agency Approvals

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

Schematic(top view)



Part Number and Electrical Parameter

Part Number	I _{DRM} ^① @V _{DRM}		V _{BR} ^① @I _R		V _C @I _{pp} ^②		R _{DYN} @ TLP ^③	V _C @I _{pp} TLP ^③		Co ^④		Co ^⑤	
	μA	V	V	mA	V	A	Ω	V	A	pF		pF	
	MAX		MIN		MAX		TYP	TYP		TYP	MAX	TYP	MAX
BV-FA05U2B	0.1	5	6	1	15	4	0.85	22	16	0.5	1.0	0.25	0.5

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

- ① I_{DRM} is measured at $V_{DRM} = 5\text{V}$, V_{BR} is measured at $I_R = 1\text{mA}$, IO to GND
- ② Surge Waveform: 8/20 μS , IO to GND
- ③ TLP parameter: $Z_0 = 50\Omega$, $t_p = 100\text{ns}$, $t_r = 1\text{ns}$, R_{DYN} is calculated from 4A to 16A, IO to GND
- ④ Off-state capacitance is measured in $V_{DC} = 0\text{V}$, $f = 1\text{MHz}$, IO to GND
- ⑤ Off-state capacitance is measured in $V_{DC} = 0\text{V}$, $f = 1\text{MHz}$, IO to IO

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Part Numbering System

Mark

BV FA 05 U 2 B
(1) (2) (3) (4) (5) (6)

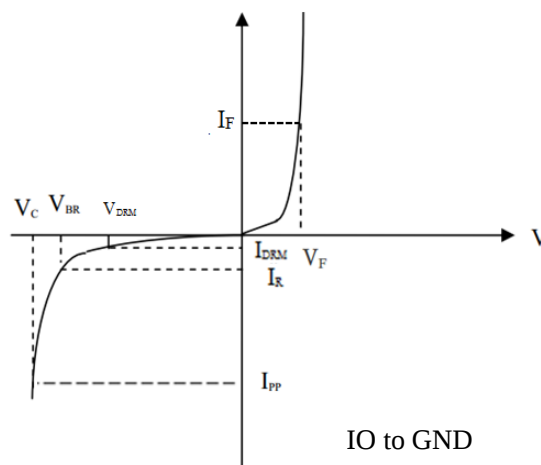
- (1) Bencent Transient Voltage Suppressor
- (2) Package:DFN1006-3L
- (3) Off-state Voltage: 5V
- (4) Low Capacitance
- (5) 2 line protections
- (6) Bencent internal code



Part number:L

V-I Curve

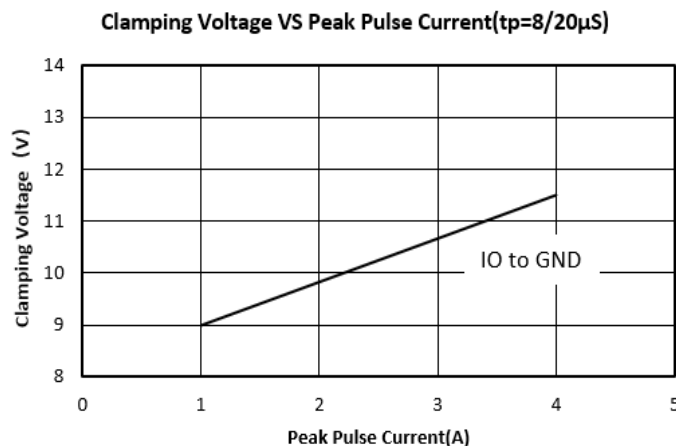
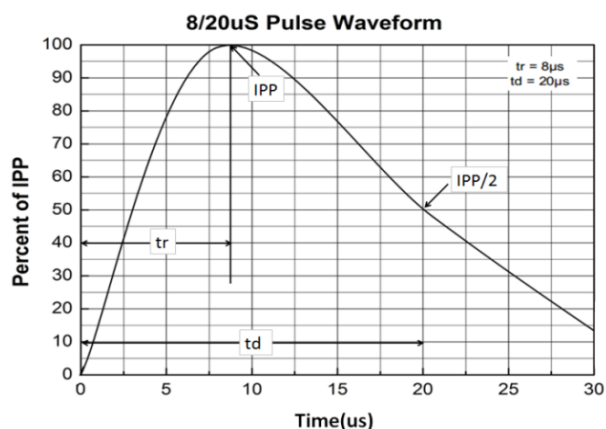
Parameters	Definition
V_C	Clamping Voltage
I_{pp}	Surge Waveform 8/20 μ s
V_{DRM}	Stand-off Voltage
I_{DRM}	Reverse Leakage Current
V_{BR}	Breakdown Voltage
I_R	Test Current
V_F	Forward Voltage
I_F	Test Current
P_{pp}	Peak Pulse Power Dissipation

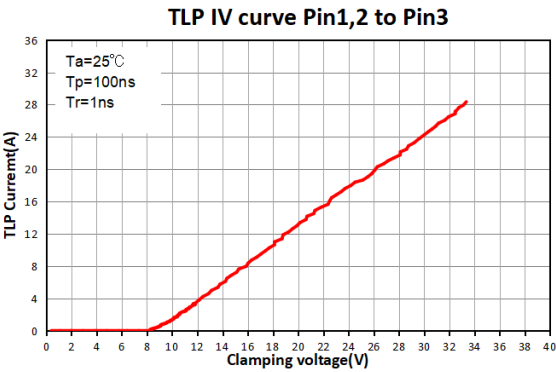


Thermal Considerations

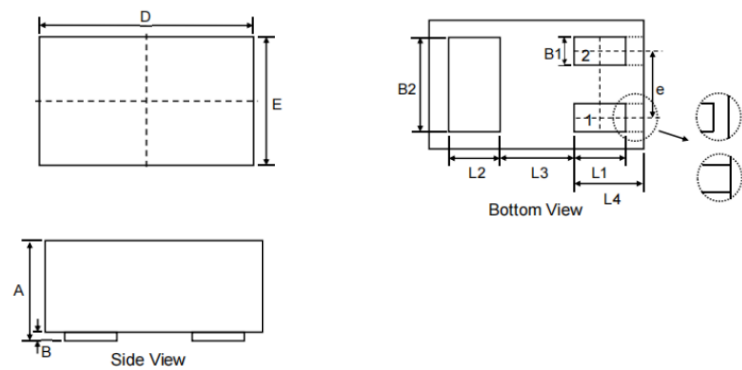
symbol	Parameter	Value	Unit
T_J	Operating Junction Temperature Range	-40 to +150	$^{\circ}\text{C}$
T_S	Storage Temperature Range	-55 to +150	$^{\circ}\text{C}$

Typical Characteristics



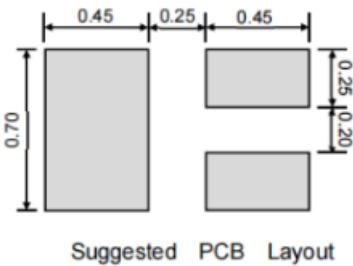


Product Dimensions



REF	mm	inch
A	0.40~0.55	0.013~0.022
B	0.00-0.05	0.000-0.002
B1	0.10-0.20	0.004-0.008
B2	0.45-0.55	0.018-0.22
D	0.90~1.10	0.035~0.043
E	0.50~0.70	0.020~0.028
e	0.35	0.014
L1	0.20-0.30	0.008-0.012
L2	0.20-0.30	0.008-0.012
L3	0.39	0.015
L4	0.25-0.35	0.01-0.014

Recommended Soldering Pad

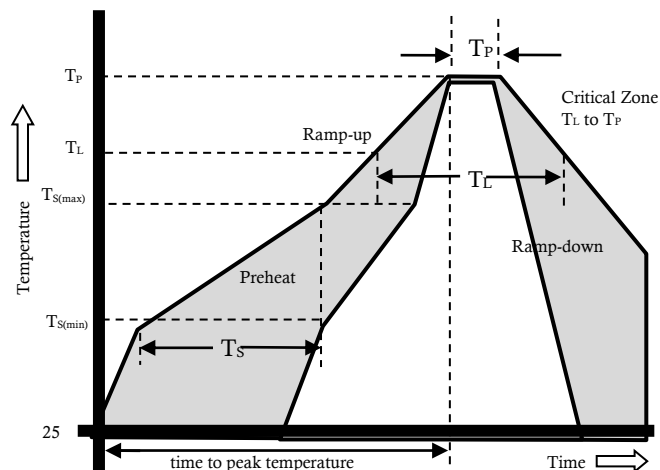


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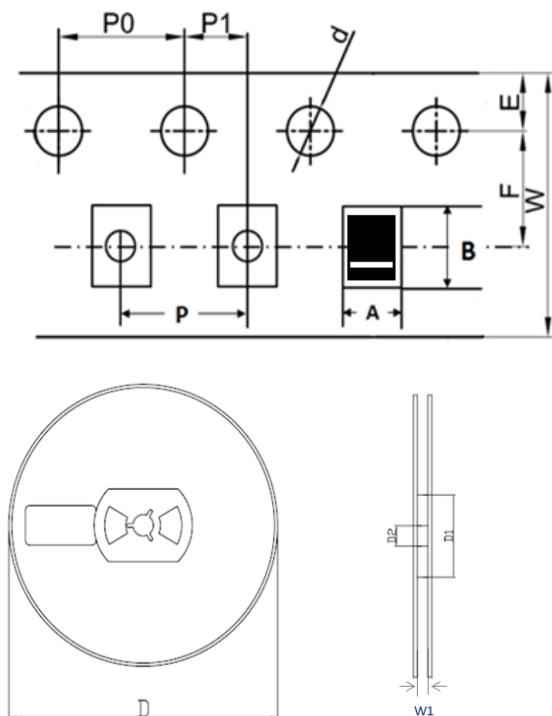
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Reflow Profile

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)		30secs
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	0.70+/-0.05	0.028+/-0.002
B	1.20+/-0.1	0.047+/-0.004
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+/-0.30	0.315+/-0.012
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	380	220	205