

Transient Voltage Suppressor

Version: A0 2022-07-20

Features

- IEC 61000-4-2 (ESD) $\pm 15\text{KV}$ (air), $\pm 15\text{KV}$ (contact)
- IEC61000-4-5(surge): 4A (8/20 μs 42 Ω)
- 40Watts peak pulse power ($t_p=8/20\mu\text{s}$ 42 Ω)
- Low capacitance: 0.40pF (Typical)
- Low clamping voltage
- Small package: DFN1006-2L
- MSL 1

Exterior



DFN1006-2L

Application Information

- USB 2.0 and USB 3.0
- HDMI 1.3, HDMI 1.4 and HDMI 2.0
- SATA and eSATA interface
- DVI
- IEEE 1394
- Portable Electronics and Notebooks

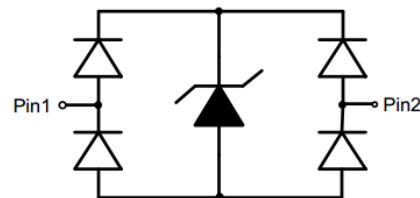
Package (top view)



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	$I_{DRM}@V_{DRM}^{①}$		$V_{BR}@I_R^{①}$		$V_C@I_{pp}^{②}$		$V_C@I_{pp}^{②}$		$R_{DYN}@TLP^{③}$	$V_C@I_{pp} TLP^{③}$		$C_o^{④}$	
	μA	V	V	mA	V	A	V	A	Ω	V	A	pF	
	MAX		MIN		MAX		MAX		TYP	TYP		TYP	MAX
BV-FA18UCA	0.05	18	18.5	1	6	1	10	4	0.25	9	16	0.40	0.55

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

① I_{DRM} is measured at $V_{DRM} = 18\text{V}$, V_{BR} is measured at $I_R = 1\text{mA}$

② Surge Waveform: 8/20 μs , 42 Ω

③ TLP parameter: $Z_0 = 50\Omega$, $t_p = 100\text{ns}$, $t_r = 2\text{ns}$, R_{DYN} is calculated from 4A to 16A

④ Off-state capacitance is measured in $V_{DC} = 0\text{V}$, $V_{RMS} = 0.3\text{V}$, $f = 1\text{MHz}$

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Part Numbering System

BV FA 18 U C A
(1) (2) (3) (4) (5) (6)

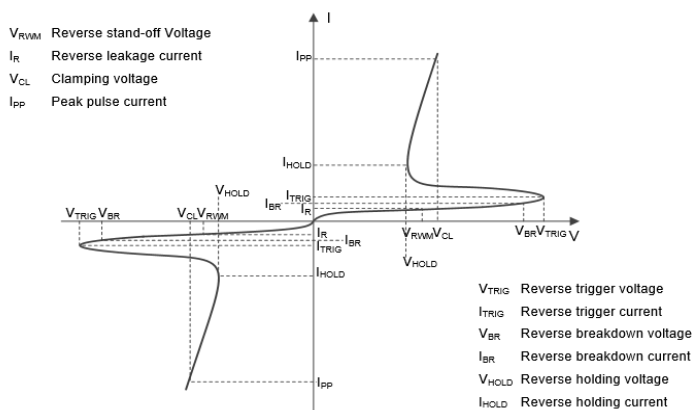
- (1) Bencent Transient Voltage Suppressor
- (2) Package:DFN1006-2L
- (3) Off-state Voltage: 18V
- (4) Low Capacitance
- (5) Bi-directional
- (6) Bencent internal code

Mark

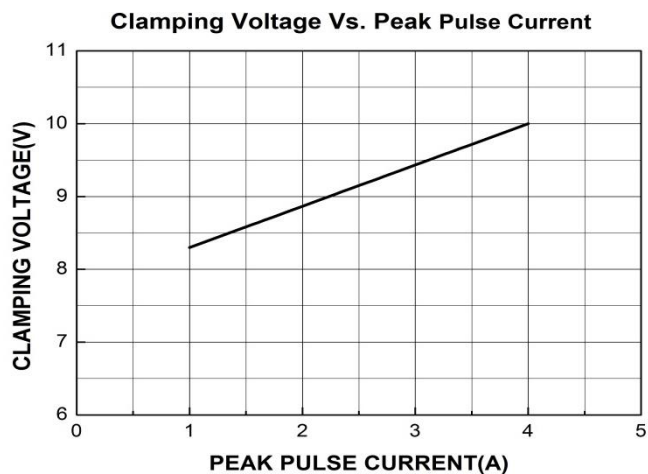
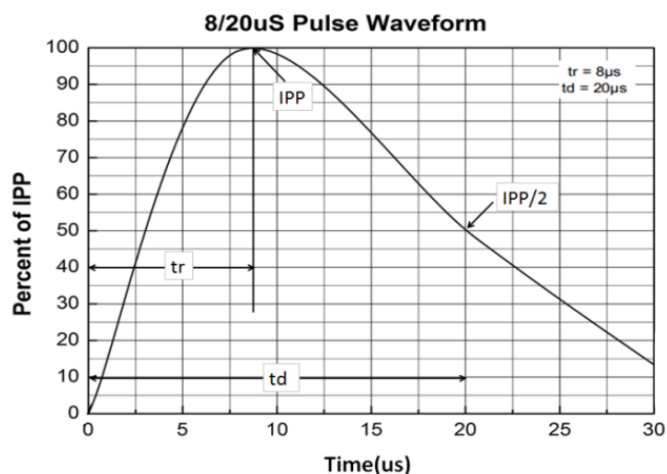


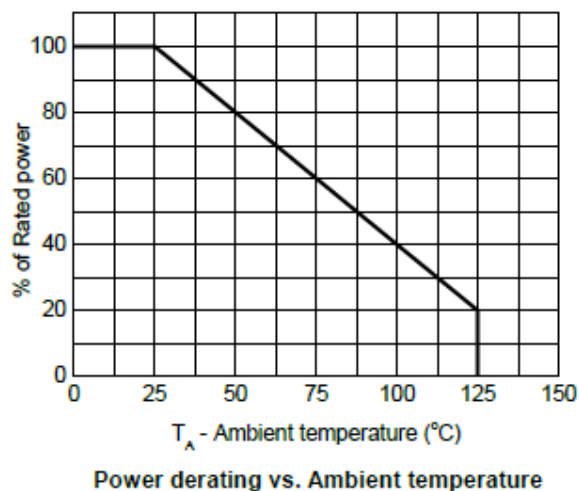
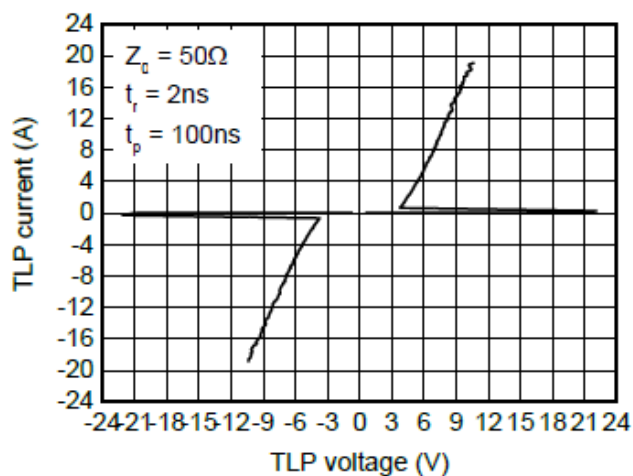
V-I Curve

Parameters	Definition
V_{DRM}	Reverse stand-off Voltage
I_R	Reverse leakage current
V_{CL}	Clamping voltage
I_{PP}	Peak pulse current
V_{TRIG}	Reverse trigger voltage
I_{TRIG}	Reverse trigger current
V_{BR}	Reverse breakdown voltage
I_{BR}	Reverse breakdown current
V_{HOLD}	Reverse holding voltage
I_{HOLD}	Reverse holding current



Typical Characteristics





Thermal Considerations

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

Environmental Characteristics

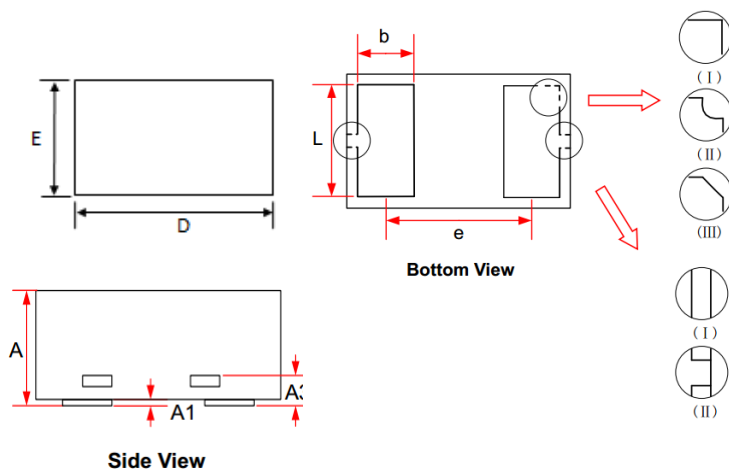
Testing items	Technical standards
High temperature Reverse Bias Test	Temperature: $150 \pm 3^{\circ}C$ Bias= $80\%V_{DRM}$ Time: 168H
High Temperature Life Test	Temperature: $150^{\circ}C$ Time: 168H
High-low Temperature Cycle test	Temperature: From $-55^{\circ}C$ to $150^{\circ}C$ Dwell time: 30min, 100cycles
High Temperature & High Humidity Test	Temperature: $85^{\circ}C$ Humidity: 85% Time: 168H
Pressure cooker Test	Temperature: $121^{\circ}C$, 2atm. Humidity: 100% Time: 24H
Resistance of soldering heat	Temperature: $260 \pm 5^{\circ}C$ Time of dip soldering: 10s, 3times

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

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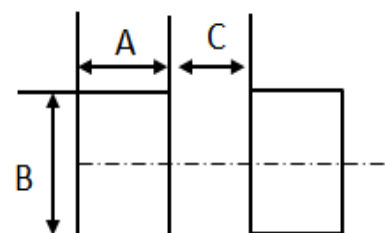
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Product Dimensions



REF	mm	inch
A	0.30~0.55	0.012~0.022
A1	0~0.05	0.000~0.002
A3	0.125 REF	0.020REF
D	0.95~1.10	0.037~0.043
E	0.55~0.70	0.022~0.028
b	0.20~0.30	0.008~0.012
e	0.65BSC	0.026BSC
L	0.45~0.55	0.018~0.022

Recommended Soldering Pad



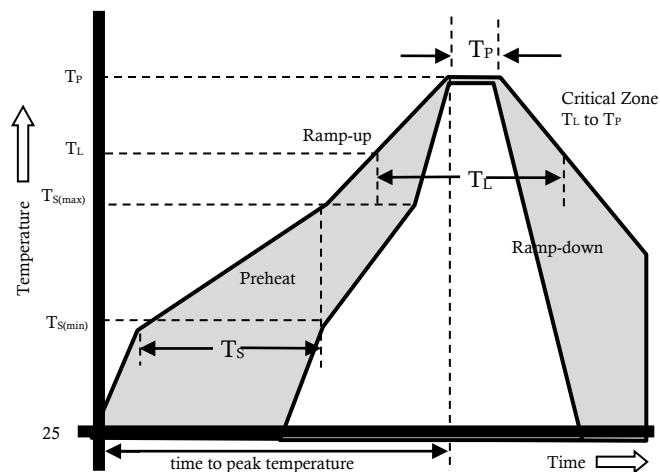
REF	mm	inch
A	0.35	0.014
B	0.60	0.024
C	0.35	0.014

Notes:

This recommended land pattern is for reference purposes only. Please consult your manufacturing group to ensure your PCB design guidelines are met

Reflow Profile

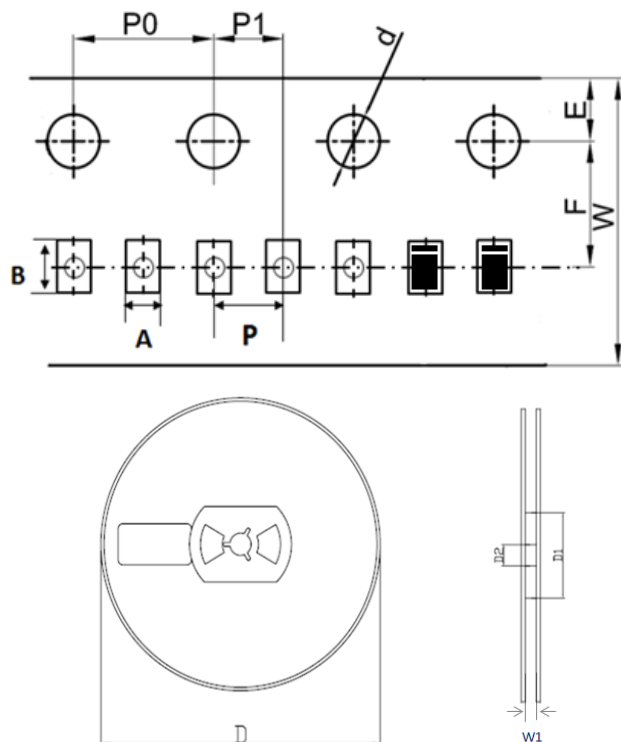
Reflow Condition		Pb-Free assembly
Pre Heat	Temperature Min	150°C
	Temperature Max	200°C
	Time (min to max)	60 – 180 secs
Average ramp up rate (Liquid T _{amp} (T _L) to peak)		3°C/s max
T _S (max) to T _L - Ramp-up Rate		3°C/s max
Reflow	- Temperature (T _L) (Liquid)	217°C
	- Temperature (T _L)	60 – 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	0.65+/-0.10	0.026+/-0.004
B	1.20+/-0.1	0.047+/-0.004
d	1.50+/-0.1	0.059+/-0.004
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