

Transient Voltage Suppressor

Version: A1 2023-2-24

Features

- IEC 61000-4-2(ESD)±15KV(air), ±8KV(contact)
- IEC61000-4-5(Lightning) 3A (8/20uS)
- IEC61000-4-4(EFT) 40A (5/50nS)
- 36 Watts peak pulse power (tp=8/20μS)
- Weight approx. 1.0 mg
- Moisture sensitivity level: Level 1
- Small package: DFN1006-2L

Exterior



DFN1006-2L

Application information

- Serial ATA
- Desktops, Servers and Notebooks
- Cellular Phones
- MDDI Ports
- USB2.0 Data Line Protection
- Display Ports
- HDMI

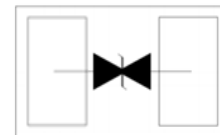
Package (top view)



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	$I_{DRM}@V_{DRM}^{①}$		$V_{BR}@I_R^{①}$		$V_C@I_{pp}^{②}$		$V_C@I_{pp}^{②}$		$R_{DYN}@TLP^{③}$	$V_C@I_{pp} TLP^{③}$		$C_o^{④}$	
	uA	V	V	mA	V	A	V	A	Ω	V	A	pF	
	MAX		MIN		MAX		MAX		TYP	TYP		TYP	MAX
BV-FA05UCK	1	5	5.6	1	10	1	12	3	0.45	14.7	16	3.5	5

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

- ① I_{DRM} is measured at $V_{DRM}=5V$, V_{BR} is measured at $I_R=1mA$
- ② Surge Waveform: 8/20 μS
- ③ TLP parameter: $Z_0 = 50\Omega$, $t_p = 100ns$, $t_r = 1ns$, R_{DYN} is calculated from 4A to 16A
- ④ Off-state capacitance is measured in $V_{DC}=0V$, $V_{RMS}=0.3V$, $f=1MHz$

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Part Numbering System

Mark

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

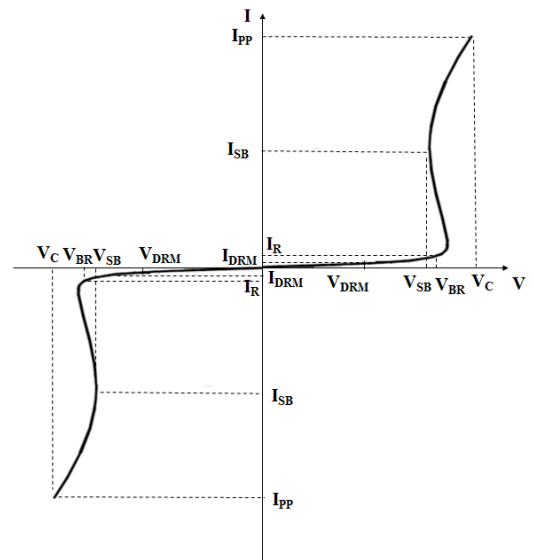
- (1) Bencent Transient Voltage Suppressor
- (2) Package:DFN1006-2L
- (3) Off-state Voltage: 5V
- (4) Low Capacitance
- (5) Bidirectional
- (6) Bencent internal code



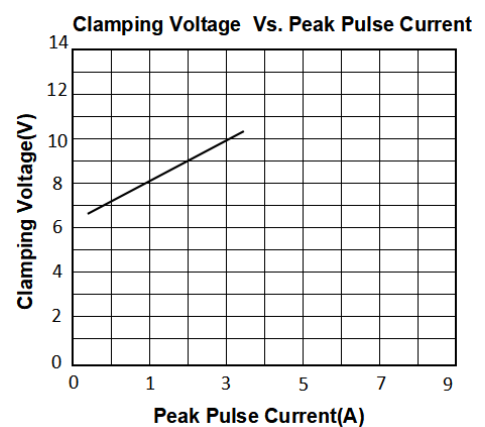
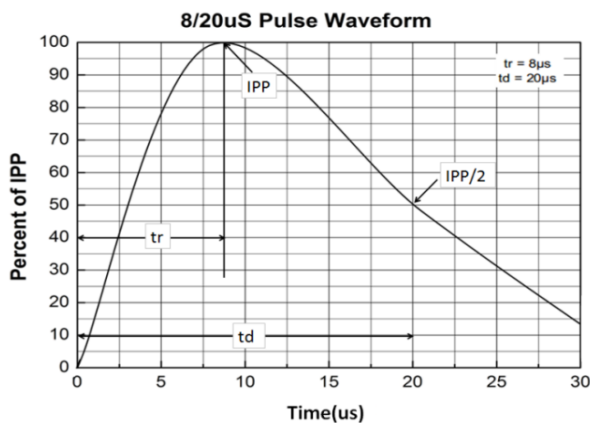
5KU: Part Number

V-I Curve

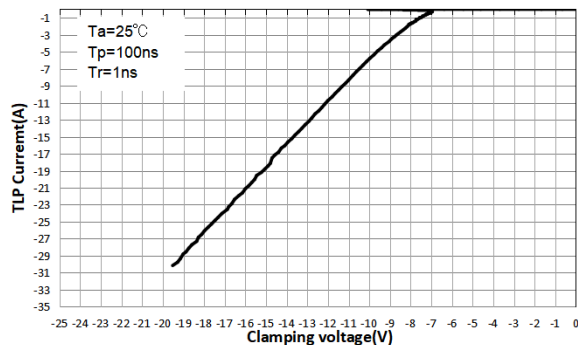
Parameters	Definition
V_C	Clamping voltage
I_{PP}	Surge waveform 8/20 μ s
V_{DRM}	Stand-off Voltage
V_{BR}	Breakdown Voltage
I_{DRM}	Reverse Leakage Current
I_R	Test current
V_{SB}	Snapback Voltage
I_{SB}	Test current
P_{PP}	Peak Pulse Power Dissipation



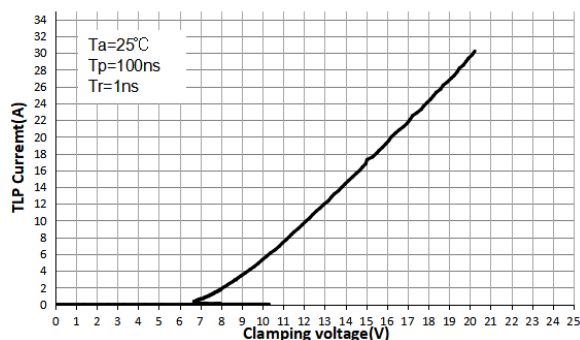
Typical Characteristics



TLP IV curve Pin2 to Pin1



TLP IV curve Pin1 to Pin2



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

Environmental Characteristics

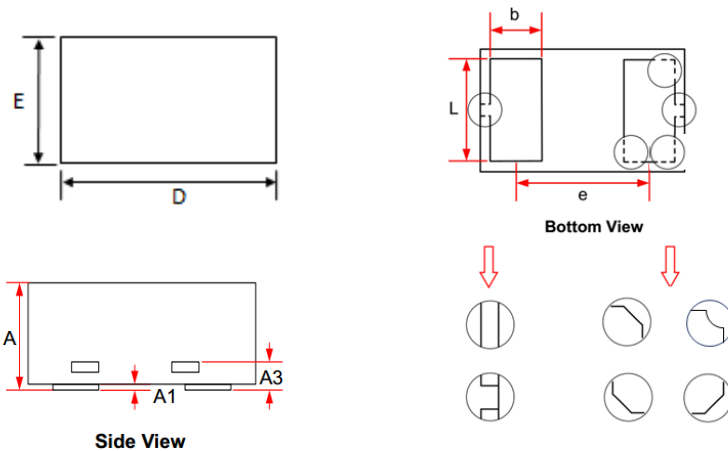
Testing items	Technical standards
High temperature Reverse Bias Test	Temperature: $125 \pm 3^\circ\text{C}$ Bias= $80\%V_{\text{DRM}}$ Time:168H
High Temperature Life Test	Temperature: 150°C Time:168H
High-low Temperature Cycle test	Temperature: From -40°C to 125°C Dwell time : 30min, 10~100cycles
High 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

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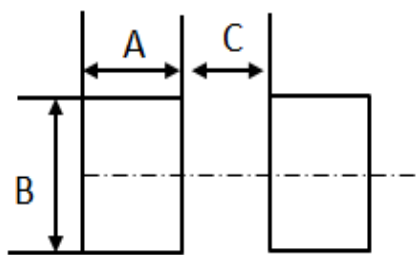
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Product Dimensions



REF	mm	inch
A	0.45~0.55	0.018~0.022
A1	0.00~0.05	0.000~0.002
D	0.95~1.05	0.037~0.041
E	0.55~0.65	0.022~0.026
b	0.15~0.35	0.006~0.014
e	0.64BSC	0.025BSC
L	0.40~0.60	0.016~0.024

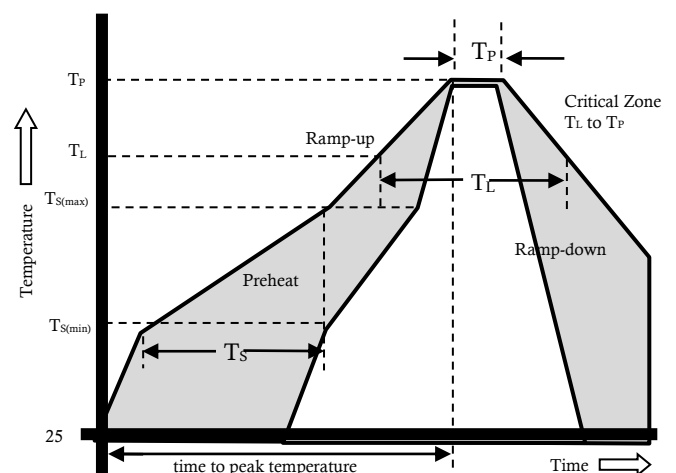
Recommended Soldering Pad



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

Reflow Profile

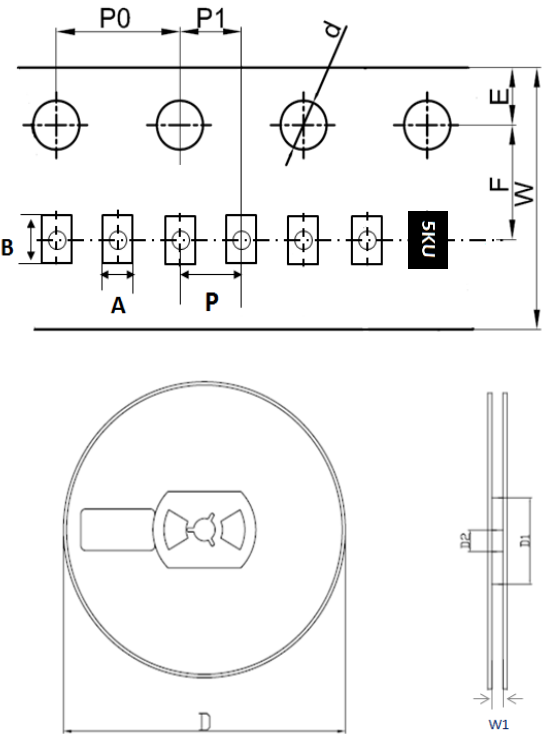
Reflow Condition		Pb-Free assembly
Pre Heat	Temperature Min	150°C
	Temperature Max	200°C
	Time (min to max)	60 – 180 secs
Average ramp up rate (Liquid) T _{amp} (T _L) to peak		3°C/s max
T _S (max) to T _L - Ramp-up Rate		3°C/s max
Reflow	- Temperature (T _L) (Liquid)	217°C
	- Temperature (T _L)	60 – 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	380	220	205