

Transient Voltage Suppressor

Version: A1 2024-2-27

Features

- IEC 61000-4-2 (ESD) $\pm 30\text{KV}$ (air), $\pm 30\text{KV}$ (contact)
- IEC61000-4-5(surge): 7A (8/20 μs)
- 77Watts peak pulse power ($t_p=8/20\mu\text{s}$)
- Low capacitance: 0.8pF (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

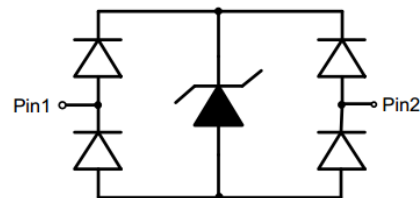
Package (top view)



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	$I_{\text{DRM}}@V_{\text{DRM}}$		$V_{\text{BR}}^{\text{①}}@I_{\text{R}}$			$V_{\text{C}}@I_{\text{PP}}^{\text{②}}$		$V_{\text{C}}@I_{\text{PP}}^{\text{②}}$		$C_{\text{O}}^{\text{③}}$	
	μA	V	V	V	mA	V	A	V	A	pF	
	MAX		MIN	TYP		MAX		MAX		TYP	MAX
BV-FA05UCD	0.05	5	6	8	1	9	1	11	7	0.8	1.0

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

- ① I_{DRM} is measured at $V_{\text{DRM}}=5\text{V}$; V_{BR} is measured at $I_{\text{R}}=1\text{mA}$
- ② Surge Waveform: 8/20 μs , pin 1 to pin2 and pin2 to pin1
- ③ Off-state capacitance is measured in $V_{\text{DC}}=0\text{V}$, $f=1\text{MHz}$

Transient Voltage Suppressor

Version: A1 2024-2-27

Part Numbering System

Mark

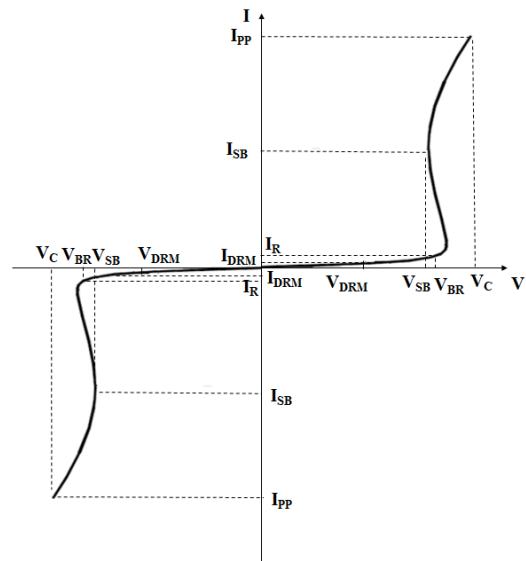
BV FA 05 U C D
(1) (2) (3) (4) (5) (6)

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

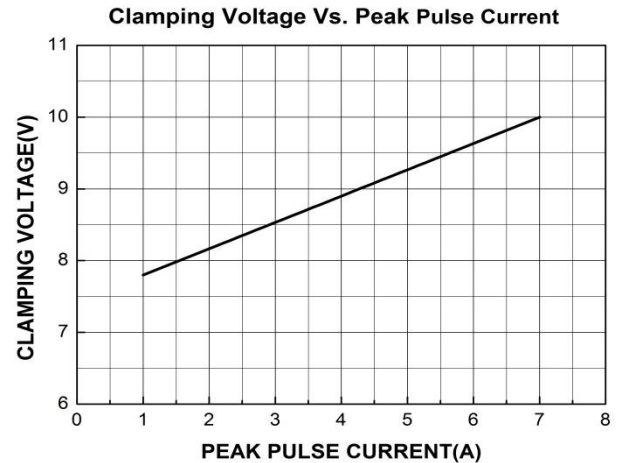
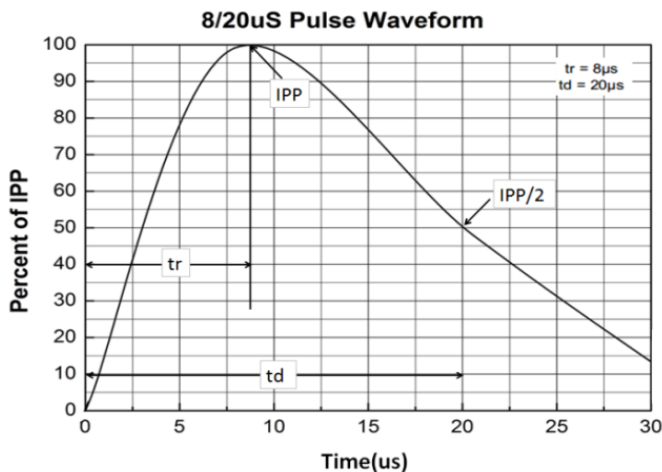


V-I Curve

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



Typical Characteristics



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	$^{\circ}\text{C}$

Transient Voltage Suppressor

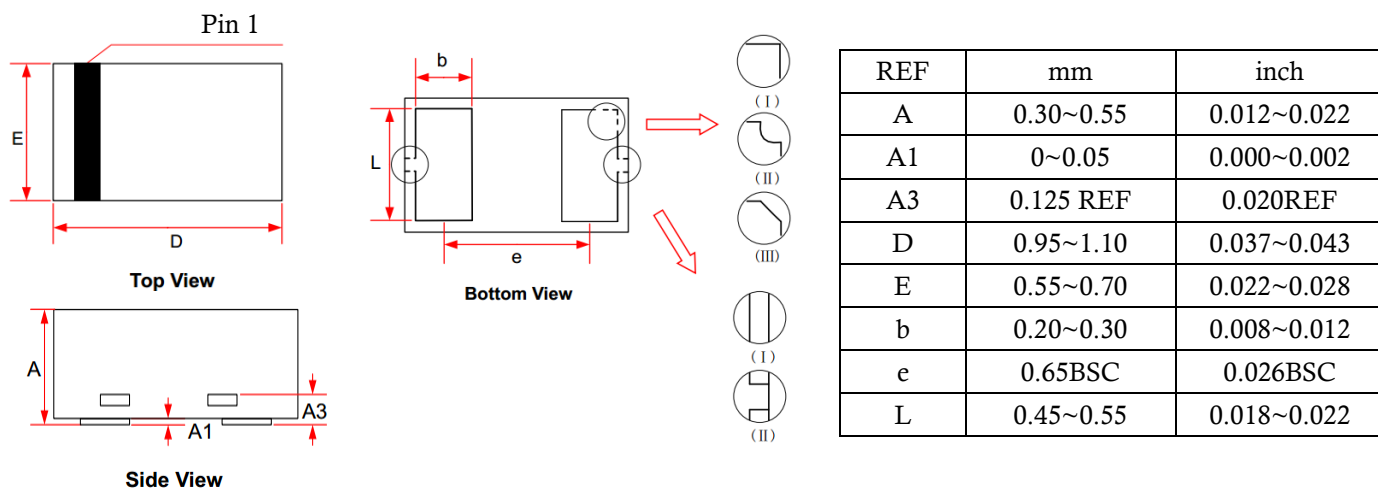
Version: A1 2024-2-27

Environmental Characteristics

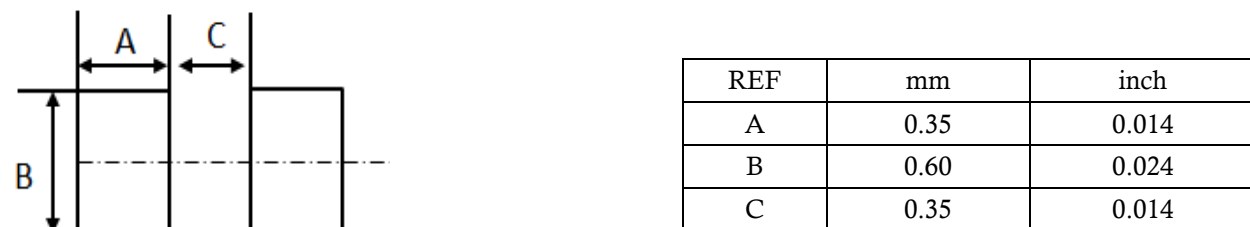
Testing items	Technical standards
High temperature Reverse Bias Test	Temperature: $150\pm 3^{\circ}\text{C}$ Bias= $80\%V_{\text{DRM}}$ Time: 168H
High Temperature Life Test	Temperature: 150°C Time: 168H
High-low Temperature Cycle test	Temperature: From -55°C to 150°C Dwell time: 30min, 100cycles
High 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



Recommended Soldering Pad



Notes:

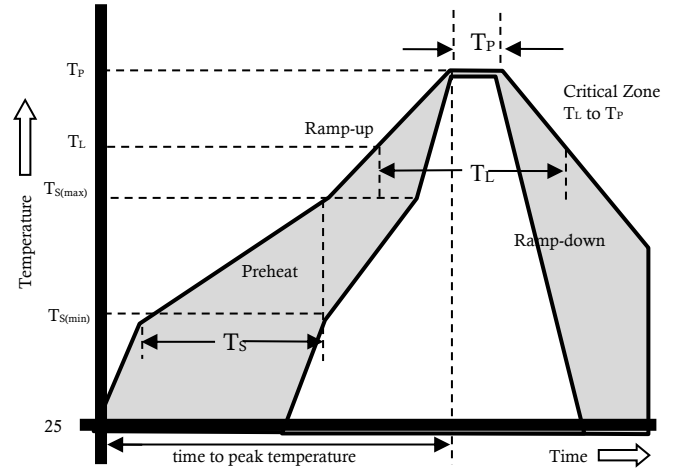
This recommended land pattern is for reference purposes only. Please consult your manufacturing group to ensure your PCB design guidelines are met

Transient Voltage Suppressor

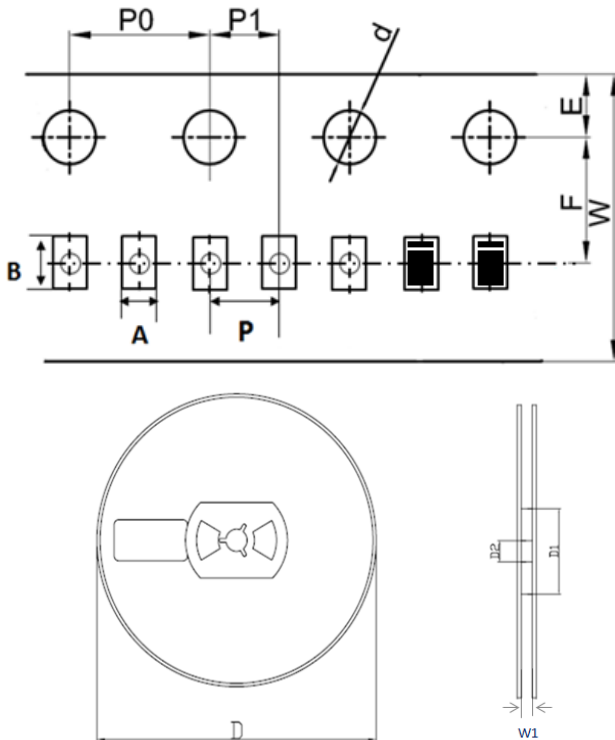
Version: A1 2024-2-27

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		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	0.65+/-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