

Transient Voltage Suppressor

Version: A0 2024-4-23

Features

- IEC 61000-4-2(ESD)±20KV(air), ±20KV(contact)
- IEC61000-4-5(Lightning) 4A (8/20uS)
- IEC61000-4-4(EFT) 40A (5/50nS)
- 40 Watts peak pulse power (tp=8/20μS)
- Low capacitance: 0.9pF maximum
- Low clamping voltage
- Weight approx. 1.0 mg
- Moisture sensitivity level: Level 1
- Small package: DFN1006

Exterior



DFN1006

Application information

- DC power port
- High speed signal

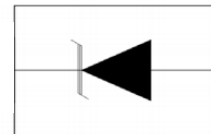
Package (top view)



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	IDRM@VDRM		VBR ^① @IR		Vc@Ipp ^②		Vc@Ipp ^②		R _{DYN} @ TLP ^③	Vc@Ipp TLP ^③		Co ^④
	μA	V	V	mA	V	A	V	A	Ω	V	A	pF
	MAX		MIN		MAX		MAX		TYP	TYP		MAX
BV-FA05UL	0.2	5	5.6	1	9	1	10	4	0.16	10	16	0.9

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

① V_{BR} is measured at I_{BR}=1mA

② Surge Waveform: 8/20μS

③ TLP parameter: Z₀ = 50Ω, 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 L
(1) (2) (3) (4) (5)

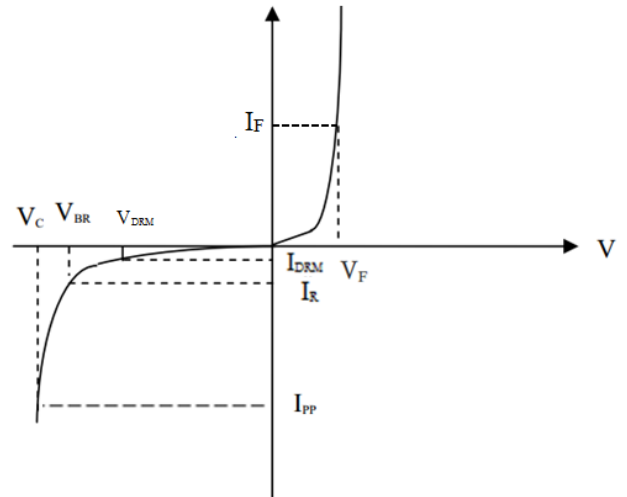
- (1) Bencent Transient Voltage Suppressor
- (2) Package:DFN1006
- (3) Off-state Voltage: 5V
- (4) Low Capacitance (Unidirectional Polarity omitted)
- (5) Bencent intenal code



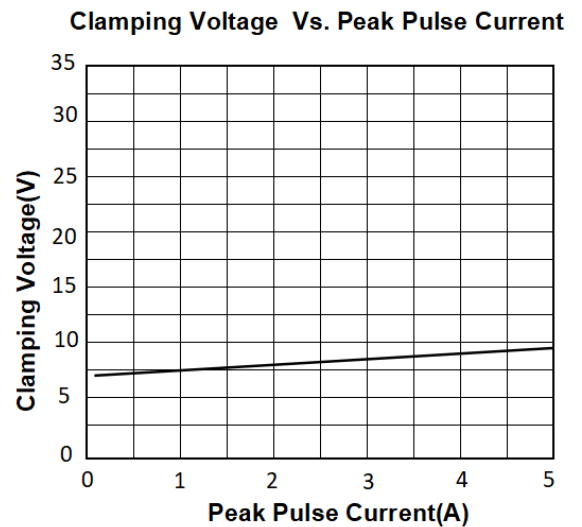
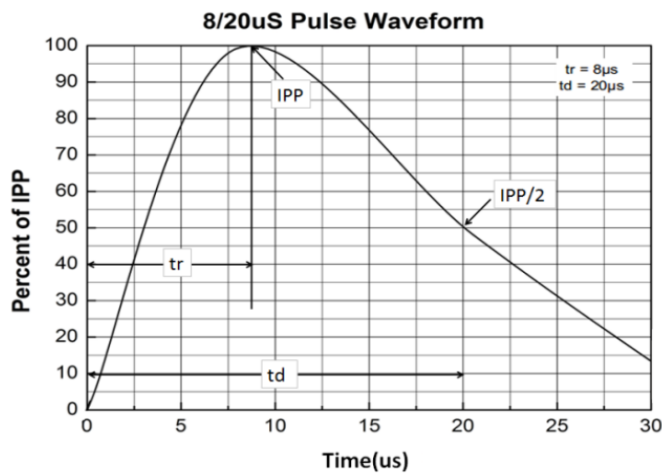
U5: Part Number

V-I Curve

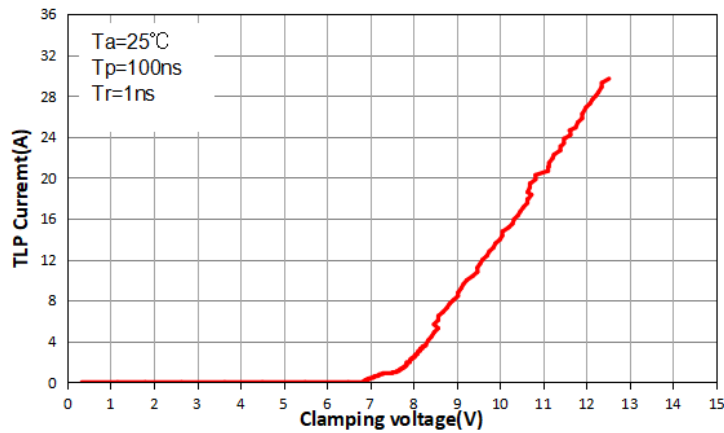
Parameters	Definition
V_C	Clamping voltage
I_{pp}	Surge waveform 8/20 μ s
V_{DRM}	Stand-off Voltage
V_{BR}	Breakdown Voltage
I_{DRM}	Reverse Leakage Current
I_R	Test current
P_{PP}	Peak Pulse Power Dissipation
V_F	Forward on-state voltage
I_F	Forward current



Typical Characteristics



TLP IV curve



Thermal Considerations

symbol	Parameter	Value	Unit
T_J	Operating Junction Temperature Range	-40 to +125	$^{\circ}\text{C}$
T_S	Storage Temperature Range	-55 to +150	$^{\circ}\text{C}$

Environmental Characteristics

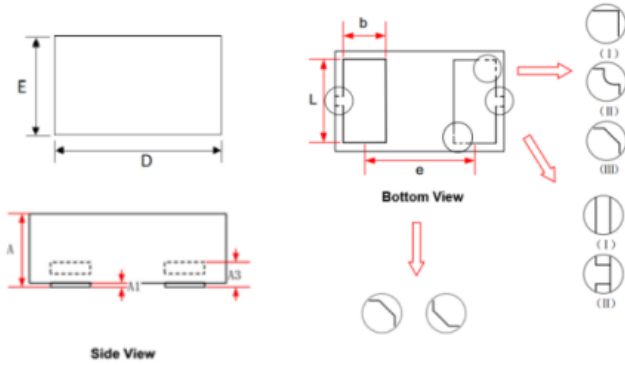
Testing items	Technical standards
High temperature Reverse Bias Test	Temperature: $125\pm3^{\circ}\text{C}$ Bias= $80\%V_{\text{DRM}}$ Time:168H
High Temperature Life Test	Temperature: 150°C Time:168H
High-low Temperature Cycle test	Temperature: From -40°C to 125°C Dwell time : 30min,10cycles
High Temperature &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: $260\pm5^{\circ}\text{C}$ Time of dip soldering: 10s, 3times

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

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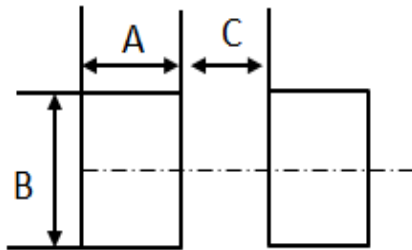
Version: A0 2024-4-23

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

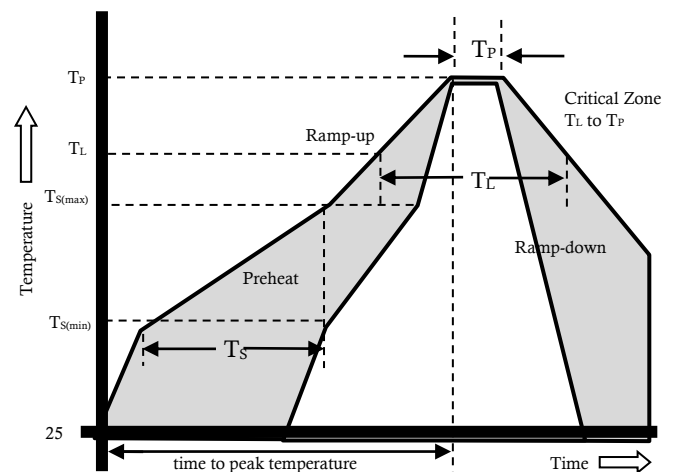
Recommended Soldering Pad



REF	mm	inch
A	0.40	0.016
B	0.60	0.024
C	0.30	0.012

Reflow Profile

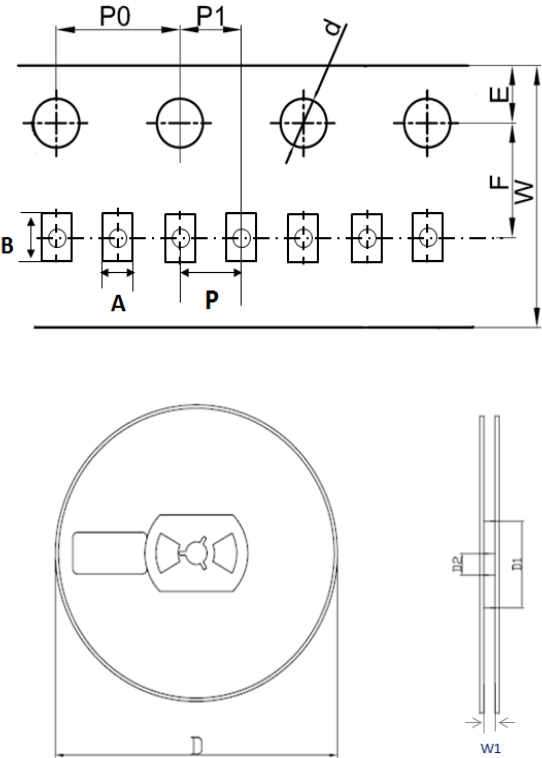
Reflow Condition		Pb-Free assembly
Pre Heat	Temperature Min	150°C
	Temperature Max	200°C
	Time (min to max)	60 – 180 secs
Average ramp up rate (Liquid) T _{amp} (T _L) to peak		3°C/s max
T _{s(max)} to T _L - Ramp-up Rate		3°C/s max
Reflow	- Temperature (T _L) (Liquid)	217°C
	- Temperature (T _L)	60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