

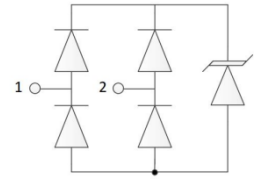
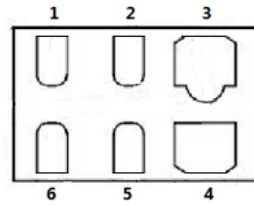
Transient Voltage Suppressor

Version: A0 2022-10-10

Features

- IEC 61000-4-2(ESD)±15KV(air), ±13KV(contact)
- IEC61000-4-5(Lightning) 10A (8/20μS)
- IEC61000-4-4(EFT) 40A (5/50ns)
- 120 Watts peak pulse power per line(tp=8/20μS)
- Low capacitance: 0.35pF typical (I/O to I/O)
- Moisture sensitivity level: level 3

Exterior



DFN1610-6L

Application information

- Near Field Communications
- USB 2.0,USB 3.0,USB 3.1
- 1G/2.5G/5G/10G Ethernet
- Central Office Equipment
- Industrial Equipment
- IP Camera

Agency Approvals

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

Part Number and Electrical Parameter

Part Number	IDRM ^① @ V _{DRM}		V _{BR} @ I _R		V _C @ I _{pp} ^②		R _{DYN} @ TLP ^③	V _C @ I _{pp} TLP ^③		V _C @ I _{pp} TLP ^③		Co ^④	
	uA	V	V	uA	V	A	Ω	V	A	V	A	pF	
	MAX		MIN		MAX		TYP	TYP		TYP		TYP	MAX
BV-FE03U2M	0.05	3.3	6.0	10	12	10	0.38	4.5	4	9.2	16	0.35	0.5

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

- ① I_{DRM} is measured at V_{DRM}=3.3V, pin 1 to pin2 and pin2 to pin1
- ② Surge Waveform: 8/20uS, pin 1 to pin2 and pin2 to pin1
- ③ TLP parameter:, tp = 100ns, tr = 0.2ns, R_{DYN} is calculated from 4A to 16A.
- ④ Off-state capacitance is measured in V_{DC}=0V, V_{RMS}=0.2V, f=1MHz

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Part Numbering System

BV FE 03 U 2 M

(1) (2) (3) (4) (5) (6)

- (1) Bencent Transient Voltage Suppressor
- (2) Package: DFN1610
- (3) Stand off Voltage:3.3V
- (4) Low Capacitance
- (5) 2 line protections
- (6) Bencent internal code

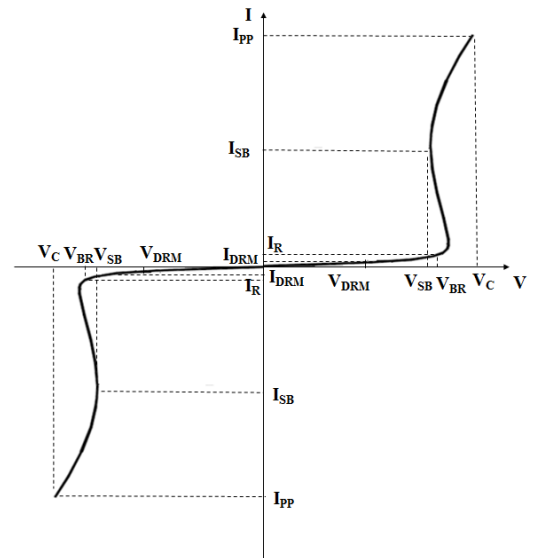
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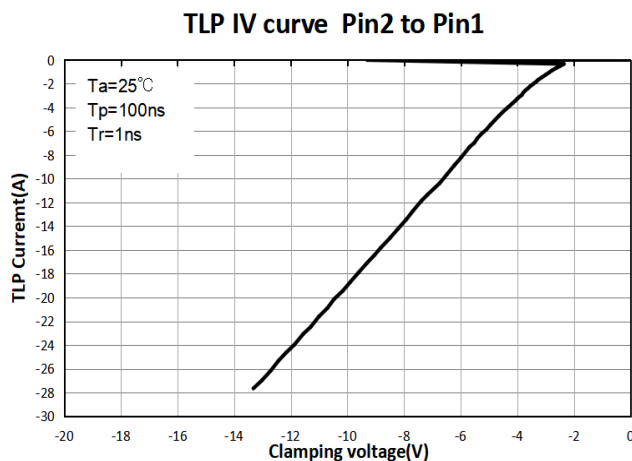
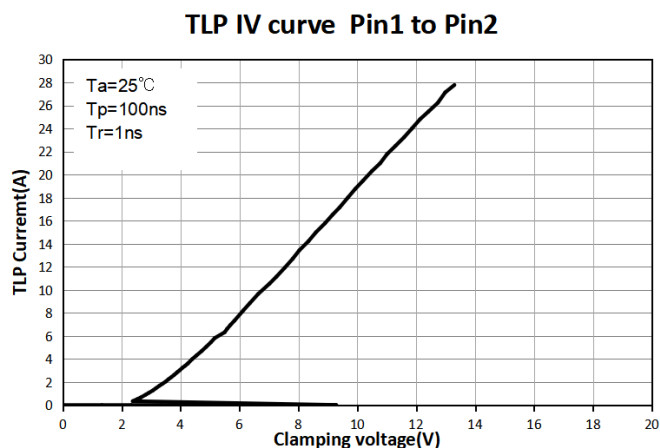
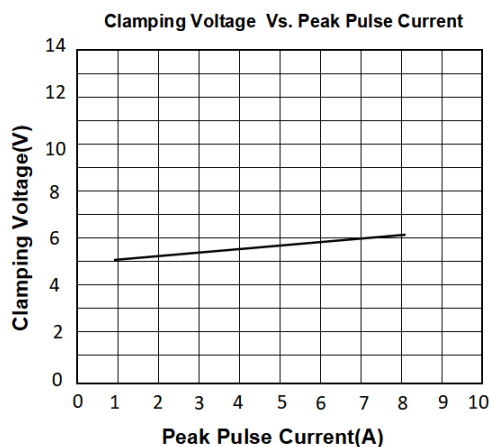
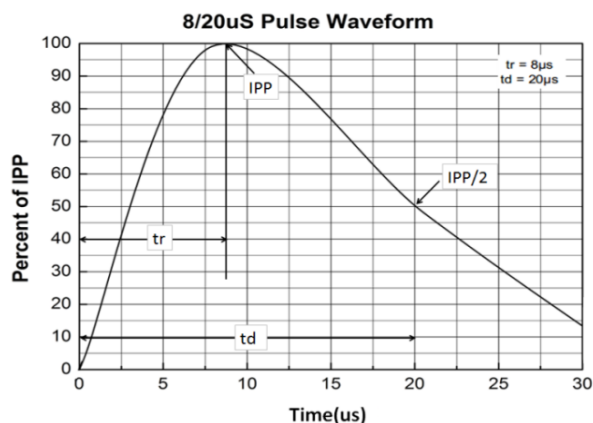
GA: Part Number

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



Thermal Considerations

symbol	Parameter	Value	Unit
TJ	Operating Junction Temperature Range	-40 to +125	°C
TS	Storage Temperature Range	-55 to +150	°C

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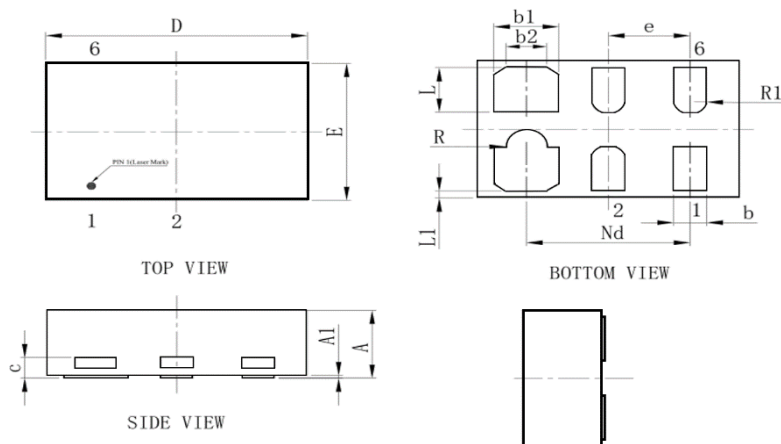
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Environmental Characteristics

Testing Items	Technical Standards
High Temperature Reverse Bias Test	Temperature: 125±3℃, Bias=80%V _{DRM} Time: 168H
High Temperature Life Test	Temperature: 150℃ Time:168H
High-low Temperature Cycle Test	Temperature: From -40℃ to125℃ Dwell time: 30min, 10-100 cycles
High Temperature &High Humidity Test	Temperature: 85℃ Humidity:85% Test time:168H
Pressure cooker Test	Temperature: 121℃, 2atm. Humidity:100% Time:24H
Resistance of Soldering Heat	Temperature: 260±5℃ Time of dip soldering: 10s, 3times

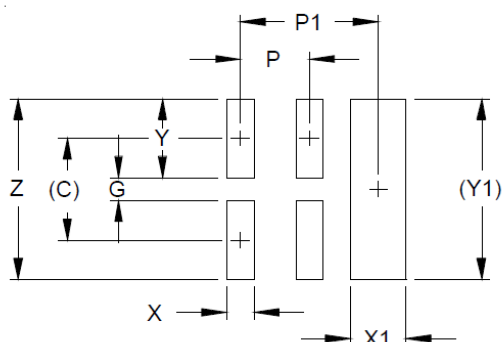
Note: The above testing items can be specified by customers by contacting Bencent service

Product Dimensions



REF	mm	inch
A	0.45~0.55	0.018~0.022
A1	0.00~0.05	0.00~0.002
b	0.15~0.25	0.006~0.010
b1	0.35~0.45	0.014~0.018
b2	0.25 REF	0.01 REF
c	0.152 REF	0.006 REF
D	1.55~1.65	0.061~0.065
e	0.50 BSC	0.020 BSC
Nd	1.0 BSC	0.04 BSC
E	0.95~1.05	0.037~0.041
L	0.275~0.375	0.010~0.015
L1	0~0.10	0~0.004
R	0.075~0.175	0.003~0.007
R1	0.025~0.125	0.001~0.005

Recommended Soldering Pad



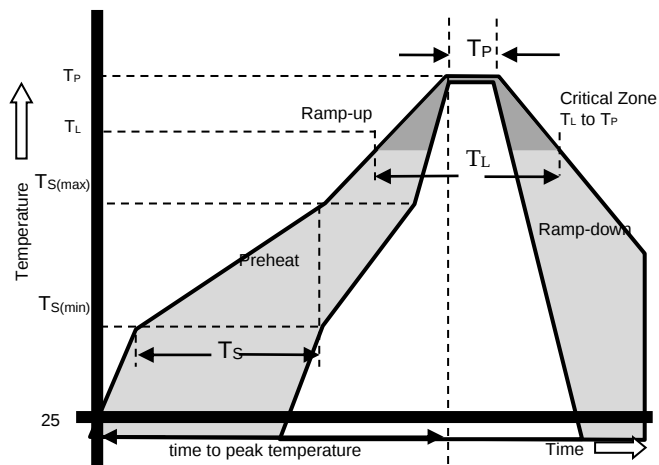
DIMENSIONS		
DIM	INCHES	MILLIMETERS
C	(.034)	(0.875)
G	.008	0.20
P	.020	0.50
P1	.039	1.00
X	.008	0.20
X1	.016	0.40
Y	.027	0.675
Y1	(.061)	(1.55)
Z	.061	1.55

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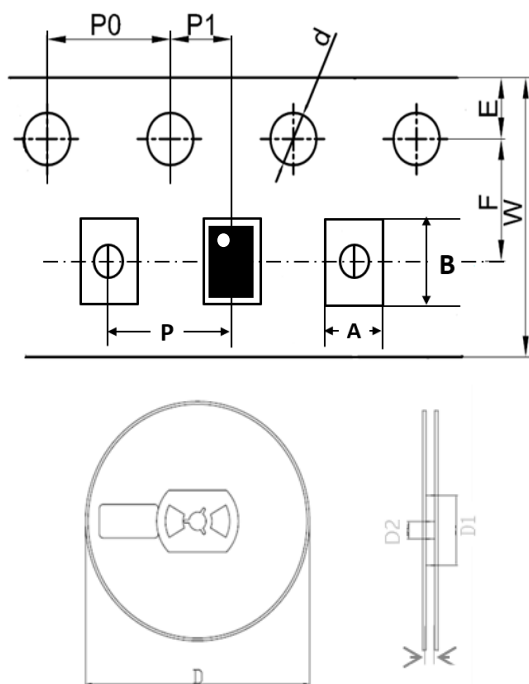
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Reflow Profile

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(Liquidus Temp(T_L) to peak)		3°C/sec. Max.
Ts(max) to T_L - Ramp-up Rate		3°C/sec. Max.
Reflow	- Temperature (T_L) (Liquidus)	+217°C
	- Temperature (T_L)	60 – 150 secs.
Peak Temp (T_P)		+(260+0/-5)°C
Time within 5°C of actual Peak Temp (T_P)		30 secs.
Ramp-down Rate		6°C/sec. Max.
Time 25°C to peak Temp (T_P)		8 min. Max.
Do not exceed		+260°C



Package Reel Information



REF	mm	inch
A	1.25+/-0.10	0.049+/-0.004
B	1.80+/-0.10	0.071+/-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	4.00+/-0.20	0.157+/-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	3,000	90,000	178	390	370	220