

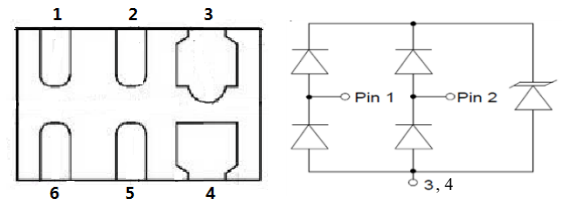
Transient Voltage Suppressor

Version: A0 2020-11-23

Features

- IEC 61000-4-2(ESD) $\pm 15\text{KV}(\text{air})$, $\pm 8\text{KV}(\text{contact})$
- IEC61000-4-5(Lightning) 4A (8/20 μS)
- IEC61000-4-4(EFT) 40A (5/50ns)
- 60 Watts peak pulse power per line($t_p=8/20\mu\text{S}$)
- Low capacitance: 0.20pF typical (I/O to I/O)

Exterior



DFN1610-6L

Application information

- 10GBASE-T Ethernet
- 10/100/1000 Ethernet USB3.0
- UHDMI 1.4
- USB 1.1/2.0/3.0/OTG

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	$I_{\text{DRM}}@V_{\text{DRM}}$		$V_{\text{BR}}^{(1)}@I_{\text{R}}$		$V_{\text{C}}@I_{\text{PP}}^{(2)}$		$C_{\text{O}}^{(3)}$		$C_{\text{O}}^{(4)}$	
	μA	V	V	mA	V	A	pF		pF	
	MAX		MIN		MAX		TYP	MAX	TYP	MAX
BV-FE05U2A	0.5	5	6.0	1	15	4	0.40	0.60	0.20	0.30

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

① I_{DRM} is measured at $V_{\text{DRM}}=5.0\text{V}$, V_{BR} is measured at $I_{\text{R}}=1\text{mA}$, Any I/O pin to GND

② Surge Waveform: 8/20 μS , Any I/O pin to GND

③ Off-state capacitance is measured in $V_{\text{DC}}=0\text{V}$, $V_{\text{RMS}}=0.3\text{V}$, $f=1\text{MHz}$, between IO and GND

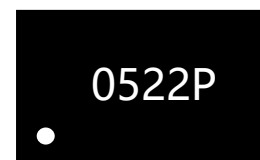
④ Off-state capacitance is measured in $V_{\text{DC}}=0\text{V}$, $V_{\text{RMS}}=0.3\text{V}$, $f=1\text{MHz}$, between pin1 and pin2

Part Numbering System

BV FE 05 U 2 A
(1) (2) (3) (4) (5) (6)

- (1) Bencent Transient Voltage Suppressor
- (2) Package: DFN1610
- (3) Stand off Voltage: 5.0V
- (4) Low Capacitance
- (5) 2 line protections
- (6) Bencent internal code

Mark



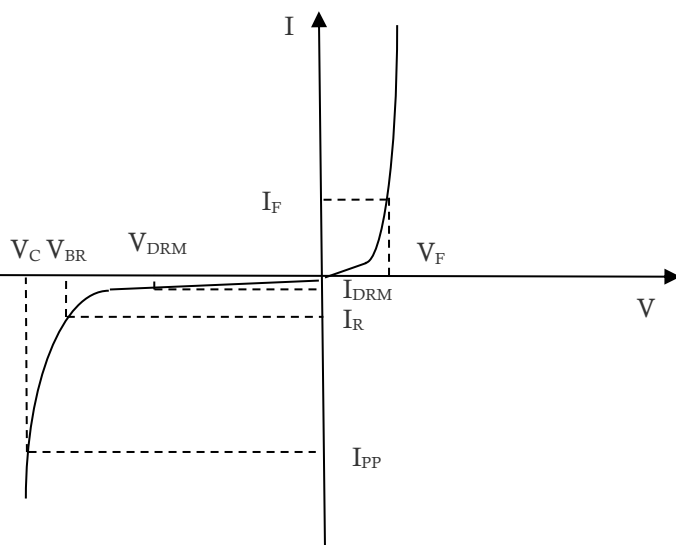
0522P: Part Number

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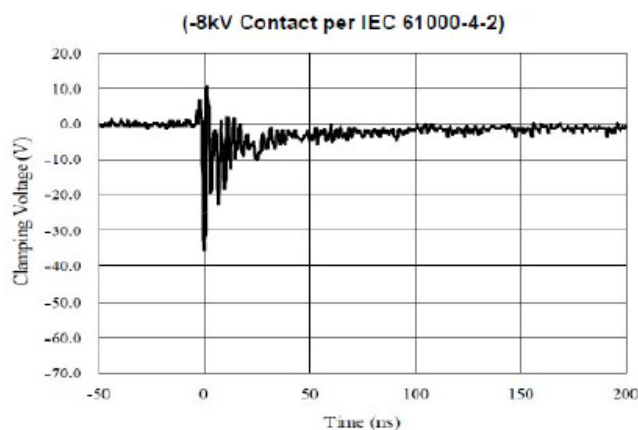
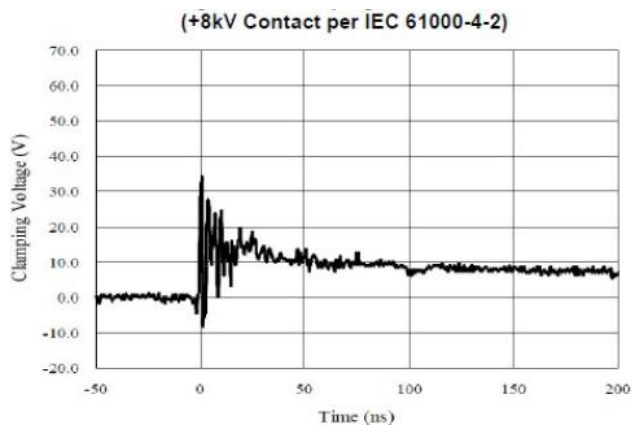
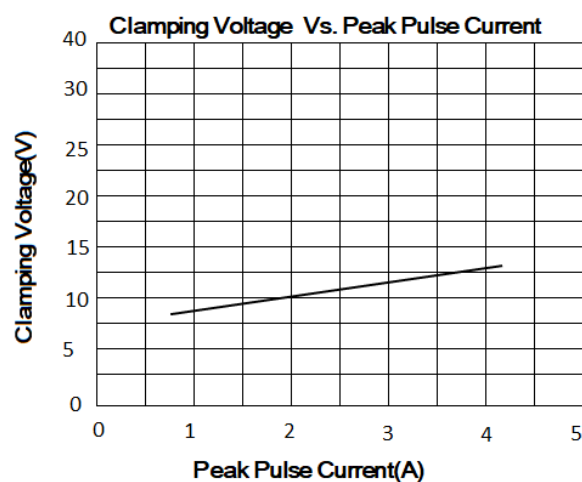
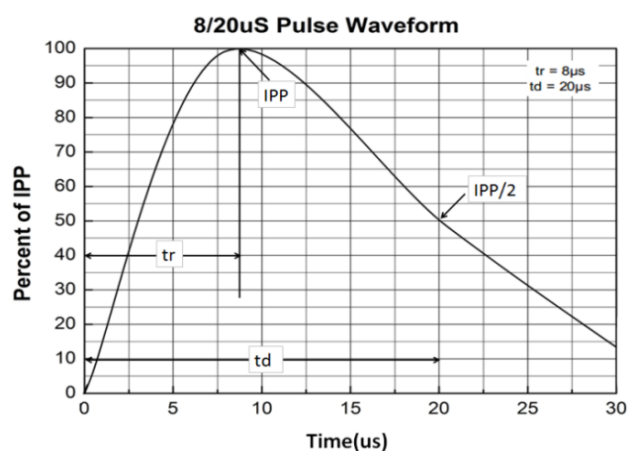
V-I Curve

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



IO to GND

Typical Characteristics



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Thermal Considerations

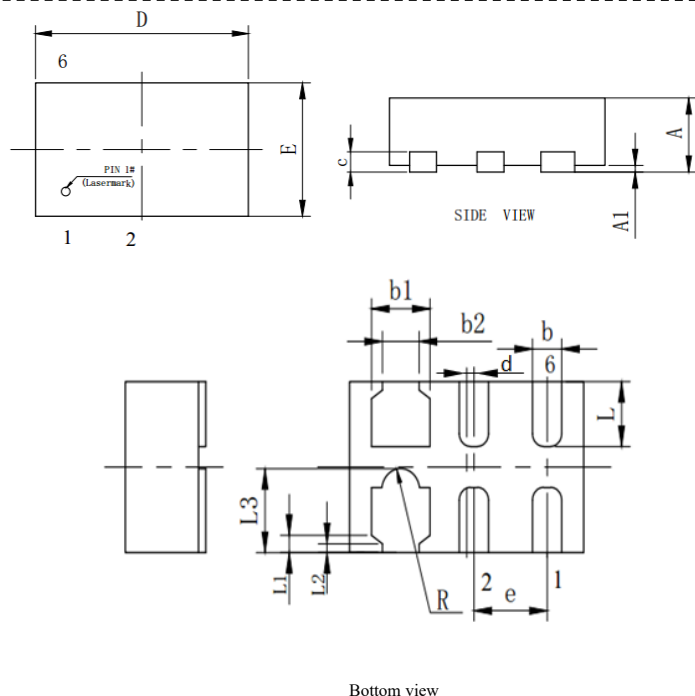
symbol	Parameter	Value	Unit
TJ	Operating Junction Temperature Range	-40 to +125	°C
TS	Storage Temperature Range	-55 to +150	°C

Environmental Characteristics

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

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

Product Dimensions

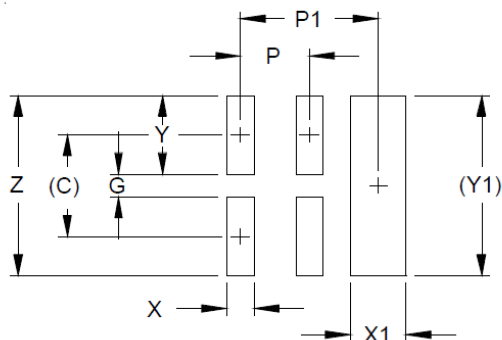


REF	mm	inch
A	0.45~0.55	0.018~0.022
A1	0.00~0.05	0.00~0.002
b	0.15~0.25	0.006~0.010
b1	0.35~0.45	0.014~0.018
b2	0.20~0.30	0.008~0.012
c	0.10~0.20	0.004~0.008
d	0.05TYP	0.002
D	1.55~1.65	0.061~0.065
e	0.50BSC	0.020BSC
E	0.95~1.05	0.037~0.041
L	0.30~0.45	0.012~0.018
L1	0.10REF	0.004REF
L2	0.05REF	0.002REF
L3	0.49REF	0.019REF
R	0.08~0.18	0.003~0.007

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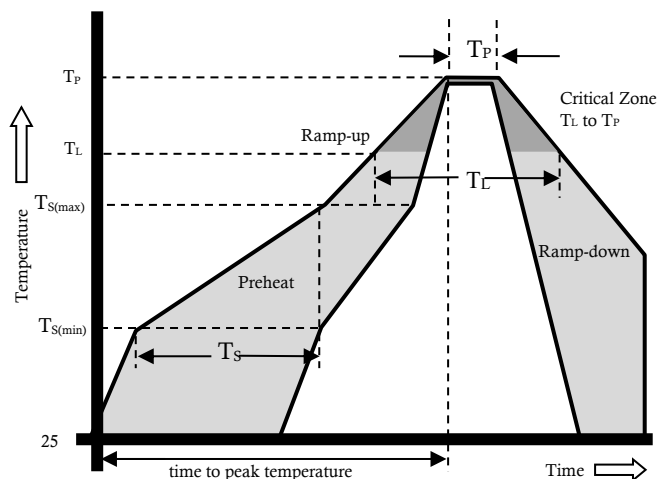
Recommended Soldering Pad



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

Reflow Profile

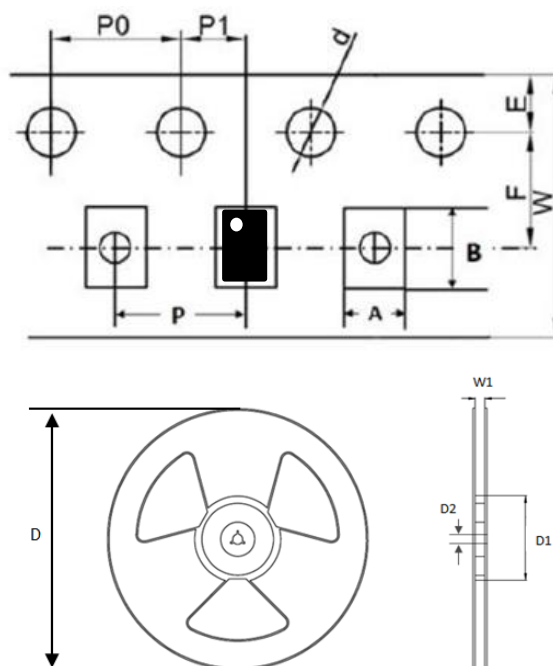
Reflow Condition		Pb-Free Assembly
Pre Heat	Temperature Min.	+150°C
	Temperature Max.	+200°C
	Time(Min to Max)	60 – 180 secs.
Average ramp up rate(Liquidus Temp(T_L) to peak)		3°C/sec. Max.
$T_{S(max)}$ to T_L - Ramp-up Rate		3°C/sec. Max.
Reflow	- Temperature (T_L) (Liquidus)	+217°C
	- Temperature (T_L)	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



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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