

ESD Protection Array

Features

- Transient protection for super-speed data lines
IEC 61000-4-2 (ESD) $\pm 15\text{kV}$ (Air)
 $\pm 8\text{kV}$ (Contact)
- ESD protection for super-speed differential signal (above 5Gb/s) channels
- Fast turn-on and low clamping voltage
- Back-drive protection for power-down mode
- Ultra-low capacitance: 0.20pF Typical (I/O-I/O)
- Each I/O pin can withstand over 1000 ESD strikes for $\pm 8\text{kV}$ contact discharge
- MSL3

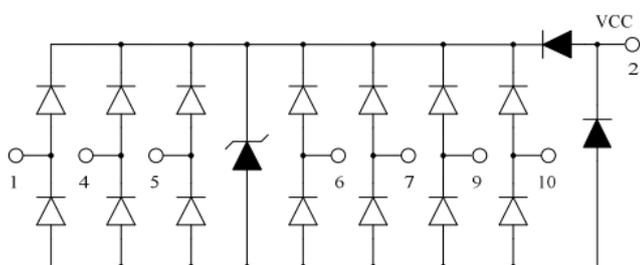
Application information

- USB3.0 Power and Data Line Protection
- Desktops, Servers and Notebooks
- MDDI Ports
- Display Ports
- High Definition Multi-Media Interface (HDMI)
- Digital Visual Interfaces (DVI)

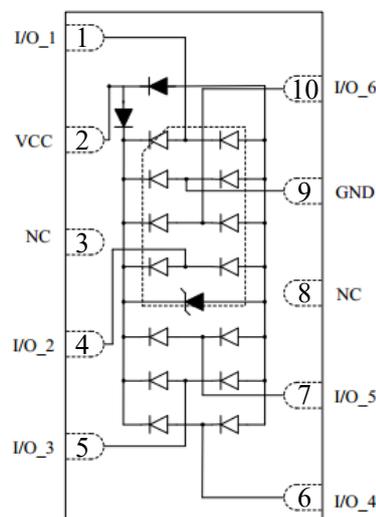
Mechanical Characteristics

- DFN4120-10L package
- Flammability Rating: UL 94V-0
- Marking: Part number, Date
- Packaging: Tape and Reel

Circuit Diagram



Pin Configuration (top view)



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Version: A5 2020-10-10

Thermal Considerations & Environmental Characteristics

symbol	Parameter	Value	Unit
T _J	Operating Junction Temperature Range	-55 to +150	°C
T _s	Storage Temperature Range	-55 to +150	°C

Testing items	Technical standards
High temperature Reverse Bias Test	Temperature: 150±3°C Bias=80%V _{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,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±5°C Time of dip soldering: 10s, 3times

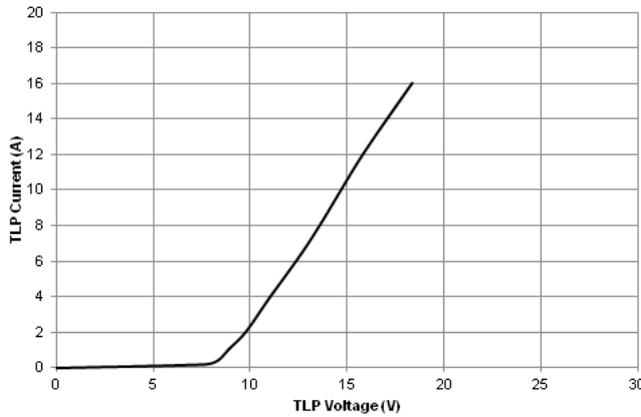
Electrical Characteristics (T = 25°C)

Part Number	I _{DRM} @V _{DRM}		V _{BR} ^① @I _{BR}		V _c @I _{pp} ^②		R _{DYN} @TLP ^③	V _c @I _{pp} TLP ^③		CO ^④	
	μA	V	V	mA	V	A	Ω	V	A	pF	
	MAX		MIN		MAX		TYP	TYP		TYP	MAX
BV-FW05U6CA	1	5	6	1	16	1	0.6	18	16	0.2	0.35

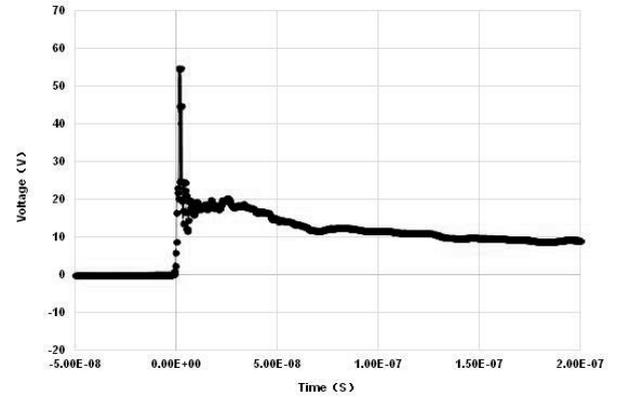
Absolute maximum ratings measured at T= 25°C RH = 45%-75% (unless otherwise noted).

- ① V_{BR} is measured at I_{BR} =1mA; I_{DRM} is measured at V_{DRM} =5V, IO,VCC to GND and GND to IO,VCC
- ② Surge Waveform: 8/20uS, IO,VCC to GND and GND to IO,VCC
- ③ TLP parameter: Z₀ = 50Ω, t_p = 100ns, t_r = 2ns, averaging window from 60ns to 80ns. R_{DYN} is calculated from 4A to 16A.
- ④ Off-state capacitance is measured in V_{DC}=0V, V_{RMS}=0.3V, f=1MHz, between IO,VCC and GND

Typical Characteristics



TLP Measurement



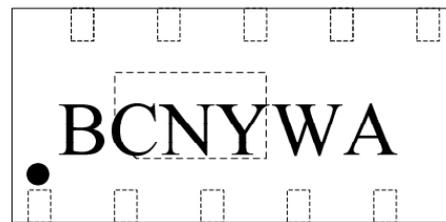
(+8kV contact discharge per IEC61000-4-2)

Part Numbering System

BV FW 05 U 6 C A
(1) (2) (3) (4) (5) (6) (7)

- (1) Bencent ESD Protection Array
- (2) Package: DN4120-10L
- (3) Off-state Voltage: 5V
- (4) Low Capacitance
- (5) 6 Lines protection
- (6) Bidirectional
- (7) Bencent internal code

Mark

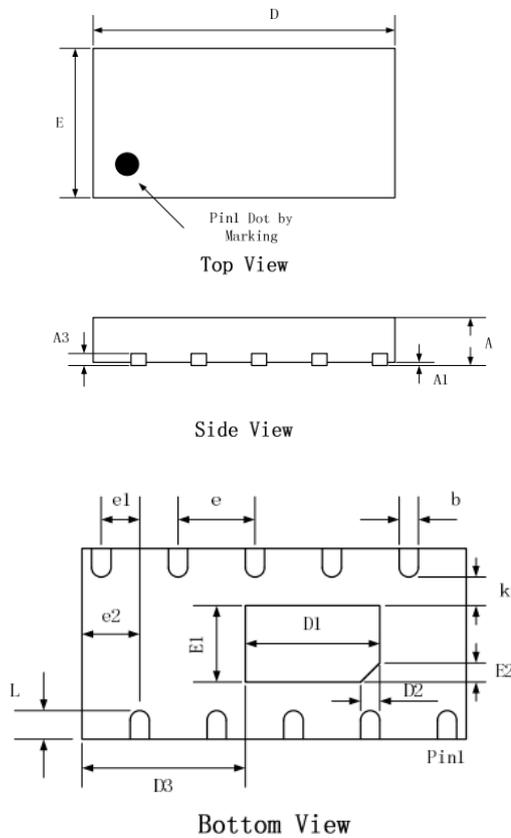


- Note 1: BCN is the part number, fixed
- Note 2: "Y" is year code, from 0 to 9, A to Z;
- "W" is date code, from A to Z.
- Note 3: "A" is the production lot number, from A to Z.

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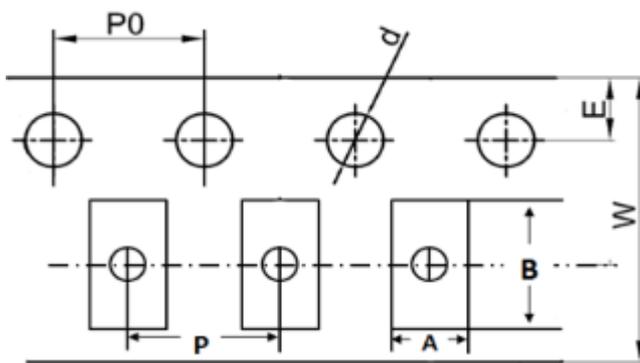
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Product Dimensions



Package Dimensions (Controlling dimensions are in millimeters)

Symbol	Dimensions (mm)		Dimensions (Inches)	
	Minimum	Maximum	Minimum	Maximum
A	0.450	0.650	0.018	0.026
A1	0.000	0.050	0.000	0.002
A3	0.152REF		0.006REF	
D	4.050	4.150	0.159	0.163
E	1.950	2.050	0.077	0.081
D1	1.300	1.500	0.051	0.059
E1	0.700	0.900	0.028	0.035
D3	1.650	1.850	0.065	0.073
D2	0.200REF		0.008REF	
E2	0.200REF		0.008REF	
k	0.200MIN		0.008MIN	
b	0.150	0.250	0.006	0.010
e	0.800TYP		0.031TYP	
e1	0.350	0.450	0.014	0.018
e2	0.600	0.700	0.024	0.028
L	0.250	0.350	0.010	0.014



Package Reel Information

REF	mm	inch
A	2.20-2.40	0.087-0.094
B	4.20-4.40	0.165-0.173
d	1.40-1.50	0.055-0.059
E	1.65-1.85	0.065-0.073
P	3.90-4.10	0.154-0.161
P0	3.90-4.10	0.154-0.161
W	11.70-12.30	0.461-0.484

OUTLINE	REEL (PCS)	PER CARTON (PCS)	REEL DIAMETERS (mm)	CARTON SIZE(mm)		
				L	W	H
TAPING	5,000	40,000	330	360	360	380