

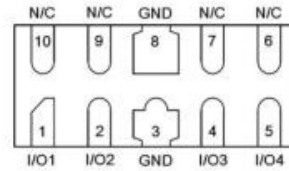
Transient Voltage Suppressor

Version: A0 2023-6-20

Features

- IEC61000-4-2(ESD)±15KV(air),±12KV(Contact)
- IEC61000-4-4(EFT) 40A (5/50nS)
- IEC61000-4-5(Lightning) 6.5A (8/20uS)
- Working Voltage: 5V
- 4 Lines Protection
- Low leakage current
- Moisture sensitivity level: Level 3

Exterior

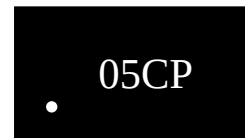


DFN2510

Application Information

- High Definition Multi-Media Interface (HDMI1.3/1.4/2.0)
- Digital Visual Interface (DVI)
- Display Port Interface
- Serial ATA
- PCI Express
- USB 1.1/2.0/3.0/3.1/OTG

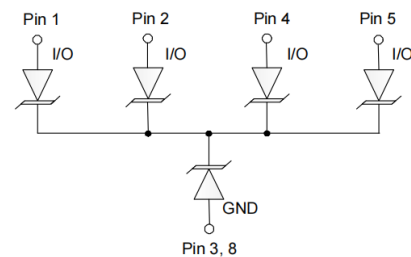
Package (top view)



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	$I_{DRM}@V_{DRM}$		$V_{BR}^{①}@I_R$		$V_C@I_{pp}^{②}$ 8/20μs		$R_{DYN}@TLP^{③}$	$V_C@I_{pp}TLP^{③}$		$C_o^{④}$	
	μA	V	V	mA	V	A	Ω	V	A	pF	
	MAX		MIN		MAX		TYP	TYP		TYP	MAX
BV-FK05U4CP	0.1	5.0	6.0	1.0	6.5	6.5	0.3	8	16	0.3	0.35

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

- ① VBR is measured at IR=1mA, pin1, 2, 4, 5 to pin 3, 8
- ② Surge Waveform: 8/20μS, pin1,2,4,5 to pin 3,8
- ③ TLP parameter: ZO = 50Ω, tp = 100ns, tr = 0.2ns
- ④ Off-state capacitance is measured in VDC=0V,VRMS=300mV, f=1MHz, IO to GND

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Part Numbering System

BV FK 05 U 4 C P
(1) (2) (3) (4) (5) (6) (7)

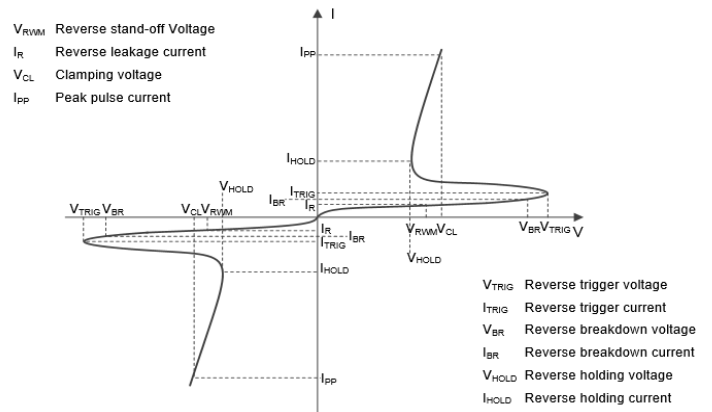
- (1) Bencent Transient Voltage Suppressor
- (2) Package: DFN2510
- (3) Working Voltage: 5.0V
- (4) Low Capacitance
- (5) 4 Lines Protection
- (6) Bi-directional, IO to GND
- (7) Bencent intenal code

Mark



V-I Curve

Parameters	Definition
V_{DRM}	Reverse stand-off Voltage
I_R	Reverse leakage current
V_{CL}	Clamping voltage
I_{PP}	Peak pulse current
V_{TRIG}	Reverse trigger voltage
I_{TRIG}	Reverse trigger current
V_{BR}	Reverse breakdown voltage
I_{BR}	Reverse breakdown current
V_{HOLD}	Reverse holding voltage
I_{HOLD}	Reverse holding current



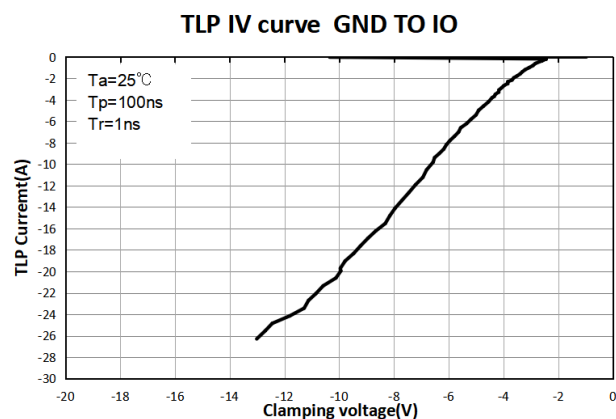
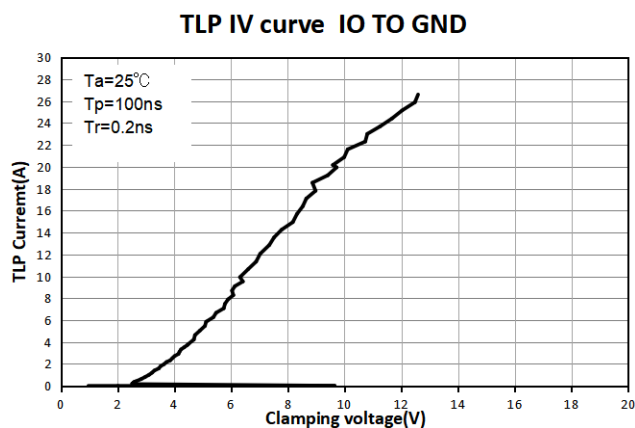
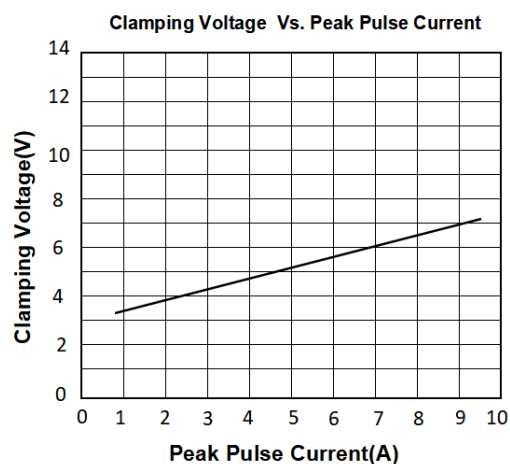
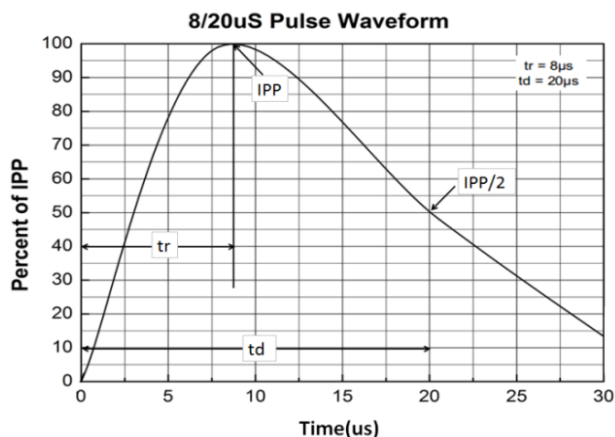
Thermal Consideration

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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Typical Characteristics

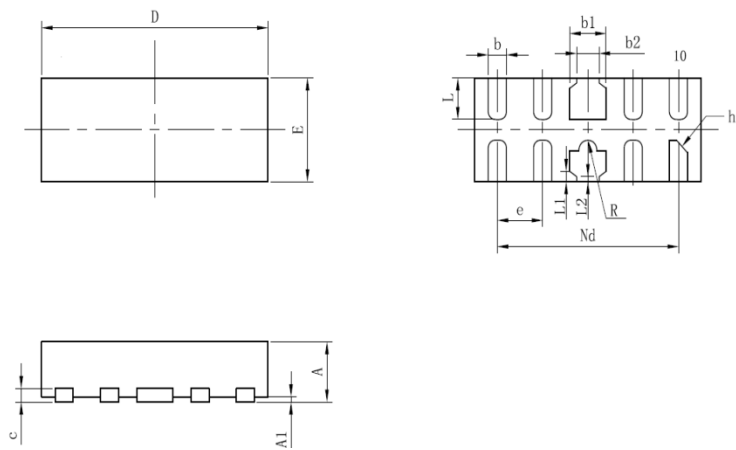


Environmental Characteristics

Testing items	Technical standards
High temperature Reverse Bias Test	Temperature: $125 \pm 3^\circ C$ Bias= $80\% V_{DRM}$ Time: 168H
High Temperature Life Test	Temperature: $150^\circ C$ Time: 168H
High-low Temperature Cycle test	Temperature: From $-40^\circ C$ to $125^\circ C$ Dwell time: 30min, 10cycles
High Temperature & High Humidity Test	Temperature: $85^\circ C$ Humidity: 85% Time: 168H
Pressure cooker Test	Temperature: $121^\circ C$, 2atm. Humidity: 100% Time: 24H
Resistance of soldering heat	Temperature: $260 \pm 5^\circ C$ Time of dip soldering: 10s, 3times

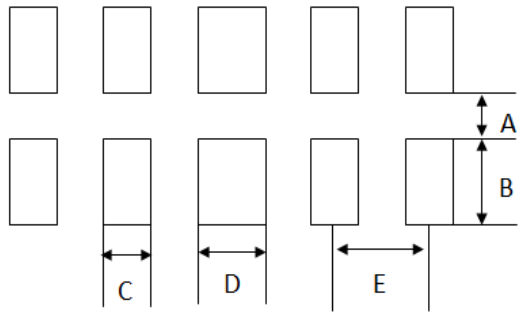
Note: The above testing items can be specified by customer's special request

Product Dimensions



REF	mm	inch
A	0.45~0.60	0.018~0.022
A1	0.00~0.05	0.000~0.002
b	0.15~0.25	0.006~0.01
b1	0.35~0.45	0.014~0.018
b2	0.2~0.3	0.008~0.012
c	0.1~0.2	0.004~0.008
D	2.45~2.55	0.096~0.100
e	0.50BSC	0.020BSC
Nd	2.00BSC	0.079BSC
E	0.95~1.05	0.037~0.041
L	0.35~0.45	0.014~0.018
L1	0.075REF	0.003REF
L2	0.05REF	0.002REF
h	0.08~0.15	0.003~0.006
R	0.05~0.15	0.002~0.006

Recommended Soldering Pad



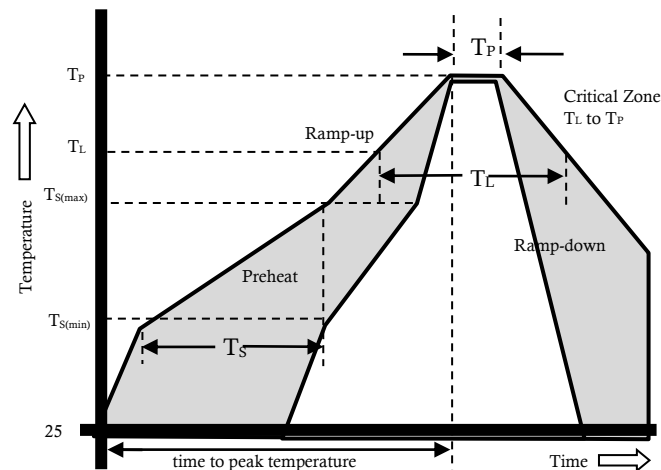
REF	mm	inch
A	0.2	0.008
B	0.6	0.024
C	0.3	0.012
D	0.45	0.018
E	0.5	0.020

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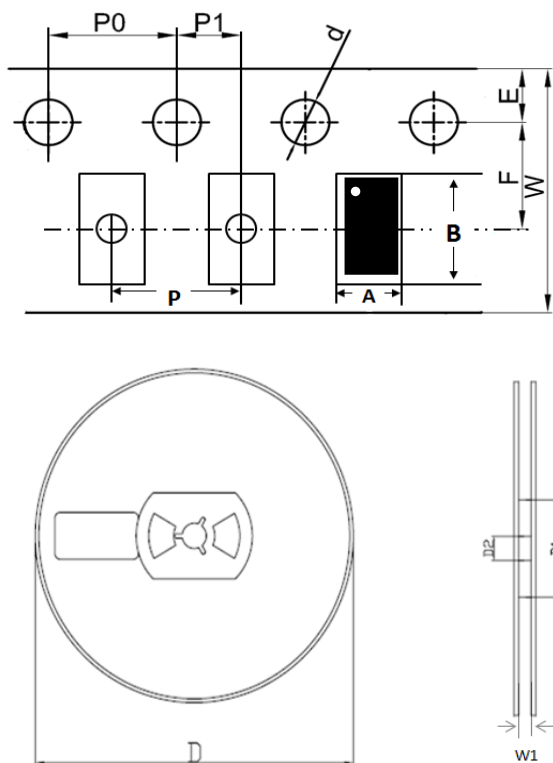
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Reflow Profile

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 (Liquid) Tamp (T _L) to peal		3°C/s max
Ts(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)		25secs
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	1.2+/-0.10	0.047+/-0.004
B	2.7+/-0.10	0.106+/-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