

Transient Voltage Suppressor

Version: A3 2024-1-19

Features

- IEC 61000-4-2 (ESD) $\pm 30\text{KV}$ (air), $\pm 30\text{KV}$ (contact)
- IEC 61000-4-4(EFT): 40A (5/50ns)
- IEC 61000-4-5(surge): 6A (8/20 μs)
- 120Watts peak pulse power (tp=8/20 μs)
- Low capacitance: 5pF (Typical)
- Small package: DFN0603-2L

Exterior



DFN0603-2L

Application Information

- Computers and peripherals
- Communication systems
- Portable electronics
- Cellular phones audio

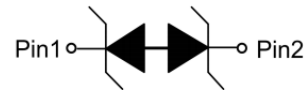
Package (top view)



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	$I_R@V_{RWM}$		$V_{BR}^{①}@I_T$			$V_C@I_{PP}^{②}$		$V_C@I_{PP}^{②}$		$R_{DYN}@TLP^{③}$	$V_C@I_{PP}TLP^{③}$		$Co^{④}$	
	μA	V	V	V	mA	V	A	V	A	Ω	V	A	pF	
	MAX		MIN	TYP		MAX		MAX		TYP	TYP		TYP	MAX
BV-F612ZCB	0.1	12	13	14	1	16	1	20	6	0.29	18.1	16	5	8

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

① I_{DRM} is measured at $V_{RWM}=12V$; V_{BR} is measured at $I_T=1mA$;② Surge Waveform: 8/20 μs , pin 1 to pin2 and pin2 to pin1③ TLP parameter: $Z_0 = 50\Omega$, $t_p = 100ns$, $t_r = 1ns$, R_{DYN} is calculated from 4A to16A④ Off-state capacitance is measured in $V_{DC}=0V$, $f=1MHz$

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Part Numbering System

Mark

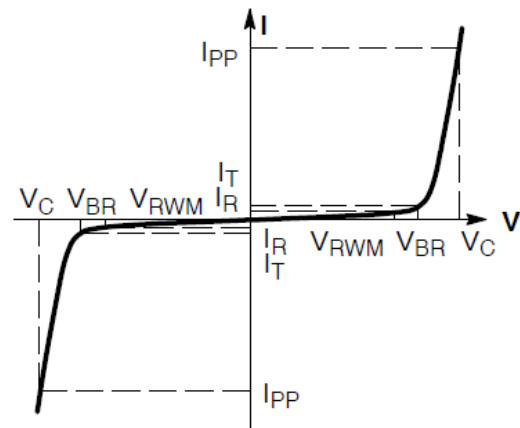
BV F6 12 Z C B
(1) (2) (3) (4) (5) (6)

- (1) Bencent Transient Voltage Suppressor
- (2) Package:DFN0603-2L
- (3) Off-state Voltage: 12V
- (4) Normal Capacitance
- (5) Bi-directional
- (6) Bencent internal code

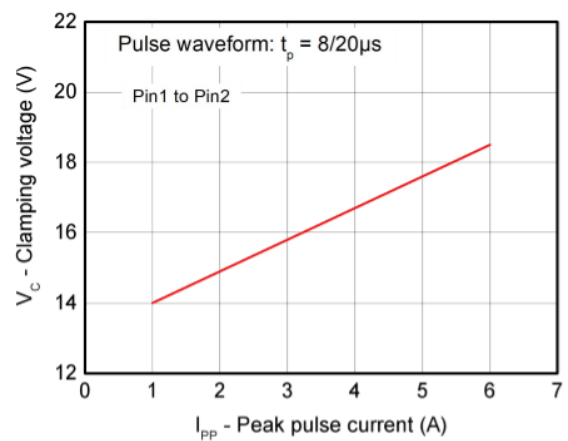
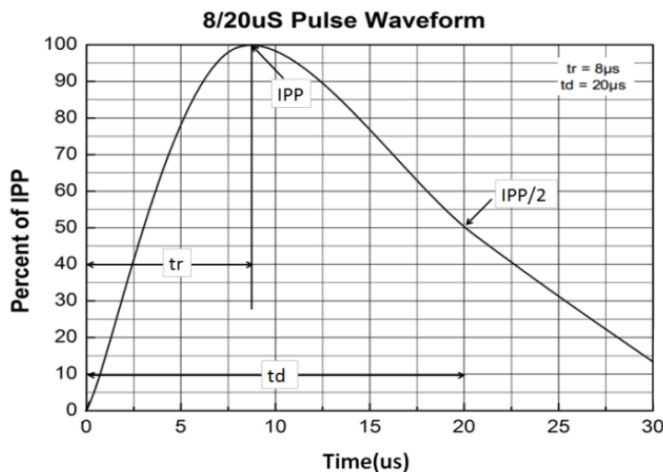


V-I Curve

Parameters	Definition
V_C	Clamping voltage
I_{PP}	Surge waveform 8/20 μ s
V_{RWM}	Working Peak Reverse Voltage
V_{BR}	Breakdown Voltage
I_R	Reverse Leakage Current
I_T	Test current
P_{PP}	Peak Pulse Power Dissipation

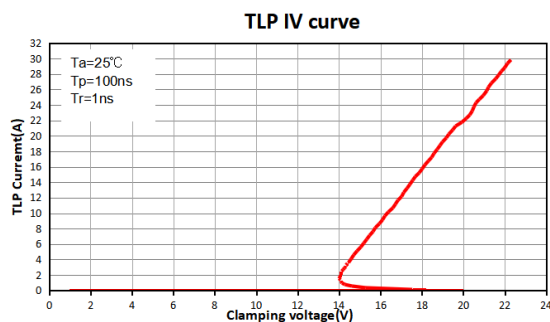


Typical Characteristics



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Thermal Considerations

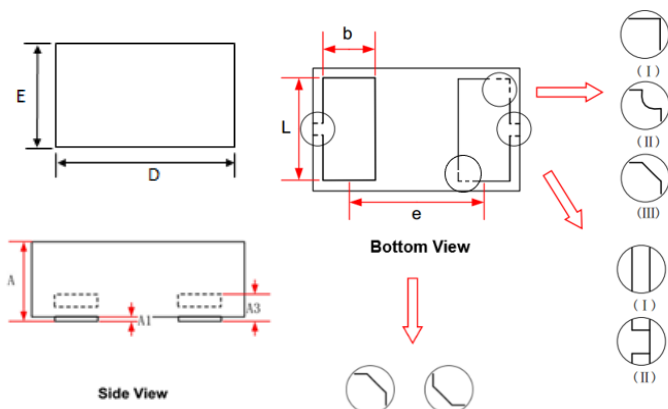
symbol	Parameter	Value	Unit
T_J	Operating Junction Temperature Range	-55 to +125	$^{\circ}\text{C}$
T_S	Storage Temperature Range	-55 to +150	$^{\circ}\text{C}$

Environmental Characteristics

Testing items	Technical standards
High temperature Reverse Bias Test	Temperature: $150\pm 3^{\circ}\text{C}$ Bias= $80\%V_{\text{DRM}}$ Time: 168H
High Temperature Life Test	Temperature: 150°C Time: 168H
High-low Temperature Cycle test	Temperature: From -55°C to 150°C Dwell time: 30min, 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: $260\pm 5^{\circ}\text{C}$ Time of dip soldering: 10s, 3times

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

Product Dimensions

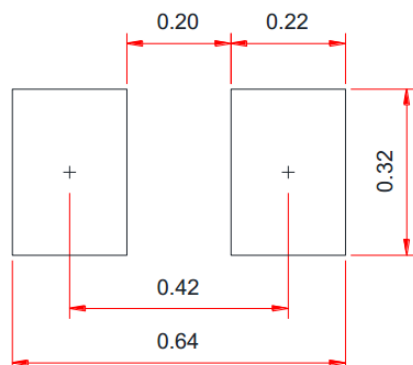


REF	mm	inch
A	0.23~0.35	0.009~0.014
A1	0.00~0.05	0.000~0.002
A3	0.102REF	0.004REF
D	0.55~0.67	0.022~0.026
E	0.25~0.37	0.010~0.015
b	0.10~0.21	0.004~0.008
e	0.36BSC	0.014BSC
L	0.20~0.30	0.008~0.012

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Recommended Soldering Pad

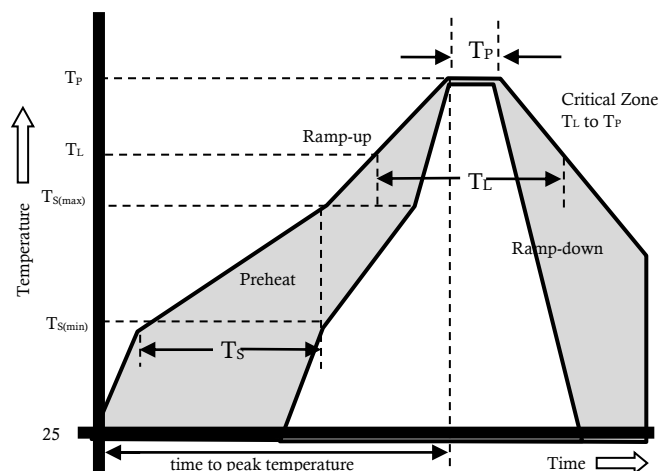


Notes:

This recommended land pattern is for reference purposes only. Please consult your manufacturing group to ensure your PCB design guidelines are met

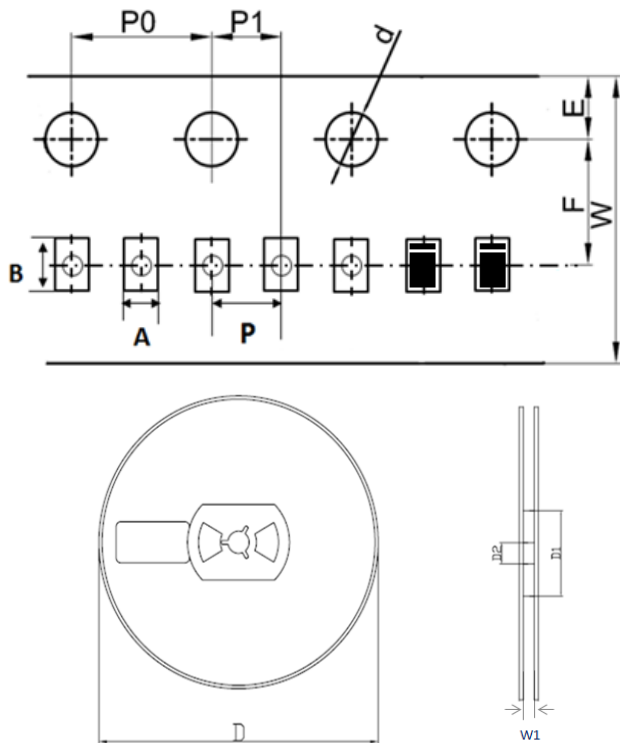
Reflow Profile

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
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

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REF	mm	inch
A	0.40+/-0.05	0.016+/-0.002
B	0.70+/-0.05	0.028+/-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