

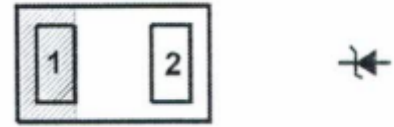
Transient Voltage Suppressor

Version: A1 2023-06-12

Features

- IEC 61000-4-2(ESD) $\pm 30\text{KV}$ (air), $\pm 30\text{KV}$ (contact)
- 1400Watts peak pulse power ($t_p=8/20\mu\text{s}$)
- Low clamping voltage
- Moisture sensitivity level: level 3
- Small package saves board space (1610)

Exterior



DFN1610-2L

Application Information

- DC power

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	$I_{\text{DRM}}@ V_{\text{DRM}}$		$V_{\text{BR}}^{①}@ I_{\text{R}}$		$V_{\text{c}}@I_{\text{pp}}^{②}$		$C_{\text{o}}^{③}$
	μA	V	V	mA	V	A	pF
	MAX		MIN		MAX		MAX
BV-FE12ZA	1	12	13	1	24	60	1500

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

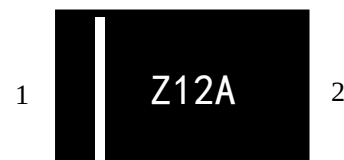
- ① V_{BR} is measured at $I_{\text{R}}=1\text{mA}$, Pin 1 to Pin2
- ② Surge Waveform: 8/20 μs , Pin 1 to Pin2
- ③ Off-state capacitance is measured in Bias=0V, f=1MHz

Part Numbering System

BV FE 12 Z A
(1) (2) (3) (4) (5)

- (1) Bencent Transient Voltage Suppressor
- (2) Package: DFN1610
- (3) Stand off Voltage:12V
- (4) Normal Capacitance
- (5) Bencent intenal code

Mark



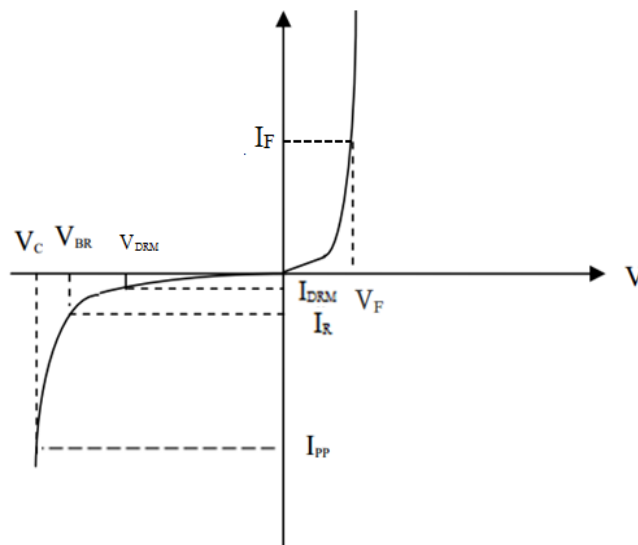
Z12A: Part Number

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Version: A1 2023-06-12

V-I Curve

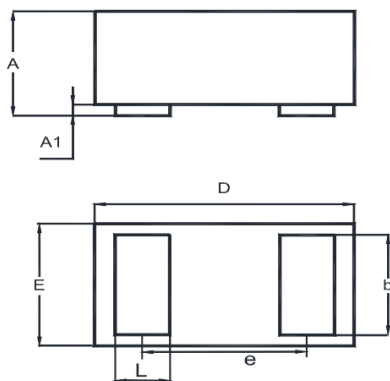
Parameters	Definition
V_C	Clamping Voltage
I_{PP}	Surge Waveform 8/20 μ s
V_{DRM}	Stand-off Voltage
I_{DRM}	Reverse Leakage Current
V_{BR}	Breakdown Voltage
I_R	Test Current
V_F	Forward Voltage
I_F	Test Current
P_{pp}	Peak Pulse Power Dissipation



Thermal Considerations

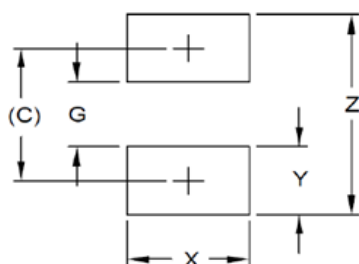
symbol	Parameter	Value	Unit
T_J	Operating Junction Temperature Range	-55 to +150	°C
T_S	Storage Temperature Range	-55 to +150	°C

Product Dimensions



REF	mm	inch
A	0.450-0.550	0.0177-0.0217
A1	0.000-0.050	0.000-0.0020
b	0.850-0.950	0.0295-0.0335
D	1.550-1.650	0.0610-0.0650
e	1.10BSC	0.0433BSC
E	0.950-1.050	0.0374-0.0413
L	0.350-0.450	0.0138-0.0177

Recommended Soldering Pad



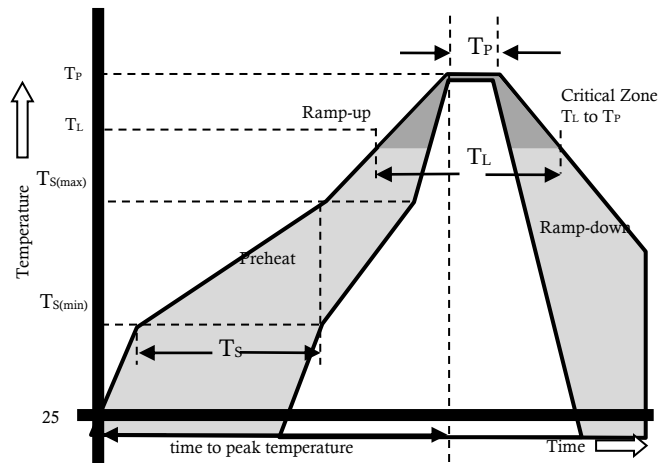
REF	mm	inch
C	1.225	0.048
G	0.600	0.024
X	1.000	0.039
Y	0.625	0.025
Z	1.850	0.073

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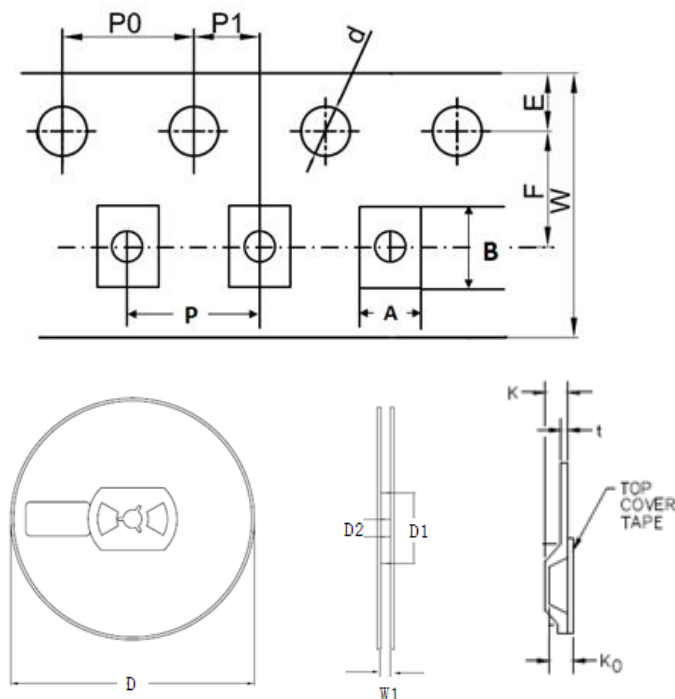
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Reflow Profile

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)		25
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+/-0.1	0.049+/-0.004
B	1.80+/-0.1	0.071+/-0.004
d	1.5+0.1/-0	0.061+0.004/-0
W	8.0+/-0.2	0.315+/-0.008
E	1.75+/-0.1	0.069+/-0.004
F	3.5+/-0.1	0.138+/-0.004
P	4.0+/-0.1	0.158+/-0.004
P0	4.0+/-0.1	0.158+/-0.004
P1	2.0+/-0.1	0.079+/-0.004
K	2.4 max	0.094 max
K0	0.8+/-0.2	0.031+/-0.008
t	1.6+/-0.6	0.063+/-0.024
D	178+/-2.0	7.009+/-0.078
D1	55+/-3.0	2.165+/-0.118
D2	13+/-0.5	0.512+/-0.020
W1	8.6+/-0.1	0.339+/-0.04

Outline	Reel (pcs)	Per Carton (pcs)	Reel Diameters (mm)	Carton Size(mm)		
				L	W	H
Taping	3000	90,000	178	390	370	220