



DFN1610-2L Plastic-Encapsulate Diodes

ESDQ4V5FD1 Uni-direction Transient Voltage Suppressor

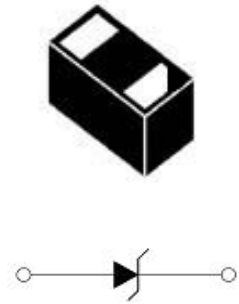
DESCRIPTION

Designed to protect voltage sensitive electronic components from ESD and other transients. Excellent clamping capability, low leakage, and fast response time provide best in class protection on designs that are exposed to ESD.

The combination of small size, high level of ESD protection makes them a flexible solution for applications such as Digital cameras,cellular phones.

It is designed to replace multiplayer varistors (MLV) in consumer equipments applications such as mobile phone, notebook, PAD, STB, LCD TV etc.

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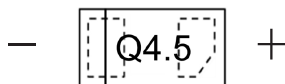
FEATURES

- Uni-directional ESD protection of one line
- Reverse stand-off voltage: 4.5V
- Low reverse clamping voltage
- Low leakage current
- Excellent package: 1.60mm×1.00mm×0.5mm
- Peak pulse power: 1600W (IEC61000-4-5 8/20μs)
- Fast response time
- JESD22-A114-B ESD Rating of class 3B per human body model
- IEC 61000-4-2 Level 4 ESD protection
- Surge protection according to IEC61000-4-5 8/20μs waveform: I_{PPM} 100A

APPLICATIONS

- Computers and peripherals
- Power lines
- Audio and video equipment
- Cellular handsets and accessories
- Portable electronics
- Tablets
- Other electronics equipments communication systems

MARKING



Front side

Q4.5 = Device code

The marking bar indicates the cathode

MAXIMUM RATINGS ($T_a=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Limit	Unit
IEC 61000-4-2 ESD Voltage	$V_{\text{ESD}}^{(1)}$	± 25	kV
Air Model			
Contact Model		± 25	
JESD22-A114-B ESD Voltage		± 16	
ESD Voltage	Machine Model	± 0.4	
Peak Pulse Power	$P_{\text{PP}}^{(2)}$	1600	W
Peak Pulse Current	$I_{\text{PP}}^{(2)}$	100	A
Lead Solder Temperature – Maximum (10 Second Duration)	T_L	260	$^{\circ}\text{C}$
Operation Junction and Storage Temperature Range	T_J, T_{stg}	$-55 \sim +150$	$^{\circ}\text{C}$

(1).Device stressed with ten non-repetitive ESD pulses.

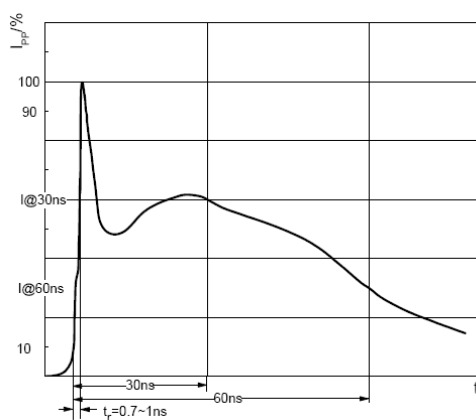
(2).Non-repetitive current pulse 8/20 μs exponential decay waveform according to IEC61000-4-5.

ESD standards compliance**IEC61000-4-2 Standard**

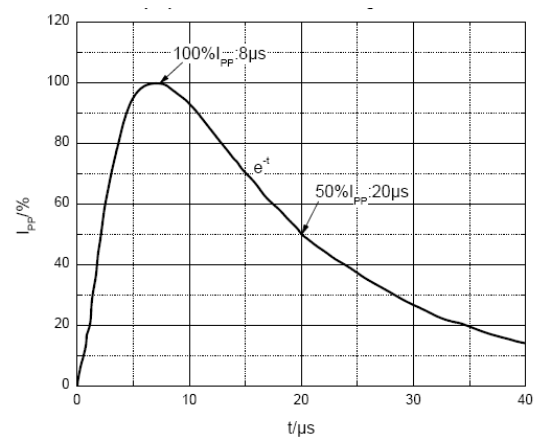
Contact Discharge		Air Discharge	
Level	Test Voltage kV	Level	Test Voltage kV
1	2	1	2
2	4	2	4
3	6	3	8
4	8	4	15

JESD22-A114-B Standard

ESD Class	Human Body Discharge V
0	0~249
1A	250~499
1B	500~999
1C	1000~1999
2	2000~3999
3A	4000~7999
3B	8000~15999

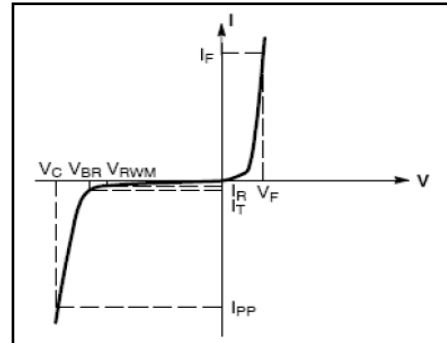


ESD pulse waveform according to IEC61000-4-2

8/20 μs pulse waveform according to IEC 61000-4-5

ELECTRICAL PARAMETER

Symbol	Parameter
V_C	Clamping Voltage @ I_{PP}
I_{PP}	Peak Pulse Current
V_{BR}	Breakdown Voltage @ I_T
I_T	Test Current
I_R	Reverse Leakage Current @ V_{RWM}
V_{RWM}	Reverse Standoff Voltage
V_F	Forward Voltage@ I_F
I_F	Forward Current

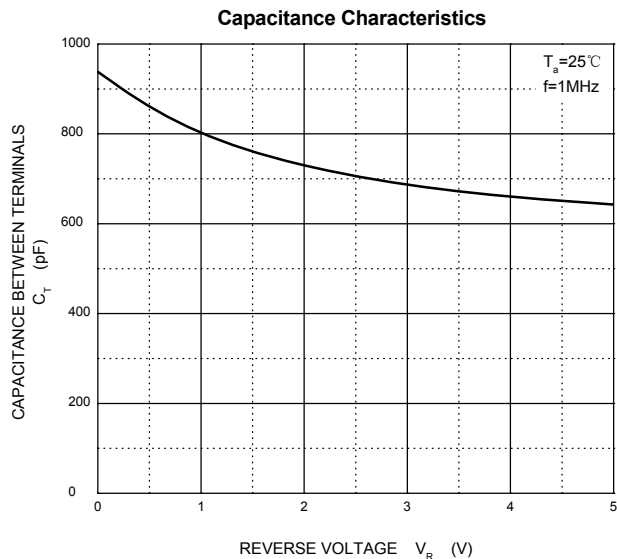
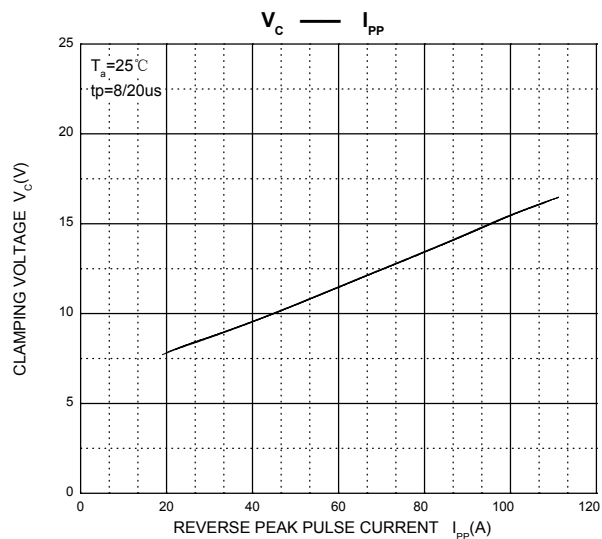
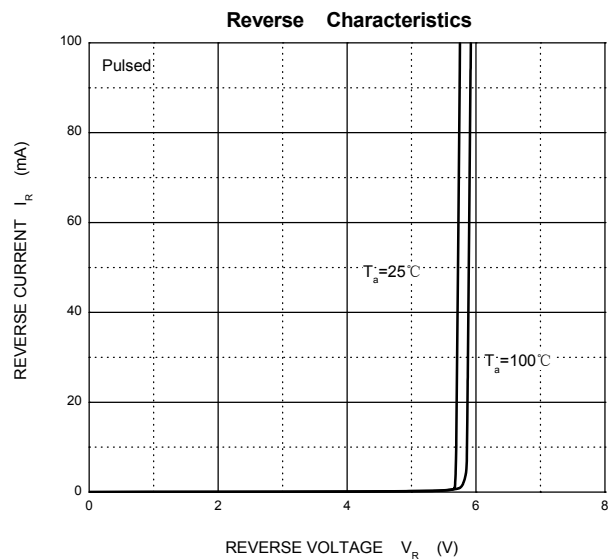
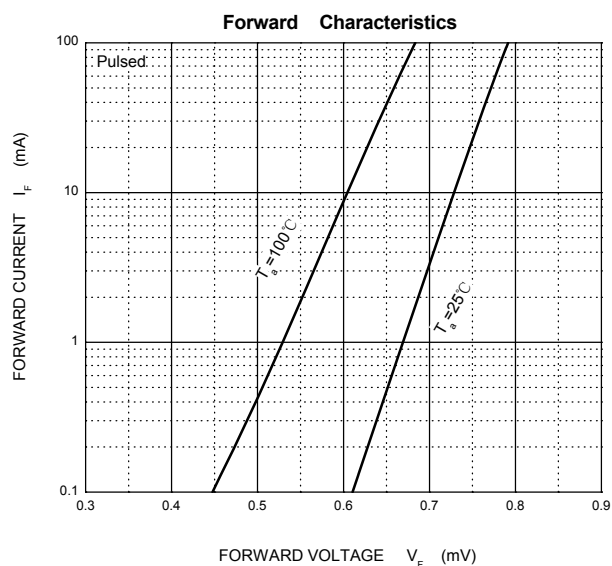
**V-I characteristics for a uni-directional TVS****ELECTRICAL CHARACTERISTICS($T_a=25^{\circ}\text{C}$ unless otherwise specified)**

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Reverse stand off voltage	$V_{RWM}^{(1)}$				4.5	V
Reverse leakage current	I_R	$V_R = 4.5\text{V}$			1	μA
Breakdown voltage	$V_{(BR)}$	$I_T = 1\text{mA}$	5.6		6.4	V
Clamping voltage	$V_C^{(2)}$	$I_{PP} = 100\text{A}$		16		V
Forward voltage	V_F	$I_F = 10\text{mA}$			1.0	V
Junction capacitance	C_J	$V_R = 0\text{V}, f = 1\text{MHz}$		900		pF

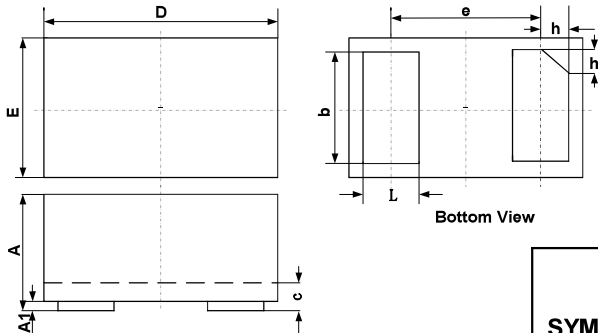
(1).Other voltages available upon request.

(2).Non-repetitive current pulse 8/20 μs exponential decay waveform according to IEC61000-4-5

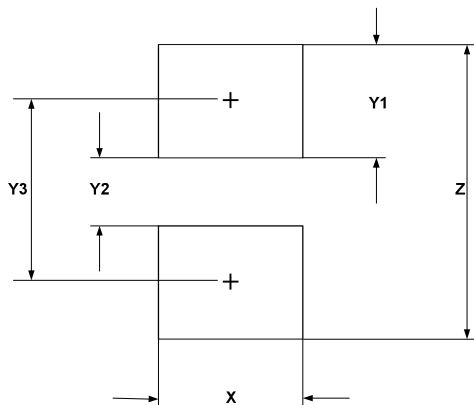
TYPICAL CHARACTERISTICS



PACKAGE OUTLINE AND PAD LAYOUT INFORMATION

DFNWB1610-2L Package Outline Drawing

SYM	DIMENSIONS					
	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.45	0.50	0.55	0.018	0.020	0.022
A1	0.00	0.02	0.05	0.000	0.001	0.002
b	0.75	0.80	0.85	0.030	0.032	0.034
c	0.10	0.15	0.20	0.004	0.006	0.008
D	1.55	1.60	1.65	0.062	0.064	0.066
e	1.10 BSC			0.044 BSC		
E	0.95	1.00	1.05	0.038	0.040	0.042
L	0.35	0.40	0.45	0.014	0.016	0.018
h	0.15	0.20	0.25	0.006	0.008	0.010

Suggested Land Pattern

SYM	DIMENSIONS	
	MILLIMETERS	INCHES
X	1.00	0.040
Y1	0.62	0.025
Y2	0.60	0.024
Y3	1.22	0.049
Z	1.85	0.074

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NOTICE

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