

Descriptions

The XESD317D-4V5 is a transient voltage suppressor designed to protect sensitive electronic components which are connected to power and control lines from over-stress damage caused by Electrostatic Discharging (ESD) and Lighting.

Features

- 1-Line, Uni-directional
- Working voltage: 4.5V Max.
- ESD withstand voltage according to IEC61000-4-2: $\pm 30\text{kV}$ (contact & air discharge)
- Lighting withstand according to IEC61000-4-5: 200A (8/20 μs)
- Solid-state silicon technology
- Low leakage current
- Device meets MSL 1 requirements
- Pb-Free, Halogen Free, RoHS Compliant

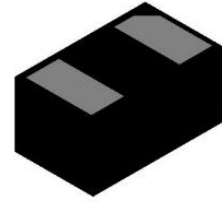
Applications

- Power supply protection
- Power management

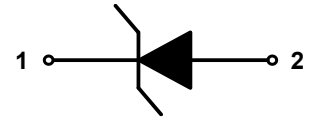
Part Number	Package Type	Marking Code	Shipping
XESD317D-4V5	DFN1610-2L	F*	10000/Tape & Reel

Electrical Characteristics

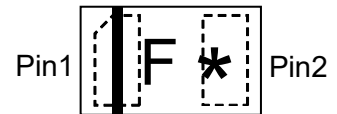
Symbol	Parameter
V_F	Forward Voltage
I_F	Forward Current
V_{RWM}	Reverse Stand-off Voltage
I_R	Reverse Leakage Current
V_{BR}	Reverse Breakdown Voltage
I_T	Test Current
I_{PP}	Peak Pulse Current
V_{CL}	Clamping Voltage



DFN1610-2L



Circuit diagram



F = Device code

* = Date code(A~z)

Marking

Absolute Maximum Ratings ($T_A = 25^{\circ}\text{C}$, unless otherwise specified)

Parameter	Symbol	Value	Unit
Peak Pulse Power ($t_p=8/20\mu\text{s}$)	P_{PP}	2200	W
Peak Pulse Current ($t_p=8/20\mu\text{s}$)	I_{PP}	200	A
ESD air discharge voltage according to IEC61000-4-2	V_{ESD}	± 30	kV
ESD contact discharge voltage according to IEC61000-4-2		± 30	
Junction Temperature Range	T_J	$-55\sim 125$	$^{\circ}\text{C}$
Operating Temperature Range	T_{OP}	$-55\sim 125$	$^{\circ}\text{C}$
Lead Solder Temperature (10 Seconds)	T_L	260	$^{\circ}\text{C}$
Storage Temperature Range	T_{STG}	$-55\sim 150$	$^{\circ}\text{C}$

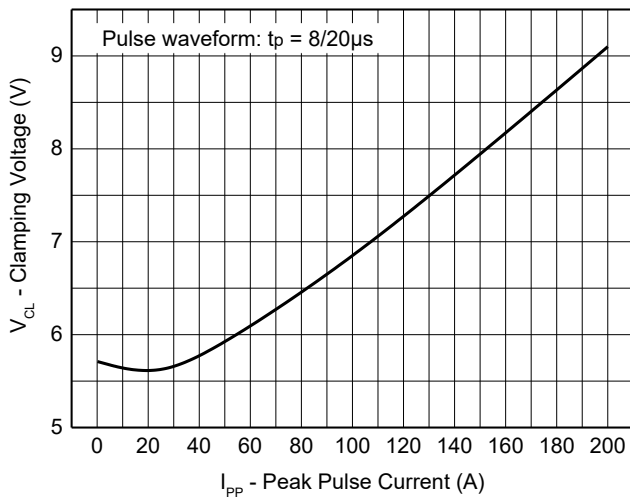
Electrical Characteristics ($T_A = 25^{\circ}\text{C}$, unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Reverse Stand-Off Voltage	V_{RWM}				4.5	V
Reverse Breakdown Voltage	V_{BR}	$I_T = 1\text{mA}$	5.2	6.0	6.8	V
Reverse Leakage Current	I_R	$V_{RWM} = 4.5$			100	nA
Forward Voltage	V_F	$I_T = 10\text{mA}$	0.5	0.76	1.0	V
Clamping Voltage ¹⁾	V_{CL}	$I_{PP} = 16\text{A}$, $t_p = 100\text{ns}$		5.8		V
Dynamic Resistance ¹⁾	R_{DYN}			0.038		Ω
Clamping Voltage ²⁾	V_{CL}	$V_{ESD} = +8\text{kV}$		5.8		V
Clamping Voltage ³⁾	V_{CL}	$I_{PP} = 1\text{A}$, $t_p = 8/20\mu\text{s}$		5.5	7	V
		$I_{PP} = 200\text{A}$, $t_p = 8/20\mu\text{s}$		9	11	V
Junction Capacitance	C_J	$V_R = 0\text{V}$, $f = 1\text{MHz}$		7.2	9.5	pF

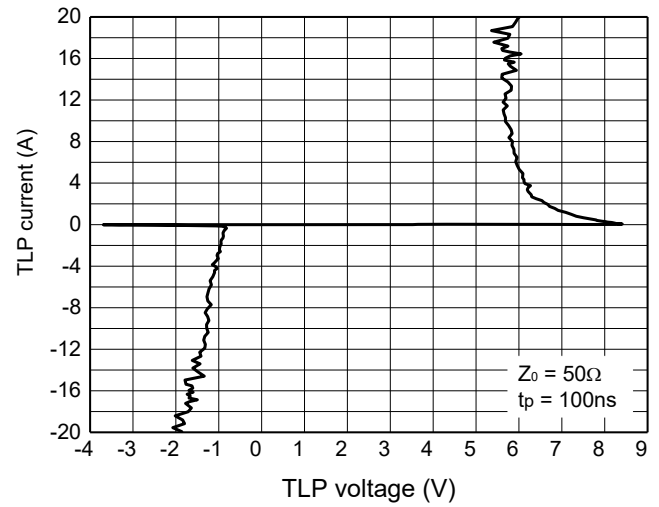
Notes:

- 1) Clamping Voltage was measured by Transmission Line Pulse Test (TLP), TLP conditions: $Z_0 = 50\ \Omega$, $t_r = 0.6\text{ns}$, $t_p = 100\text{ns}$, I_{TLP} and V_{TLP} averaging window from 70ns to 90ns. R_{DYN} is calculated from 4A to 16A.
- 2) Contact discharge mode, according to IEC61000-4-2.
- 3) Clamping Voltage was measured by 8/20 μs current waveform, $R_s = 2\ \Omega$, according to IEC61000-4-5.

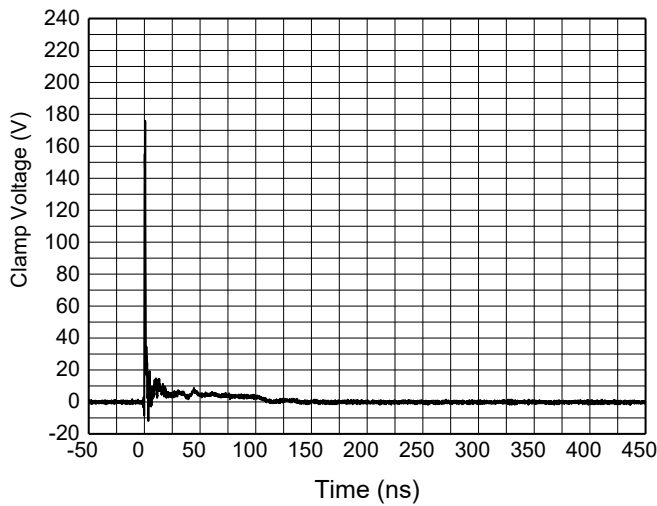
Typical Characteristics ($T_A = 25^\circ\text{C}$, unless otherwise specified)



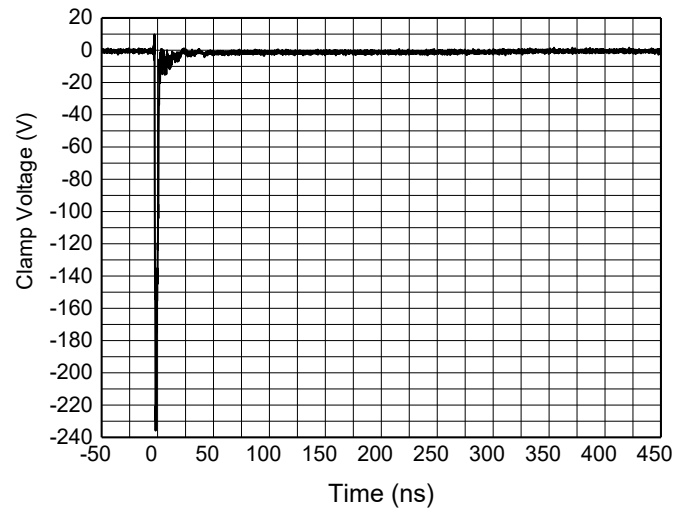
Clamping Voltage vs. Peak Pulse Current



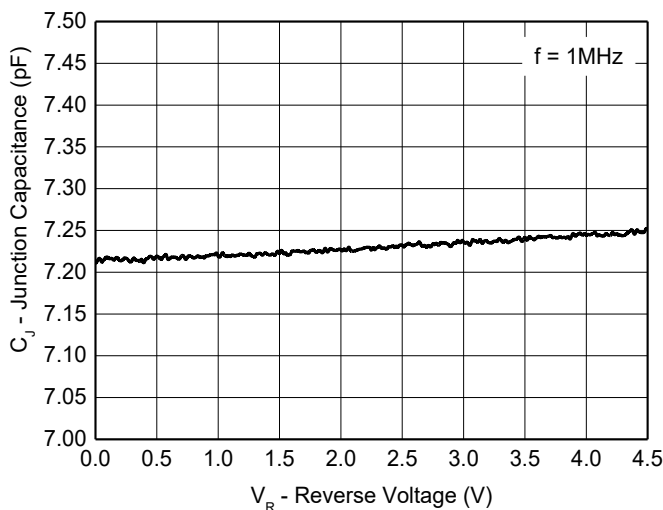
TLP IV Curve



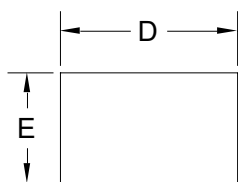
+8kV contact discharge per IEC61000-4-2



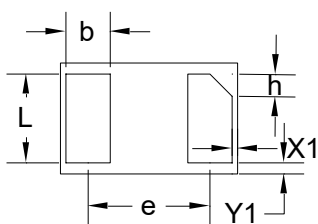
-8kV contact discharge per IEC61000-4-2



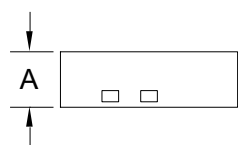
Capacitance vs. Reverse Voltage

PACKAGE OUTLINE & PCB LAYOUT DIMENSIONS


TOP VIEW

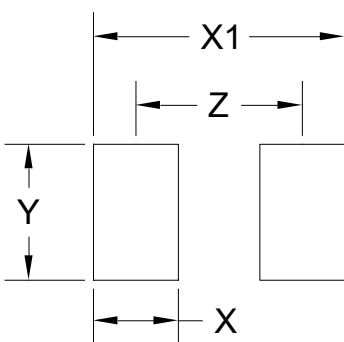


BOTTOM VIEW



SIDE VIEW

Symbol	Dimensions in Millimeters		
	Min.	Typ.	Max.
A	0.45	0.50	0.55
D	1.55	1.60	1.65
E	0.95	1.00	1.05
b	0.35	0.40	0.45
L	0.75	0.80	0.85
e	1.10BSC		
R	0.15	0.20	0.25
K	0.020	-	0.085
K1	0.065	-	0.135



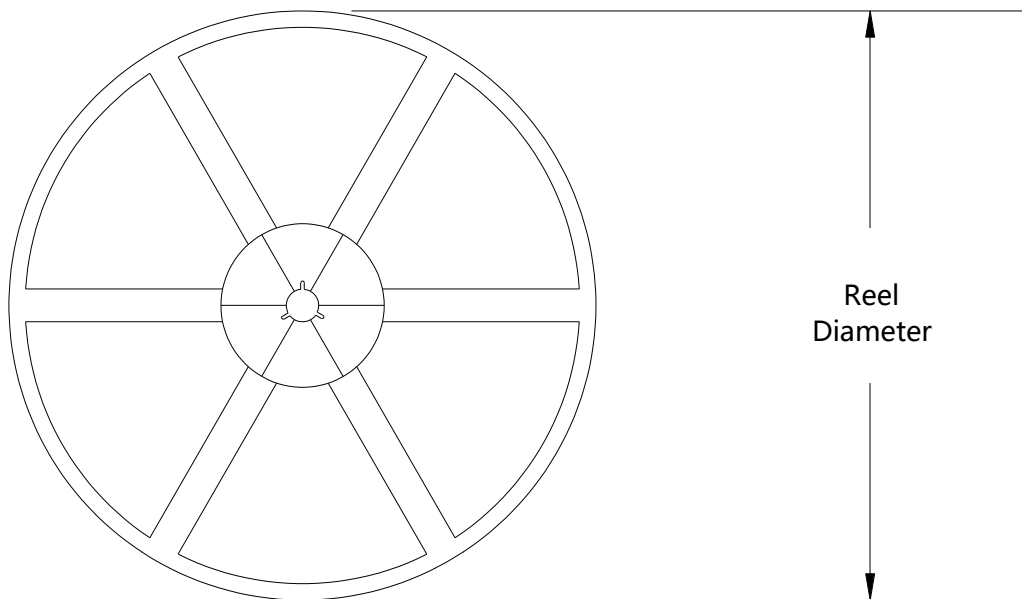
Land Layout

Symbol	Dimensions in Millimeters
X	0.625
X1	1.850
Y	1.000
Z	1.225

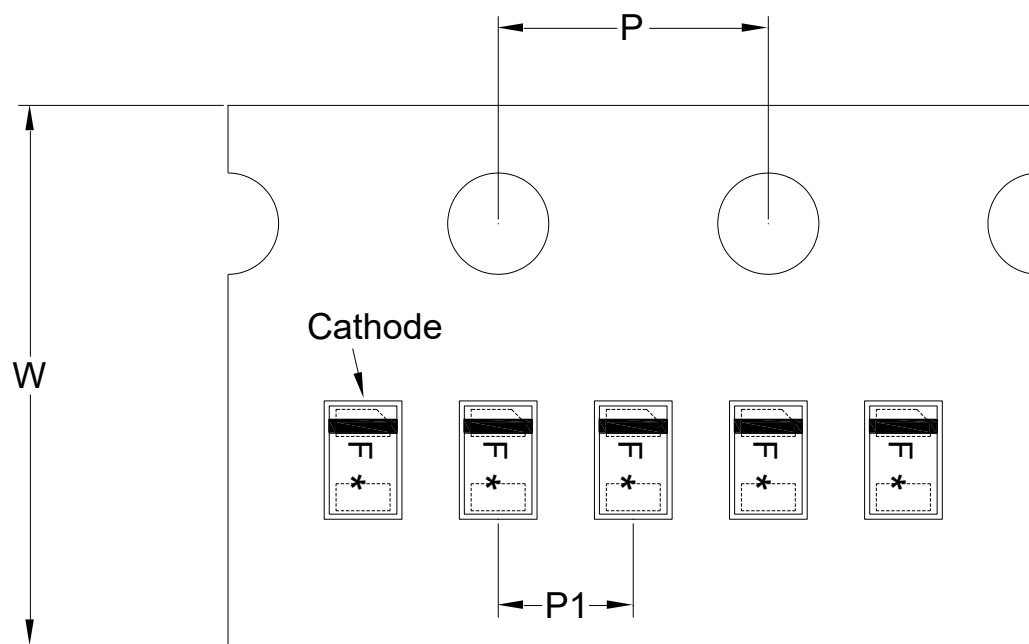
Notes: This Land Layout is for reference purposes only. Please consult your manufacturing partners to ensure your company's PCB design guidelines are met.

TAPE AND REEL INFORMATION

Reel Dimensions



Tape Dimensions



User Direction of Feed

Package Type	Reel Diameter(inch)	W (mm)	P (mm)	P1 (mm)
DFN1610-2L	7	8	4	2