

## Descriptions

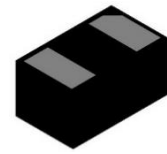
The XESD128N-5V0 is a transient voltage suppressor designed to protect sensitive electronic components which are connected to high-speed data lines from over-stress damage caused by Electrostatic Discharging (ESD) and Lighting.

## Features

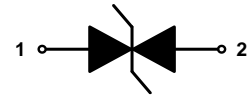
- 1-Line, Bi-directional
- Working voltage:  $\pm 5.0V$  Max.
- ESD withstand voltage according to IEC61000-4-2:  $\pm 30kV$  (contact & air discharge)
- Lighting withstand according to IEC61000-4-5: 5A (8/20 $\mu s$ )
- Solid-state silicon technology
- Low leakage current
- Device meets MSL 1 requirements
- Pb-Free, Halogen Free, RoHS Compliant

## Applications

- Notebooks and smartphone
- Computer and peripheral devices
- Portable Electronics



DFN1006-2L



Circuit diagram



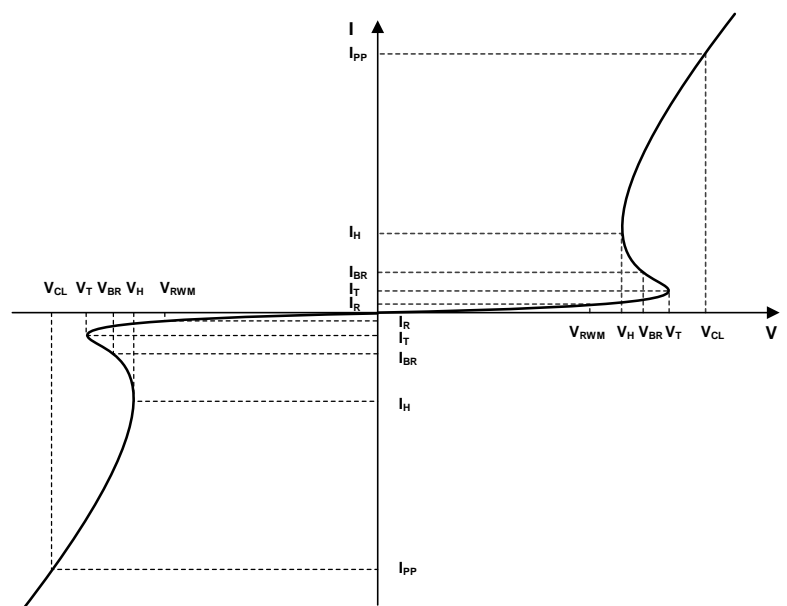
N = Device code  
\* = Date code(A~z)

Marking

Part Number	Package Type	Marking Code	Shipping
XESD128N-5V0	DFN1006-2L	N*	10000/Tape & Reel

## Electrical Characteristics

Symbol	Parameter
$V_{BR}$	Reverse Breakdown Voltage
$I_{BR}$	Reverse Breakdown Current
$V_{RWM}$	Reverse Stand-off Voltage
$I_R$	Reverse Leakage Current
$V_H$	Holding Voltage
$I_H$	Holding Current
$V_T$	Trigger Voltage
$I_T$	Trigger Current
$I_{PP}$	Peak Pulse Current
$V_{CL}$	Clamping Voltage



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

Parameter	Symbol	Value	Unit
Peak Pulse Power ( $t_p=8/20\mu\text{s}$ )	$P_{PP}$	60	W
Peak Pulse Current ( $t_p=8/20\mu\text{s}$ )	$I_{PP}$	5	A
ESD air discharge voltage according to IEC61000-4-2	$V_{ESD}$	$\pm 30$	kV
ESD contact discharge voltage according to IEC61000-4-2		$\pm 30$	
Junction Temperature Range	$T_J$	-55~125	$^\circ\text{C}$
Operating Temperature Range	$T_{OP}$	-55~125	$^\circ\text{C}$
Lead Solder Temperature (10 Seconds)	$T_L$	260	$^\circ\text{C}$
Storage Temperature Range	$T_{STG}$	-55~150	$^\circ\text{C}$

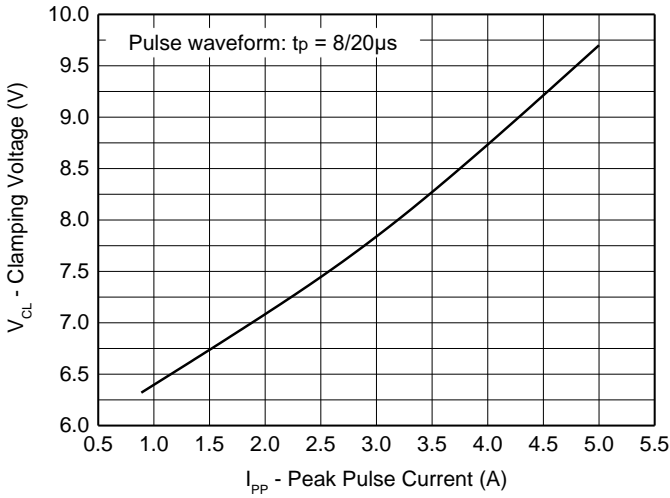
**Electrical Characteristics ( $T_A = 25^\circ\text{C}$ , unless otherwise specified)**

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Reverse Stand-Off Voltage	$V_{RWM}$				$\pm 5.0$	V
Reverse Breakdown Voltage	$V_{BR}$	$I_T = 1\text{mA}$	6.5		9.5	V
Reverse Leakage Current	$I_R$	$V_{RWM} = 5\text{V}$			100	nA
Holding Voltage	$V_H$	$I_H = 100\text{mA}$	5.2			V
Clamping Voltage <sup>1)</sup>	$V_{CL}$	$I_{PP} = 16\text{A}$ , $t_p = 100\text{ns}$		13.2		V
Dynamic Resistance <sup>1)</sup>	$R_{DYN}$			0.44		$\Omega$
Clamping Voltage <sup>2)</sup>	$V_{CL}$	$V_{ESD} = \pm 8\text{kV}$		13.5		V
Clamping Voltage <sup>3)</sup>	$V_{CL}$	$I_{PP} = 1\text{A}$ , $t_p = 8/20\mu\text{s}$		6.5	8	V
		$I_{PP} = 5\text{A}$ , $t_p = 8/20\mu\text{s}$		10	12	V
Junction Capacitance	$C_J$	$V_R = 0\text{V}$ , $f = 1\text{MHz}$		0.1	0.15	pF

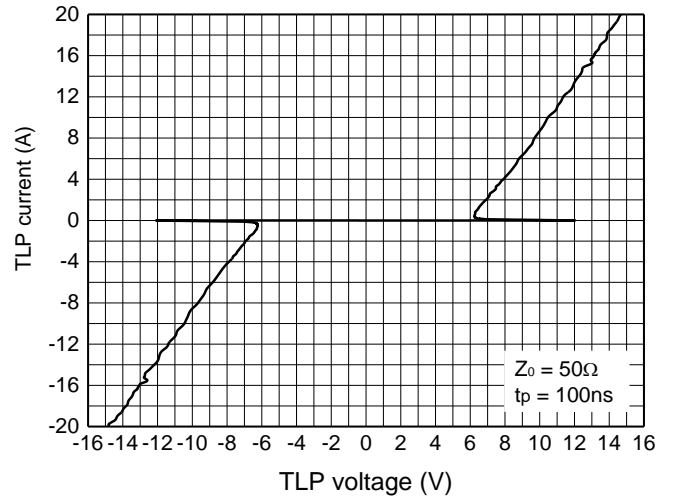
Notes:

- 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 $\mu\text{s}$  current waveform,  $R_s = 2\ \Omega$ , according to IEC61000-4-5.

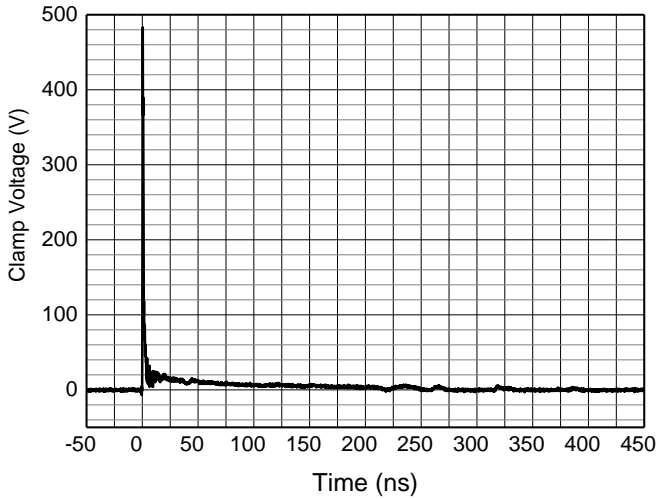
**Typical Characteristics (T<sub>A</sub> = 25 °C, unless otherwise specified)**



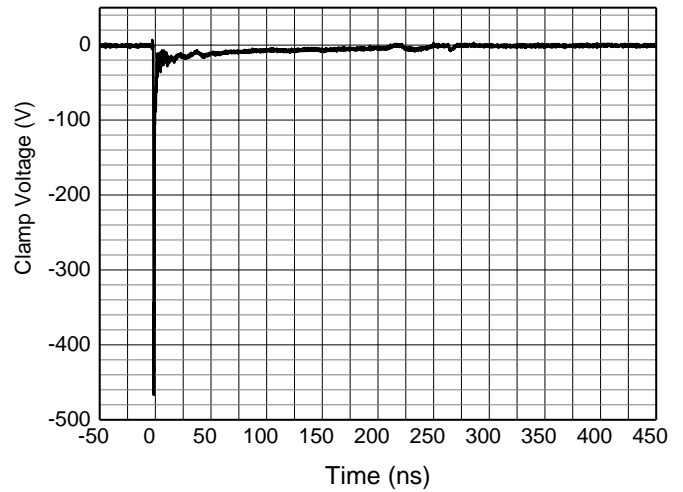
**Clamping Voltage vs. Peak Pulse Current**



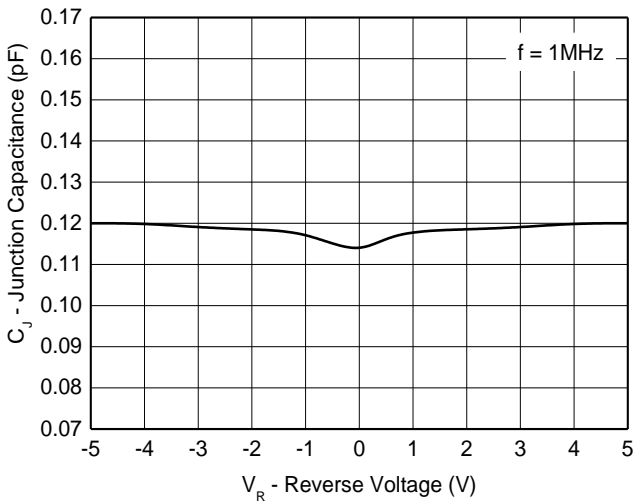
**TLP IV Curve**



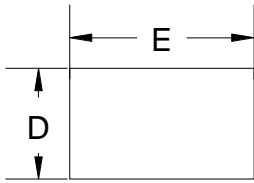
**+8kV contact discharge per IEC61000-4-2**



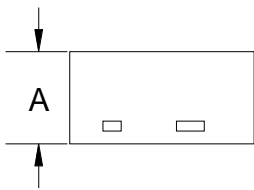
**-8kV contact discharge per IEC61000-4-2**



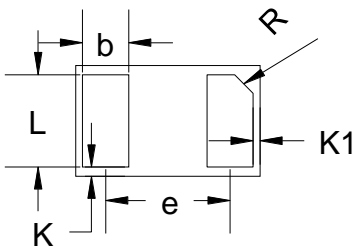
**Capacitance vs. Reverse Voltage**

**PACKAGE OUTLINE & PCB LAYOUT DIMENSIONS**


TOP VIEW

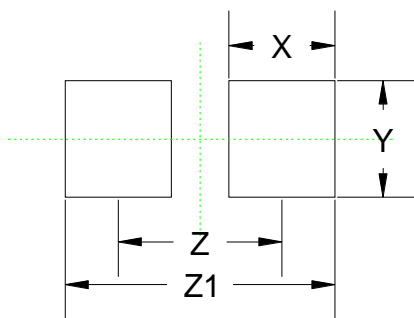


SIDE VIEW



BOTTOM VIEW

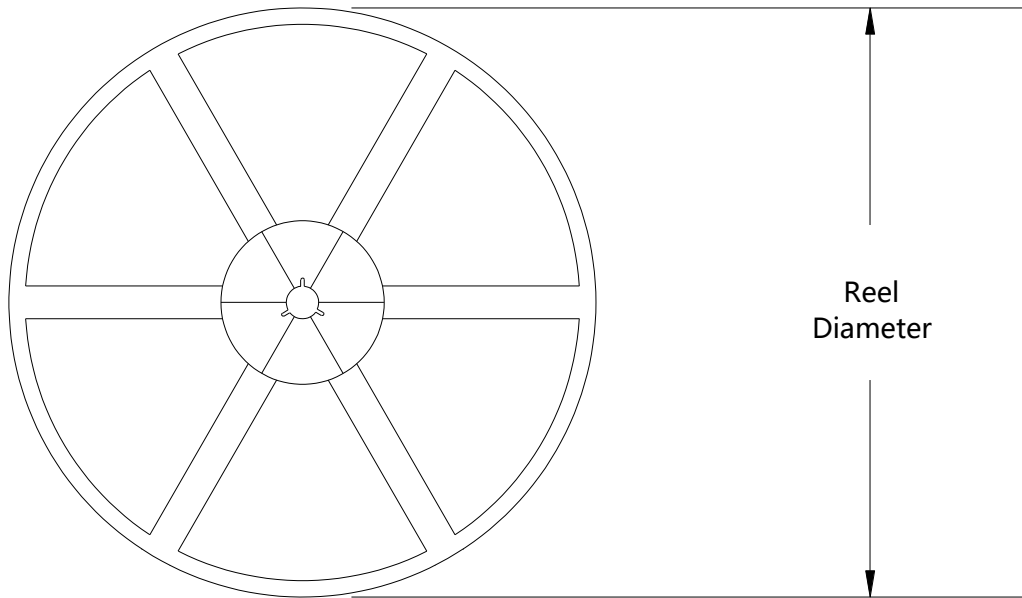
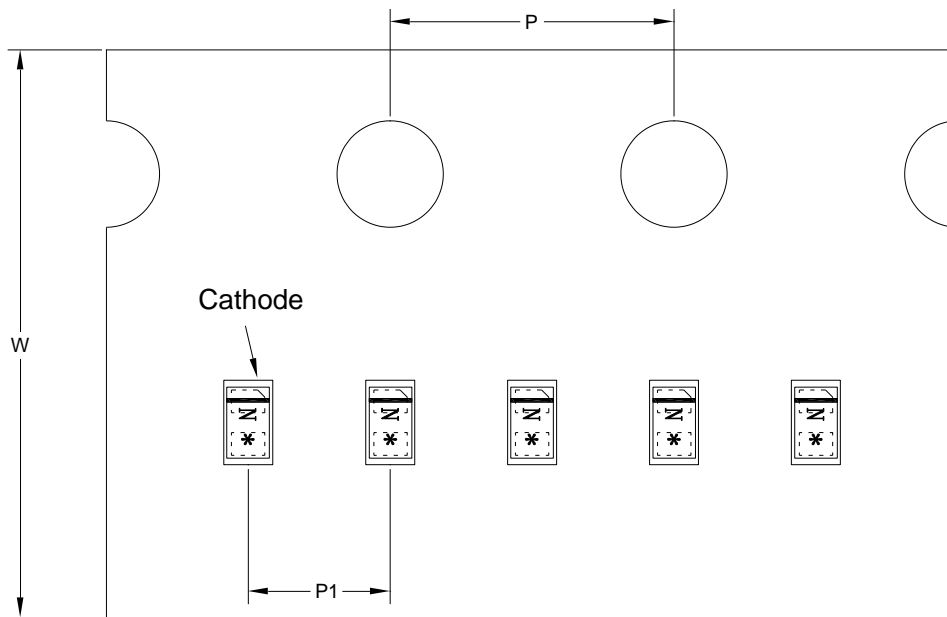
Symbol	Dimensions in Millimeters		
	Min.	Typ.	Max.
A	0.45	0.50	0.55
D	0.55	0.60	0.65
E	0.95	1.00	1.05
b	0.20	0.25	0.30
L	0.45	0.50	0.55
e	0.675BSC		
R	0.07	0.10	0.13
K	0.025	-	0.065
K1	0.025	-	0.065



Land Layout

Symbol	Dimensions in Millimeters
X	0.55
Y	0.60
Z	0.85
Z1	1.40

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)
DFN1006-2L	7	8	4	2