

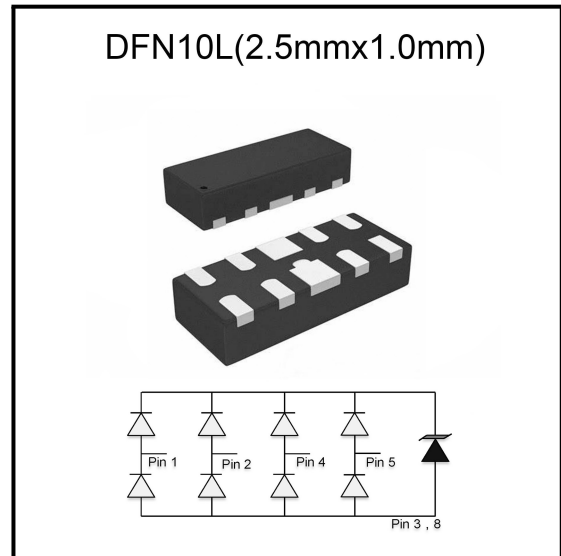
# BNESD8004MUTAG

ESD Protection  
Diode Array

## Features

- 25Watts peak pulse power ( $t_p = 8/20\mu s$ )
- Unidirectional configurations
- Solid-state silicon-avalanche technology
- Low clamping Voltage
- Low leakage current
- Low capacitance ( $C_j=0.5pF$  typ.I/O to I/O)
- Protection one data/power line
- IEC 61000-4-2  $\pm 10kV$  contact ;  $\pm 12kV$  air
- Low clamping voltage:  $V_{CLVCL} = 5.3V$  typ @  $I_{PP} = 16A$  (TLP)
- IEC 61000-4-5 (Lightning) 5A ( $8/20\mu s$ )

## Package



## Applications

- USB 3.0, USB3.1
- HDMI1.3,HDMI1.4 and HDMI2.0
- Very sensitive interface lines
- Notebooks, Desktops, and Servers
- Industrial equipment

## Mechanical Data

- Tiny DFN10L(2.5mmx1.0mm) package
- Molding compound flammability rating: UL 94V-0
- Packaging: Tape and Reel
- RoHS/WEEE Compliant

## Marking



## Ordering information

Order code	Package	Base qty	Delivery mode
BNESD8004MUTAG	DFN10L(2.5mmx1.0mm)	3k	Tape and reel

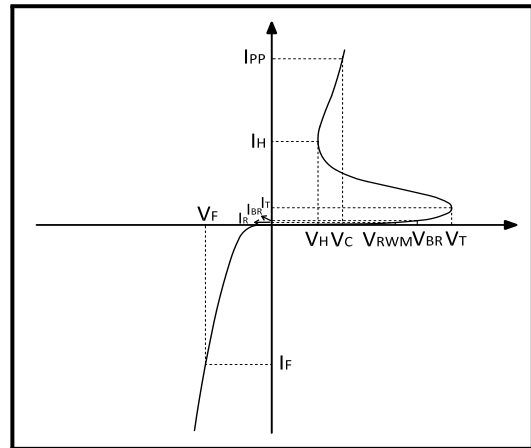


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## Electrical Parameters ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter
$I_{PP}$	Maximum Reverse Peak Pulse Current
$V_C$	Clamping Voltage @ $I_{PP}$
$V_{RWM}$	Peak Reverse Working Voltage
$I_R$	Reverse Leakage Current @ $V_{RWM}$
$V_{BR}$	Revers Breakdown Voltage
$V_T$	Trigger Voltage
$I_H$	Holding Current
$V_H$	Holding Voltage



Note: 8/20us pulse Waveform.

## Absolute Maximum Rating

Rating	Symler	Value	Units
Peak Pulse Power ( $t_p = 8/20\mu\text{s}$ )	$P_{PP}$	25	Watts
Peak Pulse Current ( $t_p = 8/20\mu\text{s}$ )	$I_{PP}$	5	A
ESD per IEC 61000-4-2 (Air)	$V_{ESD}$	12	KV
ESD per IEC 61000-4-2 (Contact)		10	
Lead Soldering Temperature	$T_L$	260(10seconds)	$^\circ\text{C}$
Junction Temperature	$T_J$	-55 to + 150	$^\circ\text{C}$
Storage Temperature	$T_{stg}$	-55 to + 150	$^\circ\text{C}$

## Electrical Characteristics

Parameter	Symler	Conditions	Min	Typical	Max	Units
Reverse Stand-Off Voltage	$V_{RWM}$	–	–	–	3.3	V
Holding Voltage	$V_H$	$I_T = 1\text{mA}$	2.0	–	3.3	V
Reverse Leakage Current	$I_R$	$V_{RWM} = 3.3\text{V}, T = 25^\circ\text{C}$	–	–	0.5	$\mu\text{A}$
Trigger Voltage	$V_T$	–	–	8.0	–	V
Clamping Voltage	$V_{CL}$	$I_{PP} = 16\text{A}, t_p = 100\text{ns}$	–	5.3	6	V
Clamping Voltage	$V_C$	$I_{PP} = 5\text{A}, t_p = 8/20\mu\text{s}$	–	4	5	V
dynamic resistance	$R_{dyn}$	$T_{amd} = 25^\circ\text{C}, I_R = 10\text{A}$	–	0.3	0.4	$\Omega$
Junction Capacitance	$C_j$	$V_R = 0\text{V}, f = 1\text{MHz}, I/O$ to $I/O$	–	0.3	–	pF
		$V_R = 0\text{V}, f = 1\text{MHz}, I/O$ to GND	–	0.55	–	





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## Typical Characteristics

Figure 1: Clamping Voltage vs. IPP

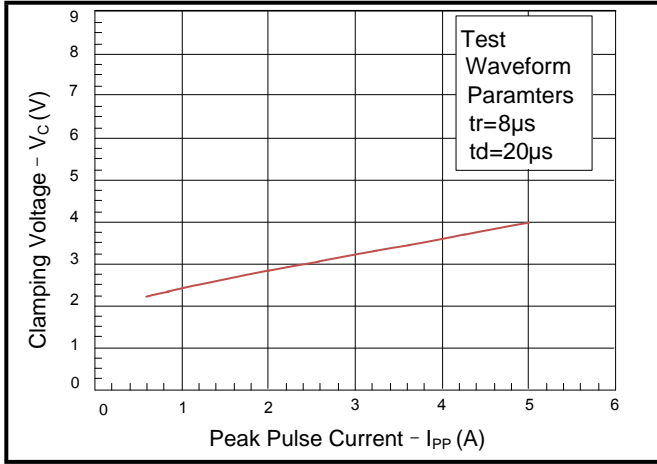


Figure 2: Peak Pluse Power vs. Pluse Time

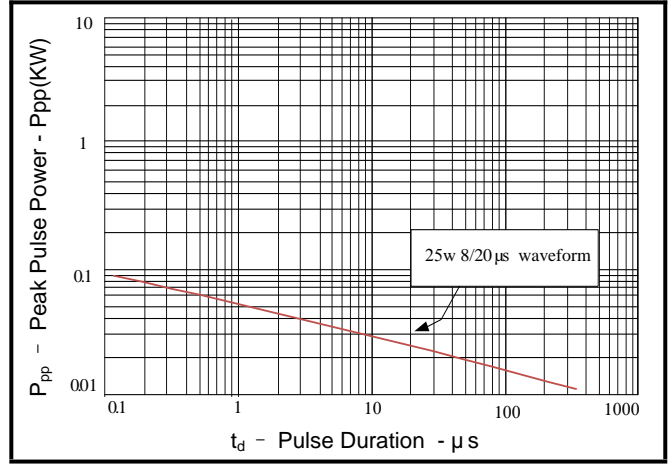


Figure 3: Positive Clamping voltage (TLP)

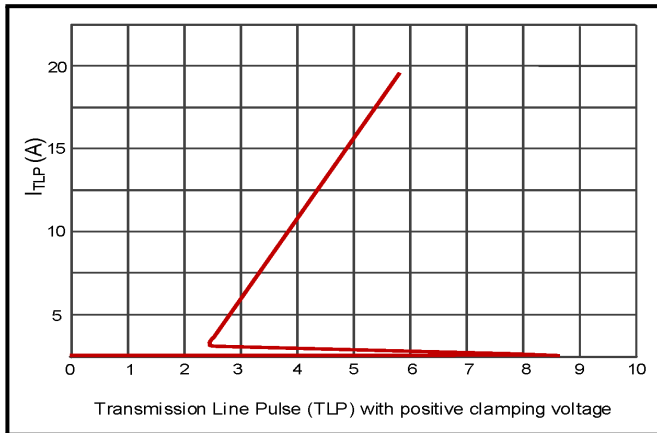


Figure 4: Capacitance vs. Reverse Voltage

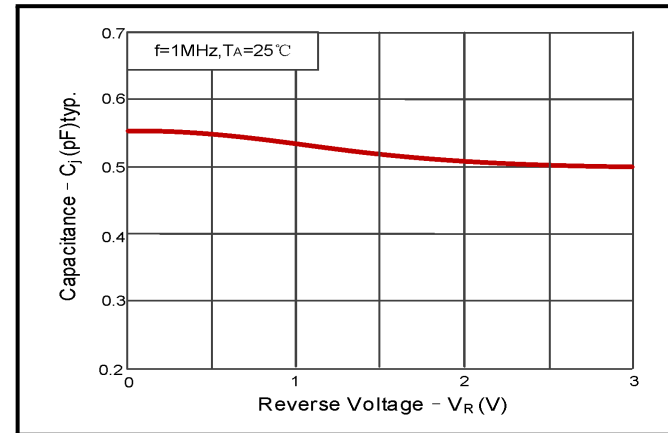


Figure 5: IEC61000-4-2 : 8 kV positive pulse( I/O to

GND)

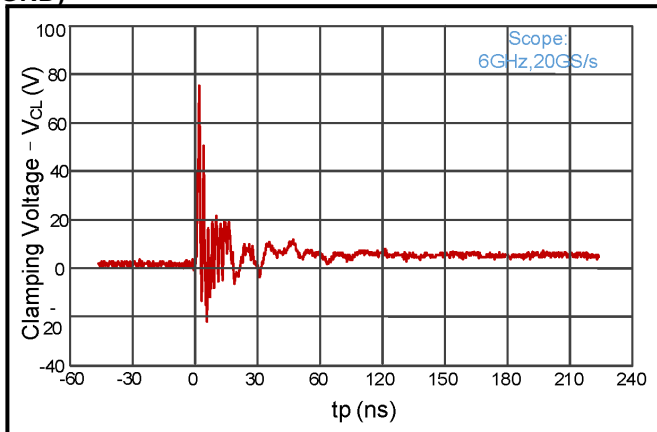
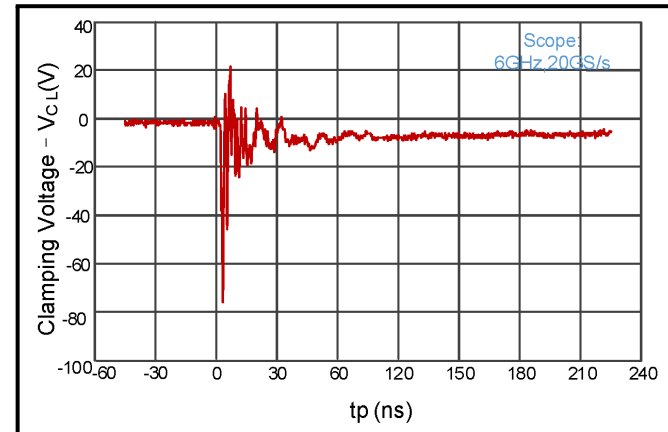


Figure 6: IEC61000-4-2 : 8 kV positive pulse(GND to

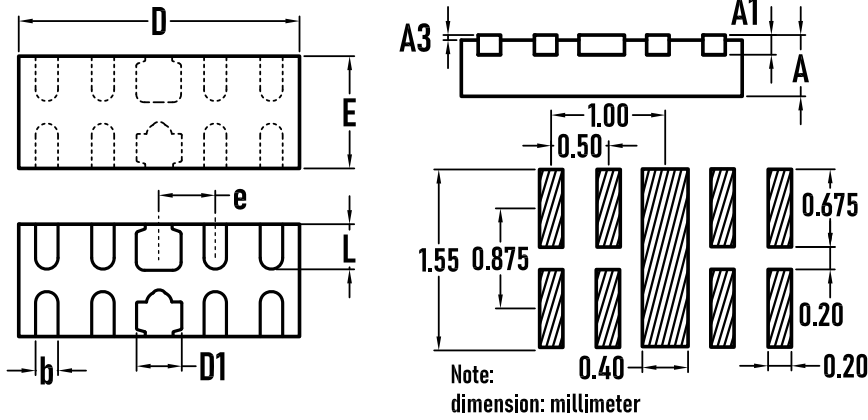
I/O)



# BNESD8004MUTAG

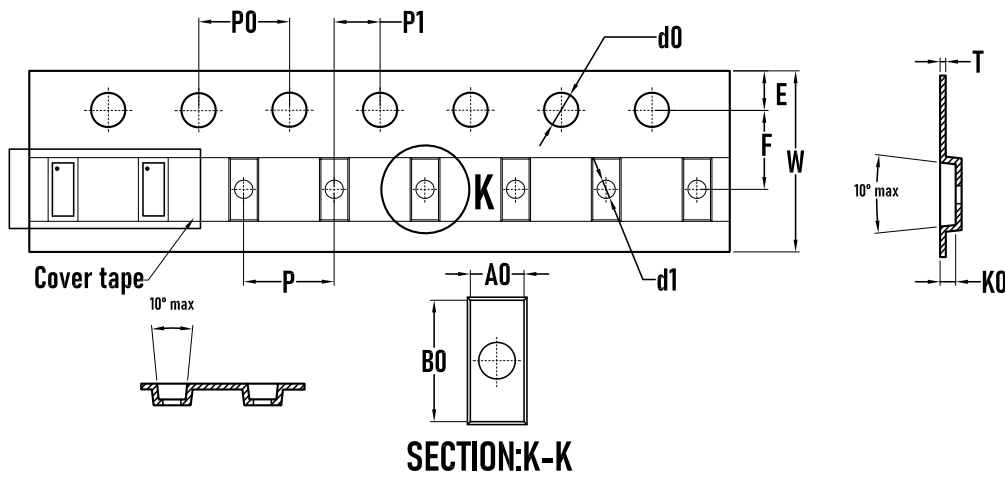
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Outline Drawing – DFN10L(2.5mmx1.0mm)



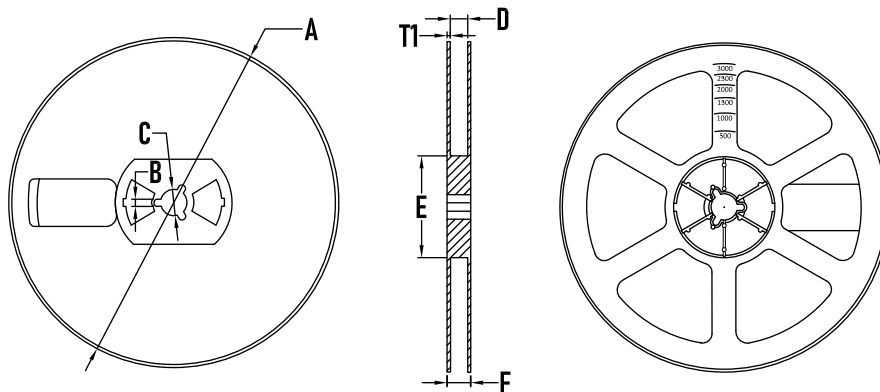
SYMBOL	MILLIMETER		
	MIN.	Typ.	MAX.
A	0.45	0.50	0.55
A3	–	0.02	0.05
A1	0.10	0.15	0.20
D	2.45	2.50	2.55
E	0.95	1.00	1.05
D1	0.35	0.40	0.45
b	0.15	0.20	0.25
e	0.50BSC		
L	0.35	0.40	0.45

Packaging Tape - DFN2510-10L



SYMBOL	MILLIMETER
A0	1.2±0.05
B0	2.7±0.05
d0	1.5 <sup>+0.1</sup> <sub>-0</sub>
d1	0.8±0.1
E	1.75±0.10
F	3.50±0.05
K0	0.7±0.05
P	4.00±0.05
P0	4.00±0.05
P1	8.00±0.05
W	8.00 <sup>+0.03</sup> <sub>-0.01</sub>
T	0.22±0.03

Packaging Reel



SYMBOL	MILLIMETER
A	178±1
B	3.5±0.2
C	14.3±0.2
D	9.8 <sup>+2</sup> <sub>-1</sub>
E	54.5±0.5
F	12.4±0.5
T1	1.0±0.2
Quantity	3000PCS



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