

## Features

- Working voltage 3.3 V
- SMT - DFN package
- Low capacitance - 4 pF
- IEC 61000-4-2 (ESD)
- IEC 61000-4-4 (EFT)
- IEC 61000-4-5 (Surge)

## Applications

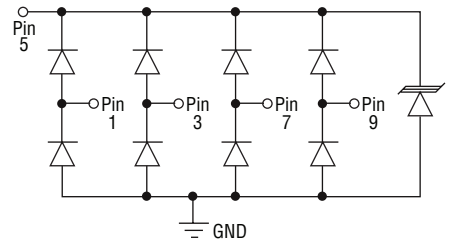
- FireWire, T1/E1, T3/E3 chip side protection
- Digital Visual Interface (DVI)
- Ethernet 10/100/1000 Base T
- High speed port protection
- Portable electronics

# CDDFN10-3304NA - TVS/Steering Diode Array

## General Information

The CDDFN10-3304NA device provides ESD, EFT and Surge protection for high speed data ports, assisting compliance with IEC 61000-4-2 (ESD), IEC 61000-4-4 (EFT) and IEC 61000-4-5 (Surge) requirements. The Transient Voltage Suppressor array, protecting up to 4 data lines, offers a Working Peak Voltage of 3.3 V.

The DFN-10 packaged device will mount directly onto the industry standard DFN-10 footprint. Bourns® Chip Diodes are easy to handle with standard pick and place equipment.



## Absolute Maximum Ratings, $T_A = 25\text{ }^\circ\text{C}$ (Unless Otherwise Noted)

Parameter	Symbol	CDDFN10-3304NA	Unit
Peak Pulse Current ( $t_p = 8/20\ \mu\text{s}$ ) per IEC 61000-4-5	$I_{PP}$	25	A
ESD Protection per IEC 61000-4-2	Contact Discharge	$\pm 30$	kV
	Air Discharge	$\pm 30$	kV
EFT Protection per IEC 61000-4-4 @ 5/50 ns		40	A
Storage Temperature	$T_{STG}$	-55 to +150	$^\circ\text{C}$
Operating Temperature	$T_{OPR}$	-55 to +125	$^\circ\text{C}$

## Electrical Characteristics (@ $T_A = 25\text{ }^\circ\text{C}$ Unless Otherwise Noted)

Parameter	Symbol	Min.	Typ.	Max.	Unit
Breakdown Voltage @ 1 mA	$V_{BR}$	3.9			V
Reverse Working Peak Voltage	$V_{RWM}$			3.3	V
Leakage Current <sup>1</sup> @ $V_{RWM}$	$I_D$			1	$\mu\text{A}$
Clamping Voltage <sup>2</sup> @ $I_P = 5\ \text{A}$ 8/20 $\mu\text{s}$	$V_C$			12	V
Clamping Voltage <sup>2</sup> @ $I_P = 15\ \text{A}$ 8/20 $\mu\text{s}$	$V_C$			15	V
Clamping Voltage <sup>2</sup> @ $I_P = 25\ \text{A}$ 8/20 $\mu\text{s}$	$V_C$			18	V
Junction Capacitance <sup>2</sup> @ 0 V 1 MHz	$C_D$		4.0	4.6	pF
Junction Capacitance <sup>3</sup> @ 0 V 1 MHz	$C_{IO}$		1.5	2.3	pF

Note 1: Pin 5 to ground.

Note 2: Pin 1,3,7 or 9 to ground.

Note 3: Between Pin 1,3,7 and 9.



**WARNING Cancer and Reproductive Harm - [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)**

\*RoHS Directive 2015/863, Mar 31, 2015 and Annex.

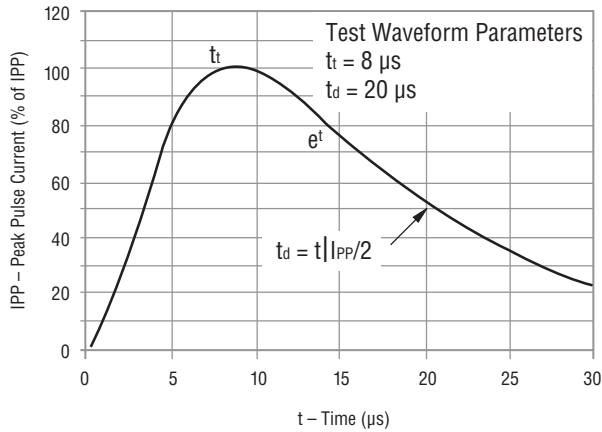
Specifications are subject to change without notice.

Users should verify actual device performance in their specific applications.

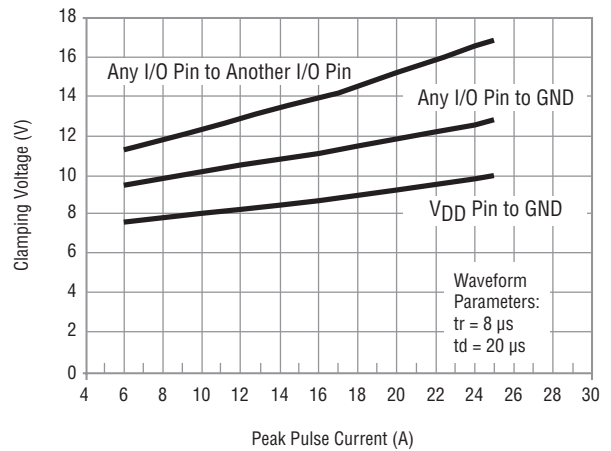
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## Rating & Characteristic Curves

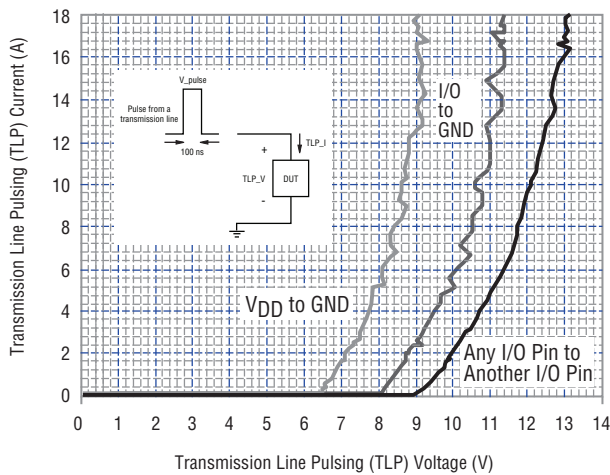
### Pulse Waveform



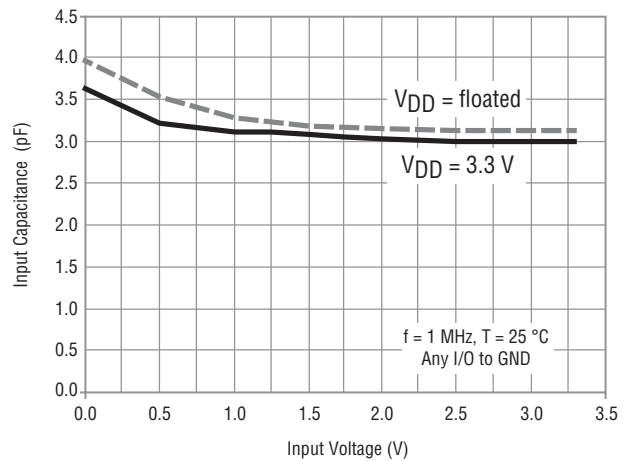
### Typical Clamping Voltage vs Peak Pulse Current



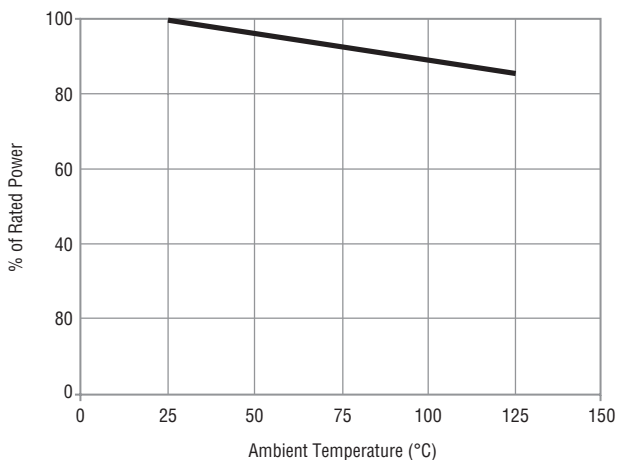
### Typical Transmission Line Pulsing (TLP) Measurement



### Typical Voltage vs. Capacitance



### Typical Power Derating Curve



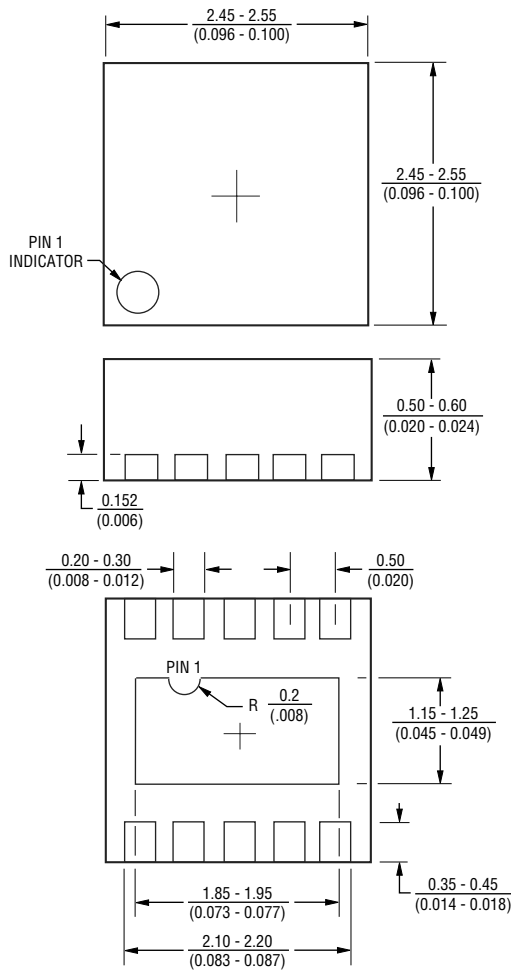
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# CDDFN10-3304NA - TVS/Steering Diode Array

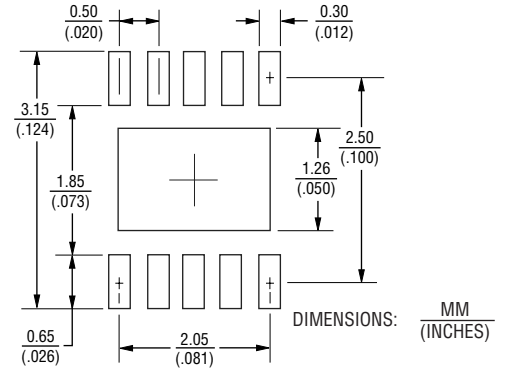


## Product Dimensions

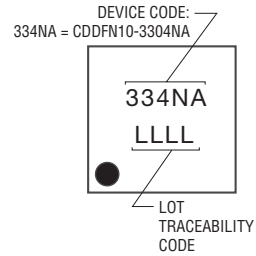
This is a molded DFN10 package with lead free Nickel-Paladium-Gold (Ni/Pd/Au) on the lead frame. It has a flammability rating of UL 94V-0.



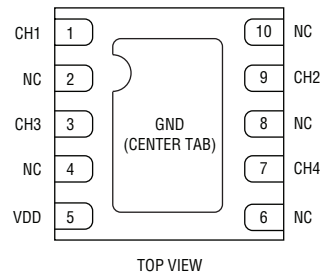
## Recommended Footprint



## Typical Part Marking



## Pin Out



Pin	Function
1	I/O
2	N.C.
3	I/O
4	N.C.
5	V <sub>DD</sub>
6	N.C.
7	I/O
8	N.C.
9	I/O
10	N.C.
CENTER TAB	GROUND

## How to Order

**CD DFN10 - 33 04 NA**

Common Diode \_\_\_\_\_  
Chip Diode \_\_\_\_\_  
Package \_\_\_\_\_  
DFN10 = DFN-10 Package \_\_\_\_\_  
Reverse Working Peak Voltage \_\_\_\_\_  
33 = 3.3 V<sub>RWM</sub> (Volts) \_\_\_\_\_  
Number of Lines \_\_\_\_\_  
04 = 4 Data Lines \_\_\_\_\_  
Suffix \_\_\_\_\_  
NA = Low Capacitance \_\_\_\_\_

## Environmental Specifications

Moisture Sensitivity Level.....3  
ESD Classification (HBM).....3B

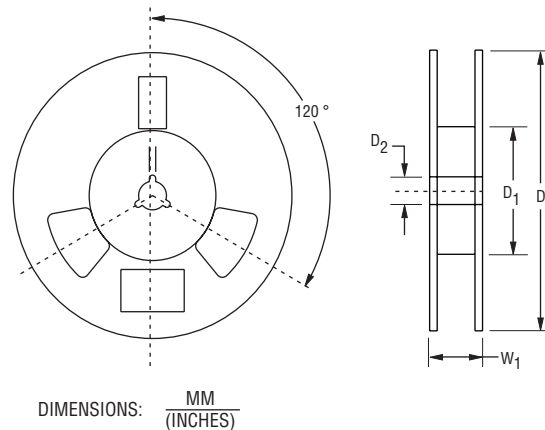
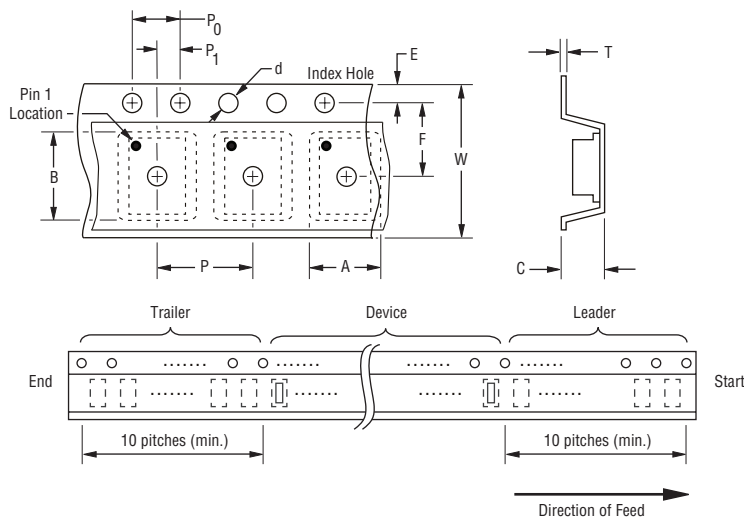
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# CDDFN10-3304NA - TVS/Steering Diode Array

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## Packaging Information

The product will be dispensed in tape and reel format (see diagram below).



Devices are packed in accordance with EIA standard RS-481-A.

Item	Symbol	DFN-10
Carrier Width	A	$\frac{1.2 \pm 0.05}{(0.047 \pm 0.002)}$
Carrier Length	B	$\frac{2.7 \pm 0.05}{(0.106 \pm 0.002)}$
Carrier Depth	C	$\frac{0.7 \pm 0.05}{(0.028 \pm 0.002)}$
Sprocket Hole	d	$\frac{1.5 \pm 0.05}{(0.059 \pm 0.002)}$
Reel Outside Diameter	D	$\frac{180 \pm 3}{(7.087 \pm 0.118)}$
Reel Inner Diameter	D <sub>1</sub>	$\frac{50.0}{(1.969)}$ MIN.
Feed Hole Diameter	D <sub>2</sub>	$\frac{13.00 \pm 0.20}{(0.512 \pm 0.008)}$
Sprocket Hole Position	E	$\frac{1.75 \pm 0.10}{(0.069 \pm 0.004)}$
Punch Hole Position	F	$\frac{3.50 \pm 0.05}{(0.138 \pm 0.002)}$
Punch Hole Pitch	P	$\frac{4.00 \pm 0.10}{(0.157 \pm 0.004)}$
Sprocket Hole Pitch	P <sub>0</sub>	$\frac{4.00 \pm 0.10}{(0.157 \pm 0.004)}$
Embossment Center	P <sub>1</sub>	$\frac{2.00 \pm 0.05}{(0.079 \pm 0.002)}$
Overall Tape Thickness	T	$\frac{0.60}{(0.024)}$ MAX.
Tape Width	W	$\frac{12.3}{(0.484)}$ MAX.
Reel Width	W <sub>1</sub>	$\frac{18.4}{(0.724)}$ MAX.
Quantity per Reel	--	3000

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