

## PTUC0516N – ESD Protection Diode

### Feature

- 30 Watts peak pulse power (8/20μs)
- Tiny DFN3310 package
- Protect up to six lines
- Solid state silicon-avalanche technology
- Low clamping voltage
- Low leakage current
- Low capacitance (C<sub>i</sub> = 0.2 pF typ. I/O to I/O)
- IEC61000-4-2 (ESD) ±15kV (Air), ±8kV (Contact)
- IEC61000-4-4 (EFT) 40A (5/50ns)
- IEC61000-4-5 (Lightning): 3A (8/20μs)



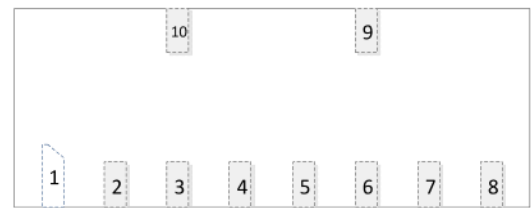
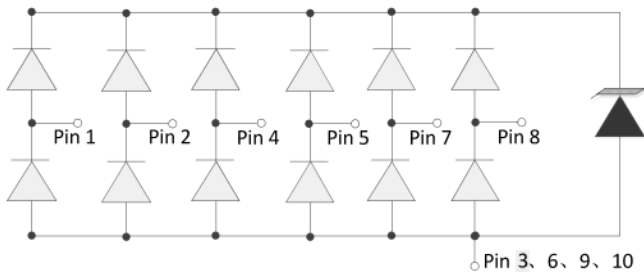
### Applications

- USB3.0/3.1, Type C
- HDMI1.4/2.0, Display Port 1.3
- Unified Display Interface
- Digital Video Interface

### Mechanical Data

- DFN3310 package
- Molding compound flammability rating: UL94 V-0
- Tape and Reel Packaging
- RoHS/WEEE Compliant

### Schematic and PIN Configuration



### Maximum Rating

Parameter	Symbol	Limit	Unit
IEC61000-4-2 ESD Voltage – Air Mode	V <sub>ESD</sub> <sup>(1)</sup>	±15	kV
IEC61000-4-2 ESD Voltage – Contact Mode		±8	
Peak Pulse Power	P <sub>PP</sub> <sup>(2)</sup>	30	W
Peak Pulse Current	I <sub>PP</sub> <sup>(2)</sup>	3	A
Maximum Lead Solder Temperature (10 seconds duration)	T <sub>L</sub>	260	°C
Junction Temperature	T <sub>J</sub>	-55~125	°C
Storage Temperature Range	T <sub>stg</sub>	-55~125	°C

Note:

1. Device stressed with ten non-repetitive ESD pulses.
2. Non-repetitive current pulse 8/20μs exponential decay waveform according to IEC61000-4-5.
3. All ratings are measured at environmental temperature of TA = 25 °C unless otherwise noted.

## PTUC0516N – ESD Protection Diode

### Electrical Characteristics

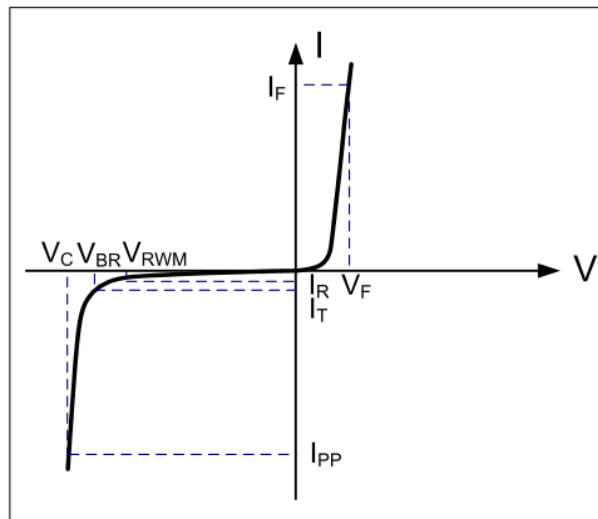
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Reverse Stand-off Voltage	$V_{RWM}^{(1)}$				5.0	V
Reverse Breakdown Voltage	$V_{BR}$	$I_T = 1\text{mA}$	6.0	7.2	9.5	V
Reverse Leakage Current	$I_R$	$V_{RWM} = 5\text{V}$		0.1	0.5	$\mu\text{A}$
Peak Pulse Current	$I_{PP}$				3	A
Clamping Voltage	$V_C^{(2)}$	$I_{PP} = 3\text{A}$			10	V
Junction Capacitance	$C_J$	$V_R = 0\text{V}, f = 1\text{MHz}, I/O \text{ to } I/O$		0.2		pF
		$V_R = 0\text{V}, f = 1\text{MHz}, I/O \text{ to } \text{GND}$		0.4		pF

Note:

1. Other voltages available upon request.
2. Non-repetitive current pulse 8/20 $\mu\text{s}$  exponential decay waveform according to IEC61000-4-5.
3. All ratings are measured at environmental temperature of  $T_A = 25^\circ\text{C}$  unless otherwise noted.

### Electrical Parameters

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 Stand-off Voltage
$V_F$	Forward Voltage @ $I_F$



## PTUC0516N – ESD Protection Diode

### Typical Characteristics

Fig.1 IEC61000-4-2 Waveform

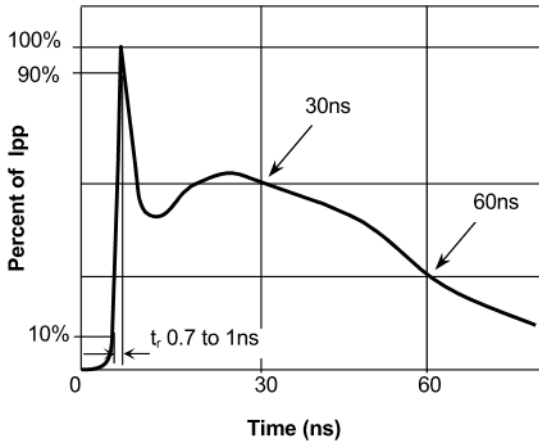


Fig.2 IEC61000-4-2 +8kV Contact ESD Clamping Waveform

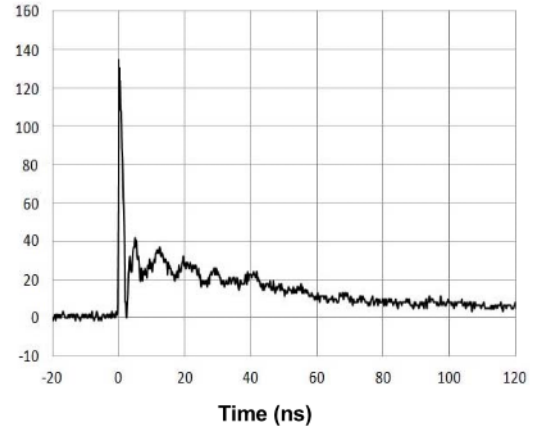


Fig.3 Eye Diagram - USB3.1 at 10Gbps per channel

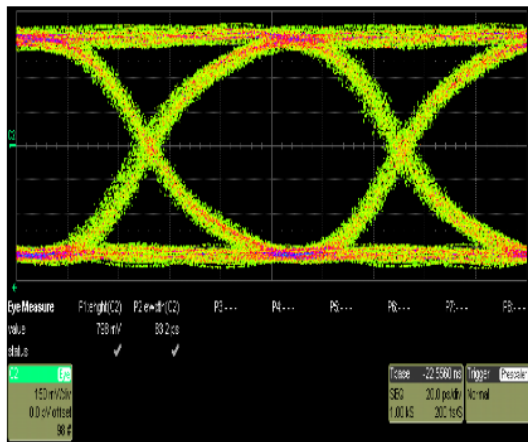
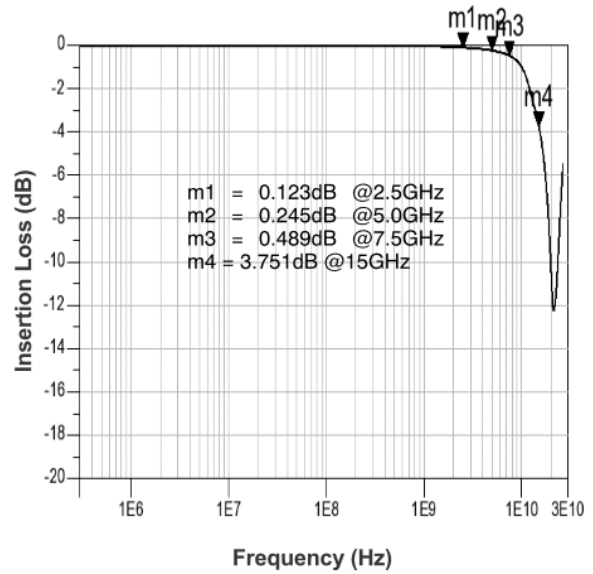
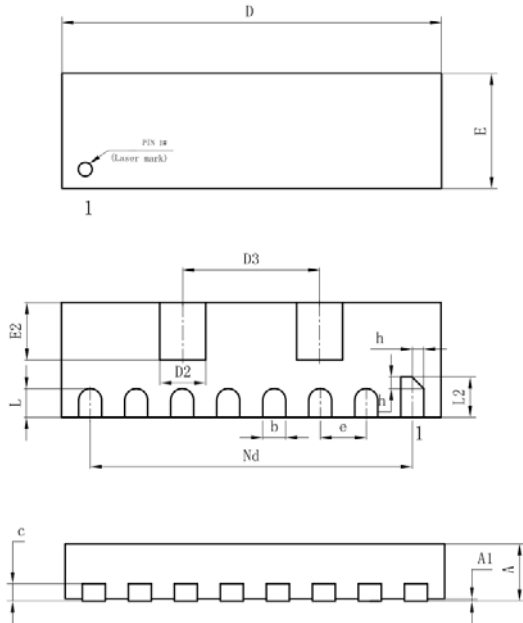


Fig.4 Insertion Loss S21 - I/O to I/O



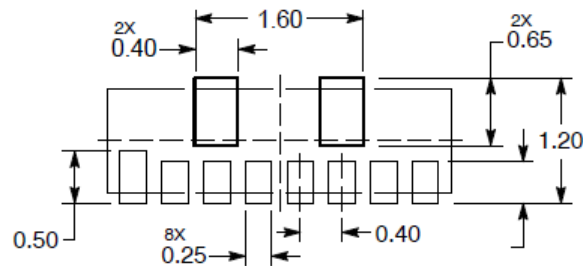
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### DFN3310 Package Outline Dimensions



Symbol	Dimensions (mm)		
	Min	Typ	Max
A	0.45	0.50	0.55
A1	0.00	0.02	0.05
b	0.15	0.20	0.25
c	0.100	0.152	0.200
D	3.25	3.30	3.35
D2	0.30	0.35	0.40
D3	1.19 BSC		
e	0.40 BSC		
Nd	2.80 BSC		
E	0.95	1.00	1.05
E2	0.45	0.50	0.55
L	0.20	0.25	0.30
L2	0.30	0.35	0.40
h	0.05	0.10	0.15

### RECOMMENDED SOLDERING FOOTPRINT



DIMENSION: MILLIMETERS

### Marking



### Packaging Information

Order Code	Packaging	Reel Size	PCS/Reel
PTUC0516N	DFN3310	7 inch	3,000