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_J = 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)

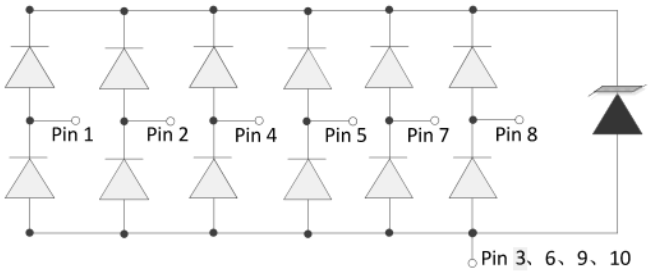
Applications

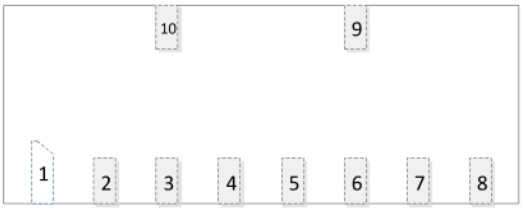
- USB3.0/3.1, Type C
- HDMI1.4/2.0, Display Port 1.3
- Unified Display Interface
- Digital Video Interface

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_{ESD}(1)	±15	kV
IEC61000-4-2 ESD Voltage – Contact Mode		±8	
Peak Pulse Power	P_{PP}(2)	30	W
Peak Pulse Current	I_{PP}(2)	3	A
Maximum Lead Solder Temperature (10 seconds duration)	T_L	260	°C
Junction Temperature	T_J	-55~125	°C
Storage Temperature Range	T_{stg}	-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.

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Electrical Characteristics

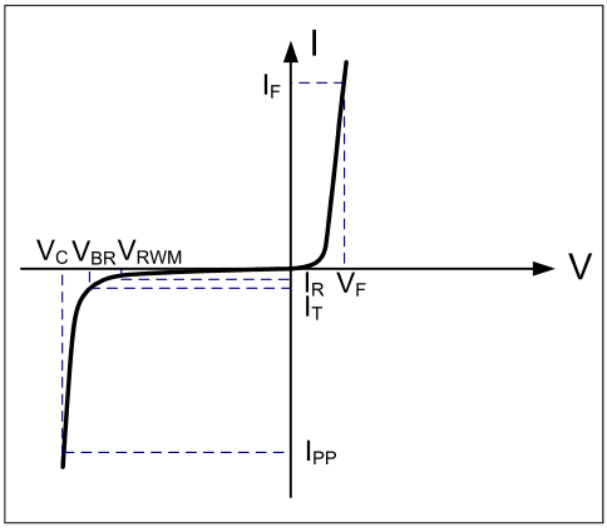
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Reverse Stand-off Voltage	V_{RWM}(1)				5.0	V
Reverse Breakdown Voltage	V_{BR}	I_T = 1mA	6.0	7.2	9.5	V
Reverse Leakage Current	I_R	V_{RWM} = 5V		0.1	0.5	μA
Peak Pulse Current	I_{PP}				3	A
Clamping Voltage	V_C(2)	I_{PP} = 3A			10	V
Junction Capacitance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

Note:

1. Other voltages available upon request.
2. Non-repetitive current pulse 8/20μs exponential decay waveform according to IEC61000-4-5.
3. All ratings are measured at environmental temperature of T_A = 25°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



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Typical Characteristics

Fig.1 IEC61000-4-2 Waveform

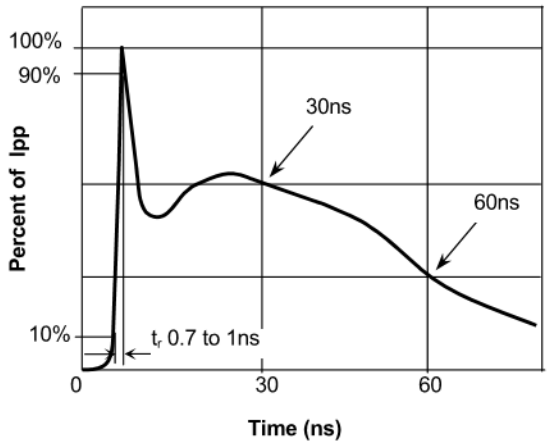


Fig.2 IEC61000-4-2 +8kV Contact ESD Clamping Waveform

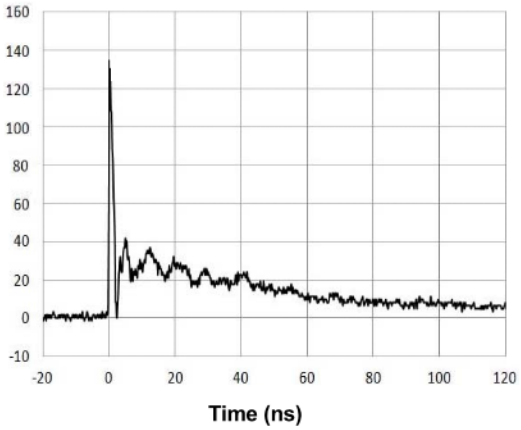


Fig.3 Eye Diagram - USB3.1 at 10Gbps per channel

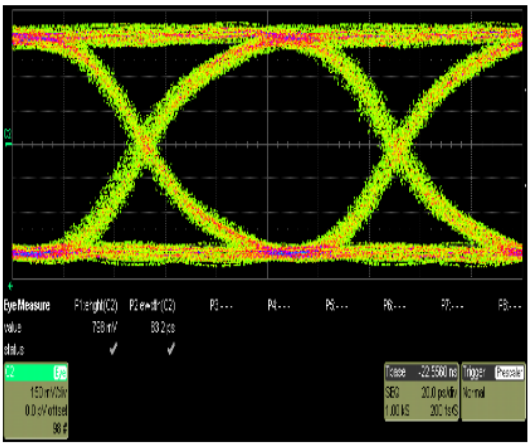
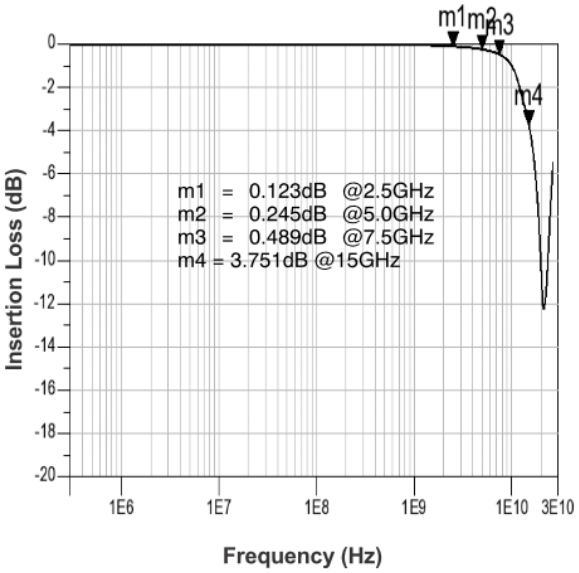


Fig.4 Insertion Loss S21 - I/O to I/O



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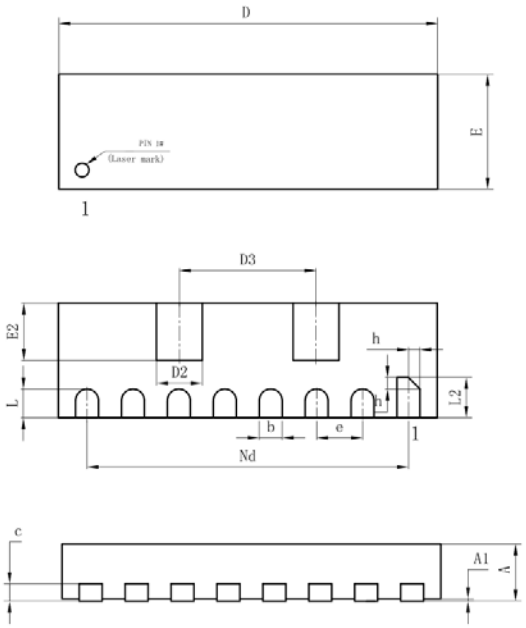
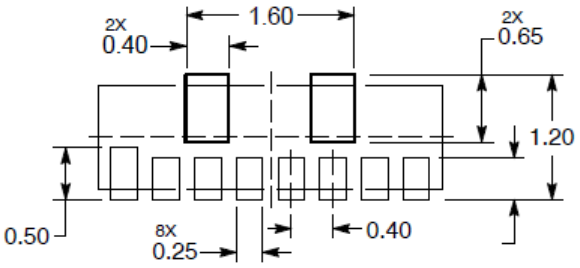
DFN3310 Package Outline Dimensions



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