

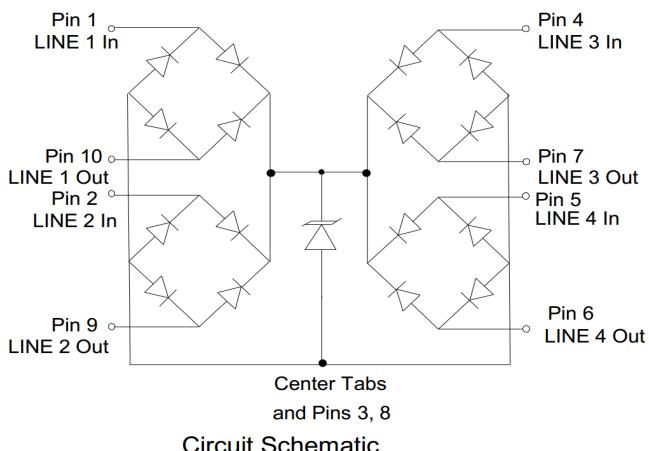
Description

The DL3304P9 is a low capacitance high power TVS, utilizing leading monolithic silicon technology to provide fast response time and low ESD clamping voltage, making this device an ideal solution for protecting voltage sensitive high-speed data lines. The DL3304P9 complies with the IEC 61000-4-2 (ESD) standard with $\pm 30\text{kV}$ air and $\pm 30\text{kV}$ contact discharge. It is assembled into a 10-pin DFN3020-10 lead-free package. Each device will protect two line pairs high-speed lines. The combination of small size, low capacitance, and high surge capability makes them ideal for use in applications such as Gigabit Ethernet, telecommunication lines, and LVDS interfaces.

Mechanical Characteristics

- ◆ Package: DFN3020-10
- ◆ Case Material: "Green" Molding Compound.
- ◆ Moisture Sensitivity: Level 3 per J-STD-020
- ◆ Terminal Connections: See Diagram Below
- ◆ Marking Information: See Below

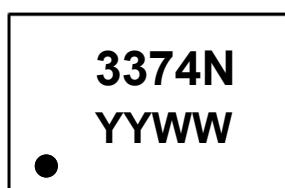
Dimensions and Pin Configuration



Features

- ◆ Low capacitance: 1.7pF typical(I/O to I/O)
- ◆ Ultra low leakage: nA level
- ◆ Operating voltage: 3.3V
- ◆ Ultra low clamping voltage
- ◆ Protects up to eight lines
- ◆ Complies with following standards:
 - IEC 61000-4-2 (ESD) immunity test Air discharge: $\pm 30\text{kV}$
 - Contact discharge: $\pm 30\text{kV}$
 - IEC 61000-4-5 (Lightning) 40A (8/20 μs)
- ◆ RoHS Compliant

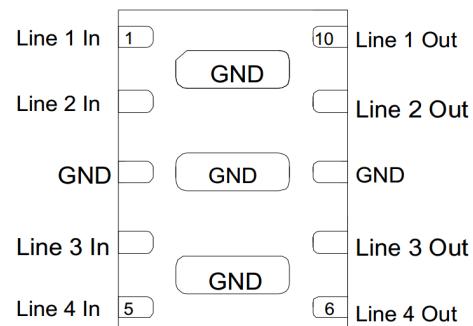
Marking Information



3374N = Device Marking Code
Dot denotes pin1

Applications

- ◆ LVDS Interfaces
- ◆ 10/100/1000 Ethernet
- ◆ Notebooks, Desktops, Servers
- ◆ Networking Equipment
- ◆ Switching Systems
- ◆ Audio/Video Inputs



Pin Schematic

Ordering Information

Part Number	Marking	Packaging	Reel Size
DL3304P9	3374N/YYWW	3000/Tape & Reel	7 inch

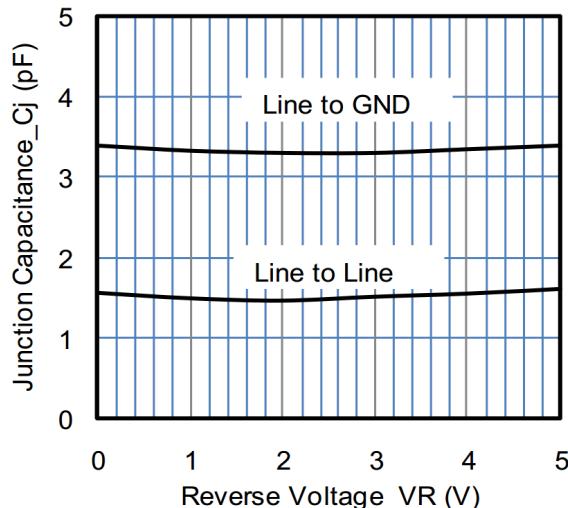
Absolute Maximum Ratings ($T_A=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Value	Unit
Peak Pulse Power(8/20μs)	Ppk	1000	W
Peak Pulse Current(8/20μs)	Ipp	40	A
ESD per IEC 61000-4-2 (Air)	VESD	±30	kV
ESD per IEC 61000-4-2 (Contact)		±30	
Operating Temperature Range	T _J	-55 to +125	°C
Storage Temperature Range	T _{stg}	-55 to +150	°C

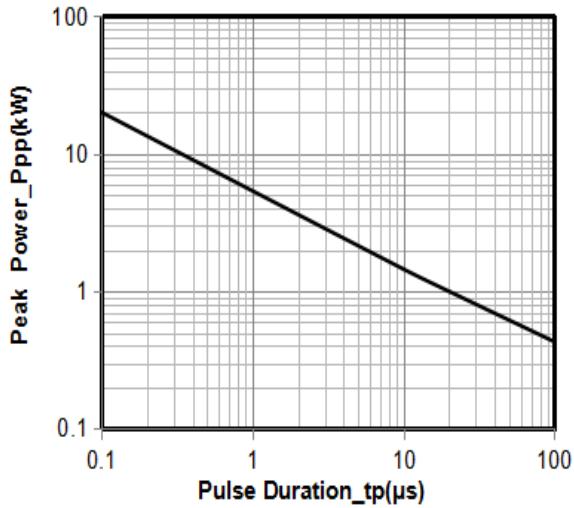
Electrical Characteristics ($T_A=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	V _{RWM}			3.3	V	
Punch-Through Voltage	V _{PT}	3.5			V	I _T = 2μA
Snap-Back Voltage	V _{SB}	2.8			V	I _{SB} = 50mA
Reverse Leakage Current	I _R			0.5	μA	V _{RWM} = 3.3V
Clamping Voltage	V _C			5.5	V	I _{PP} = 1A (8 x 20μs pulse), any I/O pin to ground
Clamping Voltage	V _C			10.5	V	I _{PP} = 10A (8 x 20μs pulse), any I/O pin to ground
Clamping Voltage	V _C			18	V	I _{PP} = 25A (8 x 20μs pulse), any I/O pin to ground
Clamping Voltage	V _C			25	V	I _{PP} = 40A (8 x 20μs pulse), line to line (two I/O pins connected together on each line)
Junction Capacitance	C _J		1.7	2.5	pF	VR = 0V, f = 1MHz, between I/O pins
Junction Capacitance	C _J		3.8	5.0	pF	VR = 0V, f = 1MHz, any I/O pin to ground

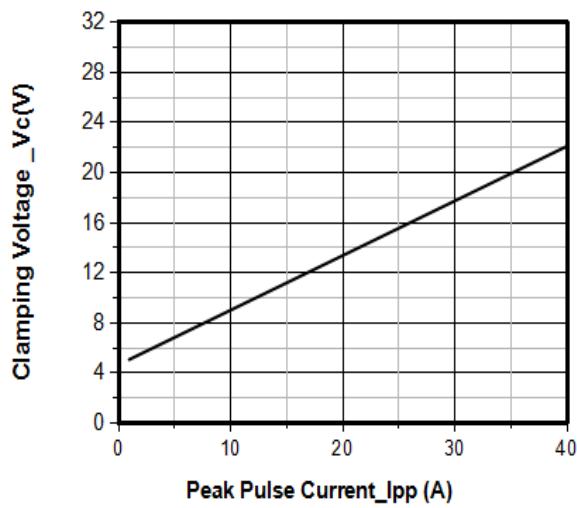
Typical Performance Characteristics (TA=25°C unless otherwise Specified)



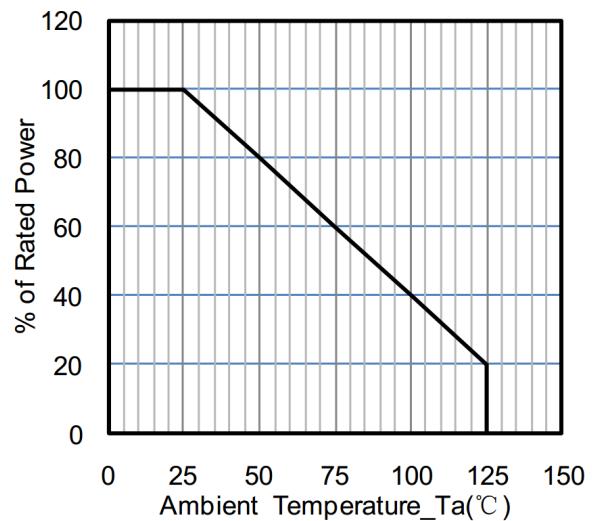
Junction Capacitance vs. Reverse Voltage



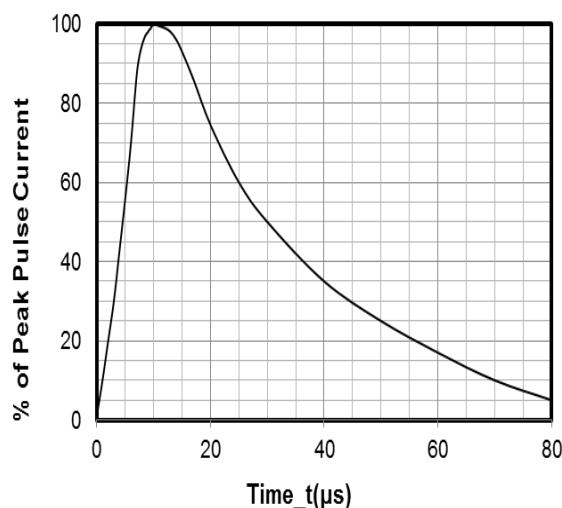
Peak Pulse Power vs. Pulse Time



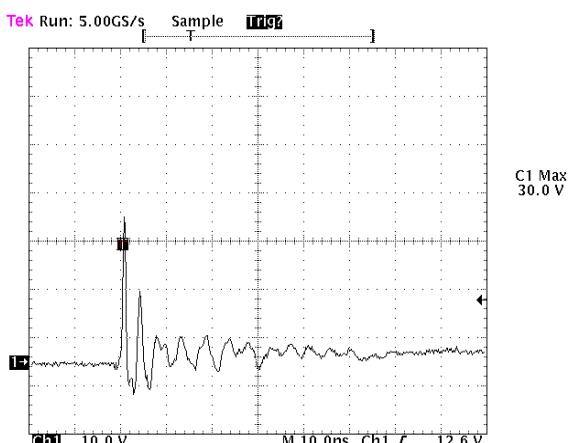
Clamping Voltage vs. Peak Pulse Current



Power Derating Curve



8 X 20 s Pulse Waveform



Note: Data is taken with a 10x attenuator

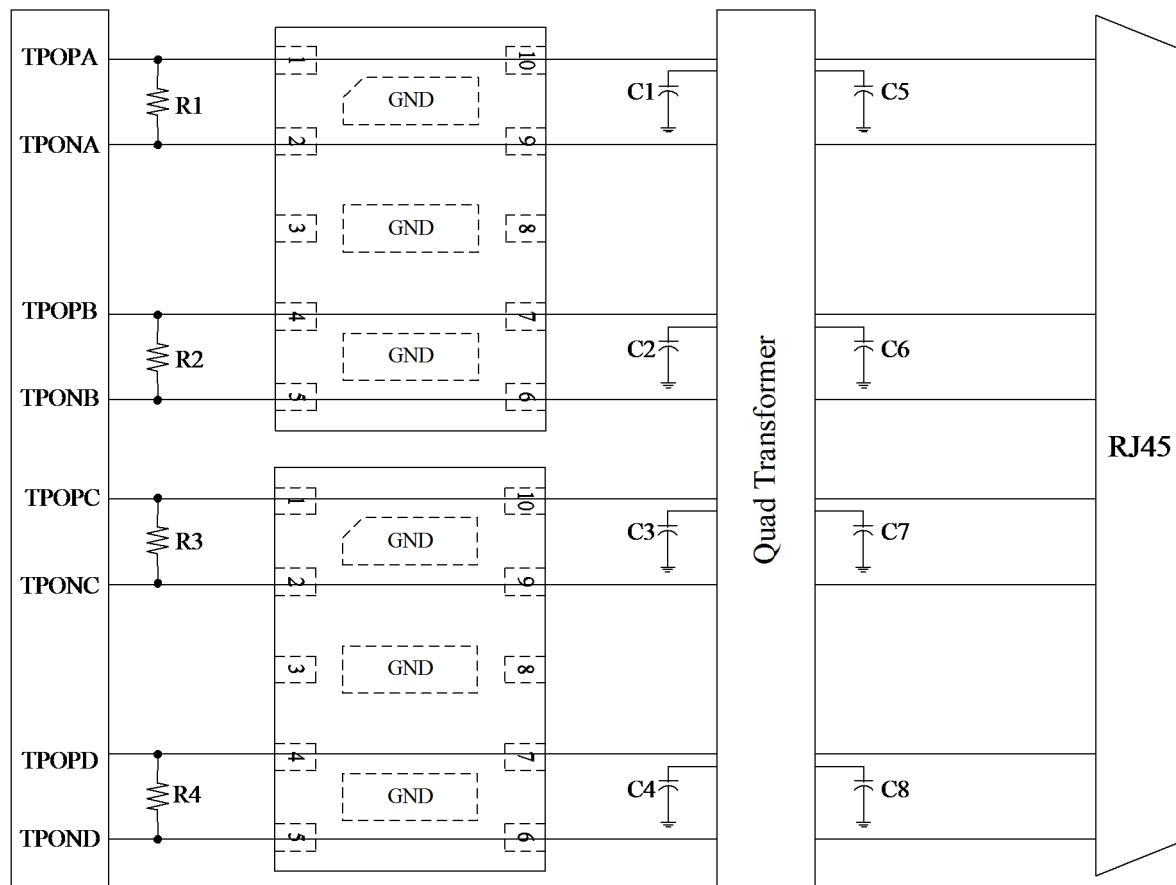
ESD Clamping Voltage

8 kV Contact per IEC61000-4-2

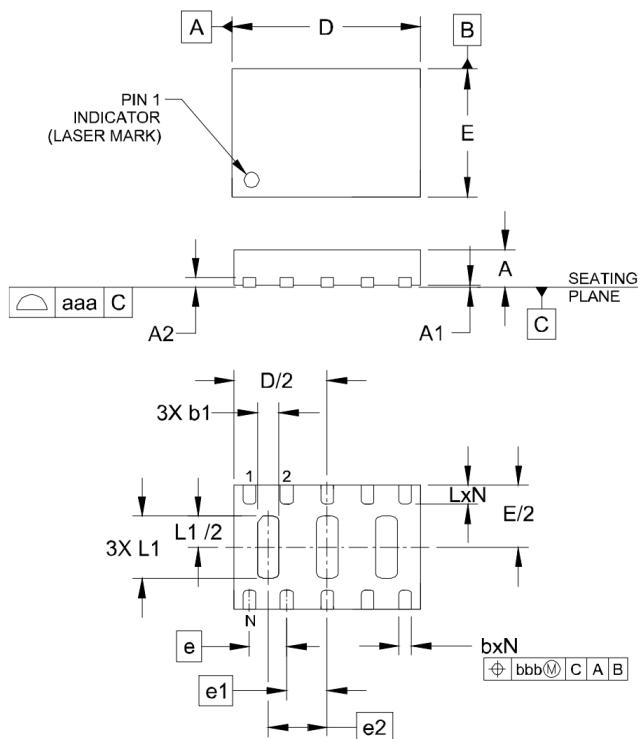
Typical Application

Electronic equipment is susceptible to damage caused by a variety of sources, including Electrostatic Discharge(ESD), Electrical Fast Transients(EFT) and Lightning strikes. The DL3304P9 is designed to protect the sensitive equipment from damage which may be induced by such transient events. This product can be configured in different connections to meet the requirement of common-mode and differential-mode.

DL3304P9 on Gigabit Ethernet Application

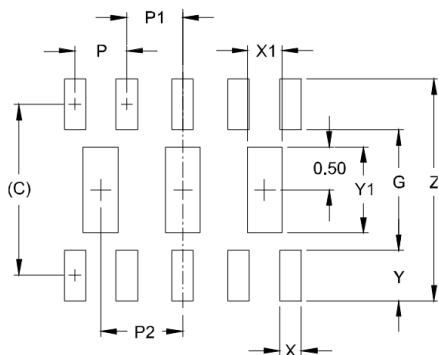


DFN3020-10 Package Outline Drawing



DIMENSIONS			
DIM	MILLIMETERS		
	MIN	NOM	MAX
A	0.50	0.60	0.65
A1	0.00	0.03	0.05
A2	(0.15)		
b	0.15	0.20	0.25
b1	0.25	0.35	0.45
D	2.90	3.00	3.10
E	1.90	2.00	2.10
e	0.60 BSC		
e1	0.65 BSC		
e2	0.95 BSC		
L	0.25	0.30	0.35
L1	0.95	1.00	1.05
N	10		
aaa	0.08		
bbb	0.10		

Suggested Land Pattern



DIMENSIONS	
DIM	MILLIMETERS
C	(1.98)
G	1.40
P	0.60
P1	0.65
P2	0.95
X	0.25
X1	0.40
Y	0.58
Y1	1.00
Z	2.56

Contact Information

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