

Electrostatic Discharged Protection Devices (ESD) Data Sheet

Description

This series are specifically designed to protect sensitive components which are connected to high-speed data and transmission lines from overvoltage caused by electrostatic discharge(ESD), cable discharge events (CDE) and electrical fast transients (EFT). The unique design incorporates surge rated, low capacitance steering diodes and a TVS diode in a single package. The UEDF3A3.3L04 is design to replace up to two components for board Level Gigabit Ethernet protection.

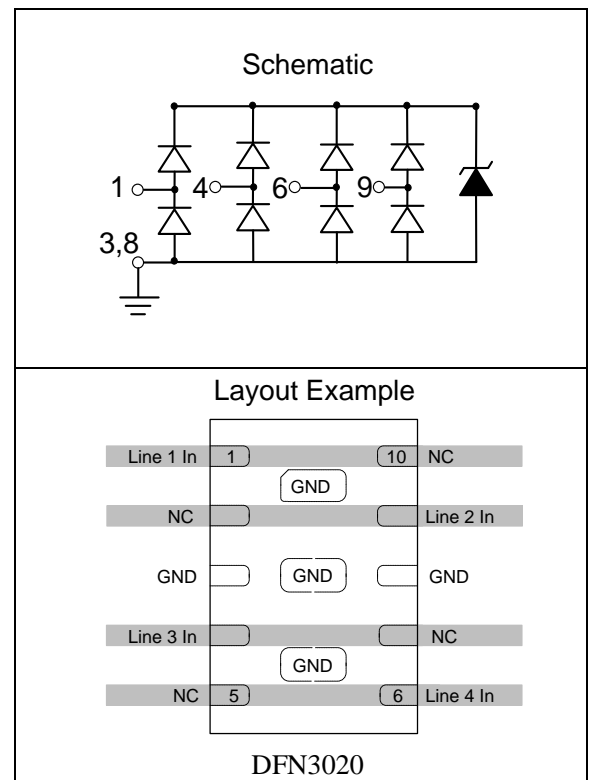


Contact : ±30kV
Air : ±30kV



Features

- IEC61000-4-2 ESD 30KV Air, 30KV contact compliance
- IEC61000-4-4 EFT 40A 5/50ns
- DFN3020 package
- Protects two line pairs
- Working voltage: 3.3V
- Low leakage current
- Low clamping voltage
- Solid-state silicon avalanche technology
- Lead Free/RoHS compliant
- Flammability rating: UL 94V-0
- Marking: B ATH



Applications

- 10/100/1000 Ethernet
- Central office equipment
- LVDS interfaces
- Integrated Magnetics
- Notebooks, Desktops, Servers

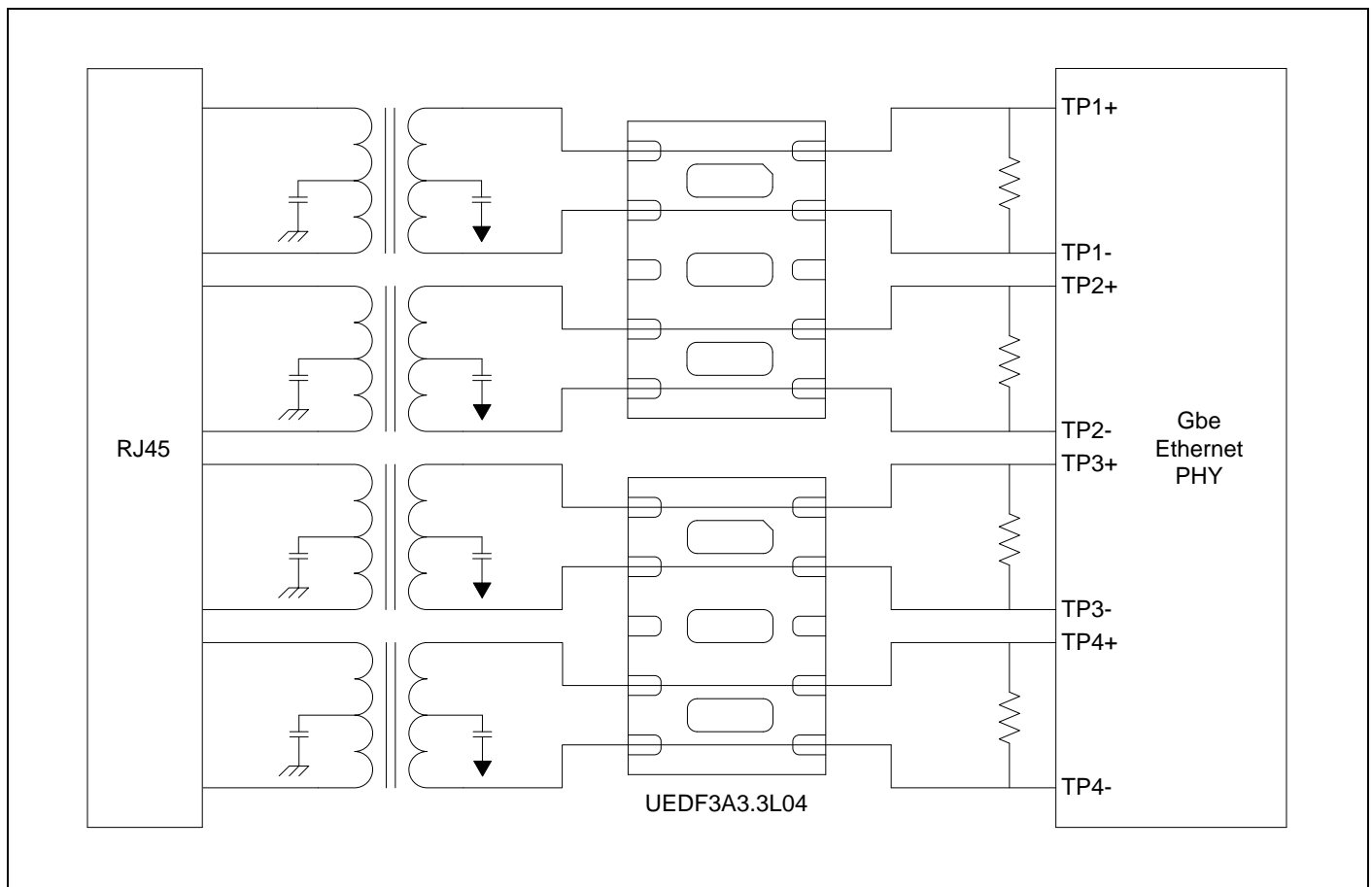
Maximum Ratings

Rating	Symbol	Value	Unit
Peak pulse current (tp=8/20µs)	I _{PP}	35	A
ESD voltage (Contact discharge)	V _{ESD}	±30	kV
ESD voltage (Air discharge)		±30	
Operating temperature	T _J	-55~+85	°C
Storage temperature	T _{STG}	-55~+150	°C

Electrical Characteristics (T_J=25°C)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Reverse stand-off voltage	V _{RWM}				3.3	V
Reverse breakdown voltage	V _{BR}	I _{BR} =1mA	3.8			V
Reverse leakage current	I _R	V _R =3.3V Each I/O pin			1	μA
Clamping voltage (tp=8/20μs)	V _C	I _{PP} =5A Any I/O to GND			10	V
Clamping voltage (tp=8/20μs)	V _C	I _{PP} =5A Between I/O pins			15	V
Clamping voltage (tp=8/20μs)	V _C	I _{PP} =30A Any I/O to GND			25	V
Clamping voltage (tp=8/20μs)	V _C	I _{PP} =30A Between I/O pins			30	V
Off state junction capacitance	C _J	0Vdc, f=1MHz Any I/O to GND			5	pF
		0Vdc, f=1MHz Between I/O pins			2.5	pF

Applications Information



Typical Characteristics Curves

Figure 1. Pulse Waveform

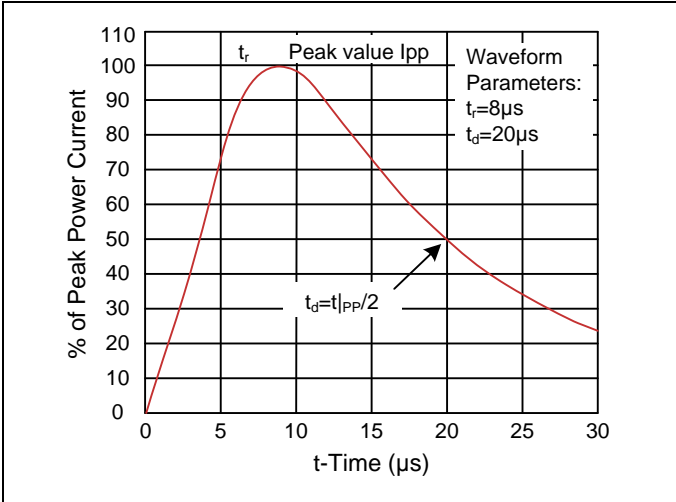


Figure 2. Clamping Voltage vs. Peak Pulse Current (Any I/O to GND)

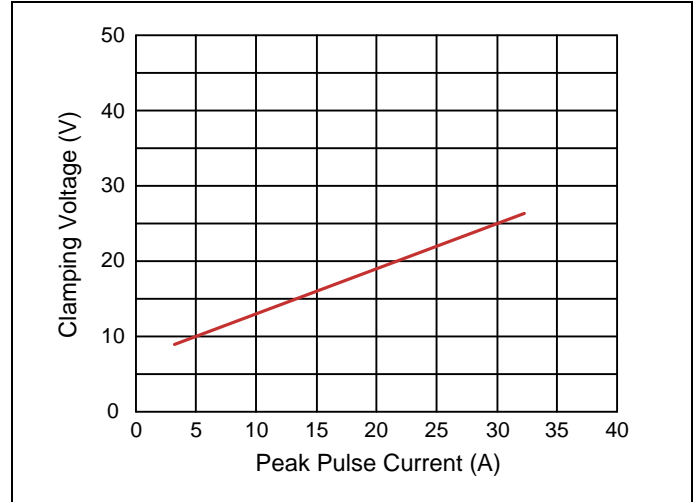


Figure 3. Clamping Voltage vs. Peak Pulse Current (Between I/O pins)

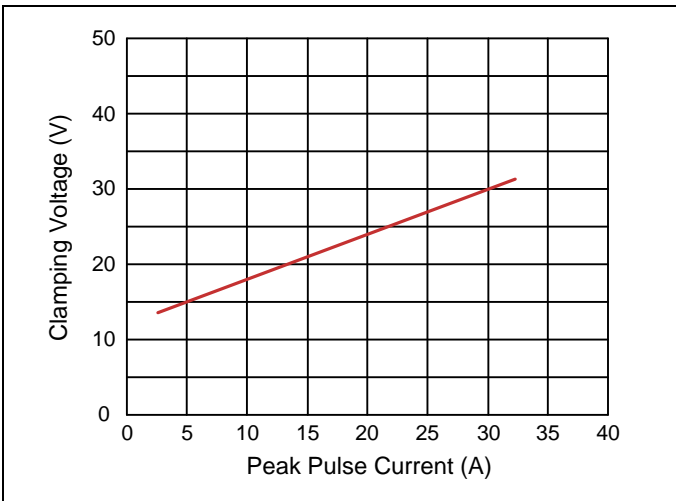


Figure 4. Forward Clamping Voltage vs. Peak Pulse Current (GND to I/O)

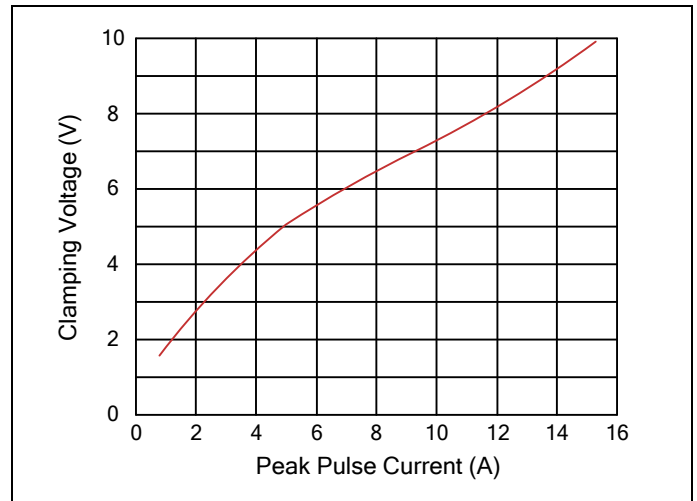


Figure 5. ESD Clamping (8kV Contact IEC61000-4-2)

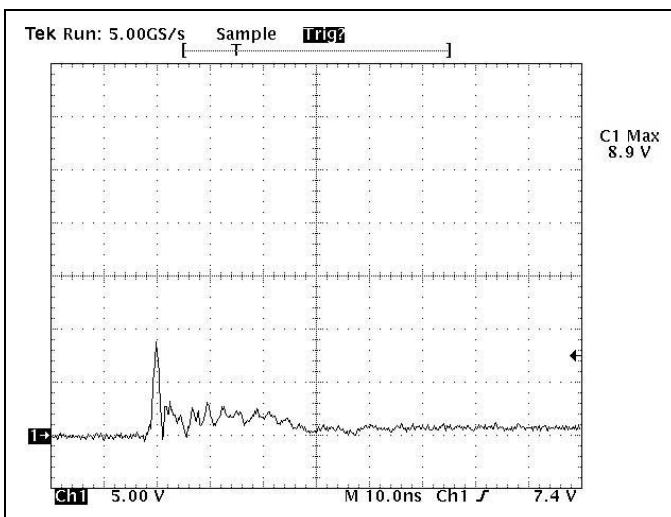
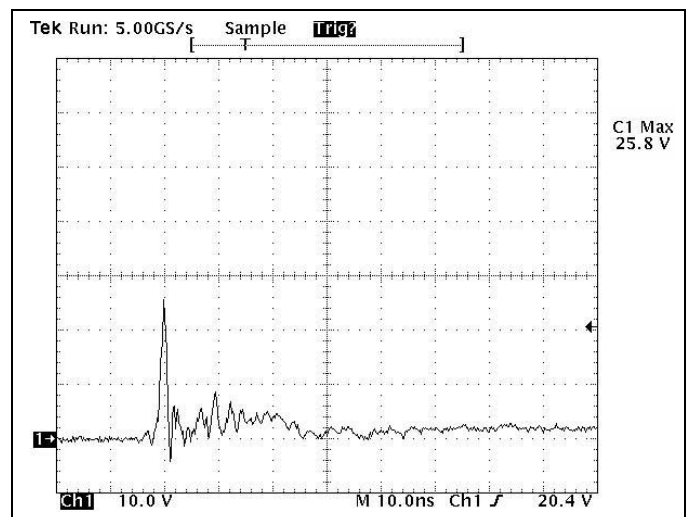
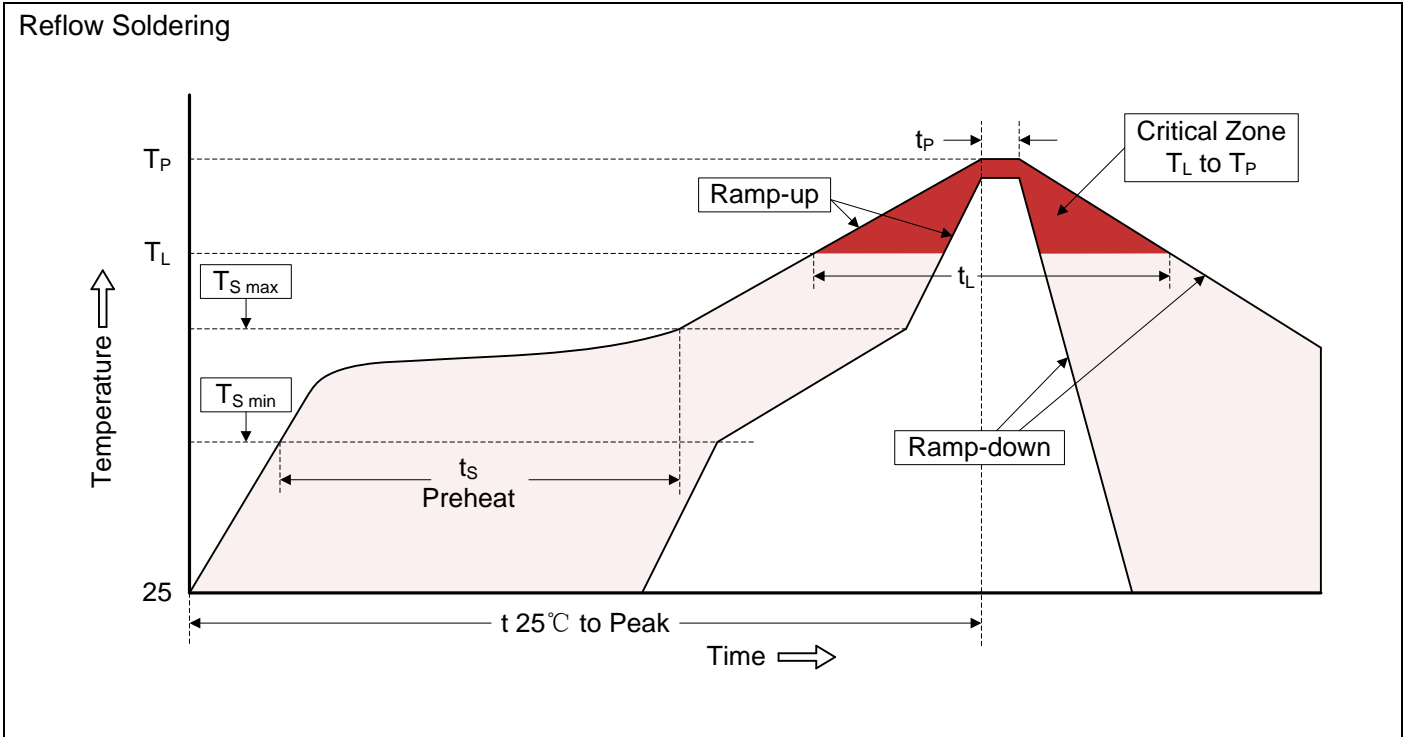


Figure 6. ESD Clamping (30kV Contact IEC61000-4-2)



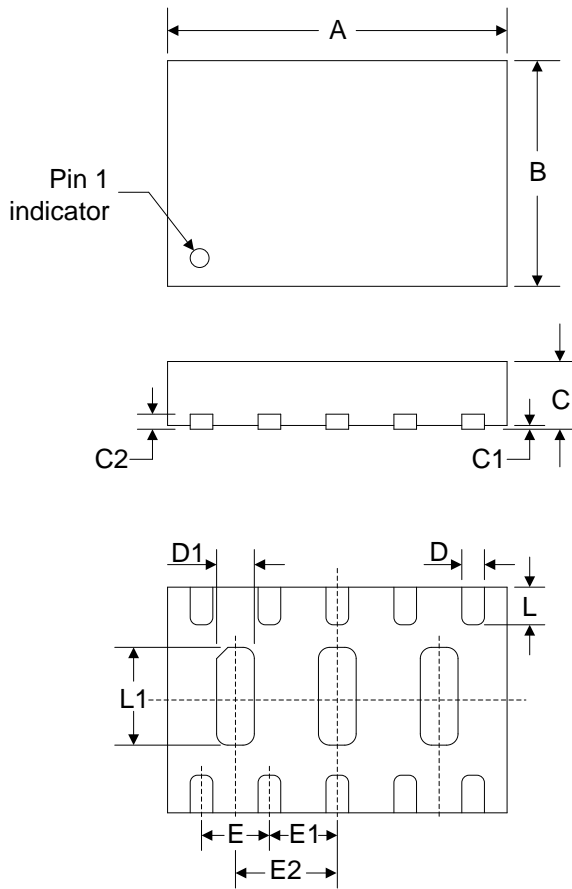
Recommended Soldering Conditions



Recommended Conditions

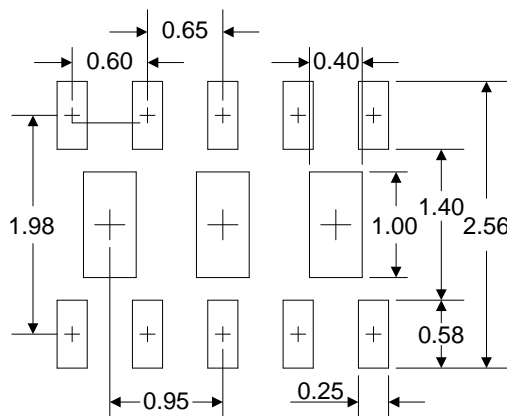
Profile Feature	Pb-Free Assembly
Average ramp-up rate (T_L to T_P)	3°C/second max.
Preheat -Temperature Min ($T_{S\ min}$) -Temperature Max ($T_{S\ max}$) -Time (min to max) (t_s)	150°C 200°C 60-180 seconds
$T_{S\ max}$ to T_L -Ramp-up Rate	3°C/second max.
Time maintained above: -Temperature (T_L) -Time (t_L)	217°C 60-150 seconds
Peak Temperature (T_P)	260°C
Time within 5°C of actual Peak Temperature (t_p)	20-40 seconds
Ramp-down Rate	6°C/second max.
Time 25°C to Peak Temperature	8 minutes max.

Dimensions (DFN3020)



Symbol	Dimension (mm)		
	Min.	Nom.	Max.
A	2.90	3.00	3.10
B	1.90	2.00	2.10
C	0.50	0.60	0.65
C1	0.00	0.03	0.05
C2	0.15		
D	0.15	0.20	0.25
D1	0.25	0.35	0.45
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

Recommended Soldering Pad Layout



Packaging

Tape	Symbol	Dimension (mm)
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<p>Technical drawing of a component showing dimensions: P0, P1, P2, E, F, W, B0, A0, and diameter D0.</p>	<table border="1"> <tr><td>A0</td><td>3.30±0.1</td></tr> <tr><td>B0</td><td>2.3±0.1</td></tr> <tr><td>P0</td><td>4.00±0.10</td></tr> <tr><td>P1</td><td>4.00±0.10</td></tr> <tr><td>P2</td><td>2.00±0.1</td></tr> <tr><td>E</td><td>1.75±0.10</td></tr> <tr><td>F</td><td>3.50±0.1</td></tr> <tr><td>D0</td><td>1.55±0.1</td></tr> <tr><td>W</td><td>8.0±0.3</td></tr> </table>	A0	3.30±0.1	B0	2.3±0.1	P0	4.00±0.10	P1	4.00±0.10	P2	2.00±0.1	E	1.75±0.10	F	3.50±0.1	D0	1.55±0.1	W	8.0±0.3	
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W	8.0±0.3																			
<p>Reel</p> <p>Technical drawing of a reel showing dimensions: D, D2, W1, W2.</p>	<table border="1"> <tr><td>D</td><td>Φ178.0±2.0</td></tr> <tr><td>D2</td><td>Φ54.50±1.0</td></tr> <tr><td>W1</td><td>9.5±2.0</td></tr> <tr><td>W2</td><td>12.30±1.5</td></tr> </table>	D	Φ178.0±2.0	D2	Φ54.50±1.0	W1	9.5±2.0	W2	12.30±1.5	<p>Quantity: 3000PCS</p>										
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