

Lightning & ESD Protection For Gigabit Ethernet Interface

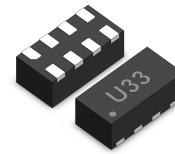
Low Capacitance

ULC33CP8

Description

The ULC33CP8 is designed to protect voltage sensitive components from ESD and transient voltage events. Excellent clamping capability, low leakage, and fast response time, make these parts ideal for ESD protection on designs where board space is at a premium.

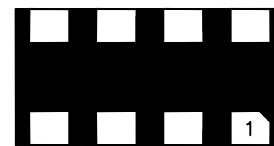
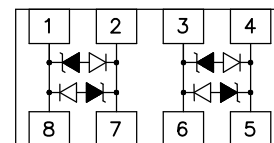
DFN2010P8



Feature

- u 150 Watts Peak Pulse Power per Line (tp=8/20µs)
- u Protects Up To Two Bidirectional I/O Lines
- u Low Capacitance (1pF) For High-Speed Interfaces
- u Working Voltages : 3.0V
- u Ultra-small Package Requires Less Than 2.0x1.0mm of PCB area
- u IEC61000-4-2 (ESD) ±25kV (air), ±15kV (contact)
- u IEC61000-4-4 (EFT) 40A (5/50ns)
- u IEC61000-4-5 (Lightning) 10A (8/20µs)

Functional Diagram



Applications

- u 10/100/1000 Ethernet
- u Integrated Magnetics / RJ-45 Connectors
- u LAN/WAN Equipment
- u Security Cameras
- u Industrial Controls
- u Peripherals
- u Notebooks & Desktop Computers

Mechanical Characteristics

- u DFN2010P8 (2.0x1.0mm) Package
- u Molding Compound Flammability Rating : UL 94V-0
- u Weight 1.0 Milligrams (Approximate)
- u Quantity Per Reel : 3,000pcs
- u Reel Size : 7 inch
- u Lead Finish : Lead Free

Mechanical Characteristics

| Symbol | Parameter | Value | Units |
|------------------|---------------------------------------|-------------|-------|
| P _{PP} | Peak Pulse Power (tp=8/20µs waveform) | 150 | W |
| T _L | Lead Soldering Temperature | 260 (10sec) | °C |
| T _{STG} | Storage Temperature Range | -55 to +150 | °C |
| T _{OP} | Operating Temperature Range | -55 to +150 | °C |
| | IEC61000-4-2 (ESD) | | |
| | Air Discharge | ±25 | KV |
| | Contact Discharge | ±15 | |
| | IEC61000-4-4 (EFT) | 40 | A |
| | IEC61000-4-5 (Lightning) | 10 | A |

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Electrical Characteristics (@ 25°C Unless Otherwise Specified)

| Part Number | Device Marking | V _{RWM} (V) (Max.) | V _B (V) (Min.) | I _T (mA) | V _C @1A (Max.) | V _C | | I _R (μA) (Max.) | C (pF) (Typ.) |
|-------------|----------------|-----------------------------|---------------------------|---------------------|---------------------------|----------------|------|----------------------------|---------------|
| | | | | | | (Max.) | (@A) | | |
| ULC33CP8 | U33 | 3.0 | 3.5 | 1 | 7.0 | 15 | 10 | 1 | 1 |

Characteristic Curves

Fig1. 8/20μs Pulse Waveform

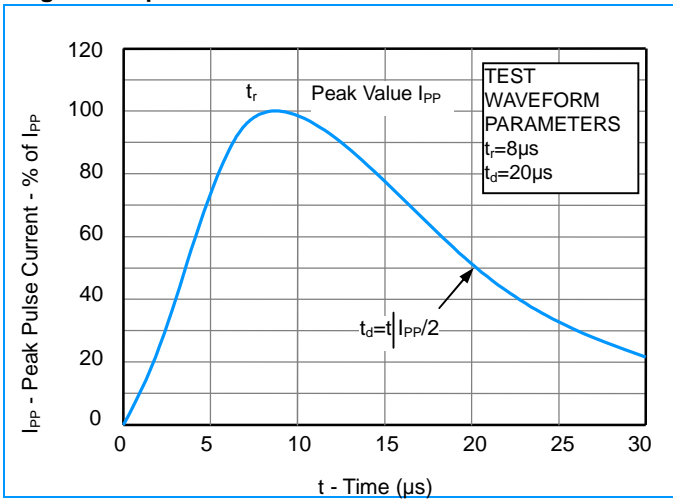


Fig2. ESD Pulse Waveform (according to IEC 61000-4-2)

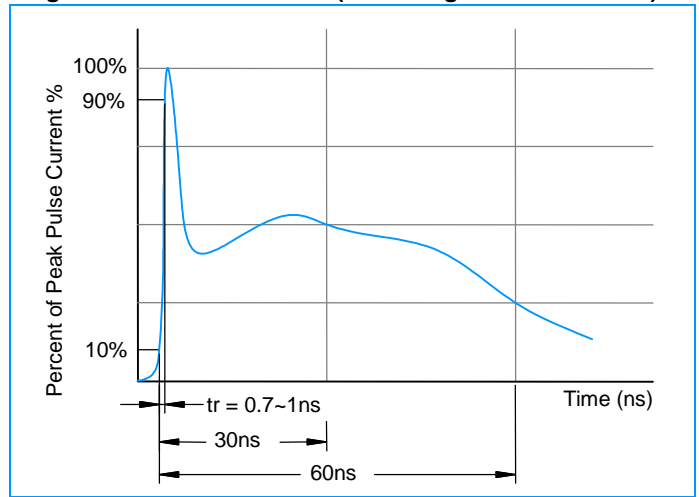
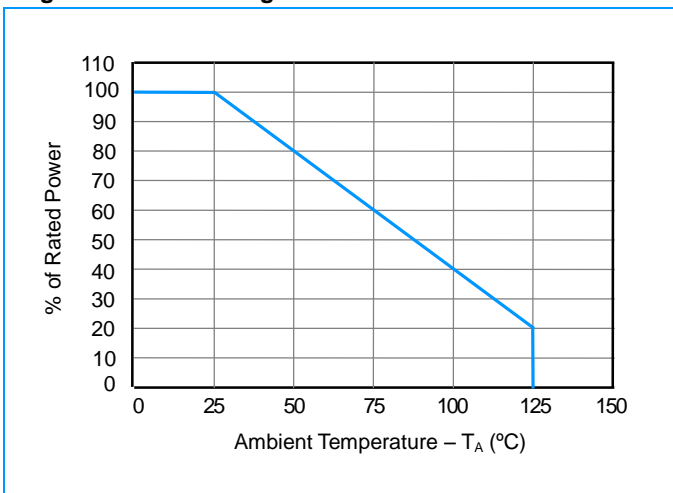


Fig3. Power Derating Curve



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Fig4. ESD Clamping (+8KV Contac per IEC61000-4-2)

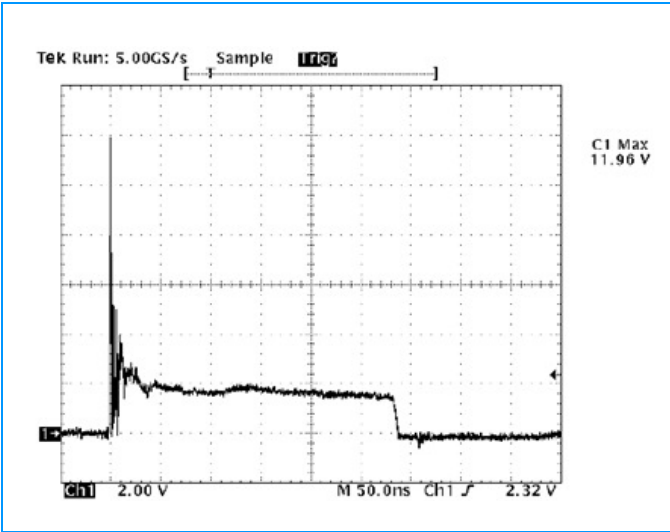
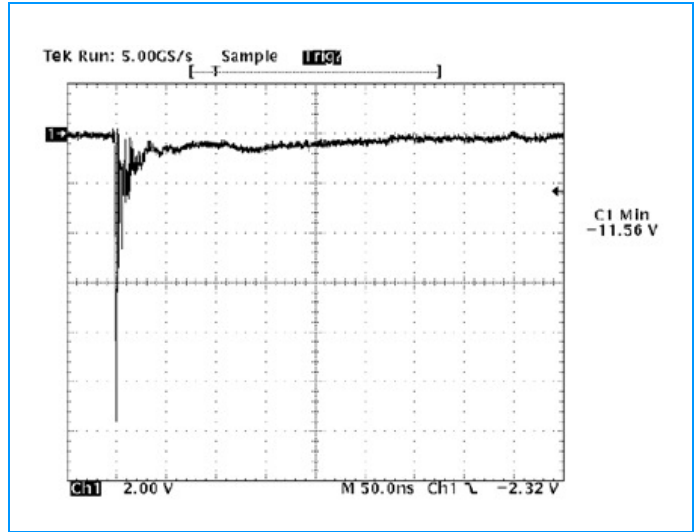
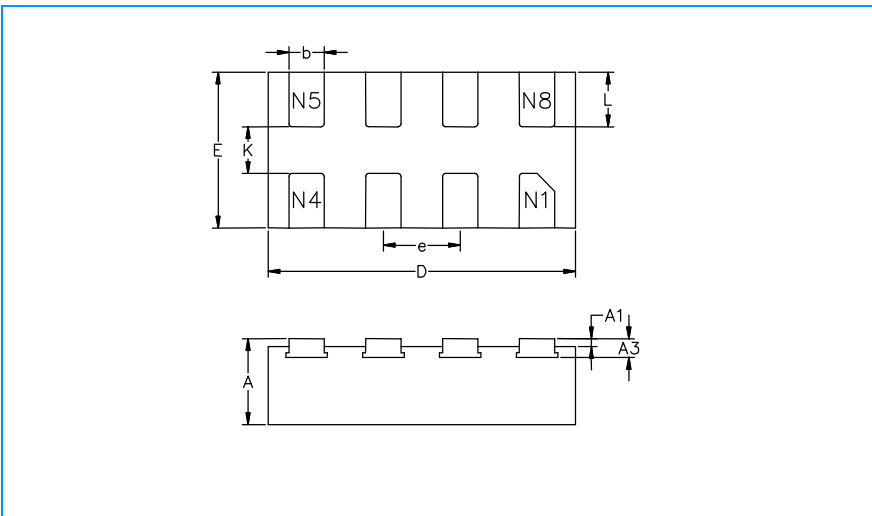


Fig5. ESD Clamping (-8KV Contac per IEC61000-4-2)



DFN2010P8 Package Outline & Dimensions



| Symbol | Millimeters | | Inches | |
|--------|-------------|-------|-----------|-------|
| | Min. | Max. | Min. | Max. |
| A | 0.700 | 0.800 | 0.028 | 0.031 |
| A1 | 0.000 | 0.050 | 0.000 | 0.002 |
| A3 | 0.120REF | | 0.005REF | |
| D | 1.924 | 2.076 | 0.076 | 0.082 |
| E | 0.924 | 1.076 | 0.036 | 0.042 |
| k | 0.200MIN | | 0.008MIN | |
| b | 0.180 | 0.280 | 0.007 | 0.011 |
| e | 0.500TYP. | | 0.020TYP. | |
| L | 0.274 | 0.426 | 0.011 | 0.017 |