

Automotive Ethernet ESD Protection

Nexperia offers the first true
OPEN Alliance compliant ESD Protection



To take the next step in automotive connectivity and electrification we need high-speed, high-bandwidth Automotive Ethernet. Industry leaders collaborate within the OPEN Alliance SIG to encourage Ethernet adoption in cars. But with advanced electrical designs, discrete ESD Protection becomes more critical than ever. Nexperia is first in offering fully compliant 100/1000BASE-T1 OPEN Alliance Ethernet ESD Protection.

PESD2ETH100-T

For 100BASE-T1 Ethernet

Features:

- › Fully 100BASE-T1 OPEN Alliance compliant
- › Low capacitance < 3 pF
- › ESD protection up to 30 kV (IEC 61000-4-2, contact)
- › ESD robustness 30 kV at 1000 discharges
- › High trigger voltage: $V_{t1} = 100$ V min
- › SOT23 package
- › AEC-Q101 qualified / automotive grade

PESD2ETH1G-T

For 100/1000BASE-T1 Ethernet

Features:

- › Fully 100/1000BASE-T1 OPEN Alliance compliant
- › Very low capacitance < 2 pF
- › ESD protection up to 30 kV (IEC 61000-4-2, contact)
- › ESD robustness 15 kV at 1000 discharges
- › High trigger voltage: $V_{t1} = 100$ V min
- › SOT23 package
- › AEC-Q101 qualified / automotive grade

Rethinking ESD Protection Requirements

The OPEN Alliance (One-Pair Ether-Net) Special Interest Group (SIG) is a non-profit alliance of mainly automotive industry and technology providers. One key goal is to enable the deployment of the existing IEEE 100BASE-T1 and 1000BASE-T1 physical layer specifications with complementing specifications for conformance and interoperability.

Discrete ESD protection devices take a crucial role when it comes to system level robustness and new requirements needs to be considered. When there is either no ESD protection or it is located at the PHY, then the power of ESD strikes would pass the CM termination, DC Block and CMC. If however the ESD protection device is placed right at the connector (see Figure 1) it not only protects the PHY but also the common-mode choke (CMC) and passives.

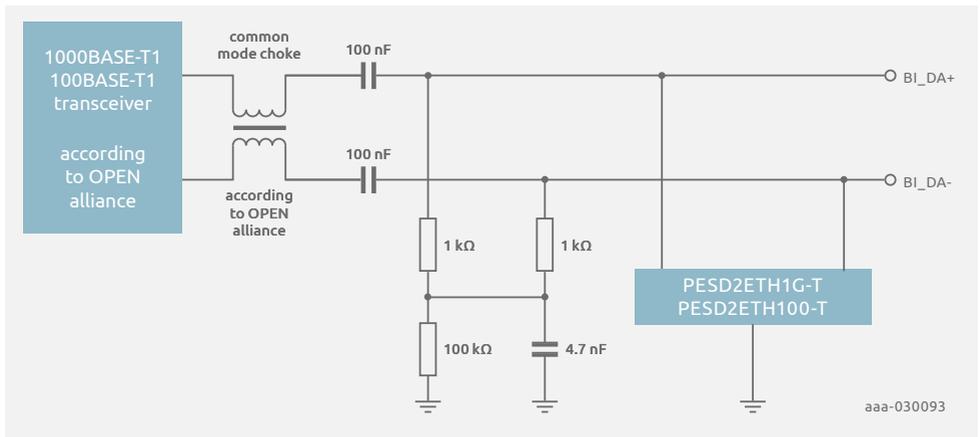


Figure 1: Arrangement of ESD suppression device within the 100BASE-T1 MDI interface, OPEN Alliance SIG (2019)

And this is the important factor of the new OPEN Alliance specifications. At this position, the power of ESD strikes can immediately be directed to ground however this change in topology requires a completely different ESD protection.

Nexperia is first in launching this ESD Protection to provide excellent performance and system robustness for OPEN Alliance Ethernet.

For more information go to: www.nexperia.com/ESD-protection/automotive-ethernet

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