

Marvell® Brightlane™ 88Q4364 Automotive 802.3ch compliant 10GBase-T1 PHY

2.5G/5G/10GBase-T1 IEEE 802.3ch compliant Automotive Ethernet PHY

Overview

The Marvell® Brightlane™ 88Q4364 device is a single-pair Ethernet physical layer transceiver (PHY) that supports operation over shielded twisted pair (STP). The transceiver implements the Ethernet physical layer portion of 2.5G/5G/10GBASE-T1 as defined by the IEEE 802.3ch standard.

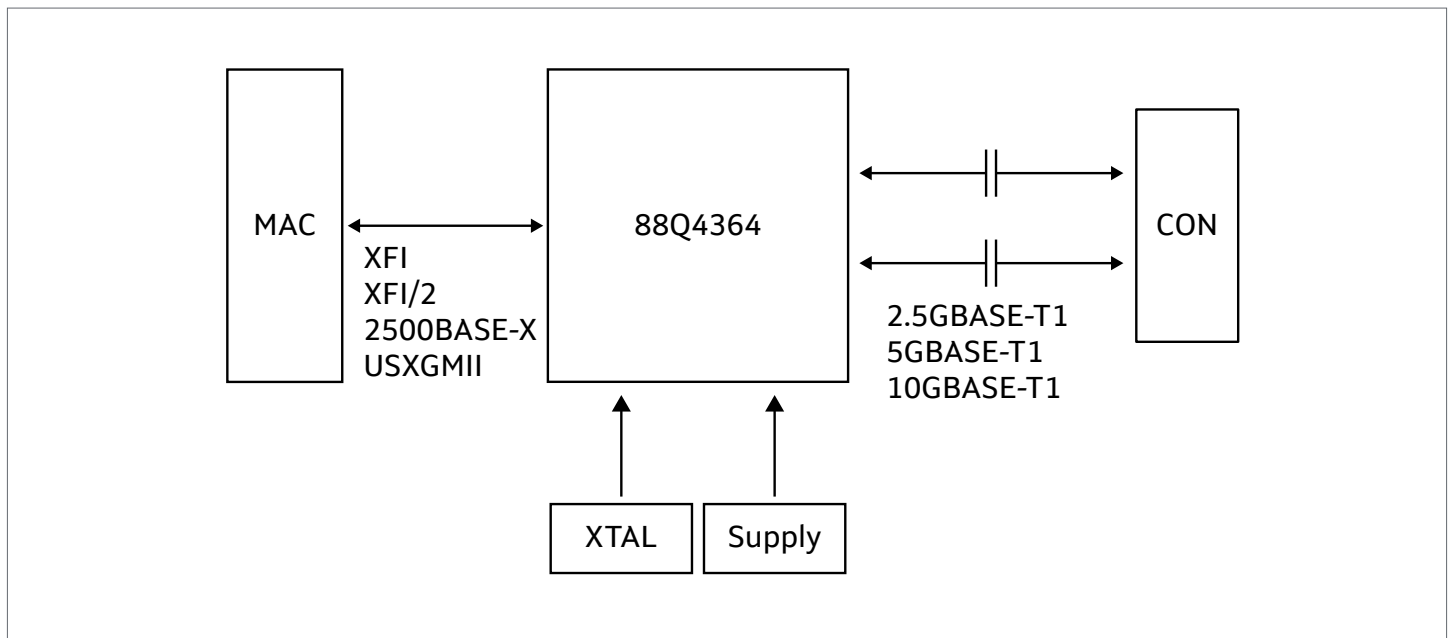
The 88Q4364 has integrated MACsec that secures against the Layer 2 In-Vehicle Networking security threats. MACsec secures data exchange on a hop-by-hop basis and prevents attacks such as intrusion, man-in-the-middle, and replay attacks.

The 88Q4364 is manufactured using a standard digital CMOS process and contains all the active circuitry required to implement the physical layer functions to transmit and receive data on a single balanced twisted pair.

The device is designed to directly connect to automotive-grade Graphics Processing Units (GPUs), CPUs, Ethernet switches, and Electronic Control Units (ECUs) via 10G/5G/2.5G USXGMII, 10 Gbps XFI, 5 Gbps XFI/2, 2.5 Gbps 2500BASE-X, or 2.5 Gbps OCSGMII interface to support the operations and network rates required for In-Vehicle Networks (IVN).

The device uses advanced mixed-signal processing to perform equalization, echo cancellation, data recovery, and error correction at full line rate. The device achieves robust performance and exceeds automotive electromagnetic interference (EMI) requirements in noisy environments with very low power dissipation.

Block Diagram



Marvell Brightlane™ 88Q4364 Block Diagram

Key Features

Features	Benefits
2.5G/5G/10GBASE-T1, IEEE 802.3ch compliant PHY	<ul style="list-style-type: none">• Triple Speed Ethernet PHY supports operation over shielded twisted pair (STP)
Supports IEEE 802.1AE MACsec	<ul style="list-style-type: none">• MACsec provides Layer 2 security
Energy Efficient Ethernet	<ul style="list-style-type: none">• Provides power savings for asymmetric data transfers
Automotive Qualified	<ul style="list-style-type: none">• AEC-Q100• Automotive Grade 2 (-40 °C to +105 °C)
Automotive Package	<ul style="list-style-type: none">• 7mm x 11 mm, 104-pin, FETFBGA package, 0.8 mm ball pitch

Target Applications

- Advanced Driver Assistance Systems
- Central Gateway
- Inter zone connectivity



To deliver the data infrastructure technology that connects the world, we're building solutions on the most powerful foundation: our partnerships with our customers. Trusted by the world's leading technology companies for 25 years, we move, store, process and secure the world's data with semiconductor solutions designed for our customers' current needs and future ambitions. Through a process of deep collaboration and transparency, we're ultimately changing the way tomorrow's enterprise, cloud, automotive, and carrier architectures transform—for the better.

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