

Marvell Unveils Industry's 1st Automotive Gigabit Ethernet PHY With MACsec Security

Market leader of in-vehicle network technology introduces third generation of secure automotive gigabit Ethernet PHY

SANTA CLARA, Calif., Oct. 7, 2020 /[PRNewswire](#)/ -- Marvell (NASDAQ: MRVL) today introduced the industry's first automotive gigabit Ethernet PHY solution with integrated media access control security (MACsec) technology for secure point to point communication. With nearly a [billion connected cars projected](#) to be on the road by 2030, the integration of security becomes an important factor in tomorrow's vehicles. MACsec technology fortifies in-vehicle networking by securing data exchange on a hop-by-hop basis and prevents Layer 2 security threats such as intrusion, man-in-the-middle, and replay attacks. Marvell's new Open Alliance TC10 compliant, dual speed 100/1000 BASE-T1 88Q222xM Ethernet PHY enables energy efficient, secure in-vehicle networks and assists in achieving functional safety compliance at the system level.

Automotive networks rely heavily on partial networking in which some segments are hibernated and woken up on demand. Marvell's new gigabit PHY supports the Open Alliance TC10 for sleep mode and wake-up, tailored for automotive use cases. TC10 control signals are sent over the data line and minimize the need for special cables for remote control of the PHY states. Rapid electrification of vehicles has resulted in reduced power budget for each component. As the industry's lowest power gigabit Ethernet PHY and with support of TC10, Marvell's 88Q222xM aids tier1s and OEMs to design energy efficient in-vehicle network architectures.

"Marvell is committed to developing innovative solutions for the automotive market and offers the industry's largest portfolio of secure Ethernet switches and PHYs," said Amir Bar-Niv, vice president of Marketing of the Automotive Business Unit at Marvell. "We are extremely proud to introduce the industry's first automotive gigabit Ethernet PHY that integrates Layer 2 security through MACsec while also delivering best-in-class lower power performance that meets the most stringent power budget. Marvell's 88Q222x solution is based on the Automotive QMS Process and comes with functional safety collateral assisting tier-1s and OEMs in fulfilling ISO 26262 at a system level."

"With ever increasing data and intelligence in the connected cars, the need for comprehensive cyber security solutions is essential," said Dr. Lars Völker, technical fellow at Technica Engineering. "MACsec IEEE 802.1AE effectively implements a layer of security for increasing bandwidth needs, while keeping the system deterministic and the complexity at a minimum allowing OEMs to build fast starting systems without the dependencies of the communication stack. Marvell's 88Q222xM Ethernet PHY product family with MACsec security allows us to build leading evaluation platforms and test tools for automotive OEMs who are evaluating MACsec on different speed grades."

"The rapid evolution of consumer devices is driving more and more features into today's cars, at an ever-increasing pace, resulting in a need for increased network bandwidth, lower latency and higher connectivity between vehicle ECUs. The current mix of vehicle networks simply cannot scale to these requirements and therefore we are seeing a megatrend towards homogenous Ethernet-based in-vehicle networks," said Ian Riches, vice president of Automotive Practice, & Director Strategy Analytics Ltd. "These will also help implement the energy efficiency and cyber security features that will be needed. It is therefore exciting to see the integration of Open Alliance TC10 and MACsec in Marvell's new third-generation PHY, as it provides a path to speed the implementation of tomorrow's in-vehicle networks."

As automotive networks are required to work in noisy environments, devices must be able to work together without interference. All components on the network should meet the electromagnetic interference/electromagnetic compatibility (EMI/EMC) requirements in accordance with the [Open Alliance TC12](#). As Marvell's third-generation gigabit PHY, 88Q222xM is built on proven automotive architectures that deliver best-in-class EMI/EMC performance.

88Q222xM Key Features:

- **1000BASE-T1, IEEE 802.3bp-compliant; 100BASE-T1, IEEE 802.3bw-compliant:** Pin compatible dual speed Ethernet PHY supports operation over unshielded twisted pair (UTP)
- **Supports IEEE 802.1AE MACsec:** MACsec provides layer 2 security and prevents security threats such as intrusion, man-in-the-middle, and replay attacks
- **Supports OPEN Alliance TC10 Sleep Mode:** 88Q222xM supports TC10 fast wake-sleep mechanism to enable partial networking
- **AEC Q100 Grade 1 Qualified:** 88Q222xM is qualified to be used in harsh automotive environment with ambient temperature ranging from -40°C to 125°C

- **802.1AS, 802.1AS-Rev PTP:** 88Q222xM Supports precision timing protocol that enables extremely precise time synchronization of networks
- **Package:** 88Q222xM comes in a small 40pin QFN, 6.0x6.0 mm, 0.5 mm pitch package with wettable flanks
- **Integrated Voltage Regulators:** Supports single 3.3V supply mode and saves overall BOM cost
- **ASPICE Level 2 software:** Enables faster time-to-market with reuse of a flexible API and robust solution

Marvell 88Q2220M, 88Q2221M are currently sampling along with their development boards.

For more information on 88Q222xM, please visit <https://www.marvell.com/products/automotive/88q222xm.html>.

About Marvell

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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