



Marvell Unveils Industry's 1st Secure Automotive Gigabit Ethernet PHY

Overview

Company founded

1995

FY20 revenue

\$2.7B

Employees

5,000+

Patents worldwide

10,000+

Located in **Santa Clara, CA**

R&D centers in **US, Israel, India, Germany, China**





Marvell's Mission

We develop and deliver semiconductor solutions that move, store, process and secure the world's data faster and more reliably than anyone else.

Marvell offers the most complete data infrastructure portfolio

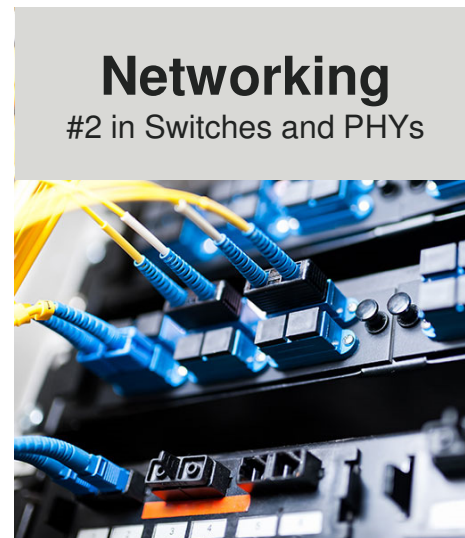
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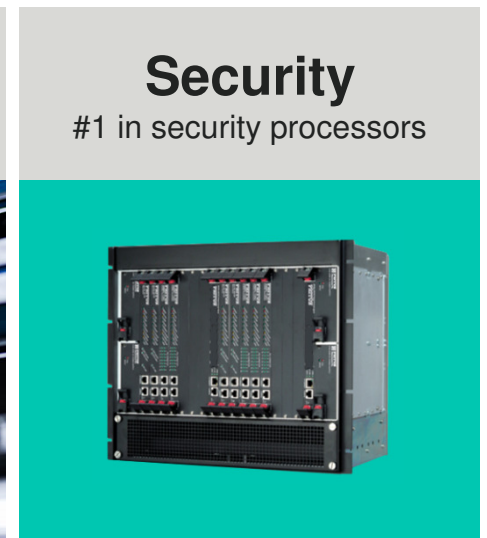
Processors
#1 in baseband and
data plane processors



Storage
#1 in HDD and SSD
controllers, Fibre Channel



Networking
#2 in Switches and PHYs



Security
#1 in security processors

Marvell Automotive

Market leader for
In-Vehicle-Network (IVN)



1,000+ engineers developing
Ethernet IP and products



2,000+ Ethernet patents



30+ Automotive IVN products in 2020



Leader in Automotive Ethernet Technology

- 1st in market with 1000BASE-T1 PHY
- 1st in market with automotive secured switch
- 1st in market with multi-gig Ethernet PHY
- Complete roadmap: Switch, PHY, controller
- ASPICE Level 2 certification
- ASIL-B certification

ASIL-B



ASPICE Level 2



Committed to investing in continuous improvement



Opened the Automotive Center of Excellence (ACE) in Ettlingen, Germany in 2017



Launched the first CISPR 25 qualified automotive EMC lab in North America in 2018



Achieved ASPICE Level II and ASIL-B certifications in 2019 to ensure quality software and robust products

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Marvell Automotive Center

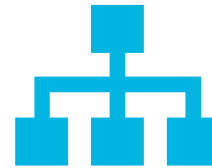


Automotive IVN Megatrends



Cyber Security

Protect personal and critical data in connected cars



Ethernet based IVN

Move towards homogenous networks with high throughput and low latency



Energy Efficiency

Manage power budgets of rapidly electrifying cars

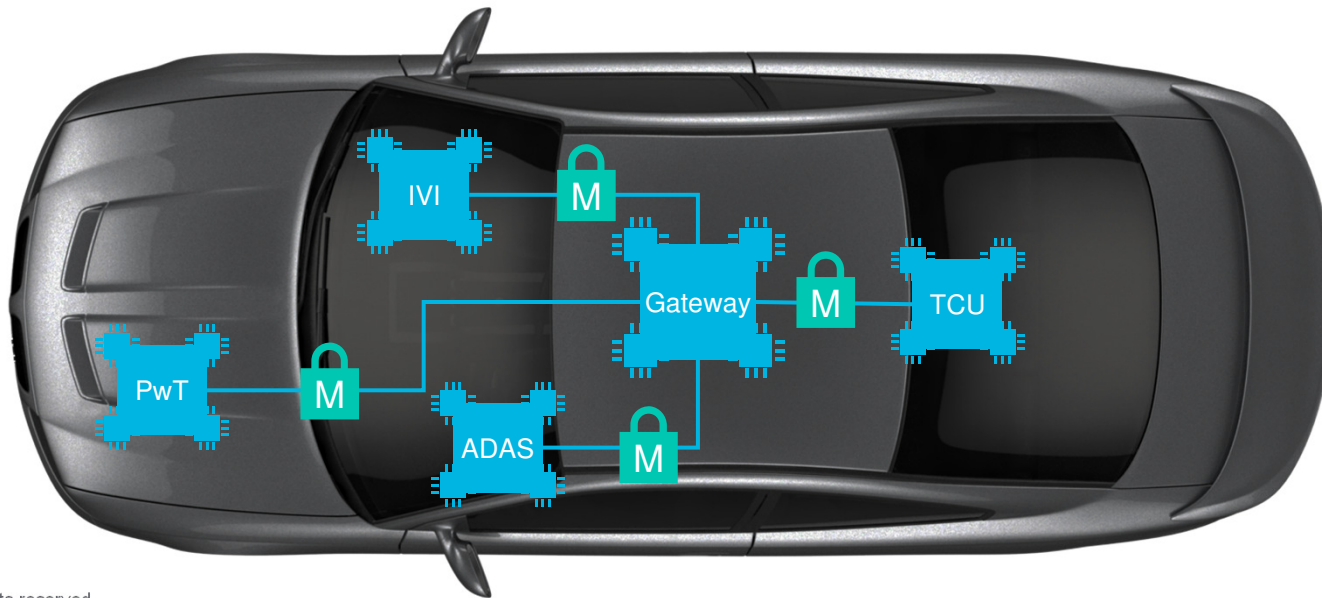


High Reliability

Minimize risk of harm to people and liability for OEM

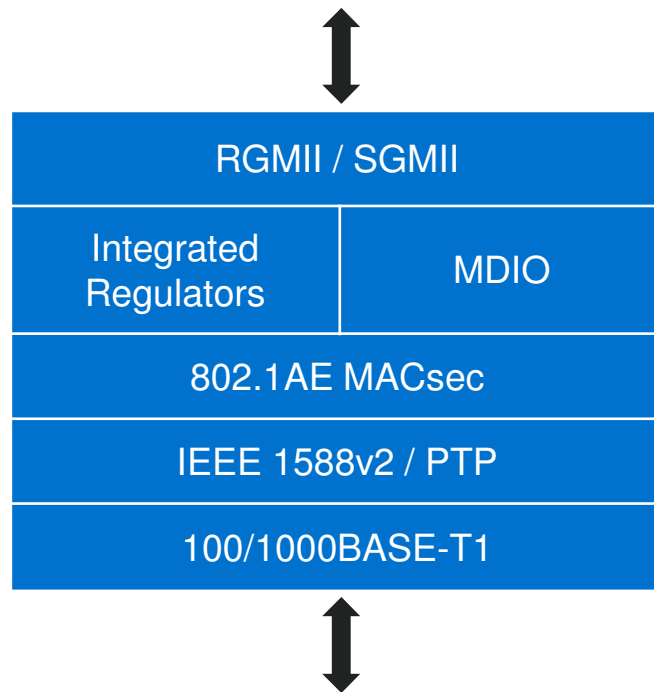
Introducing Industry's First MACsec Integrated T1 PHY

- MACsec **secures IVN** by securing data exchange on a hop-by-hop basis
- **Prevents Layer 2 security threats** such as intrusion, man-in-the-middle, and replay attacks.



88Q222xM – 3rd Generation Gigabit PHY

100/1000BASE-T1 PHY with MACsec and TC10



Key Features

- IEEE 802.3bp, 802.3bw compliant
- 802.1AE MACsec supported
- Sleep/Wake: TC10
- AEC-Q100 Grade 1 (-40 °C to +125 °C)
- 40QFN, 0.5mm pitch, 6mmx6mm
- Functional Safety Collateral Available
- ASPICE Compliant Software API

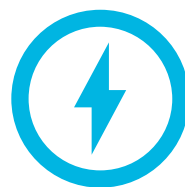
Why 88Q222xM is ideal for next gen IVN



Layer 2 security
through integrated
MACsec



TC10 for Partial
Networking

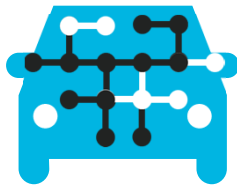


Lowest power
Gigabit Ethernet
PHY



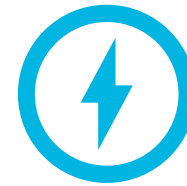
ISO 26262
collateral and
ASPICE software

88Q222xM enables energy efficient IVN



First TC10 Compliant gigabit PHY

Enables Partial Networking allowing fast and on-demand wake / sleep for segments of IVN

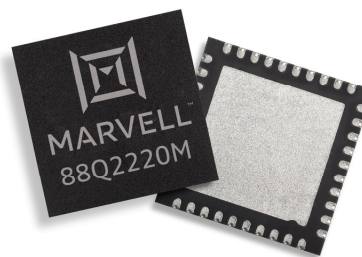
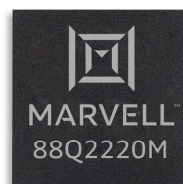


Lowest Power Gigabit PHY

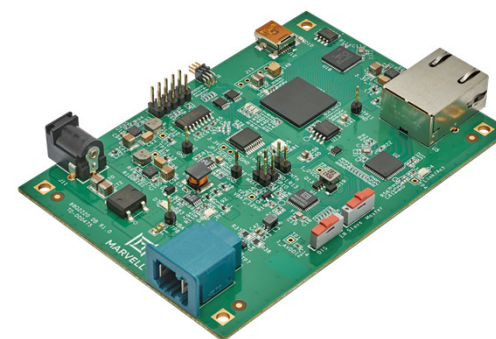
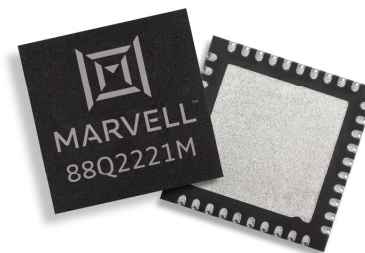
Helps meet aggressive power budgets and reduce BOM cost

Sampling now

88Q2220M
RGMII
100/1000BASE-T1
40QFN, 0.5mm pitch,
6mmx6mm

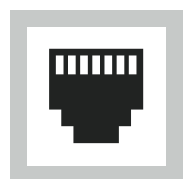


88Q2221M
SGMII
100/1000BASE-T1
40QFN, 0.5mm pitch,
6mmx6mm



Development boards for
88Q2220M and 88Q2221M

Marvell extends the IVN leadership with Q222xM



Industry's 1st
automotive
gigabit
Ethernet PHY



Marvell's 1st
automotive
100Base-T1
PHY



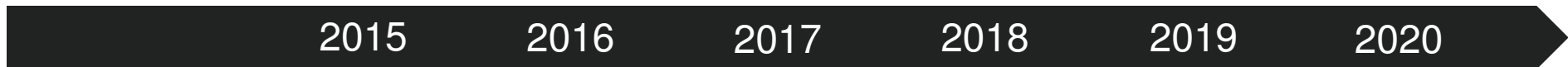
Marvell's 2nd
gen gigabit
automotive
PHY



Marvell's 2nd
gen automotive
100Base-T1
PHY



Marvell's 3rd
gen gigabit
automotive
PHY



2015

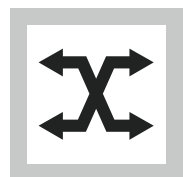
2016

2017

2018

2019

2020








Industry's
first secure
automotive
switch



Secure multi
gigabit high
port count
automotive
switch



Summary

- 1** 3rd gen gigabit Ethernet PHY extends Marvell leadership in gigabit Ethernet 
- 2** Industry's first MACsec integrated T1 PHY 
- 3** Lowest power gigabit Ethernet PHY 
- 4** Industry's first Open Alliance TC10 gigabit Ethernet PHY 
- 5** ASPICE software and ISO 26262 collateral 



Thank You

