

Marvell[®] Brightlane[™] 88Q5152 Secure Managed Switch

9-Port Automotive Ethernet Switch with Integrated 1000BASE-T1 PHYs and MACsec

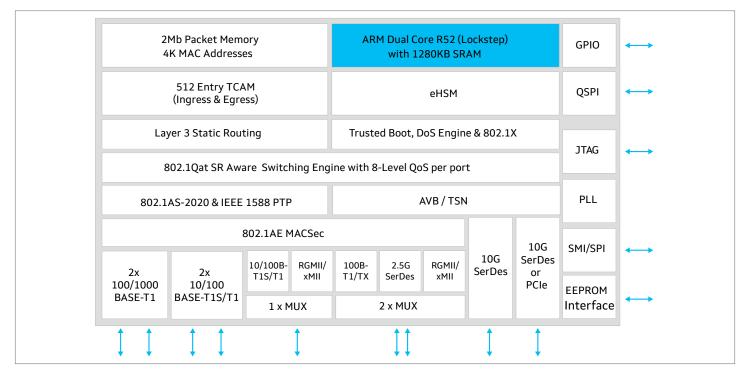
Overview

Marvell's Brightlane[™] third generation secure Automotive Ethernet switch, 88Q5152, is a 9-port switch with integrated 1000BASE-T1, 100BASE-T1, and 10BASE-T1S PHYs fully compliant to the applicable IEEE 802.3 standards.

The 9-port switch offers 6 integrated PHYs, 2x supporting dual speed 1000/100BASE-T1, 3x supporting dual speed 100/10BASE-T1(S), and 1x supporting 100BASE-T1/TX. Additional interfaces supported include 2x Multi-speed 10Gb SerDes (10G/5G/2.5G/1Gbps), 1x multi-speed 2.5Gb Serdes (2.5G/1Gbps), 2x RGMII/MII/RMII, and 1x PCIe Gen3 x1 interface.

The port interface options offer flexible configurations for connectivity to external devices, such as 2.5/5/10GBASE-T1 PHYs, or uplinks to host SoCs. This makes the device ideal for In Vehicle Networking (IVN) applications, such as Advanced Driver Assist Systems (ADAS), Zonal Control Modules, and Central Gateways. This switch includes a high-performance dual core ARM® R52 CPU that operates in lockstep, with dedicated on-chip memory to support Time Sensitive Networking (TSN) protocols such as Precision Time Protocol (PTP) and security firewall to protect from external malicious attacks.

The switch includes many advanced security features including 802.1AE MACsec to provide link security to prevent man-in-themiddle attacks, Denial of Service (DoS) engine, TCAM for deep packet inspection (DPI), and trusted boot functionality to secure the vehicle network. It also includes an embedded Hardware Security Module to enhance device security by supporting secure and encrypted boot and managing advanced security features such as MACsec.



Block Diagram

Key Features

Features	Benefits
Processor	Integrated dual core ARM R52 CPU operating in lockstep
Security	 802.1AE MACsec Embedded Hardware Security Module (eHSM) Secure boot and encrypted boot support
Switch Port Interfaces	 2x 1000BASE-T1/100BASE-T1 PHYs 3x 100BASE-T1/10BASE-T1S PHYs 1x 100BASE-T1/100BASE-TX PHY 2x RGMII/MII/RMII 1x Multi-Speed SerDes (2.5G/1Gbps) 2x Multi-Speed SerDes (10G/5G/2.5G/1Gbps) 1x PCIe Gen 3 x1 supporting Single Root I/O Virtualization (SR-IOV)
I/O Interfaces	 Configurable GPIO JTAG interface for debugging SMI/SPI interface for configuration QSPI with configurable frequencies (19.2MHz-83.3MHz)
Time Sensitive Networking (TSN) Support	 802.1AS-2020 802.1Qat / Qav / Qbu / Qbv / Qci / Qcr 802.1CB
Automotive Qualified	 AEC Q-100 Automotive Grade 2 (-40°C to +105°C)
Package characteristics	• 15mm x 15mm, 288 pin TFBGA, 0.8mm pitch

Target Applications

- · Zonal Control Module
- Central Gateway
- In-Vehicle Infotainment
- Advanced Driver Assistance Systems (ADAS)
- Body Domain Controller.



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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