



# BRIGHTLANE™ 88Q5152 secure managed switch

## 9-port automotive Ethernet switch with integrated 1000BASE-T1 PHYs and MACsec

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.

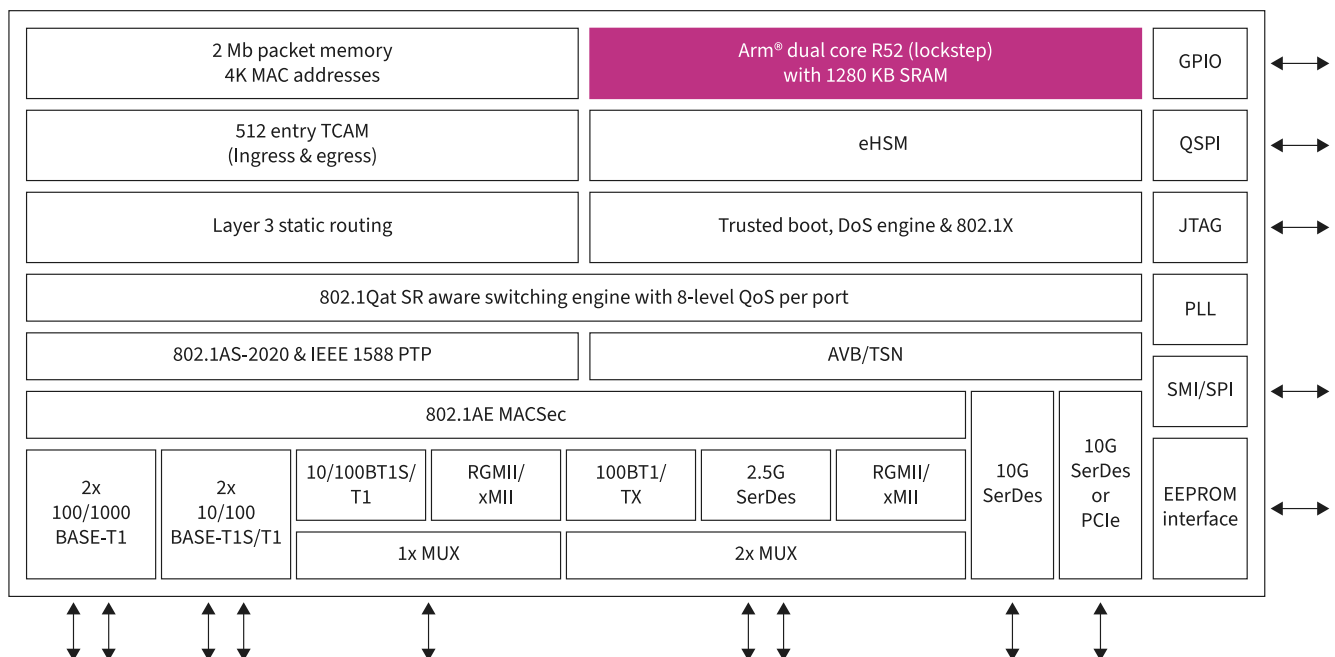
The 9-port switch offers 6 integrated PHYs, 2x supporting dual speed 1000/100BASE-T1, 3x supporting dual speed 100/10BASE-T1(S), and 1x supporting 100BASE-T1/TX. Additional interfaces supported include 2x multi-speed 10 Gb SerDes (10G/5G/2.5G/1 Gbps), 1x multi-speed 2.5 Gb SerDes (2.5G/1 Gbps), 2x RGMII/MII/RMII,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



## PRODUCT BRIEF

### Key features

| Features                                | Benefits   |
|---|--|
| Processor                               | – Integrated dual core Arm® R52 CPU operating in lockstep  |
| Security                                | – 802.1AE MACsec<br>– Embedded Hardware Security Module (eHSM)<br>– Secure boot and encrypted boot support   |
| Switch port interfaces                  | – 2x 1000BASE-T1/100BASE-T1 PHYs<br>– 3x 100BASE-T1/10BASE-T1S PHYs<br>– 1x 100BASE-T1/100BASE-TX PHY<br>– 2x RGMII/MII/RMII<br>– 1x multi-speed SerDes (2.5G/1 Gbps)<br>– 2x multi-speed SerDes (10G/5G/2.5G/1 Gbps)<br>– 1x PCIe Gen 3 x1 supporting Single Root I/O Virtualization (SR-IOV) |
| I/O interfaces                          | – Configurable GPIO<br>– JTAG interface for debugging<br>– SMI/SPI interface for configuration<br>– QSPI with configurable frequencies (19.2–83.3 MHz)   |
| Time Sensitive Networking (TSN) support | – 802.1AS-2020<br>– 802.1Qat / Qav / Qbu / Qbv / Qci / Qcr<br>– 802.1CB  |
| Automotive qualified                    | – AEC-Q100<br>– Automotive grade 2 (-40 to +105°C)   |
| Package characteristics                 | – 15 mm x 15 mm, 288 pin TFBGA, 0.8 mm pitch   |

### Target applications

- Zonal control module
- Central gateway
- In-vehicle infotainment
- Advanced Driver Assistance Systems (ADAS)
- Body domain controller

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