Quad-Port SerDes for ASA Motion Link
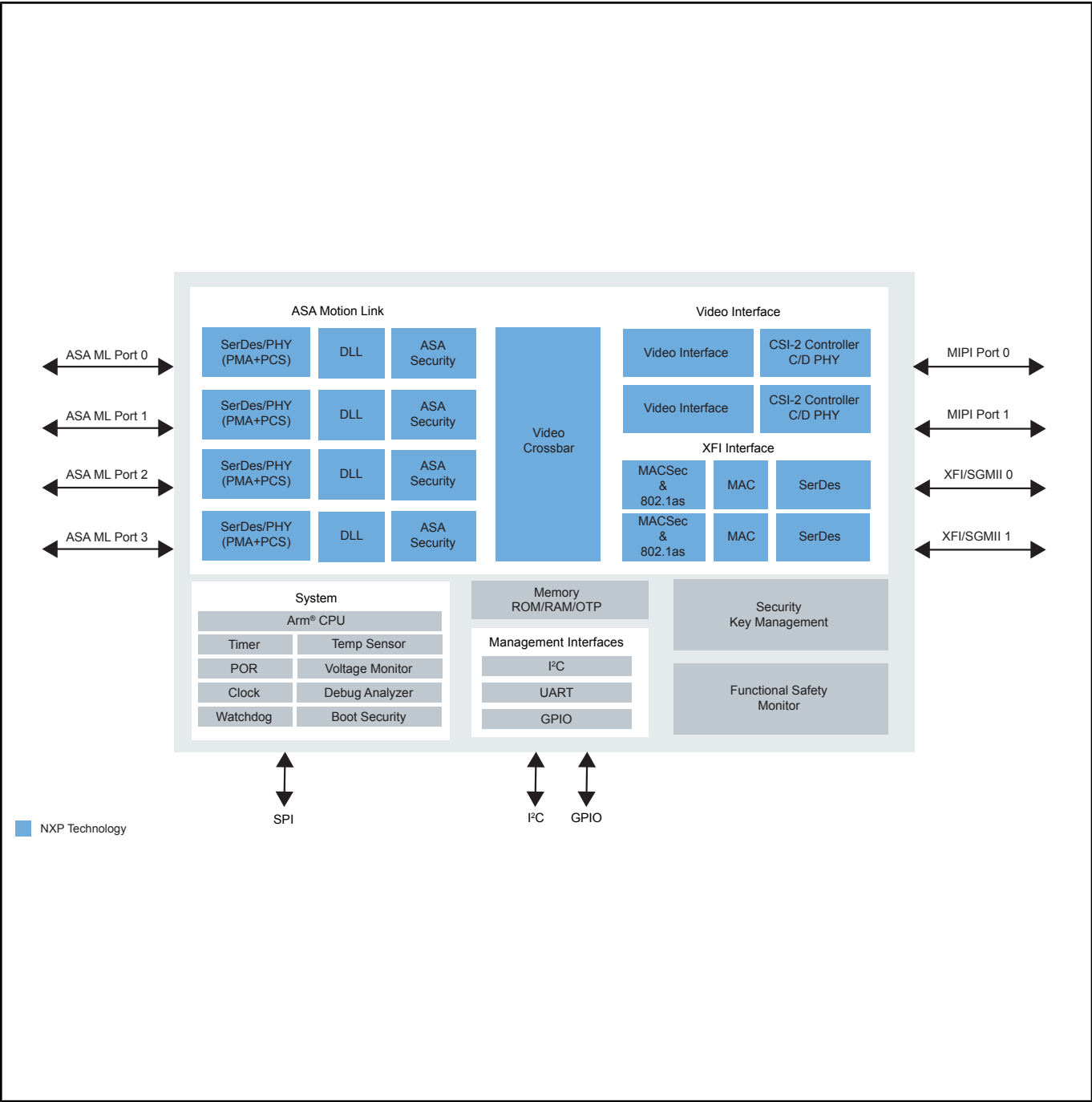
AVL140XX

Last Updated: Dec 5, 2025

The AVL140XX family of quad-port serializer/deserializer (SerDes) provides an Automotive SerDes Alliance (ASA) Motion Link–compliant solution to securely distribute video and sensor data within Automotive Advanced Driver Assistance Systems (ADAS) systems.

A pair of AVL140XX devices supports multi#gigabit connections for high-resolution camera, lidar and radar sensors used in safety-critical ADAS and autonomous driving systems. It does so by converting the high-speed video from the Mobile Industry Processor Interface Alliance (MIPI) Camera Serial Interface-2 (CSI-2) interface and data from the control interfaces to an ASA Motion Link interface and vice versa.

Each of the four ASA ports on these devices can be configured in firmware either as a transmitter (serializer mode) or a receiver (deserializer mode), enabling several use cases with a single SerDes device. Each ASA port on the AVL140XX chipsets can support line rates from 2 Gbit/s - 16 Gbit/s (Speed Grades 1/2/3/4/5) over a single low-cost 50 Ω Coax or 100 Ω shielded twisted pair (STP) cable. The ASA Motion Link physical layer (PHY) is based on time-division duplexing (TDD), resulting in lower power consumption, implementation complexity and solution size.

The AVL140XX family of SerDes devices supports the complete ASA security framework, including standardized interoperable link-based security as well as a 3-level Key Exchange Entity to ensure device/data authentication and protection across the automotive supply chain. These SerDes devices also include a suite of functional safety and diagnostic features that provide end-to-end link monitoring and reliability for safety-critical ADAS and autonomous driving applications.

Quad-Port SerDes for ASA Motion Link Block Diagram

ASA Motion Link

ASA ML Port 0

ASA ML Port 1

ASA ML Port 2

ASA ML Port 3

SerDes/PHY (PMA+PCS)	DLL	ASA Security
SerDes/PHY (PMA+PCS)	DLL	ASA Security
SerDes/PHY (PMA+PCS)	DLL	ASA Security
SerDes/PHY (PMA+PCS)	DLL	ASA Security

Video Crossbar

Video Interface

| Video Interface | CSI-2 Controller C/D PHY |
| Video Interface | CSI-2 Controller C/D PHY |

MIPI Port 0

MIPI Port 1

XFI Interface

| MACSec & 802.1as | MAC | SerDes |
| MACSec & 802.1as | MAC | SerDes |

XFI/SGMII 0

XFI/SGMII 1

System

Arm® CPU

Timer	Temp Sensor
POR	Voltage Monitor
Clock	Debug Analyzer
Watchdog	Boot Security

SPI

Memory
ROM/RAM/OTP

Management Interfaces

I²C

UART

GPIO

I²C   GPIO

Security
Key Management

Functional Safety
Monitor

NXP Technology

View additional information for Quad-Port SerDes for ASA Motion Link.