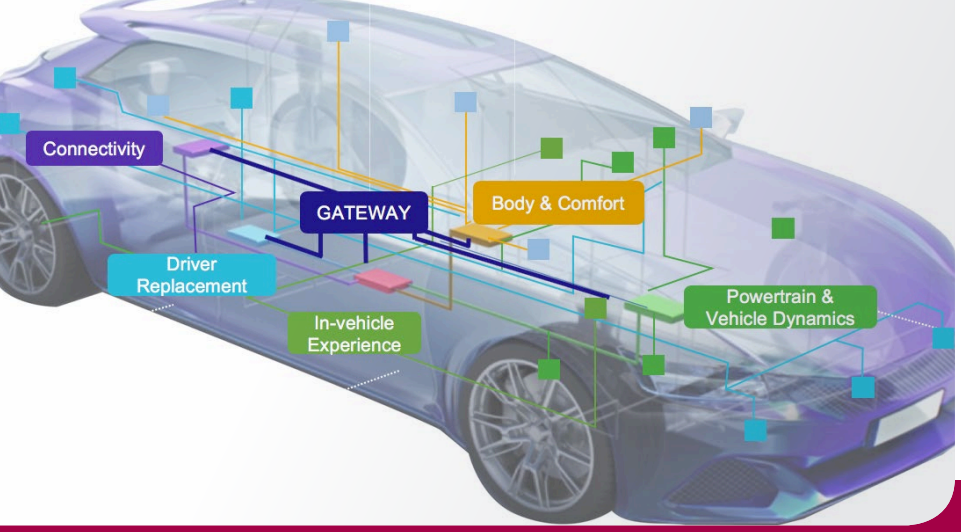


Enabling secure, connected vehicles and service-oriented gateways

MPC-LS Vehicle Network Processing (VNP) Reference Design Board (RDB)

The MPC-LS-VNP-RDB is an optimized, automotive reference design board for vehicle network processing applications. Used by carmakers, suppliers, and software ecosystem partners, it helps accelerate development of next-generation service-oriented gateways.

OVERVIEW

High-performance service-oriented gateways enable the automotive industry to unlock the value of connected vehicle data and offer new vehicle services and edge data analytics. The MPC-LS Vehicle Network Processing (VNP) reference design board (RDB) combines automotive and enterprise networking technology to offer high levels of compute, real-time network performance, multi-Gigabit packet acceleration, and security for new service-oriented gateways.

REFERENCE SOLUTION

The MPC-LS VNP reference design board combines standards-based, open-source software together with feature-rich hardware, to establish a common, open framework for secure service delivery within a vehicle network.

This reference design board includes multiple production NXP® components, including a functionally safe microcontroller supporting traditional automotive interfaces (CAN, LIN and FlexRay) and Ethernet, a high-performance (~15k DMIPS) applications processor with multiple high-speed interface ports (up to 10 Gigabit Ethernet, PCIe® Gen 2.0, and USB 3.0), an automotive Ethernet switch and PHYs, and power management IC (PMIC).

The reference design board is in a gateway ECU form factor with a thermal management enclosure. BOM and schematics for the 6-layer printed circuit board are available to accelerate customer hardware development.

MPC-LS VEHICLE NETWORK PROCESSING REFERENCE DESIGN BOARD

Ordering Part Number: MPC-LS-VNP-RDB

KEY FEATURES*

MPC5748G Automotive Microcontroller

- AEC-Q100, Grade 2
- ISO 26262 ASIL B Functional Safety
- Processors
  - (2 x) Power Architecture® e200z4 @ 160 MHz
  - (1 x) Power Architecture e200z2 @ 80 MHz
- 6 MB embedded flash, 768 KB SRAM
- 8 x CAN FD + 4 (Non FD) w/SPI expansion
- 100 Mbps Ethernet, AVB
- 2 x FlexRay, 4x LIN
- Embedded hardware security module (HSM)
  - Supports SHE and EVITA standards

LS1043A Microprocessor

- (4 x) Arm® Cortex®-A53 64-bit processors
  - Up to 1.4 GHz
- Gigabit Ethernet data path acceleration
- 10 Gbit/s crypto acceleration
- 2 GB DDR3L @ up to 1.6 GT/s
- 1 GB NAND flash
- 64 MB Serial NOR flash
- 8 GB eMMC
- 3 x 1 Gbps + 1x 1/2.5/10 Gbps Ethernet, IEEE® 1588v2
- PCIe x1 Gen2 for NVMe SSD module
- 2 x USB 3.0
- AEC-Q100, Grade 3 (Grade 2 available)

SJA1105 Automotive Ethernet Switch

- AEC-Q100, Grade 2
- SJA1105S: 3 x 100 Mbps + 2 x 1 Gbps ports
- 1024-entry MAC address learning table
- Hardware support for IEEE 802.1AS and IEEE 802.1Qav for AVB networks

Power Management IC

- PF8200 PMIC
- Configurable and programmable outputs to power the core processor, memory and a wide range of peripherals

Software

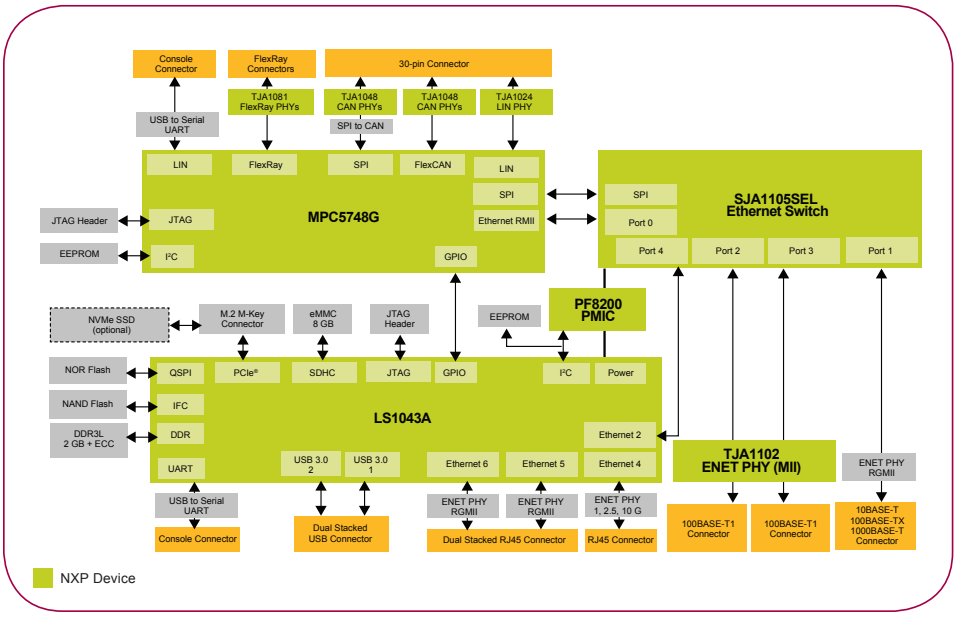
- MPC5748G: AUTOSAR® OS, MCAL, Bare-metal
- LS1043A: Linux® (Yocto 2.5), fast path packet forwarding
- Inter-platform communications framework (IPCF)
- Demo applications
  - Datalogging to cloud for vehicle health
  - Ethernet packet acceleration
  - Software-Defined Networking (SDN)
- Certification: FCC Class B and CE

MPC-LS-VNP-RDB CONNECTORS

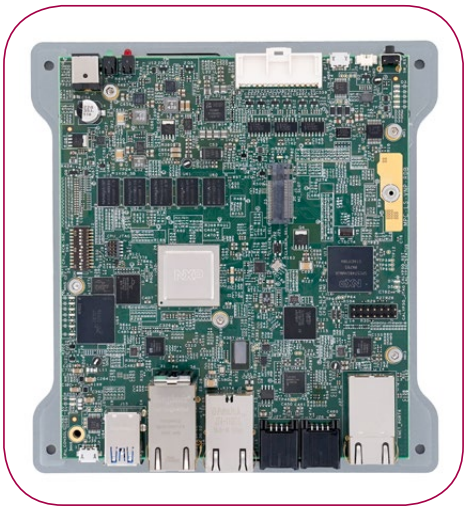
- MPC5748G Console
- USB 3.0 (x2)
- 10GBASE-T (x1)
- 1000BASE-TX (x3)
- Automotive 100BASE-T1 (x2)
- FlexRay (x2)
- LS1043A Console
- CAN/CAN FD (x12)
- LIN (x3)
- +12VDC Power Input

*Features available in RDB. Each device supports additional features.

MPC-LS-VNP-RDB LOGICAL BLOCK DIAGRAM



MPC-LS-VNP-RDB BOARD



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