

# S32G VEHICLE NETWORK PROCESSING REFERENCE DESIGN BOARD 3 (S32G-VNP-RDB3)



The S32G-VNP-RDB3 is a compact, highly optimized and integrated reference design board featuring the S32G3 vehicle network processor. With its high-performance computing capacity and rich input/output (I/O), this board can provide reference for a variety of automotive applications such as service-oriented gateways, vehicle central compute, domain controllers, safety processors and data loggers. Carmakers, suppliers and software ecosystem partners can directly use the RDB3 to help accelerate development for shorter time-to-market.

## TECHNICAL HIGHLIGHTS

- Supports service-oriented gateway, vehicle compute and domain controller applications
- Hardware Security Engine (HSE), Ethernet Packet Forwarding Engine (PFE), and Low Latency Communications Engine (LLCE)
- Multiple network interfaces with 18 CAN/CAN FD and 12 Ethernet ports
- Supports low-power mode and multiple wake-up sources
- Strengthens safety design with power management

## FEATURES

- Hardware key features:
  - 1x NOR flash (64 MB) 1x eMMC (32 GB), 1x SD card slot
  - 1x LPDDR4 (4 GB)
  - 6x 100BASE-T1 Ethernet
  - 4x 1000BASE-T Ethernet
  - 1x 1G/2.5GBASE-T Ethernet
  - 1x 100BASE-TX Ethernet
  - 16x LLCE\_CAN, 2x FlexCAN
  - 4x LLCE\_LIN, 1x LINFlexD
  - 1x FlexRay™

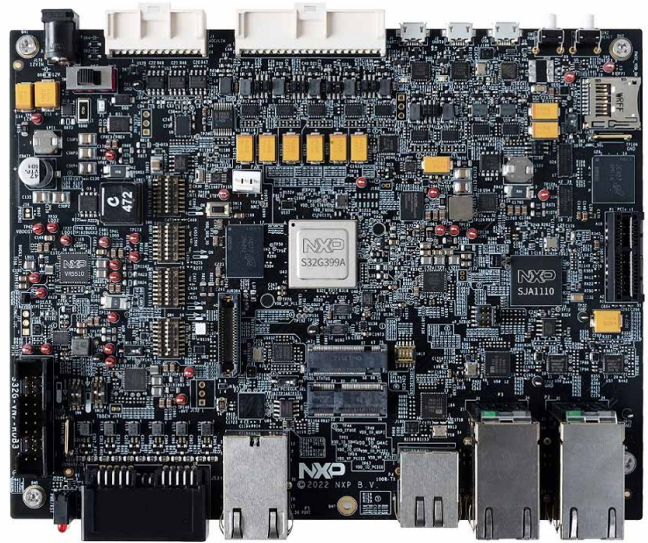
- 1x USB 2.0
- 5x ADC
- 1x DSPI, 1x I<sup>2</sup>C, 1x WKUP pin
- 1x PCIe X1
- 1x M.2 M-key, 1x M.2 E-key
- On-board chip functional safety features:
  - ASIL D S32G399A vehicle network processor
  - ASIL D VR5510 power management IC
  - ASIL D PF53 core supply regulator
  - ASIL B SJA1110A Ethernet switch

## S32G399A PROCESSOR SPECIFICATIONS

Core	4x Arm® Cortex®-M7 LS pairs and 8x Cortex-A53 cores (opt. cluster LS)		
Memory	20 MB system RAM, 32 KB standby RAM, DRAM I/F, QuadSPI I/F, eMMC/SDXC		
Communications	FlexCAN, LINflexD, FlexRay, DSPI, I <sup>2</sup> C, PCIe® 3.0, USB 2.0		
Ethernet Networks	1-Gbit GMAC, 3x 2.5-Gbit EMAC (PFE_MAC0, PFE_MAC1, PFE_MAC2),		
Security	HSE, XRDC, eFuse, Lifecycle	Safety	2x Safe DMA, FCCU and LBIST/MBIST
ADC/Timers	12-bit SAR ADC, System timer module, software watchdog timer, periodic interrupt timer, FlexTimer, real-time clock		

## ENABLEMENT TOOLS

- NXP S32 Design Studio, Yocto, EB Tresos™
- Linux®, FreeRTOS™, Real-Time Drivers (RTD)
- NXP S32G Vehicle Integration Platform (GoldVIP)
- Compiler: Green Hills®, GCC
- Debugger: Lauterbach, NXP Debug Probe



## SYSTEM BLOCK DIAGRAM

