NXP

| SECURE CONNECTIONS
  FOR A SMARTER WORLD |

S32G3 VEHICLE NETWORK PROCESSING REFERENCE DESIGN BOARD (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 Communication 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

o Hardware key features:

- 1 x NOR flash (64 MB) 1 x eMMC (32 GB), 1x SD card slot

- 1 x LPDDR4 (4 GB)

- 6 x 100BASE-T1 Ethernet

- 4 x 1000BASE-T Ethernet

- 1 x 1G/2.5GBASE-T Ethernet

- 1 x 100BASE-TX Ethernet

- 16 x LLCE_CAN, 2 x FlexCAN

- 4 x LLCE_LIN, 1 x LINFlexD

- 1 x FlexRay

- 1 x USB 2.0

- 5 x ADC

- 1 x DSPI, 1 x I2C, 1 x WKUP pin

- 1 x PCIe X1

- 1 x M.2 M-key, 1x M.2 E-key

o On-board chip functional safety features:

- ASIL D S32G399A vehicle network processor

- ASIL D VR5510 power management IC

- ASIL D PF53 core supply regulator
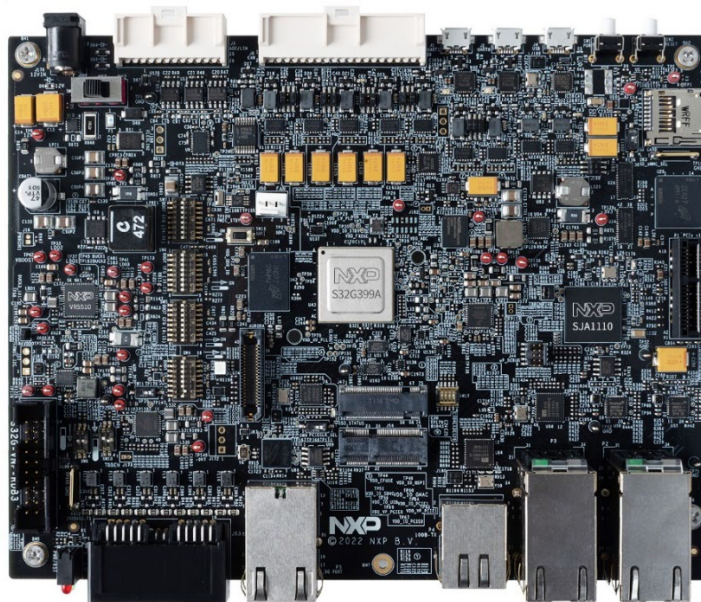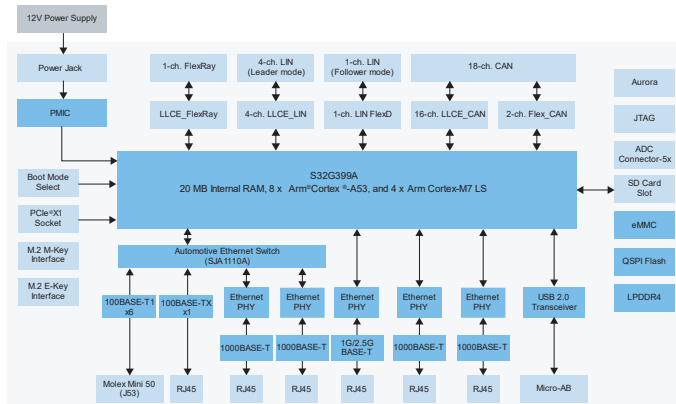
- ASIL B SJA1110A Ethernet switch

ENABLEMENT TOOLS

o NXP S32 Design Studio, Yocto, EB Tresos™

o Linux®, FreeRTOS™, Real-Time Drivers (RTD)

o NXP S32G GoldVIP (Vehicle Integration Platform)

o Compiler: Green Hills®, gcc

o Debugger: Lauterbach, NXP Debug Probe

NXP S32G399A PROCESSOR SPECIFICATIONS

Core	4 x Arm® Cortex®-M7 LS pairs and 8 x 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, I2C, 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	2 x 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		

SYSTEM BLOCK DIAGRAM

Document Number REV 0