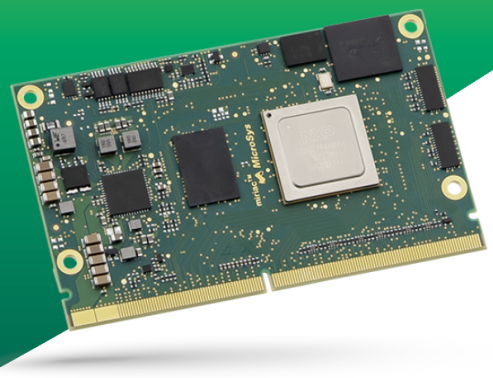
MicroSys
Creating Embedded Systems

miriac® MPX-S32G274A

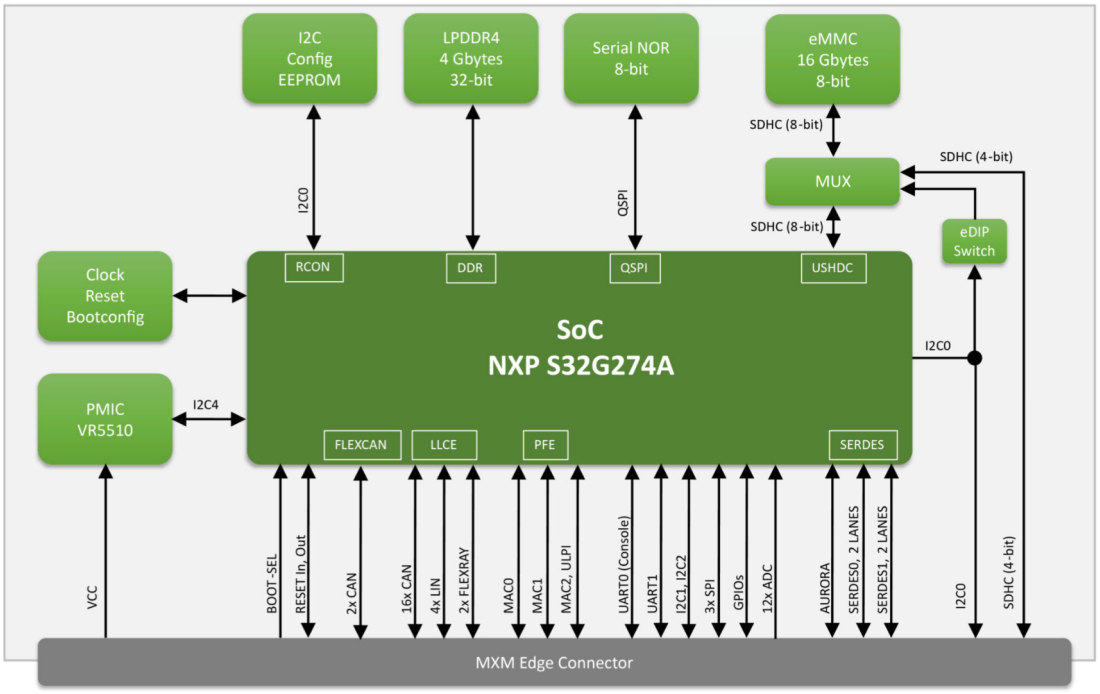
The world's first System-on-Modules based on NXP® S32G vehicle network processors are equipped with the NXP® S32G2 processor. They offer more than 10 times the real-time performance and networking throughput of NXP's previous vehicle network devices and address the next generation of fail-safe and cyber-secure connected mobility and controller applications.

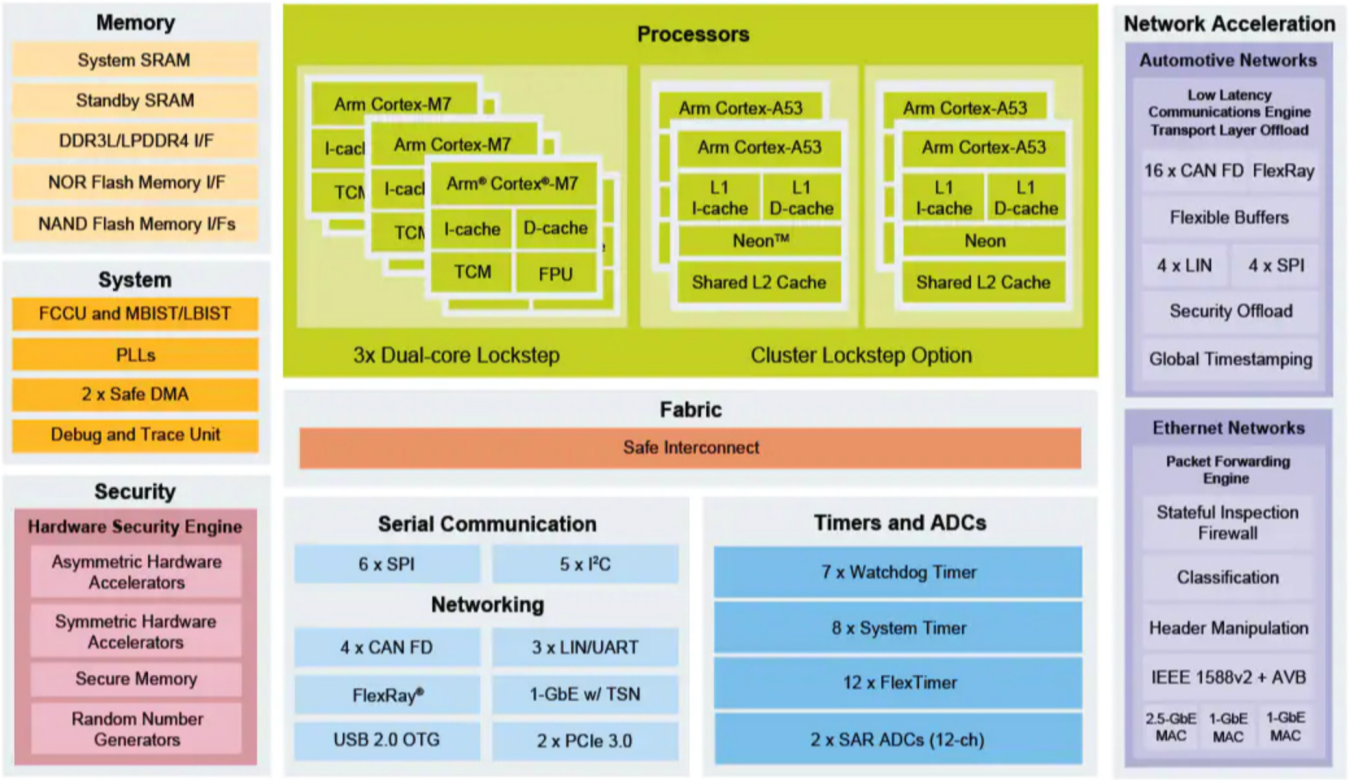
- 4 Arm® Cortex®-A53 cores and 3 Arm® Cortex®-M7 cores including lockstep support
- Comprehensive connectivity including 18x CAN FD + dedicated protocol engine, furthermore FlexRay, LIN, SPI, Ethernet with TSN, PCI Express®, USB and I²C
- Hardware Security Engine for secure boot and accelerated security services



Vehicle gateway platform with massive native CAN support

Since the MPX-S32G274A System-on-Modules offer multiple native CAN interfaces as well as comprehensive FlexRay, LIN and Ethernet support target markets can be found in real-time connected vehicles, mobile machinery and automotive test and measurement equipment. Further application areas include data loggers, edge gateways and fail-safe programmable logic controllers (PLCs).


I2C
Config
EEPROM
LPDDR4
4 Gbytes
32-bit
Serial NOR
8-bit
eMMC
16 Gbytes
8-bit
SDHC (8-bit)
MUX
SDHC (4-bit)
SDHC (8-bit)
eDIP
Switch
I2C0
QSPI
Clock
Reset
Bootconfig
RCON
DDR
QSPI
USHDC
SoC
NXP S32G274A
I2C0
PMIC
VR5510
I2C4
FLEXCAN
LLCE
PFE
SERDES
VCC
BOOT-SEL
RESET In, Out
2x CAN
16x CAN
4x LIN
2x FLEXRAY
MAC0
MAC1
MAC2, ULPI
UART0 (Console)
UART1
I2C1, I2C2
3x SPI
GPIOs
12x ADC
AURORA
SERDES0, 2 LANES
SERDES1, 2 LANES
I2C0
SDHC (4-bit)
MXM Edge Connector


Memory
System SRAM
Standby SRAM
DDR3L/LPDDR4 I/F
NOR Flash Memory I/F
NAND Flash Memory I/Fs
System
FCCU and MBIST/LBIST
PLLs
2 x Safe DMA
Debug and Trace Unit
Security
Hardware Security Engine
Asymmetric Hardware Accelerators
Symmetric Hardware Accelerators
Secure Memory
Random Number Generators
Processors
Arm Cortex-M7
Arm® Cortex®-M7
I-cache
D-cache
TCM
FPU
Arm Cortex-A53
L1 I-cache
L1 D-cache
Neon™
Neon
Shared L2 Cache
3x Dual-core Lockstep
Cluster Lockstep Option
Fabric
Safe Interconnect
Serial Communication
6 x SPI
5 x I²C
Networking
4 x CAN FD
3 x LIN/UART
FlexRay®
1-GbE w/ TSN
USB 2.0 OTG
2 x PCIe 3.0
Timers and ADCs
7 x Watchdog Timer
8 x System Timer
12 x FlexTimer
2 x SAR ADCs (12-ch)
Network Acceleration
Automotive Networks
Low Latency Communications Engine Transport Layer Offload
16 x CAN FD FlexRay
Flexible Buffers
4 x LIN
4 x SPI
Security Offload
Global Timestamping
Ethernet Networks
Packet Forwarding Engine
Stateful Inspection Firewall
Classification
Header Manipulation
IEEE 1588v2 + AVB
2.5-GbE MAC
1-GbE MAC
1-GbE MAC

Features

CPU	
Architecture	Arm® Cortex®-A53
Processor	NXP® S32G274A CPU: 4 Arm® Cortex®-A53 64-bit cores at 1Ghz, 3 Arm® Cortex® M7 dual-cores at 400Mhz
DRAM	4 GB 32-bit soldered LPDDR4 RAM at 3200MT/s
Memory	
Flash	64 MB QSPI Flash
Flash Card	Interface for external SD card multiplexed with eMMC
Boot Flash	Boot select: XSPI, eMMC or external SD card
eMMC	up to 32 GB
Ethernet	
2.5 Gbps	1x (upt to)
1 Gbps	4x (upt to)
High Speed IO	
SerDes lanes	4x
ULPI-USB	1x
PCIe	Yes
IO	
FlexSPI	4x
UART	2x
CAN FD	18x
FlexRay	2x
LIN	4x
I2C	4x
Analog Inputs (ADCs)	12x
GPIOs	Yes
JTAG Debug Interface	Yes
Aurora Interface	Yes

Security / Safety	
Security	Hardware Security Engine (HSE) for secure boot and accelerated security services
Safety	• Advanced hardware and software for safety applications • Optional: AEC-Q100 Grade 3 (or I): -40°C to 85°C

Operating Condition	
Power Supply Voltage	Single DC power input (+9 V to +36 V)
Optional Power Supply Voltage	Single DC power input (+6 V to +36 V)
Typical Power Consumption	3,5 W
RTC	RV-3028-C7
Temperature	0 °C to 70 °C
Optional Extended Temperature	-40 °C to +85 °C

Mechanical	
Dimensions	82 mm x 50 mm
Connector Type	MXM3.0

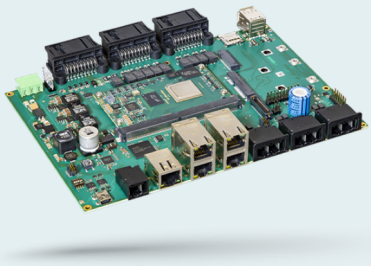
Software / Additional	
Software Support	• Linux • VxWorks (on request) • Others (on request)
Additional	• All I/O pins available on 314-pin edge connector • Low Latency Communication Engine (LLCE) for vehicle networks acceleration • Packet Forwarding Engine (PFE) for Ethernet networks acceleration • Dev Kit available for immediate start, includes power supply, cables. Linux on SD card

Our standard product versions offer what we consider to be the optimum configuration in terms of performance, price, usage and TDP. The product features lists specify the maximum range of functions per interface. However, not all interfaces or functions are always available in parallel. Flexible SERDES multiplexing is one of the reasons for this. In addition, we provide multiple memory expansion options and are also happy to accommodate specific customer wishes. So do not hesitate to contact us directly to discuss your desired configuration.

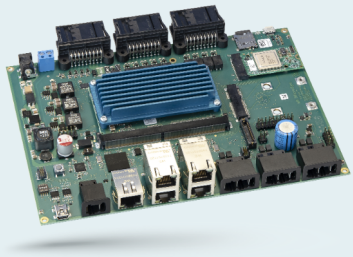
Order Info

Name	Code	Description	Status
miriac® MPX-S32G274A	858102	4 Arm® Cortex®-A53, 1.0 GHz, 4 GB DDR4L w ECC, 64 MB NOR Flash, 16 GB eMMC, 0 °C to 70 °C, w SEC	active
miriac® MPX-S32G274A	858103	4 Arm® Cortex®-A53, 1.0 GHz, 4 GB DDR4L w ECC, 64 MB NOR Flash, 32 GB eMMC, -40 °C to 85 °C, w SEC	active
Development Kit basic for miriac® MPX-S32G274A	8590	• miriac® MPX-S32G274A • CRX-S32G • incl. BSP and accessories	active

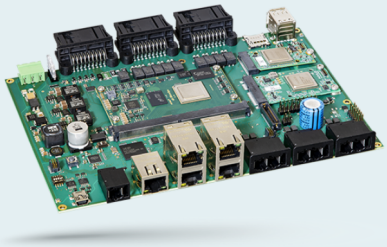
Take a look at related products



miriac® SBC-S32G274A



miriac® AIP-S32G274A



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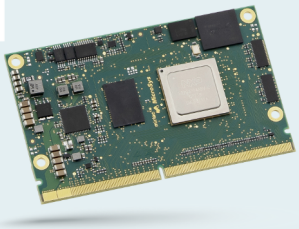

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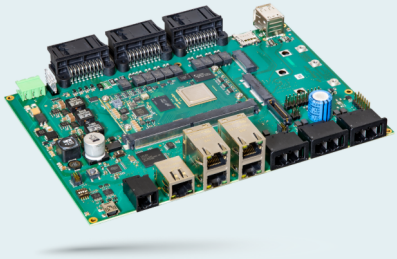

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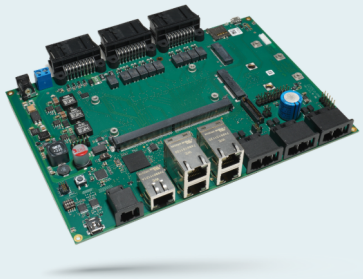

CRX-S32G

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