

Arm[®] Architecture **miriac[®] MPX-LS1028A**

Compact SoM with TSN, security engine and HMI



System-On-Modules at a glance

- Two 64-bit Arm[®] Cortex[®]-A72 cores
- TSN based Real Time Ethernet communication
- Security engine
- Integrated graphics unit for HMI functions
- Small, highly integrated SoM, a perfect fit for IIoT devices and nodes





) Product Description

It combines high compute power by two powerful 64-bit Arm[®] Cortex[®]-A72 cores with TSN based Real Time Ethernet communication, a security engine and an integrated graphic unit for HMI functions.

Specifications

CPU	
Architecture Processor DRAM	Arm® Cortex®-A72 NXP® QorIQ® LS1028A CPU: 2 Arm® Cortex®-A72 64-bit cores at up to 1.5 GHz core frequency Up to 4 GB 32-bit DDR4 ECC RAM 1600 MT/s
Memory	
Flash Flash Card Boot Flash eMMC EEPROM	Up to 256 MB Serial NOR Flash & up to 4 GB Serial NAND Flash 2x SDHC SDHC, emmC, XSPI, NAND Flash 8-bit Yes
Graphic	
Graphics Controller Display	Yes Display Port 1.3 and eDP1.4
Ethernet	
10GbE RGMII SGMII QSGMII TSN / IEEE 1588	1x SXGMII / QXGMII 1x 4x 1.25 Gbps 1x 5 Gbs Yes (4 Port TSN Switch on board) IEEE 802.1
High Speed IO	
SerDes lanes USB 3.0 PCIe SATA	4x at 10 Gbps 2x 4x PCIe Gen3 1x GEN3
10	
Flex SPI UART CAN FD I ² C Audio GPIOs JTAG Debug Interface	3x 2x 2x 8x Yes (SAI) Yes
Security / Safety	
Security	Trust Architecture
Operating Condition	
Power Supply Voltage Typical Power Consumption Power Management RTC Temperature Optional Extended Temperature:	Single 5 V DC input supply voltage range 5 W Yes PCF85063 0 °C to 70 °C -40 °C to +85 °C

Specifications

Mechanical

Dimensions

45 mm x 62 mm

Connector Type	230 pin 0.5 mm pitch
Software / Additional	
Software Support	LinuxVxWorks (on request)Others (on request)
Additional	Graphics processing unit: Supports Geometry rate 100 Mtri/sec, Pixel rate 650 Mpixel/sec, GFLOPS(32-bit high precision) = 10.4 Supports OpenGL ES 3.0, 2.0, 1.1 Supports OpenCL 1.1, 1.2 Compatible variants available with QorlQ® LS1018A Temperature sensor Dev Kit available for immediate start, includes power supply, cables

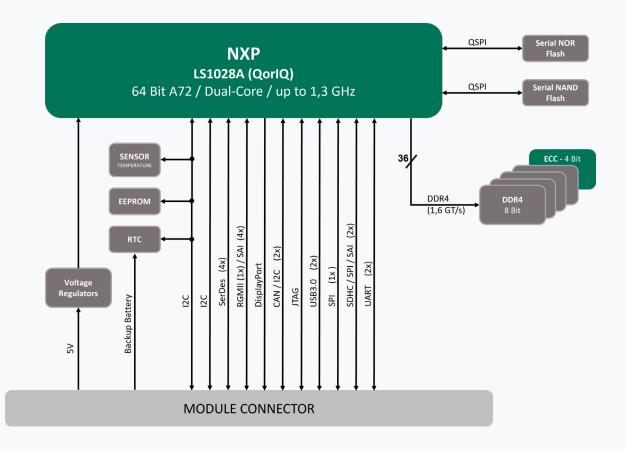
Linux on SD card

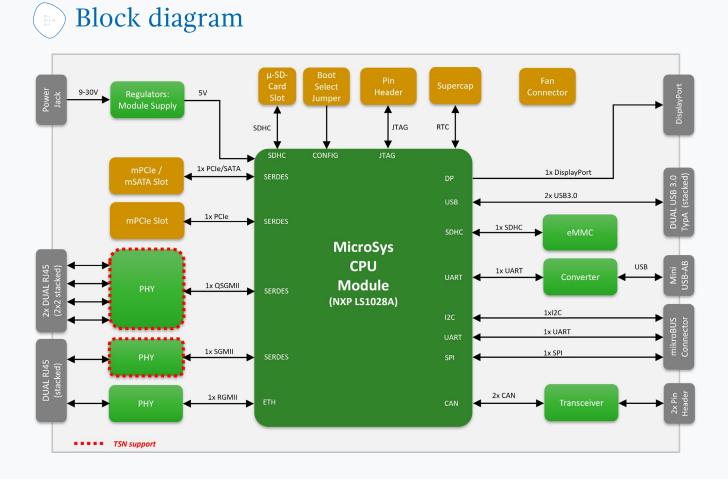
General note:

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.

Block diagram

Security	Core Complex				Memory Controller			
Security Engine	The second second second							
Arm TrustZone®	Arm®	Arm® Cortex–A72						
Secure Boot	Cortex-A72				16/3	16/32-bit DDR3L/4		
Power Management	48 KB L1-I 32 KB L1-D (w/ ECC)	48 KB L1-I 32 KB L1-D (w/ ECC)			(w/ECC))	
Standard Interfaces	1 MB L2 Cache (w/ECC)							
2x SD/SDIO/eMMC								
3x SPI	Coherent Interconnect (CCI-400)							
2x UART, 6x LPUART								
8x I2C, GPIO	Accelerators and Me	High S	peed	I Interfaces	terfaces Network			
6x SAI, 2x CAN-FD	256KB On-Chip SRAM				SATA 3	TSN Switch	2.5 GbE	
FlexSPI			PCle 3.0		SAIAS		2.5 GbE	
8x Flex Timer					USB 3.0		2.5 GbE	
Multimedia Interfaces	3D GPU				w/PHY	Ĥ	2.5 GbE	
EDP/DP PHY			PCIe 3.0)	USB 3.0	2.5 TSN GbE		
4K LCD Controller					w/PHY	1 GbE		





Order Information

Name	Code	Description	Status
miriac® MPX-LS1028A	857001	2 Arm® Cortex®-A72, 1.3 GHz, 4 GB DDR4 w ECC, 16 MB NOR Flash, 512 MB Nand Flash, 0 °C to 70 °C, w SEC	active
Development Kit basic for miriac® MPX-LS1028A	857602	2 Arm® Cortex®-A72, 1.3 GHz, 4 GB DDR4 w ECC, 16 MB NOR Flash, 512 MB Nand Flash, 0 °C to 70 °C, w SEC, Carrier Board, Linux BSB, accessories	active

Related Products

Name	Code	Description	Status
miriac [®] SBC-LS1028A-TSN		Single Board Computer based on NXP® QorIQ® LS1028A CPU	active



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