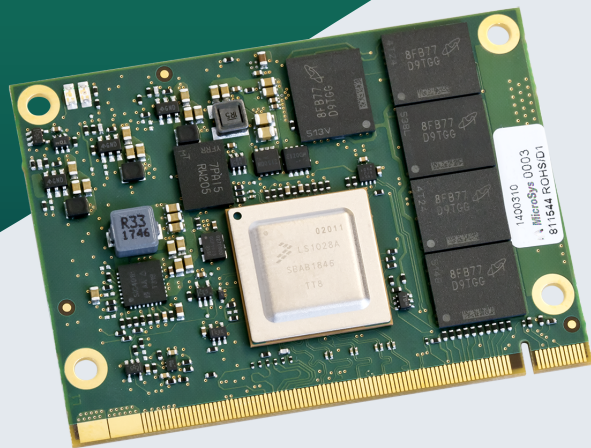


SoMs Arm® Architecture

# miriac® MPX-LS1028A

Compact SoM with TSN, security engine and HMI



## Highlights

- 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.



## Features

| CPU                        |                                                                                          |
|----------------------------|------------------------------------------------------------------------------------------|
| Architecture:              | Arm® Cortex®-A72                                                                         |
| Processor:                 | NXP® QorIQ® LS1028A CPU: 2 Arm® Cortex®-A72 64-bit cores at up to 1.5 GHz core frequency |
| DRAM:                      | Up to 4 GB 32-bit DDR4 ECC RAM 1600 MT/s                                                 |
| Memory                     |                                                                                          |
| Flash:                     | Up to 256 MB Serial NOR Flash & up to 512 MB Serial NAND Flash                           |
| Flash Card:                | 2x SDHC                                                                                  |
| Boot Flash:                | SDHC, eMMC, XSPI, NAND Flash                                                             |
| eMMC:                      | 8-bit                                                                                    |
| EEPROM:                    | Yes                                                                                      |
| Graphic                    |                                                                                          |
| Graphics Controller:       | Yes                                                                                      |
| Display:                   | Display Port 1.3 and eDP1.4                                                              |
| Ethernet                   |                                                                                          |
| 10GbE:                     | 1x SXGMII / QXGMII                                                                       |
| RGMI:                      | 1x                                                                                       |
| SGMI:                      | 4x 1.25 Gbps                                                                             |
| QSGMI:                     | 1x 5 Gbps                                                                                |
| TSN / IEEE 1588:           | Yes (4 Port TSN Switch on board) IEEE 802.1                                              |
| High Speed IO              |                                                                                          |
| SerDes lanes:              | 4x SerDes lanes at 10 Gbps                                                               |
| USB 3.0:                   | 2x                                                                                       |
| PCIe:                      | 4x PCIe Gen3                                                                             |
| SATA:                      | 1x GEN3                                                                                  |
| Security / Safety          |                                                                                          |
| Security:                  | Trust Architecture                                                                       |
| Operating Condition        |                                                                                          |
| Power Supply Voltage:      | Single 5 V DC input supply voltage range                                                 |
| Typical Power Consumption: | 5 W                                                                                      |
| Power Management:          | Yes                                                                                      |
| RTC:                       | PCF85063                                                                                 |

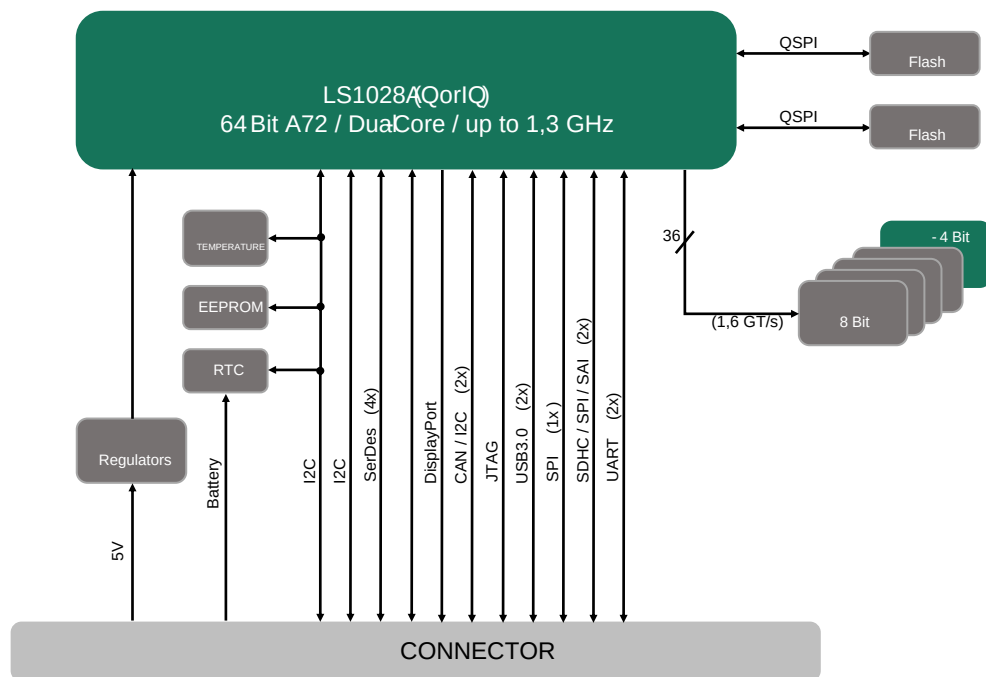
|                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Temperature:                   | 0 °C to 70 °C                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Optional Extended Temperature: | -40 °C to +85 °C                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Mechanical</b>              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Dimensions:                    | 45 mm x 62 mm                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Connector Type:                | 230 pin 0.5 mm pitch                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Software / Additional</b>   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Software Support:              | <ul style="list-style-type: none"> <li>- Linux</li> <li>- VxWorks (on request)</li> <li>- Others (on request)</li> </ul>                                                                                                                                                                                                                                                                                                                                                         |
| Additional:                    | <p>Graphics processing unit:</p> <ul style="list-style-type: none"> <li>- Supports Geometry rate 100 Mtri/sec, Pixel rate 650 Mpixel/sec, GFLOPS(32-bit high precision) = 10.4</li> <li>- Supports OpenGL ES 3.0, 2.0, 1.1</li> <li>- Supports OpenCL 1.1, 1.2</li> <li>- Compatible variants available with QorIQ® LS1018A</li> <li>- Temperature sensor</li> <li>- Dev Kit available for immediate start, includes power supply, cables</li> <li>- Linux on SD card</li> </ul> |

**General Note:**

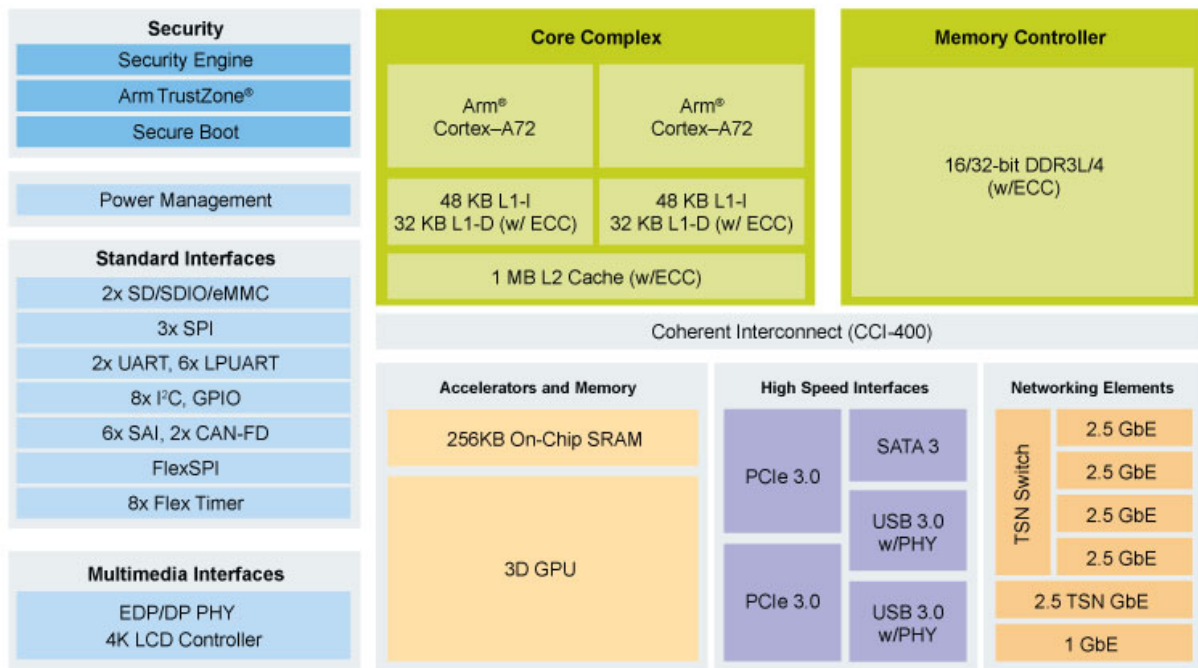
Our standard product versions offer what we consider to be the optimum configuration in terms of performance, price, usage and TDP. The product features lists specify the maximum range of functions per interface. However, not all interfaces or functions are always available in parallel. Flexible SERDES 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 Diagrams



miriac® MPX-LS1028A



NXP® Layerscape LS1028A



## Order Info

| 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                    | Description | Image                                                                               |
|-------------------------|-------------|-------------------------------------------------------------------------------------|
| miriac® SBC-LS1028A-TSN |             |  |

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