



# QorIQ LS1046A and LS1026A Processors

Quad 64-bit core processor with integrated packet processing acceleration and high speed peripherals including 10 Gb Ethernet, PCIe® Gen3, SATA 3.0 and USB 3.0 for a wide range of networking, storage, security and industrial applications.

## TARGET APPLICATIONS

The LS1046A and LS1026A processors are perfectly suited for a range of embedded applications that require high CPU, packet processing performance, and high-speed interfaces such as 10 Gb Ethernet, PCI Express, SATA and USB.

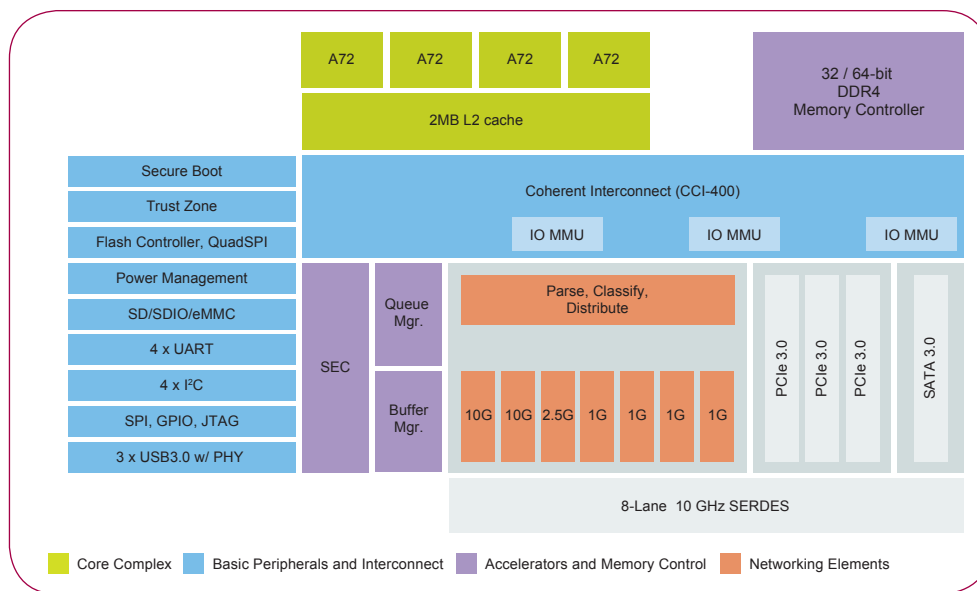
- ▶ Enterprise routers and switches
- ▶ Linecard controllers
- ▶ Network attached storage
- ▶ Security appliances
- ▶ Virtual customer premise equipment (vCPE)
- ▶ Service providers gateways
- ▶ Single board computers

## OVERVIEW

The QorIQ LS1046A processor integrates four 64-bit ARM® Cortex-A72 cores with packet processing acceleration and high-speed peripherals. The impressive performance of more than 32,000 CoreMarks®, paired with 10 Gb Ethernet, PCIe Gen. 3, SATA 3.0, USB 3.0 and QSPI interfaces provides a perfect combination for a range of enterprise and service provider networking, storage, security and industrial applications. The LS1046A and LS1026A are available in a 23 x 23 mm package and they are pin-compatible with the LS1023A, LS1043A and LS1088A SoCs providing unprecedented performance scaling for 64-bit ARM processors, ranging from dual-A53 through octal-A53 to quad-A72 core processors, while maintaining hardware and software compatibility. This flexible scaling enables customers to leverage their existing software and reuse hardware design for faster time-to-market.



## QorIQ LS1046A PROCESSOR BLOCK DIAGRAM



## QorIQ LS1046A FEATURES

| Features                                                                                                                                                                                                                                                                                                                                        | Benefits                                                                                                                                                                                                                                                                                                                                             |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Four ARM® Cortex®-A72 cores<br>2 MB L2 cache                                                                                                                                                                                                                                                                                                    | <ul style="list-style-type: none"> <li>Performance in excess of 32,000 CoreMarks®</li> <li>Total power under 10 W at 1.2 GHz for convection cooled designs</li> </ul>                                                                                                                                                                                |
| Packet processing acceleration                                                                                                                                                                                                                                                                                                                  | <ul style="list-style-type: none"> <li>Efficient packet classification and distribution; hardware work scheduling, shaping, and buffer management, offloading the general purpose processors to concentrate their processing cycles on value added operations.</li> </ul>                                                                            |
| Integrated security engine                                                                                                                                                                                                                                                                                                                      | <ul style="list-style-type: none"> <li>High-speed security protocol processing, including IPsec, SSL, DTLS, and IKE</li> <li>SEC also supports high speed XORing for RAID 5 acceleration</li> </ul>                                                                                                                                                  |
| ARM TrustZone® and NXP QorIQ trust architecture                                                                                                                                                                                                                                                                                                 | <ul style="list-style-type: none"> <li>Secure boot, secure debug, tamper detection, secure key storage</li> </ul>                                                                                                                                                                                                                                    |
| Rich connectivity <ul style="list-style-type: none"> <li>Two 10 Gigabit Ethernet controllers</li> <li>One 2.5 Gigabit Ethernet controller</li> <li>Four 1 Gigabit Ethernet controllers</li> <li>Three PCIe® 3.0 Controllers, x 4, x 2, x 1</li> <li>Three USB 3.0 with integrated PHY</li> <li>SATA 3.0 controller</li> <li>Quad SPI</li> </ul> | <ul style="list-style-type: none"> <li>High versatility that enables support for 802.11ac modules and high bandwidth connectivity for ASICs, 4G/LTE, SATA and low-cost NAND/NOR Flash</li> <li>Multiple USB 3.0 for redundant WAN fail over, storage and configuration</li> <li>Advanced XFI, Quad SGMII for maximum Ethernet flexibility</li> </ul> |
| Support for hardware-based virtualization                                                                                                                                                                                                                                                                                                       | <ul style="list-style-type: none"> <li>Enables partitioning of physical and virtual resources on LS1046A multicore devices for increased system flexibility</li> </ul>                                                                                                                                                                               |

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Document Number:  
QORIQLS1046AFS REV 1 cc