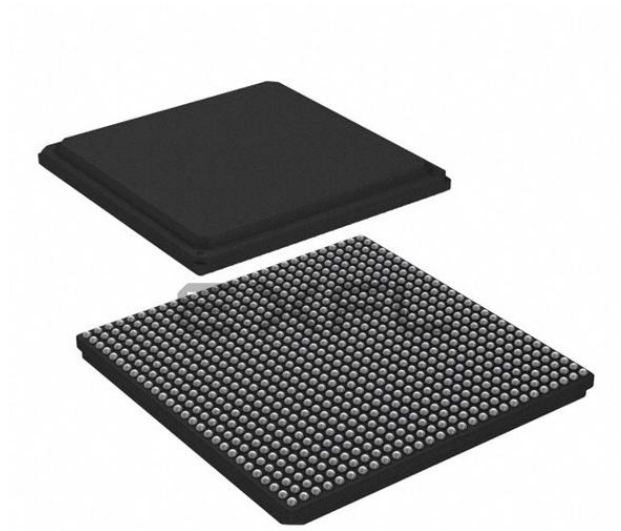


Welcome to E-XFL.COM

Understanding Embedded - Microprocessors

Embedded microprocessors are specialized computing chips designed to perform specific tasks within an embedded system. Unlike general-purpose microprocessors found in personal computers, embedded microprocessors are tailored for dedicated functions within larger systems, offering optimized performance, efficiency, and reliability. These microprocessors are integral to the operation of countless electronic devices, providing the computational power necessary for controlling processes, handling data, and managing communications.

Applications of Embedded - Microprocessors

Embedded microprocessors are utilized across a broad spectrum of applications, making them indispensable in

Details	
Product Status	Active
Core Processor	ARM® Cortex®-A72
Number of Cores/Bus Width	4 Core, 64-Bit
Speed	1.4GHz
Co-Processors/DSP	-
RAM Controllers	DDR4
Graphics Acceleration	-
Display & Interface Controllers	-
Ethernet	10GbE (2), 2.5GbE (1), 1GbE (4)
SATA	SATA 6Gbps (1)
USB	USB 3.0 (3) + PHY
Voltage - I/O	-
Operating Temperature	-40°C ~ 105°C
Security Features	Secure Boot, TrustZone®
Package / Case	780-FBGA, FCBGA
Supplier Device Package	780-FCPBGA (23x23)
Purchase URL	https://www.e-xfl.com/product-detail/nxp-semiconductors/ls1046axe8p1a

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

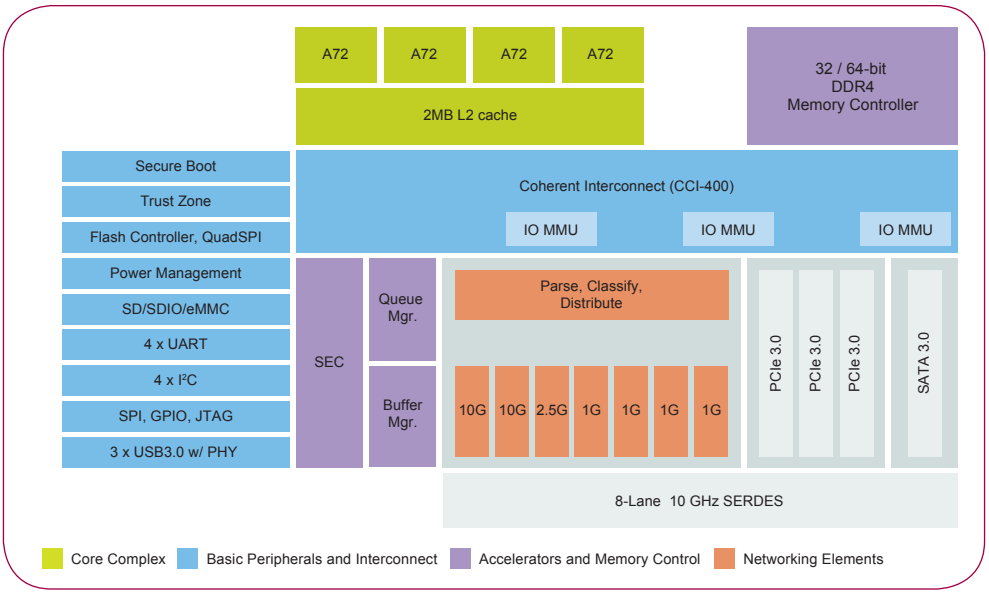
The LS1046A and LS1026A processors are perfectly suited for a range of embedded applications that require high CPU, packet processing performance, and high-speed interfaces such as 10 Gb Ethernet, PCI Express, SATA and USB.

- 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 2 MB L2 cache	• Best-in-class performance, in excess of 32,000 CoreMarks® • Total power under 10 W at 1.2 GHz for convection cooled designs
Packet processing acceleration	• 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.
Integrated security engine	• High-speed security protocol processing, including IPsec, SSL, DTLS, and IKE • SEC also supports high speed XORing for RAID 5 acceleration
ARM TrustZone® and NXP QorIQ trust architecture	• Secure boot, secure debug, tamper detection, secure key storage
Rich connectivity • Two 10 Gigabit Ethernet controllers • One 2.5 Gigabit Ethernet controller • Four 1 Gigabit Ethernet controllers • Three PCIe® 3.0 Controllers, x 4, x 2, x 1 • Three USB 3.0 with integrated PHY • SATA 3.0 controller • Quad SPI	• High versatility that enables support for 802.11ac modules and high bandwidth connectivity for ASICs, 4G/LTE, SATA and low-cost NAND/NOR Flash • Multiple USB 3.0 for redundant WAN fail over, storage and configuration • Advanced XFI, Quad SGMII for maximum Ethernet flexibility
Support for hardware-based virtualization	• Enables partitioning of physical and virtual resources on LS1046A multicore devices for increased system flexibility

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