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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	Obsolete
Core Processor	ARM® Cortex®-A9
Number of Cores/Bus Width	2 Core, 32-Bit
Speed	1.2GHz
Co-Processors/DSP	-
RAM Controllers	DDR3
Graphics Acceleration	-
Display & Interface Controllers	-
Ethernet	GbE (3)
SATA	SATA 3Gbps (2)
USB	USB 2.0 + PHY (1), USB 3.0 + PHY
Voltage - I/O	-
Operating Temperature	0°C ~ 70°C (TA)
Security Features	Secure Boot, TrustZone®
Package / Case	625-BFBGA, FCBGA
Supplier Device Package	625-FCPBGA (21x21)
Purchase URL	https://www.e-xfl.com/product-detail/nxp-semiconductors/ls1024ase7jla



QorIQ LS1 Processor Family

QorIQ LS1024A Communications Processor

Optimized for low-end applications requiring enterprise-class performance in a cost-effective envelope

OVERVIEW

Incorporating dual ARM® Cortex®-A7 cores with ECC protection running up to 1.0 GHz, the QorIQ LS1020A and LS1022A processors are engineered to deliver outstanding efficiency, delivering over 5,000 CoreMarks® of performance, as well as virtualization support, advanced security features and the broadest array of high-speed interconnects and serial connectivity options ever offered in a sub-3 W processor.

CORE COMPLEX

The QorIQ LS1024A communications processor leverages the energy efficiency of ARM® technology and a low-power design process to achieve the lowest power consumption in its class (<2 W typical at 900 MHz). In order to provide performance scalability and maximum flexibility, the LS1024A communications processor includes dual ARM Cortex®-A9 cores ranging from 650 MHz to 1.2 GHz delivering up to 6000 DMIPS.

TARGET APPLICATIONS

- ▶ High-end VoIP and videoenabled home gateways
- ▶ Small- to mid-sized business (SMB) high-performance security appliances
- ▶ Ethernet-powered 802.11n enterprise access points
- ▶ Consumer networked storage products
- ▶ Secure payment terminals



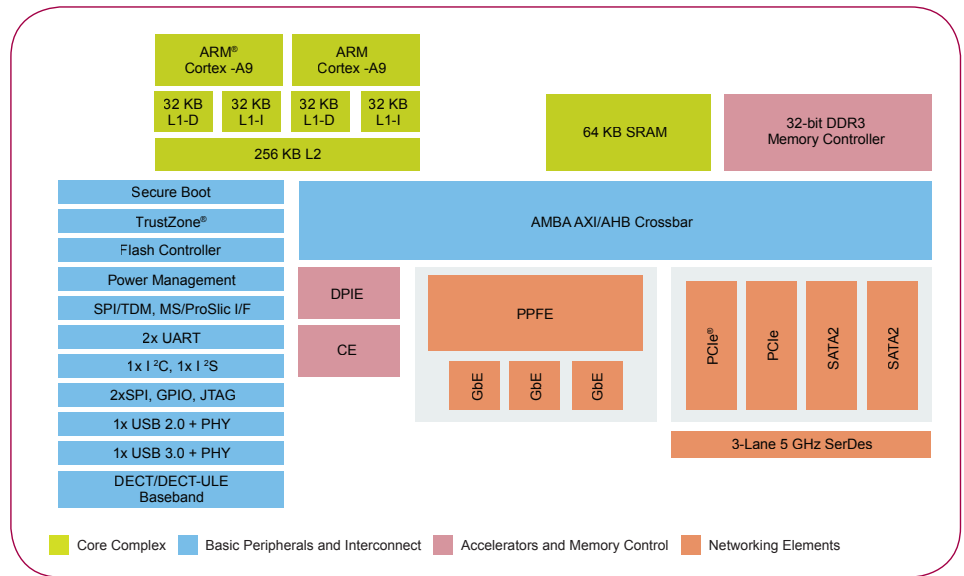
SYSTEM INTERFACES AND NETWORKING

The QorIQ LS1024A communications processor includes I/O interfaces in conjunction with the innovative multilayer bus architecture that allows non-blocking concurrent transactions across all data interfaces, thus minimizing on-chip packet processing latency. The SATA-2 interfaces, along with the powerful processing engine and integrated RAID controller, provide an ideal solution for network attached storage applications.

COMPLETE ENABLEMENT, RICH ECOSYSTEM

Additionally, the rich ecosystem provided by the powerful combination of NXP and ARM delivers turnkey solutions that reduce time to market and lower development costs for VPN/SSL SMB routers, home gateway, consumer network attached storage and enterprise access point manufacturers. The board support package software provides a rich set of power management features to address the energy-saving goals of service providers and product manufacturers worldwide. Finally, the software deliverables for the QorIQ LS1024A dual-core devices are backward compatible with the LS102MA devices.

QorIQ LS1024A PROCESSOR BLOCK DIAGRAM



QorIQ LS1024A PROCESSOR FEATURES

Packet acceleration logic	<ul style="list-style-type: none"> Complete offload of packet handling Up to 6000 DMIPS of ARM Cortex-A9 core and two ARM Neon™ DSPs available for user applications (e.g., OSGI and Android™ apps, video transcoding, etc.)
	<ul style="list-style-type: none"> Hardware security encryption for IPsec and SSL
	<ul style="list-style-type: none"> Deep Packet Inspection engine High-rate packet content screening for policy enforcement, intrusion detection and prevention, antivirus and application-dependent QoS
Dual-core Cortex-A9 core with cache coherence	<ul style="list-style-type: none"> Highly efficient multicore processing with SMP Linux®
Support for voice software	<ul style="list-style-type: none"> VoIP for up to 16 carrier-grade VoIP channels
SATA, USB 3.0 DDR3 and NAND controller interfaces	<ul style="list-style-type: none"> Highly cost-effective design for a wide variety of applications and high-bandwidth access to peripheral devices
Comprehensive set of security features (e.g., Secure boot, ARM TrustZone®, OTP, JTAG blocking)	<ul style="list-style-type: none"> Complies with security requirements of business applications, digital media gateways and financial transaction devices
Integrated DECT and DECTULE baseband processor	<ul style="list-style-type: none"> Cost-efficient design for DECT base stations and home-automation devices
Rich ecosystem of software partners	<ul style="list-style-type: none"> Accelerated time to market or turnkey solutions for designs involving advanced software features (e.g., OSGI, Java™, DLNA, TR-69, etc.)

www.nxp.com/QorIQ

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