freescale QorIQ

QorIQ LS1 Processor Family

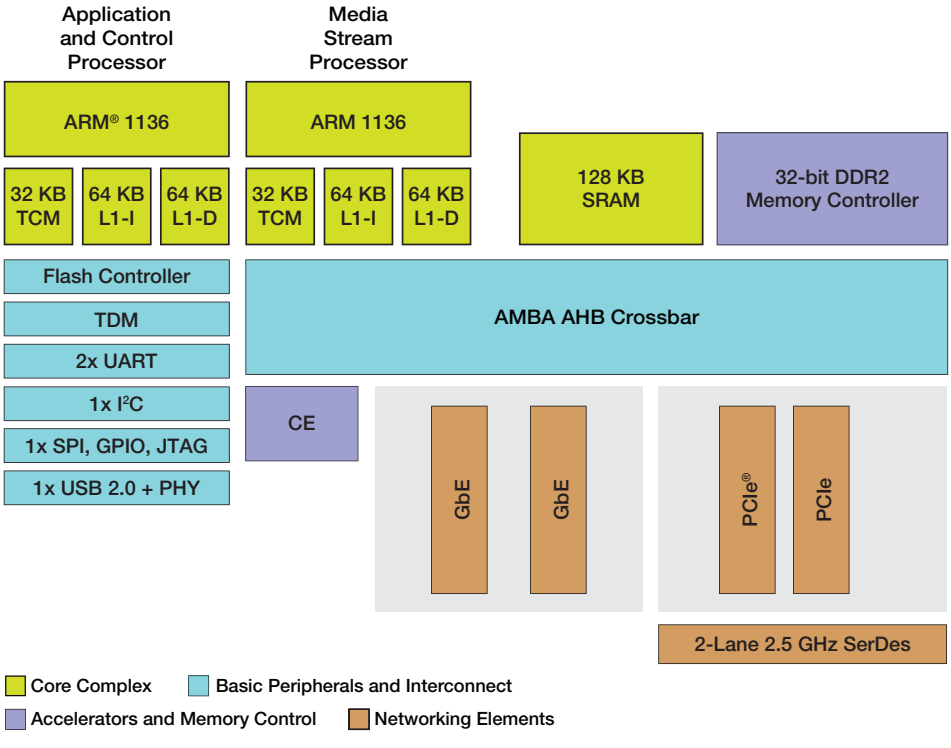
QorIQ LS102MA Communications Processor

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

Overview

The QorIQ LS102MA system-on-chip (SoC) communications processor delivers scalability, superior packet handling capabilities, power and VoIP density, vastly increased VPN and SSL throughput and industry leading quality of service hardware features. The optimized packet and QoS coprocessor provide needed Layer 2/3/4 acceleration with hardware assist for queuing, classification, marking, scheduling and rate limiting. The LS102MA processor allows considerable system cost savings due to the integration of these advanced features that are emerging in the CPE market. The processor features both a dual-core (LS102MA) and single-core (LS101MA) version.

QorIQ LS102MA Processor Block Diagram



Target Applications

- High-end VoIP and video-enabled 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

Core Complex

The QorIQ LS102MA communications processor leverages the energy-efficient ARM® core technology and low-power design process to achieve the lowest power consumption in its class (<1.5 W typical @ 650 MHz). In order to provide performance scalability and maximum flexibility, the LS102MA and LS101MA processors include single and dual ARM11 core devices from 450 MHz to 650 MHz delivering up to 1600 DMIPS.

System Interfaces and Networking

The QorIQ LS102MA communications processor's I/O interfaces in conjunction with an innovative multi-layer bus architecture allows non-blocking concurrent transactions across all data interfaces, thus minimizing on-chip packet processing latency. The SoC provides ethernet, PCIe, TDM, USB 2.0 interfaces for a complete set of data interfaces which deliver a system BOM cost reduction by simplifying and thus minimizing PC board design requirements.

Complete Enablement, Rich Ecosystem

Additionally, the companion 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. The QorIQ LS102MA processor OpenWRT Linux®-based SDK is optimized for both single- and dual-core operation. The software deliverables for QorIQ LS102MA dual-core devices are backward compatible with other devices in the product line. Additionally, the rich ecosystem delivers turnkey solutions that reduce time-to-market and lower development costs for VPN/SSL SMB routers, home gateway and enterprise access point manufacturers.

QorIQ LS102MA Processor Features

Optimized single- and dual-core CPUs	• Single and dual ARM 1136J core architectures available in 450 MHz, 533 MHz, and 650 MHz • Advanced power management functions leveraging ARM's leadership and experience in the handheld market • DSP instruction set extensions (including MAC ops)
Packet & QoS coprocessor	• Layer 2/3/4 acceleration • Hardware assist for queuing, classification, marking, scheduling and rate limiting
High-performance I/O data interfaces	• 2x Ethernet MACs (RGMII; GMII; RMII; or MII) • 2x PCIe lanes root or end point • TDM/PCM interface for glue-less VoIP support • USB 2.0, high speed, host/device with integrated PHY
Integrated carrier-class VoIP solution	• Field hardened voice features • World-class acoustic echo cancellation technology • Narrow and wideband codecs • G.711, G.729, G.722, G.723.1, iLBC, T.38, G.729.1, G.722.2, AMR, and AMR Wideband • Enhanced echo canceller, CID-I/II, VAD/CNG, AGC • 3-way conferencing
Flexible software architecture	• Industry-standard and open SDK and tools • Full software compatible with the LS102MA • Rich third-party ecosystem for turnkey applications

For more information visit freescale.com/QorIQ

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