QorIQ® LS2 processor family

QorIQ LS2088A Reference Design Board (RDB)

The QorIQ LS2088A reference design board is a 1U form-factor tool for evaluation and design of value-added networking applications such as SDN/OpenFlow™ switching, network-function virtualization (NFV) solutions and enterprise routing.

OVERVIEW

The NXP® QorIQ LS2088A processor is designed to enable network intelligence and capitalize on the emerging trends of networking virtualization. The processor goes beyond the traditional multicore approach, where performance is directly proportional to the number of cores instantiated. Instead, the LS2088A processor adds an intelligent software-aware packet processor, a versatile Layer 2 switch and a management complex that simplifies programming and that delivers unprecedented efficiency and new virtualized networks.

The features and capabilities of the QorIQ LS2088A processor enable designs in enterprise SDN switching and routing, cloud data center switching and wireless cell site routing. With up to eight 64-bit ARM® cores, the processor also enables many control-based applications like control plane functions for branch routers, chassis switches, firewalls and WAN optimization controllers.

The QorIQ LS2088A RDB provides a comprehensive platform that enables design and evaluation of the product in all its instantiations: with options for configuring an internal 8-port, L2 switch and the powerful and autonomous 40 Gbit/s advanced packet processor.

The LS2088A reference design has a 1U form factor and will conform to all requirements for sale worldwide, including certifications for FCC Part 15 Class A.

The QorIQ LS2088A RDB comes pre-loaded with NXP's board support package (BSP) based on standard Linux® kernel. The comprehensive BSP also enables some of the SoCs new capabilities:

▸ Linux kernel support for DPAA2 containers.

▸ DPAA2 L2 switch objects

▸ NADK, a Linux user space environment providing functions and interfaces oriented towards packet processing applications

▸ Support for an open architecture parallel processing packet engine

HARDWARE FEATURES:

▸ LS2088A CPU Up to 8 x ARM Cortex®-A72 cores, up to 2.0 GHz core speed

▸ Memory

  – SDRAM supporting dual ranked DIMM slot, 2 x DDR4 uDIMM x72 support for 4 GB memory per slot, 2.1 GT/s data rate, ECC enable

  – Support for an additional dual rank uDIMM slot. One x ½ uDIMM x 40 support for 1 GB memory, 1.6 GT/s data rate

  – 128 MB NOR flash, 8-bit

  – 2 GB SLC NAND flash

▸ PCI Express®

  – One standard slot x 8 PCIe connector to support 1 x 8 PCIe Gen3 or 2 x 4 PCIe through a connector

▸ USB 3.0

  – Two USB type A connectors on the front or rear panel connected to a USB PHY; one configured as a host, the second as OTG

▸ SATA

  – 2 x SATA connectors; these will be muxed from the PCIe SERDES and configured through a switch on the board

▸ Ethernet

  – Support for up to four (4) of 10 GbE, SFP+

  – Support for up to four (4) of 10 GbE, copper (4 x RJ45)

SOFTWARE FEATURES:

▸ U-Boot boot loader

▸ Linux kernel with DPAA2 networking support

▸ GNU tool chain for ARMv8 technology

QorIQ LS2088A RDB SYSTEM BLOCK DIAGRAM
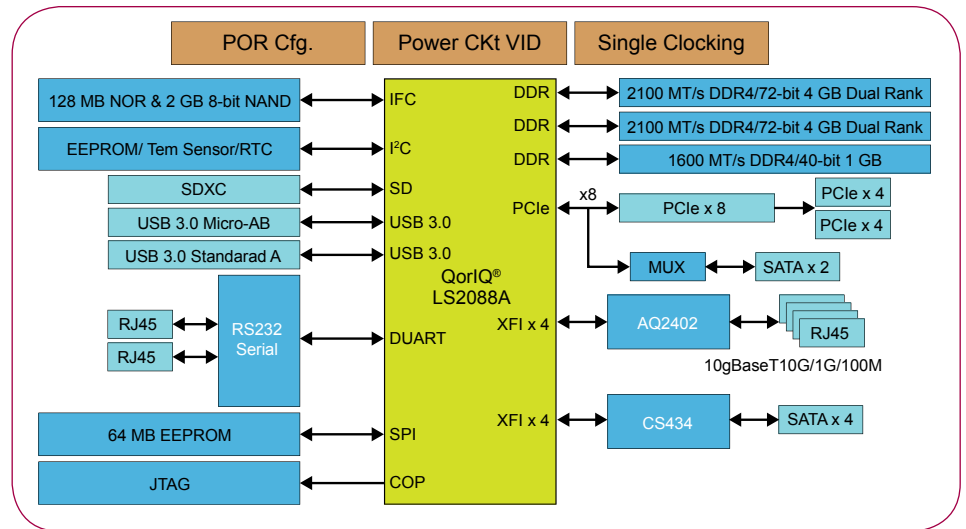
▸ Large set of standard Linux user space packages including shells, initialization scripts and servers

▸ Support for DPAA2

  – Management complex firmware for the DPAA2 architecture

▸ Linux kernel support for treating DPAA2 containers as plug-and-play busses with VFIO support

▸ Integrated control of DPAA2 L2 switch objects

▸ NADK, a Linux user space environment providing functions and interfaces oriented toward packet processing applications

▸ Support for an open-architecture parallel processing packet engine

  – "Service layer" which provides interfaces and APIs for packet processing programs that run on the advanced packet processor

  – Available CodeWarrior® tool chain

▸ Fully integrated market-ready solutions that integrate NXP-supplied datapaths (i.e., IP forwarding, IPSec, Netflow, BFD, SDN, ETh OAM and many other networking functions and protocols)

  – Users may also integrate these advanced packet processing datapaths themselves

QorIQ LS2088A REFERENCE DESIGN BOARD