QorIQ® LS1046A Reference Design Board

The LS1046A reference design board (RDB) is a high-performance computing, evaluation, and development platform that supports the QorIQ LS1046A, a processor with four 64-bit ARM® Cortex®-A72 cores that supports packet processing acceleration and high-speed peripherals.

PROCESSOR OVERVIEW

The impressive performance of more than 32,000 CoreMarks®, paired with 10 Gbit 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 are pin-compatible with the LS1023A, LS1043A and LS1088A SoCs, offering 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.

REFERENCE DESIGN BOARD

The LS1046A reference design board (RDB) is a high-performance computing, evaluation, and development platform that supports the QorIQ LS1046A communications processor. The RoHS-compliant lead-free and LS1046ARDB board is optimized to support DDR4 memory and a full complement of high-speed SerDes ports.
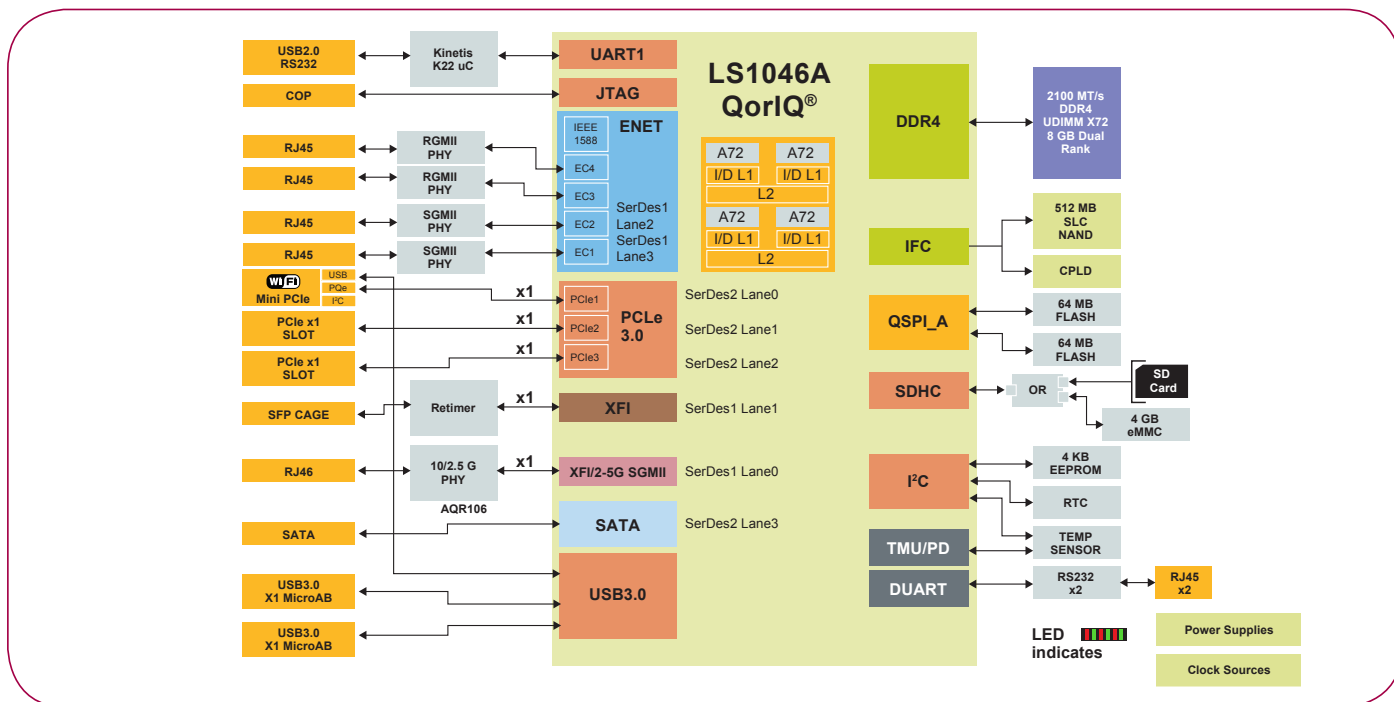
BOARD HARDWARE FEATURES

Processor

▸ Four 32-/64-bit Cortex v8-A72 CPUs with, up to 1.6 GHz core speeds

Memory

▸ Supports 8 GB DDR4 SDRAM memory

▸ Supports double-bit error detection and single-bit error correction ECC (8-bit check word across 64-bit data)

▸ Supports data rate up to 2100 MT/s

▸ Provides one 288-pin DDR4 DIMM connector

▸ DIMM connector supports unbuffered X72 8 GB dual rank

▸ SDHC port connects directly to an adapter card slot, featuring 4 GB eMMC memory device

▸ One 512 MB SLC NAND flash with ECC support (1.8 V)

▸ CPLD connection: 8-bit registers in CPLD to configure mux/demux selections

▸ Support two 64 MB onboard QSPI NOR flash memories

QORIQ LS1046A–RDB BLOCK DIAGRAM

QORIQ LS1046A–RDB BOARD

USB

▸ Two USB 3.0 controllers with integrated PHYs

▸ One USB1 3.0 port is connected to a Type A host connector

▸ One USB1 3.0 port is configured as On-The-Go (OTG) with a Micro-AB connector
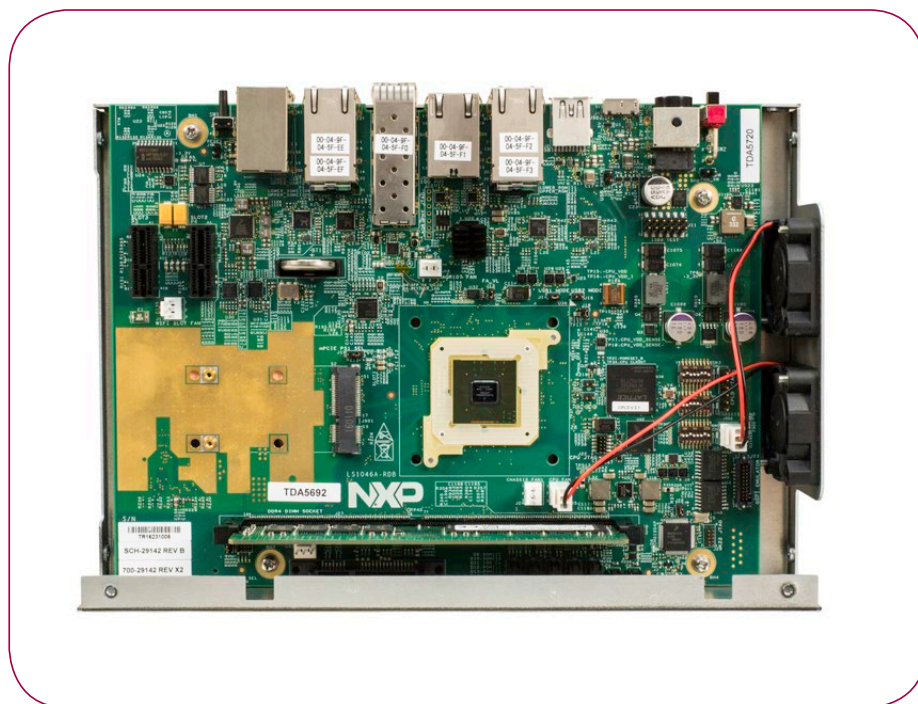
▸ One USB2.0 is connected to Mini PCIe connector

Ethernet

▸ Supports SGMII 1 G PHYs at Lane 2 and Lane 3

▸ Supports SFP+module with XFI retimers

▸ Supports AQR106/107 10 G PHY with XFI/2.5G SGMII

PCI Express and SATA

▸ Mini PCIe x1 (Gen1/2/3) card

▸ Standard PCIe x1 (Gen1/2/3) card

▸ Standard PCIe x1 (Gen1/2/3) card

▸ One SATA 3.0 connector

HARDWARE KIT CONTENTS

The LS1046ARDB hardware kit contains:

▸ A LS1046ARDB kit enclosure

▸ A DB9 to UART (RJ45) cable

▸ Ethernet cable, straight through wiring, 6 ft. min., RoHS compliant

▸ A USB Micro-B to Type-A cable

▸ A USB3.0 Micro-B male to USB3.0 Type-A female cable

▸ A 110-240 V AC, 12 V DC 8 A AC-DC power adapter

▸ Universal AC input adaptors

▸ A SATA cable (with 22 pins) and power combo cable

▸ A USB stick that contains the board design files

▸ A Getting Started Guide

▸ Finisar® FTLX8571D3BCL SFP + module x 1

SDK ENABLEMENT

▸ Boot loader

– Boot from flash, disk (IFC, NAND, I²C, SPI)

– UEFI, uboot Secure Boot support

▸ Linux®

– Linux platform (32-bit/64-bit), real-time support (RT patch)

– Linaro® ODP support

– DPDK support

▸ Datapath

– Production fast path modules:

– Intelligent forwarding offload, NAT+firewall

– IPv6, NAT, IPSEC VPN

– Enablement libraries

▸ Virtualization

– Standard KVM support; Linux containers, I/O virtualization

▸ Tools

– CodeWarrior®, for 64-bit ARM (including 32-bit mode), GNU tool chain

PRODUCT READY SOFTWARE SOLUTIONS

Product	Linux OpenWRT	BHR ASK	NAS ASK
Solutions	• U-Boot • BSPs • Linux Kernel (3.19) • Linux file system • Application drivers • Binary for packet forwarding engine	• Small business router • Next gen. broadband router • Integrated services • Enterprise access point • Security gateway	• Personal storage • Wireless personal storage • Chip on drive • NAS
Availability	Now	Early access release now	Early access release now
ASK licensing	$100,000		
KE1 Support plans 5Z	Starting at $25,000 (100 hours/12 months)		

To evaluate the application solutions kit please go to **www.nxp.com/LS1046A** and select Software and Tools tab, and chose the ASK that you want to evaluate.