QorIQ Multicore Processor Development

QorIQ T1024 Reference Design Board

Accelerate time to market with this performance and power optimized reference design
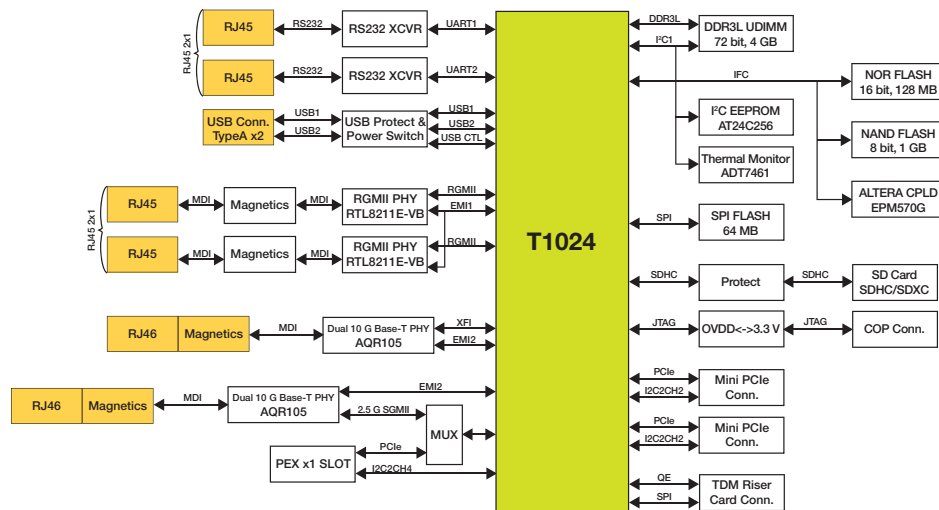
Overview

The QorIQ T1024 Reference Design Board (T1024RDB) is a high-performance computing, evaluation, development and test platform supporting the QorIQ T1024 and T1014 communications processors built on Power Architecture® technology. The board, with its 1.4 GHz T1024 processor and rich I/O mix is intended for evaluation of most of the features of the T1 series family of processors. The system addresses networking and Ethernet-centric applications, such as mixed control and data plane in fixed routers, switches, wired and wireless Internet access devices, firewall and other packet filtering applications, as well as industrial and general-purpose embedded computing.

The QorIQ T1024RDB can help shorten your time to market. This system can serve as a reference for your hardware and software development, debugging and performance evaluation prior to production. Design files are available upon request.

The T1024RDB supports one PCI Express® slot, two mini-PCI Express® connectors, an SD/MMC connector interface and two USB 2.0 ports. These components integrated with the

QorIQ T1024 Reference Design Board Block Diagram

T1024 processor provide an application-specific platform that will help accelerate your next design. The T1024RDB also supports 4 GB of DDR3L at 1600 MT/s, 128 MB of NOR flash, and a 1 GB NAND flash.

The QorIQ T1024RDB is loaded with the Linux® Software Development Kit (SDK) for QorIQ processors v1.7. The SDK includes a 64-bit SMP Linux kernel, hugetlbfs for applications with a large memory footprint, user space DPAA for high-performance packet handling, U-boot, the GCC tool chain, virtualization support and many other features.

QorIQ T1024RDB Board Features:

Processor:

- QorIQ T1024 processor at 1.4GHz dual-core with 1600 MT/s DDR3L data rate
- Multiple SysClk inputs for generating various device frequencies

Memory:

- 4 GB unbuffered DDR3L SDRAM UDIMM/RDIMM (64-bit bus), 1600 MT/s datarate
- 128 MB NOR flash, 16-bit
- 1 GB SLC NAND flash
- SD connector to interface

PCI Express

- One PCIe slot
- Two Mini-PCIe connectors

USB 2.0:

- Dual USB slot, connected to USB PHY

Ethernet

- One on-board SGMII 10/100/1G Ethernet Port
- Two on-board RGMII 10/100/1G Ethernet ports

UART

- Two UART (RJ45) ports at up to 115,200 bps

Other

- JTAG/COP for debug
- Thermal Monitor

About the T1 Family

The QorIQ T1 family is based on the 64-bit e5500 core, built on Power Architecture® technology, offering speeds up to 1400 MHz. It has a three-level cache hierarchy with 32 KB of instruction and data cache per core, 256 KB of low-latency backside L2 cache per core, and a 256 KB shared platform cache. The processor I/O includes four Serdes lanes running at up to 5 Gb/s multiplexed across three PCI-Express controllers, and up to four Gigabit Ethernet interfaces.

The QorIQ T1 family of communications processors also supports a 64-bit DDR3L and a DDR4 SDRAM memory controller with ECC support running at up to 1600 MT/s data rate. It includes two high-speed USB2.0 controllers (with integrated PHY), four UARTs, an SD/MMC interface, an integrated flash controller supporting NAND and NOR flash memory, four I²C and SPI. It also includes the accelerator blocks collectively known as the Data Path Acceleration Architecture, that offload various tasks from the core, including routine packet handling, security algorithm calculation, and pattern matching. In addition, the T1 family of processors integrates a QUICC Engine module offering support for legacy protocols such as TDM, HDLC, UART and ISDN and includes support for hardware-assisted virtualization.

Software and Tool Support

Freescale and our partner network deliver a wide range of tools, run-time software, reference solutions and services to accelerate your designs.

- QorIQ T1024 reference design board (T1024RDB-PC)
- CodeWarrior Development Studio for Power Architecture
- Freescale Linux SDK
- VortiQa Application Software
  - VortiQa application identification } software (AIS)
  - Enterprise software for networking
  - VortiQa open network switch software
  - VortiQa open network director software
- Professional Services and Support
  - Commercial services
  - Linux SDK support package
  - Reference Design Software (RDS support package)
- Third-party software and tools
  - Enea, Green Hills, Mentor Graphics and Wind River

Orderable parts:

T1024RDB-PC

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