QorIQ Multicore Processor Development
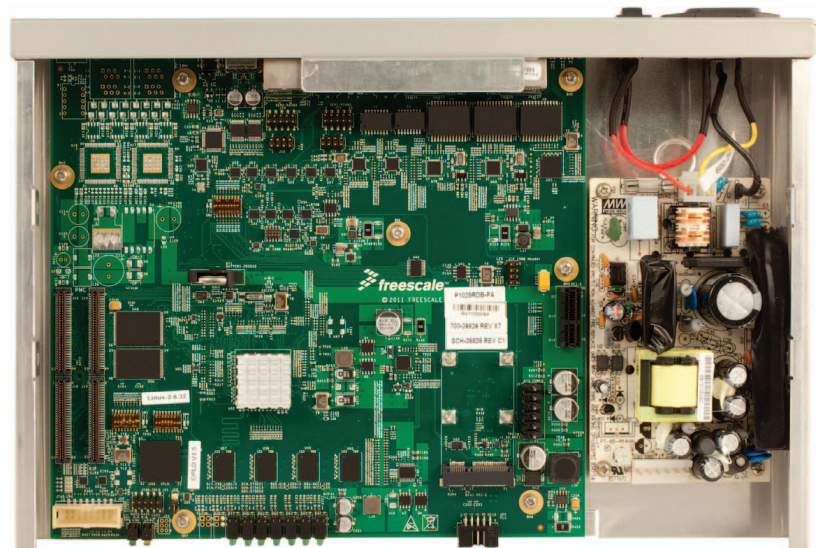
QorIQ P1025 Reference Design Board

Overview

The QorIQ P1025 reference design board (RDB) can accelerate your time to market for products targeting the networking, telecom, aerospace and defense and industrial markets. This cost-effective, highly integrated board is based on the QorIQ P1025 dual-core processor and features a broad array of modern connectivity options to help you quickly design, test and launch your application.
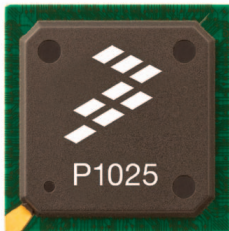
The P1025RDB features the dual-core P1025 processor and offers support for the single-core P1016 processor. The P1025 processor family is based on the e500 core, built on Power Architecture® technology, with a core frequency range of 400–667 MHz, and supports L1 32 KB instruction and data cache as well as a shared 256 KB frontside L2 cache. The P1025 supports three Gigabit Ethernet controllers with IEEE® 1588 v2 support, dual USB 2.0, up to two PCI Express® 1.0a controllers, up to two SGMII SerDes interfaces, 32-bit DDR with ECC support, a SPI controller supporting boot from SPI serial flash memory, an SD/MMC card controller supporting boot-from-flash cards, an integrated security engine and a QUICC Engine module supporting UTOPIA-L2, four T1/E1/HDLC and two additional 10/100 Ethernet interfaces.

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The P1025 RDB features 1 GB unbuffered DDR3 SDRAM, 16 MB NOR flash and 32 MB NAND flash, with the ability to boot from either NOR or NAND flash memory. The reference design board includes a built-in security accelerator and QUICC Engine for multiprotocol support. It also supports three Gigabit-capable ports via an SGMII PHY and two RGMII PHYs, two 10/100 Mb/s Ethernet ports, as well as two ports of USB 2.0, two 10-pin RJ45 RS485 ports and PMC connectors.

The P1025RDB features two PCI Express ports, one a full size add-in connector, the other a mini PCI Express connector. In addition, the P1025RDB also provides a combination SD/MMC card slot. These components, integrated with the P1025, provide a highly versatile development platform that allows you to jump start your next design. In addition, the P1025RDB provides a simplified migration path for an existing PowerQUICC processor customer wishing to migrate to QorIQ multicore processors. Customers who only require single-core processing or lower power can migrate to the P1016 as a stepping stone on their way to multicore processing.

Along with hardware support, the P1025RDB comes with a board support package (BSP) that includes both u-boot and Linux® 2.6 operating system support. The platform is also supported by third-party software applications. To see demonstrations or to acquire details of our third-party applications for this platform, please contact your local Freescale or distributor sales office.

Board Features
- Memory
  - 1 GB DDR3
  - 16 MB NOR flash memory
  - 32 MB NAND flash memory
  - 16 MB SPI ROM
  - 256 KB M2456 I^{2}C EEPROM

QorIQ P1025 Reference Design Block Diagram

Freescale Technology
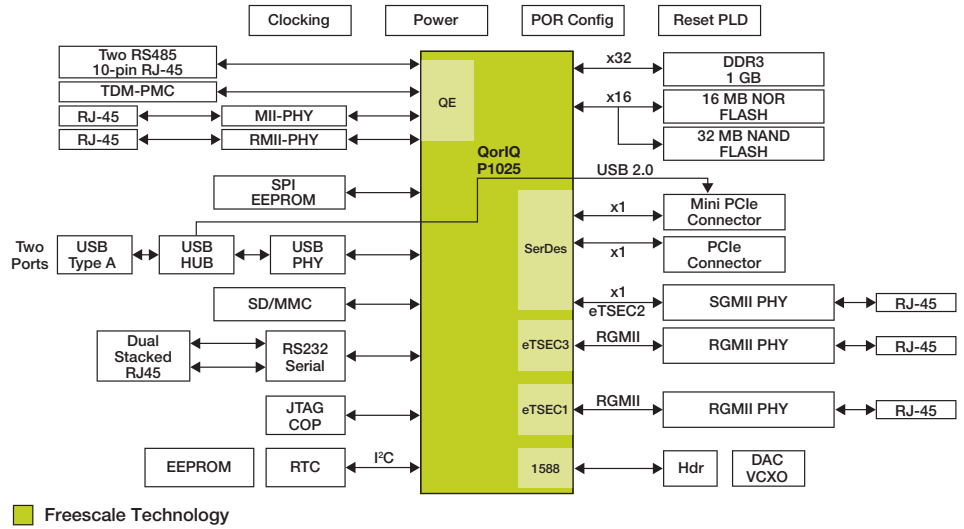
- PCI Express interconnects
  - One standard PCI Express connector (x1)
  - One mini PCI Express connector (x1)
- Ethernet
  - Three 10/100/1000 ports
    – One RGMII PHY connected to eTSEC1
    – One SGMII PHY connected to eTSEC2
    – One RGMII PHY connected to eTSEC3
  - Dual 10/100Base-T Ethernet ports for QUICC Engine module
    – One MII PHY connected to UEC1
    – One RMII PHY connected to UEC5
- USB 2.0 port
  - ULPI PHY interface: SMSC USB3300 USB PHY and Genesys Logic's GL850A USB2.0 HUB controller with four downstream ports
  - Two USB 2.0 Type A receptacles
  - One USB 2.0 signal to mini PCI express slot

- System integration
  - Dual I^{2}C
  - SD/MMC card slot
  - Mini AB connectors on I/O panel (default)
  - UARTs
  - IEEE 1588 signals for test and measurement
  - Two 10-pin RJ45 RS485 ports
- Board connectors
  - Open frame power supply connector
  - JTAG/COP for debugging
  - PMC connector
  - UMI (PLC) connector
- Mini-ITX form factor
  - 170 mm x 170 mm
  - 6-layer PCB routing (4-layer signals, 2-layer power and ground)
- Lead-free (ROHS), CE and FCC certification
- Software tools
  - Linux 2.6.x kernel
  - Cross compile and native GNU tool chain
  - CodeWarrior V8.8

For more information, please visit freescale.com/QorIQ