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QorIQ multicore processor development

P1020/P1011 Reference Design Board

The QorIQ P1020 reference design board (RDB) can help shorten your time to market for networking, wired and wireless access, industrial and medical applications.

The cost-effective, highly integrated board is based on the QorIQ P1020 processor and leading-edge external components to help you quickly design and implement your target application.

The P1020RDB leverages the P1020 processor and supports both the dual-core P1020 and single-core P1011 configurations. The P1020 processor family is based on the e500 core, built on Power Architecture® technology, which has a core frequency range of 533–800 MHz, and supports a 32 KB instruction and L1 data cache as well as a shared 256 KB frontside cache. The P1020 also supports three Gigabit Ethernet controllers with IEEE® 1588 v2 support, USB 2.0, up to two PCI Express® 1.0a controllers, up to two SGMII SerDes interfaces, 32-bit DDR2/3 with ECC, SPI controller supporting booting from SPI serial flash memory, SD/MMC card controller supporting booting from flash cards and an integrated security engine. The P1020, built in 45 nm process technology, provides high integration that simplifies board design and offers a cost-effective solution.

The P1020RDB platform features 1 GB unbuffered DDR3 SDRAM, 16 MB NOR flash and 32 MB NAND flash, where the platforms can boot from either NOR or NAND flash memory. It supports six Gigabit-capable ports via an SGMII PHY, an RGMII PHY and an on-board switch with four ports, as well as two ports of USB On-the-Go (OTG), four FXS ports and one FXO port via relay.

The P1020RDB also supports a PCI Express add-in connector and a MiniPCI Express slot, as well as an SD/MMC card slot. These components, integrated with the P1020, provide an application-specific platform that can help you get a jump start on your next application design. In addition, the P1020RDB provides a simplified migration path for existing PowerQUICC processor customers wishing to migrate to QorIQ multicore processors. Customers can migrate to the single-core P1011 as a stepping stone on their way to multicore processing.

Since the P1020 is pin-compatible with the P2020, the P1020RDB can also be used as a development vehicle for the P2020.

Along with hardware support, the P1020RDB comes with a board support package (BSP) that includes both U-boot and Linux® 2.6 operating system support. The platform is also available with third-party software applications. To see demonstrations or to acquire details of our third-party applications for this platform, please contact your local sales office.



P1020RDB BOARD FEATURES

Memory

- ▶ 1 GB DDR3
- ▶ 16 MB (128 MB device) NOR flash memory
- ▶ 32 MB NAND flash memory
- ▶ 16 MB SPI ROM

PCI Express® interconnects

- ▶ One standard PCI Express connector (x1)
- ▶ One mini PCI Express connector (x1)

Ethernet

Six 10/100/1000 ports:

- ▶ Four ports from L2 switch connected to eTSEC1
- ▶ One SGMII PHY connected to eTSEC2
- ▶ One RGMII PHY connected to eTSEC3

IEEE® 1588 v2

- ▶ Clock input from DAC/VCXO circuitry
- ▶ Accessible via test header

System Integration

- ▶ Dual I²C
- ▶ SD/MMC card slot
- ▶ Dual USB
- ▶ Mini AB connectors on I/O panel (default)
- ▶ UARTs
- ▶ One DB9 connector
- ▶ Dual SLIC for FXS/FXO interfaces

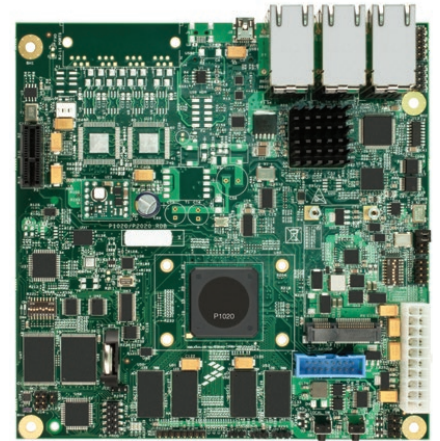
Mini-ITX Form Factor

- ▶ 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



P1020RDB BLOCK DIAGRAM

