

P1022 Reference Design Kit

Integrated media and communications processor development system

Overview

The QorIQ P1022 Reference Design Kit (P1022-RDK) is a cost-effective hardware and software development platform for embedded applications. It brings together the Atlas-II-IQc processing module from iVeia™ and the highly integrated P1022 processor, a Freescale Energy-Efficient product solution built on Power Architecture® technology. The high level of integration in the P1022 processor is designed to help lower system costs, improve performance and simplify board design.

QorIQ P1022 processor supports:

- Dual enhanced three-speed Ethernet controllers (eTSEC) with IEEE® 1588 V2 supporting RGMII and SGMII
- 64-bit legacy DDR2 and DDR3 with ECC
- Multiple PCI Express® ports supporting one x4 and one x2, or two x2 and one x1 link widths
- Advanced power management controller supporting jog and deep sleep modes, allowing for 1W AC standby system power
- Two SATA controllers
- Two USB controllers
- Display interface unit (DIU) LCD controller
- Serial synchronous interface (SSI)
- Time division multiplexing (TDM) interface
- Enhanced local bus controller (eLBC)
- Enhanced serial peripheral interface (eSPI)
- Enhanced secure digital hardware controller (eSDHC)
- 4-channel direct memory access (DMA)
- Dual universal asynchronous receiver/transmitter (DUART)
- Serial peripherals
- General purpose I/O
- System timers

The P1022 processor also integrates a hardware encryption block that supports different algorithms for high-performance data that is critical for supporting secure communications.

The P1022-RDK also supports the P1013 single-core processor.

Atlas-II-IQc Processing Module

The Atlas-II-IQc credit card-sized processing module was designed, developed and manufactured by iVeia as a low-power, high-performance, network-oriented system based on the Atlas II form factor. The Atlas-II-IQc, together with a carrier card, completes the P1022-RDK, providing a small, powerful and flexible engine for embedded Linux® based applications.

The Atlas-II-IQc features the following:

- 1067 MHz P1022 processor with 32 KB I/D cache, 256 KB L2 cache
- 512 MB 64-bit DDR3-667 memory
- 8 MB SPI serial flash memory for boot loader
- Bootable 4-bit SD/MMC port
- RGMII to copper
- SGMII to copper
- SerDes x4 and SerDes x2
- Two x 480 MB USB 2.0 ULPI PHYs (one Host, one OTG)

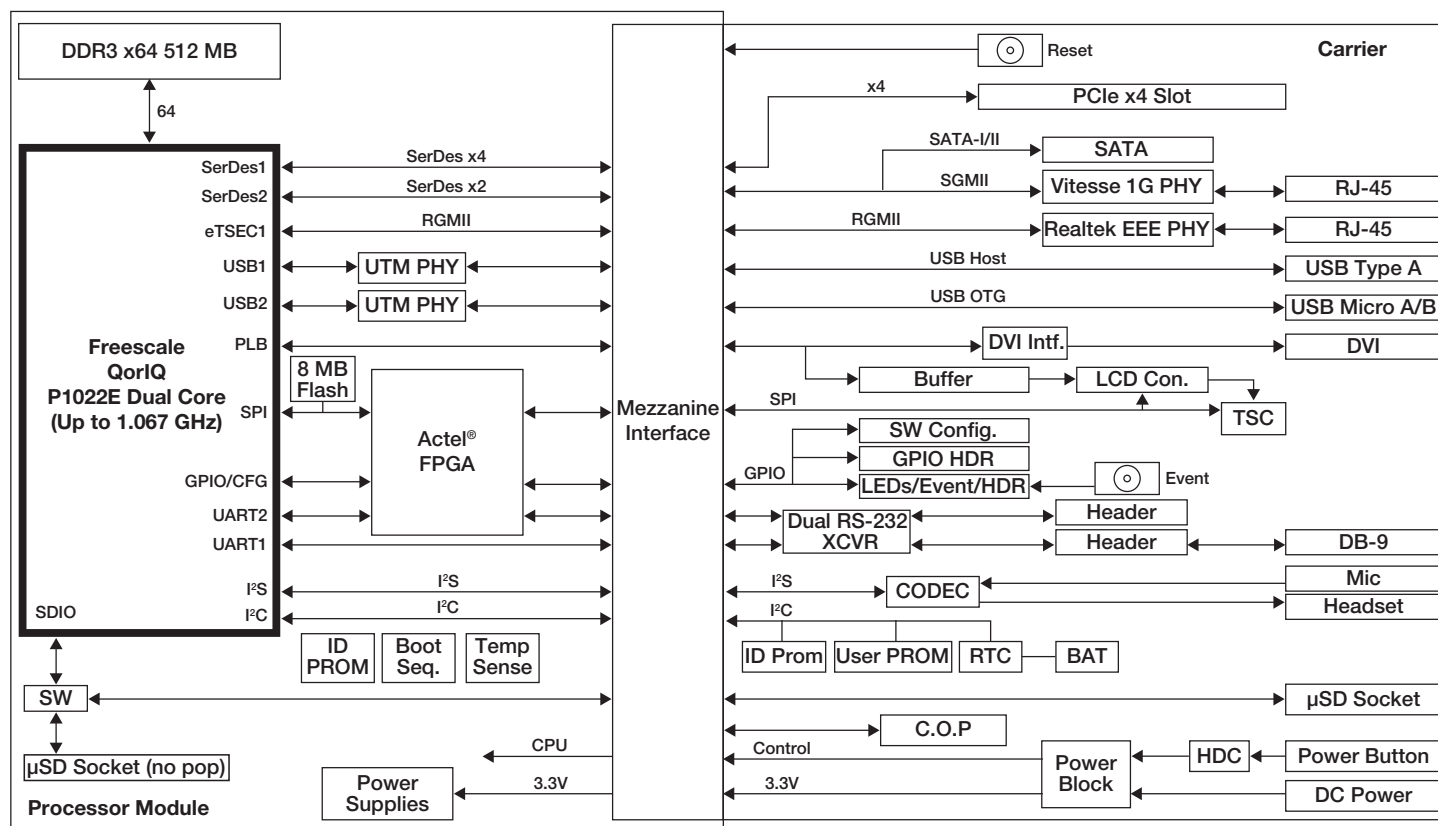


- Two 4-wire TTL serial ports (one I2C and one SPI)
- DIU LCD controller
- SSI
- Configurable GPIO lines through an on-board FPGA (interrupts, GPIO, SPI, communications)
- 0°C to +70°C operation with supplied passive heatsink
- Low power consumption: <2W sleep, <4W typical, <6W max
- Compact size: 50 mm (2.0") x 90 mm (3.5")

P1022-RDK Carrier Board

The P1022-RDK carrier board, also designed, developed and manufactured by iVeia, is a flexible board that will fit in a standard mini-ITX form factor chassis.

P1022-RDK System Block Diagram



Features

- x4 PCI Express slot (physical) supporting up to x4 lane width
- Single SATA connector for optional hard drive
- USB-A host connector
- Micro-USB-A/B connector for on-the-go support
- Two 10/100/1000 Ethernet connectors
- Realtek supports Energy-Efficient Ethernet (EEE)
- Wolfson audio codec headphone out and microphone in
- MicroSD port for booting and data storage
- Battery backed-up RTC

- Support for either DVI LCD monitor or user-definable standard TFT LCD panel
- Standard 16-pin JTAG header supporting Power Architecture technology
- Configuration DIP switches and debug LEDs

P1022 Reference Design Kit Contents

The cost-effective P1022-RDK development kit contains the following items standard:

- Atlas-II-IQc with the P1022 credit card-sized processor module
- P1022-RDK carrier board
- Small form factor (SFF) enclosure with power supply and power cord

- Quick start guide, user's guide, hardware reference manual, schematics, bill of materials (BOM) and Linux source code
- MicroSD card with firmware, Linux OS and root file system pre-installed
- Ethernet and serial cables



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