MPC8536E Reference Design Kit
Integrated media and communications processor development system

Overview

The MPC8536E Reference Design Kit (MPC8536RDK) is a cost-effective hardware and software development platform for embedded applications. It brings together the CSB1801 uATX Carrier board and the CSB1880 CSB based on the COM Express form factor and Freescale's highly integrated MPC8536E processor, built on Power Architecture® technology. The high level of integration in the MPC8536E processor is designed to help lower system costs, improve performance and simplify board design.

The MPC8536E processor supports:

- Dual enhanced three-speed Ethernet controllers (eTSEC) with IEEE® 1588 V2
- Multiple PCI Express® ports supporting one x8, two x4, or one x4 and two x2 link widths
- 32-bit PCI controller
- Advanced power management controller
- Three integrated USB controllers
- Two integrated SATA controllers
- 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 MPC8536E processor also integrates a hardware encryption block that supports different algorithms for high-performance data that is critical for supporting secure communications.

The MPC8536RDK also supports the MPC8535E processor.

CSB1880 CSB Based on COM Express Form Factor

The CSB1880 was designed, developed and is manufactured by Cogent Computer Systems, Inc. It is a low-power, high-performance, network-oriented system based on the COM Express form factor. The CSB1880 provides a small, powerful and flexible engine for embedded Linux® based 10/100/1000 networking applications of all kinds.

The CSB1880 has the following features:

- 1.25 GHz MPC8536E with 32 KB I-Cache, 32 KB D-Cache and 512 KB L2 Cache
- 512 MB 64-bit DDR2-500 memory with ECC
- 8 MB SPI serial flash memory for boot loader
- 512 MB NAND flash memory
- Bootable 4-bit SD/MMC Port (SDIO-compliant)
- Three PCI Express ports configurable as one x8, two x4 or one x4 and two x2
- Dual RGMII to copper/SGMII (autoselect) PHY
- Three 480 MB USB 2.0 ULPI PHYS
- Two 4-wire TTL serial ports and one I²C port
- Eight GPIO lines and four PCI interrupts
- Standard 16-pin JTAG header for Power Architecture technology
- Onboard MCF51QE32 IPM microcontroller for power sequencing, boot configuration, fan control and thermal monitoring
- 0ºC to +70ºC operation with supplied heatsink
- Low power consumption: <2W sleep, <4W typical, <8W max and <10mw power down (via 3.3V standby rail)
- CSB Express compliant-derived from COM Express Type 3 pinout with Cogent enhancements
- Compact size: 95 mm (3.75") x 95 mm (3.75") x 9 mm high (total height is 32 mm with heatsink)
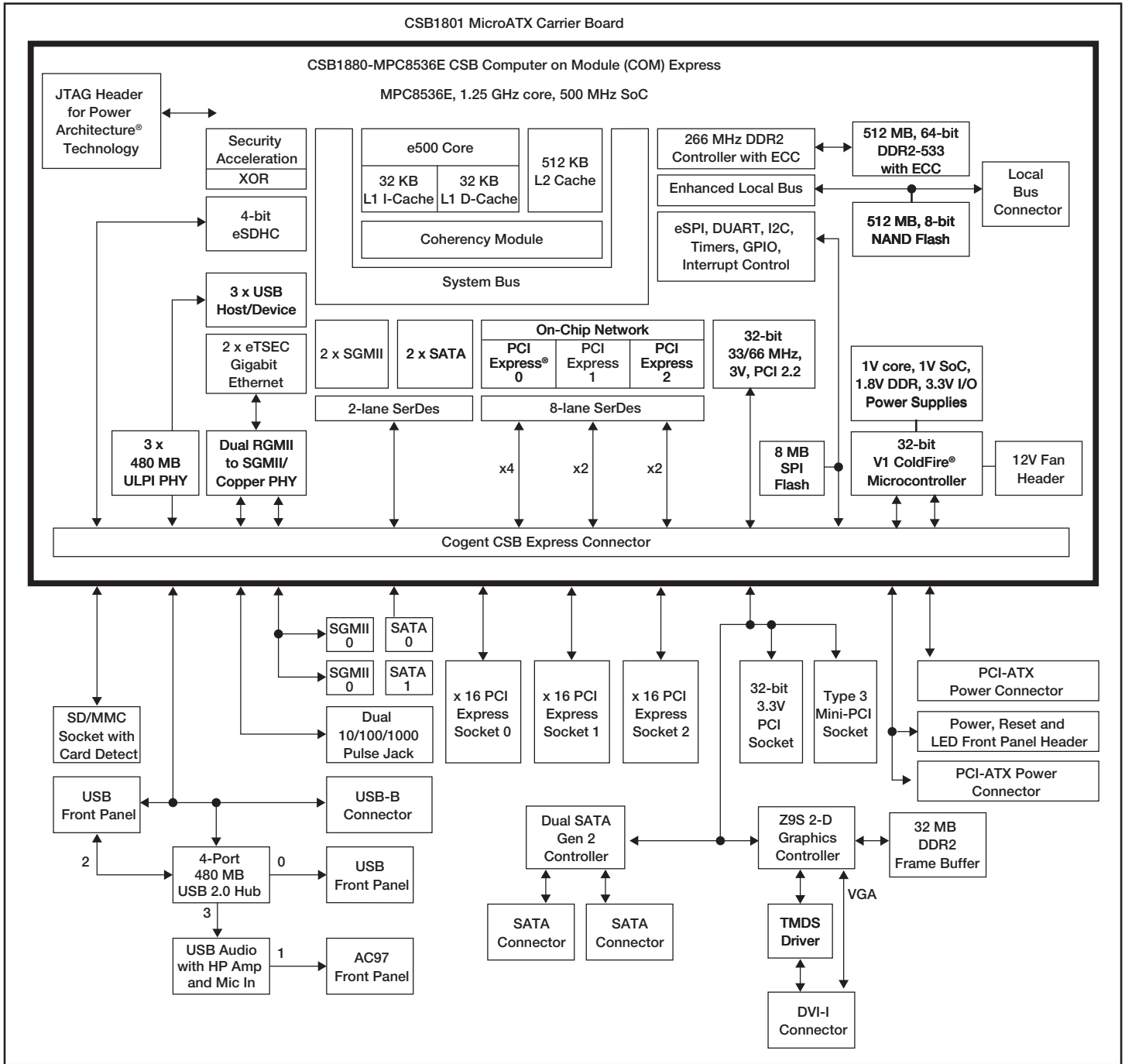
CSB1801 µATX Carrier Board

The CSB1801 is designed, developed and manufactured by Cogent Computer Systems, Inc. It is a flexible Flex/MicroATX form factor carrier board for the Cogent CSB18xx series of systems based on the COM Express form factor. The CSB1801 has the zfollowing features:

- 7.9" x 9.6" Flex/MicroATX form factor
- High-speed 440-pin CSB Express connector
- Three x16 PCI Express connectors (actual widths are x4, x2 and x2)
- 32-bit 3.3V PCI edge connector
- 3V Type III Mini-PCI socket for Wi-Fi
- Dual SATA connectors (from SOM SATA)
- USB x2, audio and power/reset front panel headers
- USB-B connector (from SOM USB 2)
- Dual SGMII connectors (from SOM dual PHY)
- Dual 10/100/1000 Ethernet-pulse jack
- USB2514 four-port USB Hub
- PCM2912 USB audio IC with headphone out and microphone in
- Silicon Image SII3512 Dual Gen II SATA controller for self-hosted operation
- XGI Z9S 2-D graphics controller with 32 MB frame buffer

MPC8536E Reference Design Kit Contents

The MPC8536E cost-effective development kit contains the following items standard:

- CSB1880, MPC8536E CSB based on the COM Express form factor
- CSB1801 MicroATX carrier board
- Small form factor (SFF) enclosure with 300W power supply and power cord
- Quick start guide
- Ethernet and serial cables

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CSB1801 MicroATX Carrier Board

CSB1880-MPC8536E CSB Computer on Module (COM) Express

MPC8536E, 1.25 GHz core, 500 MHz SoC

- JTAG Header for Power Architecture® Technology
- Security Acceleration / XOR
- 4-bit eSDHC
- 3 x USB Host/Device
- 2 x eTSEC Gigabit Ethernet

e500 Core
- 32 KB L1 I-Cache
- 32 KB L1 D-Cache
- Coherency Module

512 KB L2 Cache

System Bus

- 266 MHz DDR2 Controller with ECC
- Enhanced Local Bus
- eSPI, DUART, I2C, Timers, GPIO, Interrupt Control
- 512 MB, 64-bit DDR2-533 with ECC
- 512 MB, 8-bit NAND Flash
- Local Bus Connector

- 2 x SGMII
- 2 x SATA

On-Chip Network
- PCI Express® 0
- PCI Express 1
- PCI Express 2

- 32-bit 33/66 MHz, 3V, PCI 2.2
- 1V core, 1V SoC, 1.8V DDR, 3.3V I/O Power Supplies

- 2-lane SerDes
- 8-lane SerDes

- 3 x 480 MB ULPI PHY
- Dual RGMII to SGMII/Copper PHY

x4 x2 x2

- 8 MB SPI Flash
- 32-bit V1 ColdFire® Microcontroller
- 12V Fan Header

Cogent CSB Express Connector

- SGMII 0
- SGMII 0
- SATA 0
- SATA 1

- SD/MMC Socket with Card Detect
- Dual 10/100/1000 Pulse Jack

- x 16 PCI Express Socket 0
- x 16 PCI Express Socket 1
- x 16 PCI Express Socket 2

- 32-bit 3.3V PCI Socket
- Type 3 Mini-PCI Socket

- PCI-ATX Power Connector
- Power, Reset and LED Front Panel Header
- PCI-ATX Power Connector

- USB Front Panel
- USB-B Connector

2

- 4-Port 480 MB USB 2.0 Hub

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- USB Front Panel

3

- USB Audio with HP Amp and Mic In

1

- AC97 Front Panel

- Dual SATA Gen 2 Controller
- Z9S 2-D Graphics Controller
- 32 MB DDR2 Frame Buffer

- SATA Connector
- SATA Connector

- TMDS Driver

VGA

- DVI-I Connector

Learn More: For current information about Freescale products and documentation, please visit **www.freescale.com**.

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