XPedite6401

NXP QorIQ LS10xxA Arm® A53/A72 Core Processor-Based Conduction-Cooled XMC/PrPMC Mezzanine Module

- NXP QorIQ LS1043A processor with four 64-bit Arm® A53 cores at up to 1.6 GHz

- NXP QorIQ LS1088A processor with eight 64-bit Arm® A53 cores at up to 1.8 GHz

- NXP QorIQ LS1046A processor with four 64-bit Arm® A72 cores at up to 1.8 GHz

- 128-bit NEON SIMD engine per core

- Conduction cooling

- LS1088A/LS1046A: Up to 16 GB of DDR4-2100 ECC SDRAM

- LS1043A: Up to 8 GB of DDR4-1600 ECC SDRAM

- Up to 256 MB of NOR flash (with redundancy)

- Up to 16 GB of NAND flash

- LS1043A: x1 PCI Express Gen2 interface to P15

- LS1088A/LS1046A: x4 PCI Express Gen3 interface to P15

- Up to four 10/100/1000BASE-T Ethernet ports

- Up to two 10GBASE-KR Ethernet ports

- Up to two 1000BASE-X Ethernet ports

- Two RS-232/422/485 serial ports

- Two USB 2.0 ports

- One USB 3.0 port

- One SATA 6 Gb/s port (optional)

- Linux BSP

- Wind River VxWorks BSP

- Green Hills INTEGRITY BSP
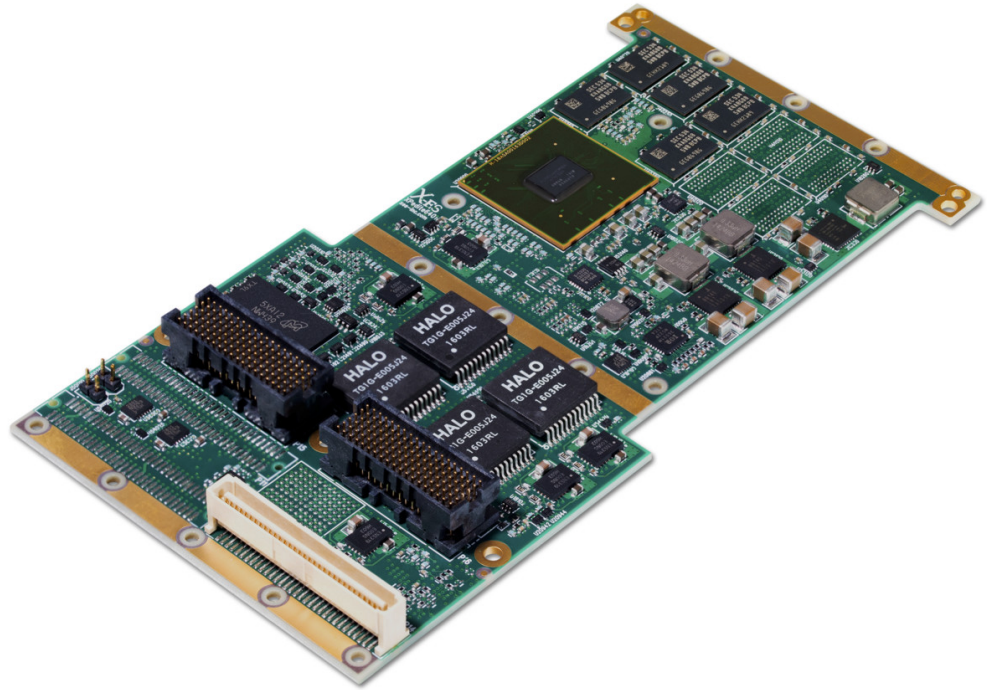
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The XPedite6401 is an XMC/PrPMC mezzanine module that supports an NXP QorIQ LS1043A processor with four 64-bit Arm® Cortex-A53 cores operating at up to 1.8 GHz. The LS10xxA processor family delivers excellent networking performance and flexible I/O options in a single System-on-Chip (SoC) design, making it the logical choice for Small Form Factor (SFF) networking and rugged industrial embedded computing applications.

The XPedite6401 supports up to 8 GB of DDR4-1600 ECC SDRAM memory in its default configuration with the LS1043A processor. For increased bandwidth and storage, the XPedite6401 supports up to 16 GB of DDR4-2100 ECC SDRAM when configured with the LS1088A or LS1046A processor. The pin-compatible LS1046A and LS1026A processors with Arm® A72 cores offer increased performance over the A53 core variants, providing a scalable performance solution within a single product form factor. Additionally, the processor offers dual-redundant NOR boot flashes and SLC NAND flash for non-volatile storage.

The P14 I/O connector allows for two 10/100/1000BASE-T Ethernet ports, two RS-232/422/485 serial ports, and two USB 2.0 ports. Its pinout is identical to many of X-ES' earlier products, providing an easy drop-in upgrade solution for legacy XMC/PrPMC products. The XPedite6401's P16 connector provides access to an array of I/O from the processor, maximizing performance in a small package design. It supports up to two 10GBASE-KR Ethernet ports, two 1000BASE-X Ethernet ports or eight Ethernet ports through two QSGMII interfaces, one SATA port capable of 6 Gb/s, and one USB 3.0 port.

The XPedite6401's impressive I/O complements the computing power of the processor and provides ample bandwidth to rapidly move data in and out of the processor. Wind River VxWorks, Linux, and Green Hills INTEGRITY Board Support Packages (BSPs) also are available.

Processor

- NXP QorIQ LS1043A processor with four 64-bit Arm® A53 cores at up to 1.6 GHz
- 128-bit NEON SIMD engine per core

Alternate Processors

- NXP QorIQ LS1023A processor with two 64-bit Arm® A53 cores at up to 1.6 GHz
- NXP QorIQ LS1026A processor with two 64-bit Arm® A72 cores at up to 1.8 GHz
- NXP QorIQ LS1046A processor with four 64-bit Arm® A72 cores at up to 1.8 GHz
- NXP QorIQ LS1048A processor with four 64-bit Arm® A53 cores at up to 1.8 GHz
- NXP QorIQ LS1088A processor with eight 64-bit Arm® A53 cores at up to 1.8 GHz

Memory

- Up to 8 GB of DDR4-1600 ECC SDRAM (LS1043A)
- Up to 16 GB of DDR4-2100 ECC SDRAM (LS1088A/LS1046A)
- Up to 256 MB of NOR flash (with redundancy)
- Up to 16 GB of NAND flash

PrPMC Interface

- 66/33 MHz PCI
- 32-bit bus interface

PMC P14 I/O

- Two 10/100/1000BASE-T Ethernet ports
- Two RS-232/422/485 ports
- Two USB 2.0 ports
- 3.3 V GPIO

P15 XMC Interface

- LS1043A: x1 PCI Express Gen2 interface to P15
- LS1088A/LS1046A: x4 PCI Express Gen3 interface to P15

XMC P16 I/O

- Two RS-232/422/485 serial ports
- One USB 3.0 port
- One SATA port capable of 6 Gb/s (optional)
- Two 10/100/1000BASE-T Ethernet ports
- Two 1000BASE-X Ethernet ports (optional)
- Two 10GBASE-KR Ethernet ports (optional)

Software Support

- Linux BSP
- Wind River VxWorks BSP
- Green Hills INTEGRITY BSP
- QNX Neutrino BSP (contact factory)
- LynuxWorks LynxOS BSP (contact factory)

Physical Characteristics

- Conduction-cooled XMC/PMC form factor
- Dimensions: 149 mm x 74 mm, 10 mm stacking height
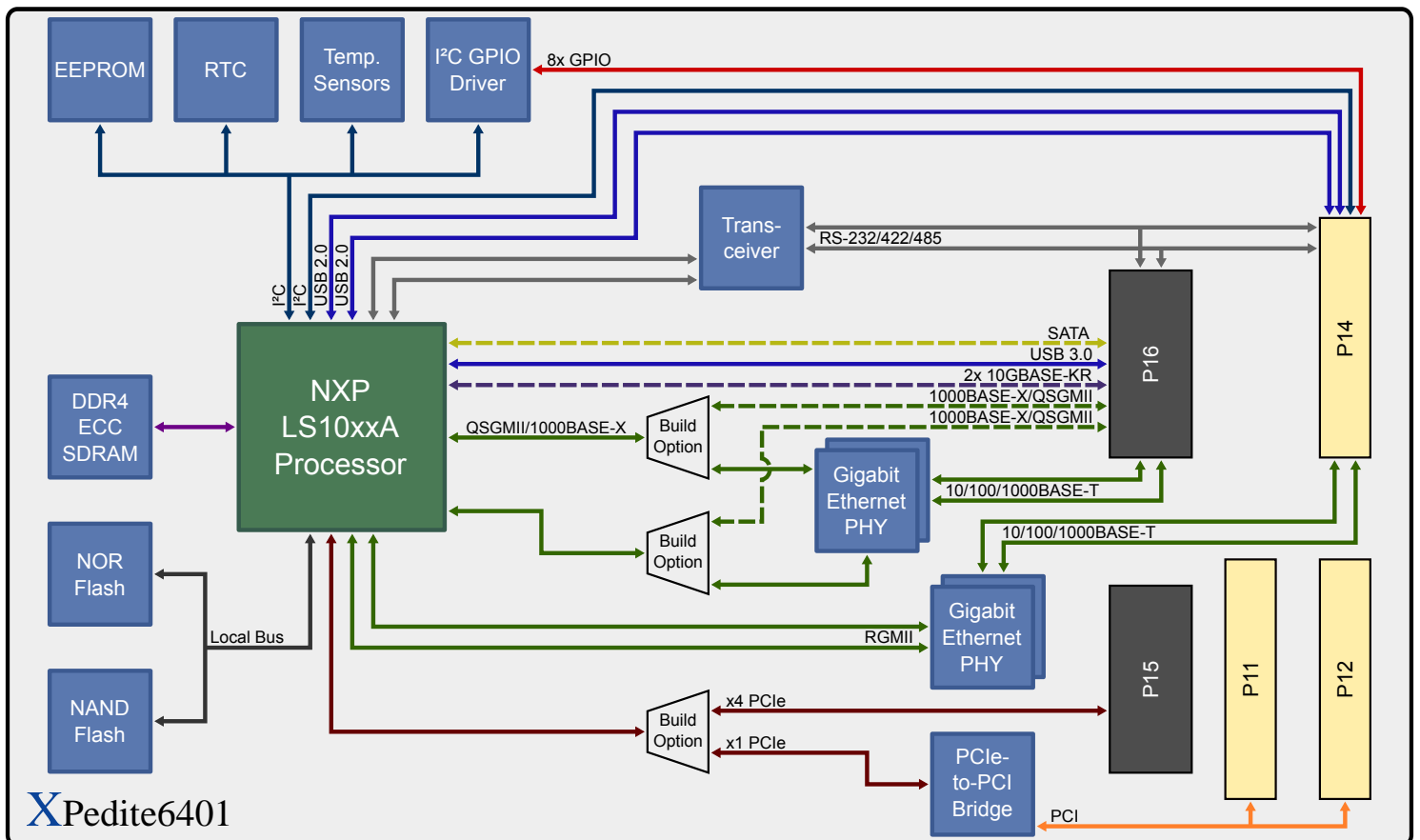
Environmental Requirements

Contact factory for appropriate board configuration based on environmental requirements.

- Supported ruggedization levels (see chart below): 5
- Conformal coating available as an ordering option

Power Requirements

- Power will vary based on configuration and usage. Please consult factory.

Ruggedization Level	Level 1	Level 3	Level 5
Cooling Method	Standard Air-Cooled	Rugged Air-Cooled	Conduction-Cooled
Operating Temperature	0 to +55°C ambient (300 LFM)	-40 to +70°C (600 LFM)	-40 to +85°C (board rail surface)
Storage Temperature	-40 to +85°C ambient	-55 to +105°C ambient	-55 to +105°C (maximum)
Vibration	0.002 g²/Hz (maximum), 5 to 2000 Hz	0.04 g²/Hz (maximum), 5 to 2000 Hz	0.1 g²/Hz (maximum), 5 to 2000 Hz
Shock	20 g, 11 ms sawtooth	30 g, 11 ms sawtooth	40 g, 11 ms sawtooth
Humidity	0% to 95% non-condensing	0% to 95% non-condensing	0% to 95% non-condensing

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bsi. ISO 9001 Quality Management