XPedite2470

3U VPX Virtex-7 FPGA Module with FMC Site and Freescale P1010 Processor

- Xilinx Virtex-7 FPGA XC7VX485T
- 3U VPX (VITA 46) module
- FMC-compliant carrier card (VITA 57) with High Pin Count (HPC) connector
- Freescale QorIQ P1010 processor with one Power Architecture® e500 core at up to 800 MHz
- Up to 512 MB of DDR3L-800 ECC SDRAM for P1010
- Up to 16 GB of SPI flash (with redundancy) for P1010
- Up to 1 GB of NAND flash for P1010
- Four channels of x32 DDR3L SDRAM, up to 1 GB each for FPGA
- 128 MB of user NOR flash for FPGA
- LVDS and high-speed GTX transceiver connectivity between FPGA and FMC
- One MicroSD socket
- x1 PCI Express P1010 to FPGA interconnect
- Two SerDes Gigabit Ethernet P1 fabric interconnects (P1010)
- Optional 10/100/1000BASE-T Ethernet port (P1010)
- Eight high-speed GTX lanes to FMC
- Eleven high-speed GTX lanes to P1 fabric interconnect
- Up to two RS-232/422/485 serial P2 ports (P1010)
- One USB 2.0 port (P1010)
- FPGA Development Kit (FDK)
- Linux BSP

XPedite2470

The XPedite2470 is a high-performance, reconfigurable, conduction- or air-cooled, 3U VPX, FPGA processing module based on the Xilinx Virtex-7 family of FPGAs. With multiple high-speed fabric interfaces, external memory, Virtex-7 FPGA, an FMC site, and high-density I/O, the XPedite2470 is ideal for customizable, high-bandwidth, signal-processing applications.

The XPedite2470's DDR3L SDRAM and flexible I/O routing makes it perfect for high-speed, bandwidth-intensive, data-streaming applications. The card provides numerous I/O capabilities through its FMC daughter card interface, allowing access to single-ended and differential I/O and configurable GTX transceivers. An FMC daughter card can expand the capabilities of the XPedite2470 by providing technologies such as Digital Signal Processing (DSP), high-frequency Digital-to-Analog Conversion (DAC), and high-frequency Analog-to-Digital Conversion (ADC).

The XPedite2470 supports a high-performance Freescale P1010 QorIQ processor. With a Power Architecture® e500 core running at up to 800 MHz, the P1010 provides hybrid signal processing with the combination of an FPGA and a general-purpose processor on one 3U VPX module. With the flexibility of the FMC interface, high-speed streaming data can be brought directly into the FPGA and processed, then transferred over a high-speed PCIe interface to the P1010 processor for further processing and analysis.

The XPedite2470 provides a high-performance, feature-rich solution capable of interfacing to and processing streaming data from a wide variety of sensors. The X-ES FPGA Development Kit (FDK) is provided to support the requirements of high-performance, real-time, embedded streaming data applications and simplify FPGA development. It includes IP blocks, example FPGA designs, and software to control and communicate with FPGAs. A Linux Board Support Package (BSP) is available.

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...Always Fast

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FPGA

- Xilinx Virtex-7 for high-performance logic and DSP applications
- Up to 4 GB of DDR3L SDRAM in four channels
- 128 MB of user NOR flash

Supported FPGAs

- Xilinx Virtex-7 XC7VX330T
- Xilinx Virtex-7 XC7VX415T
- Xilinx Virtex-7 XC7VX485T (default)
- Xilinx Virtex-7 XC7VX690T
- Support for commercial and industrial temperature as well as -1, -2, -3 speed grades

FMC (VITA 57)

- FPGA LVDS I/O
- x8 GTX transceivers
- FPGA and processor GPIO via I²C expanders
- VPX GPIO
- RS-232/485 serial ports
- SPI and I²C interfaces
- Support for 1.8 V, 1.5 V, 1.2 V, and 1.35 V VADJ

Processor

- Freescale QorIQ P1010 processor
- Power Architecture® e500 core at up to 800 MHz
- 256 kB L2 cache
- Up to 512 MB of DDR3L-800 ECC SDRAM
- Up to 16 MB of NOR flash (with redundancy)
- Up to 1 GB of NAND flash

VPX (VITA 46) P1 I/O

- Up to x8 PCI Express P1.A
- Three additional GTX lanes
- Two SerDes Gigabit Ethernet ports (or one SerDes port out P1 and one 10/100/1000BASE-T port out P2)

VPX (VITA 46) P2 I/O

- One 10/100/1000BASE-T port (when two SerDes Gigabit Ethernet P1 ports are not used)
- Up to two RS-232/422/485 serial ports
- One USB 2.0 port
- 3.3 V GPIO signals
- FGPA LVDS GPIO
- P1010 GPIO
- FMC GPIO

Development Support

- X-ES FPGA Development Kit (FDK)
- Linux BSP

Physical Characteristics

- 3U VPX-REDI conduction- or air-cooled form factor
- Dimensions: 100 mm x 160 mm
- 0.8 in. pitch without solder-side cover
- 0.85 in. and 1.0 in. pitch with solder-side cover

Environmental Requirements

Contact factory for appropriate board configuration based on environmental requirements.

- Supported ruggedization levels (see chart below): 1, 3, 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 ambient
Vibration	0.002 g²/Hz, 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