XPedite2570

3U VPX AMD (formerly Xilinx) Kintex® UltraScale™ FPGA-Based Fiber-Optic I/O Module

- AMD (formerly Xilinx) Kintex® UltraScale™ XCKU115 FPGA
- 3U VPX (VITA 46) module
- Twelve 10.3125 Gb/s optical transmitter links
- Twelve 10.3125 Gb/s optical receiver links
- 8 GB of DDR4 ECC SDRAM in two channels
- Non-volatile FPGA dual quad-SPI configuration flash
- x8 PCI Express Gen3 to P1.A
- Two GTH-capable High-Speed Serial (HSS) lanes
- 44 LVDS GPIO
- Ten single-ended (SE) GPIO
- FPGA Development Kit (FDK)
- Linux drivers

XPedite2570

The XPedite2570 is a high-performance, reconfigurable, conduction- or air-cooled, 3U VPX, FPGA processing module based on the AMD (formerly Xilinx) Kintex® UltraScale™ family of FPGAs. With multiple high-speed fabric interfaces, x8 PCI Express Gen3, 12 high-speed fiber-optic transceivers, and 8 GB of DDR4 SDRAM in two channels, the XPedite2570 is ideal for customizable, high-bandwidth, signal-processing applications.

The XPedite2570 is a reconfigurable FPGA resource designed to meet the demands of high-bandwidth applications such as packet processing, signal processing, and DSP-intensive applications. It features 12 rugged, protocol-independent fiber optic transceivers operating at up to 10.3125 Gb/s, along with 8 GB of DDR4 ECC SDRAM in two independent channels capable of up to 38 GB/s aggregate bandwidth. The XPedite2570 has several options for high-performance backplane I/O, including a x8 Gen3 PCI Express interface, dual GTH transceivers with a maximum data rate of 16.375 Gb/s, and up to 44 LVDS transceivers for user I/O.

The XPedite2570 incorporates 12 high-data-rate, protocol-independent fiber-optic receivers. The fiber-optic receivers utilize 50/125 µm multi-mode fiber with MT connectors, which can easily be connected to the backplane (VITA 66). The fiber-optic receivers are qualified over the full -40°C to +85°C industrial temperature range for reliable performance in extreme environments.

The XPedite2570 is designed to be a user-programmable FPGA resource, using the powerful AMD Kintex® UltraScale™ XCKU115 FPGA to support high-performance signal processing, sensor I/O, data acquisition, data recording, and linking systems in a range of protocols.

The XPedite2570 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. X-ES' FDK includes IP blocks, HDL, test benches, Linux drivers, and complete example designs for the XPedite2570.

X-ES
Extreme Engineering Solutions

"Fast, Flexible, Customer-Focused Embedded Solutions"

Extreme Engineering Solutions
9901 Silicon Prairie Parkway • Verona, WI 53593
Phone: 608.833.1155 • Fax: 608.827.6171
sales@xes-inc.com • https://www.xes-inc.com

FPGA

- AMD (formerly Xilinx) Kintex® UltraScale™ XCKU115 FPGA for high-performance logic and DSP applications
- 8 GB of DDR4 ECC SDRAM in two channels
- 1 GBit of configuration NOR Flash

Optical Interfaces

- 12-channel transmitter and receiver modules
- 14 Gb/s max line rate
- Socketed Samtec FireFly optics
- I²C register interfaces
- Industrial temperature range

VPX (VITA 46) P1 I/O

- One x8 PCI Express Gen3 interface to P1.A
- Two additional GTH-capable High-Speed Serial (HSS) lanes
- Twelve LVDS and two single-ended GPIO

VPX (VITA 46) P2 I/O

- Thirty-two LVDS and eight single-ended GPIO

Development Support

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

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.

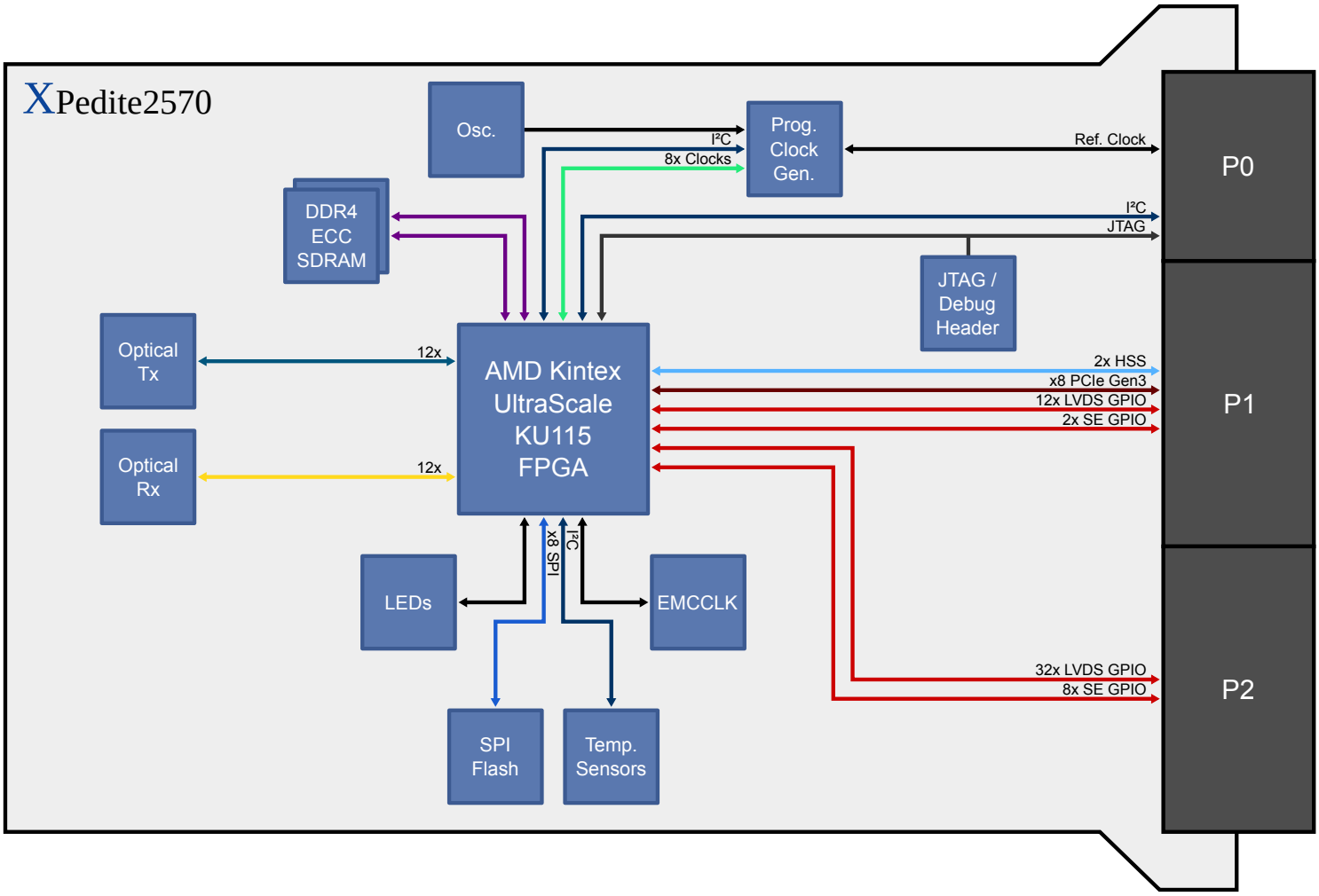
- Supported ruggedization levels (see chart below): 3, 5
- Conformal coating available as an ordering option

Power Requirements

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

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

† Contact factory for airflow rate details.



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