

XPedite7683

Intel® Xeon® D-1500 Processor-Based 3U VPX Module with 32 GB of DDR4, XMC Support, and SecureCOTS™

- ▶ 3U VPX (VITA 46) module
- ▶ Compatible with multiple VITA 65 OpenVPX™ slot profiles
- ▶ Supports Intel® Xeon® D-1500 family processors (formerly Broadwell-DE)
- ▶ Up to 16 Xeon®-class cores in a single, power-efficient SoC package
- ▶ 4-, 8-, or 12-core SKUs available with native extended temperature support
- ▶ Up to 32 GB of DDR4 ECC SDRAM in two channels
- ▶ XMC site with a x8 PCIe interface and rear I/O support
- ▶ Ruggedized Enhanced Design Implementation (REDI) per VITA 48
- ▶ Designed with SecureCOTS™ technology to support enhanced security and trusted computing
- ▶ Microsemi SmartFusion@2 SoC with 1 GB DDR3 ECC SDRAM and 128 MB SPI flash
- ▶ Up to 128 GB of NAND flash
- ▶ Two x4 PCI Express backplane fabric interconnects
- ▶ Two 10 Gigabit Ethernet ports and two Gigabit Ethernet ports
- ▶ Four SATA ports and two USB 2.0 ports
- ▶ One XMC (J16) SATA port for secure storage (XPort6105)
- ▶ coreboot firmware powered by Intel® FSP
- ▶ Wind River VxWorks BSP
- ▶ X-ES Enterprise Linux (XEL) BSP
- ▶ Contact factory for availability of Green Hills INTEGRITY, QNX Neutrino, and LynxWorks LynxOS BSPs, as well as Microsoft Windows drivers



XPedite7683

The XPedite7683 is a secure, high-performance, 3U OpenVPX™, single board computer based on the Intel® Xeon® D-1500 family of processors. Providing up to 16 Xeon®-class cores, up to 32 GB of DDR4 ECC SDRAM, and XMC support, the XPedite7683 is an optimal choice for computationally heavy applications requiring maximum data and information protection.

The XPedite7683 integrates SecureCOTS™ technology with a Microsemi SmartFusion@2 security SoC for hosting custom functions to protect data from being modified or observed, and provides an ideal solution when stringent security capabilities are required. The Microsemi SmartFusion@2 can control, intercept, and monitor the Xeon® D subsystem, implement penalties, and interface to the system through GPIO directly connected to the VPX backplane. Circuit board enhancements and optimized Two-Level Maintenance (2LM) metalwork provide additional protection to the physical hardware.

The XPedite7683 maximizes network performance with two 10 Gigabit Ethernet interfaces and two Gigabit Ethernet interfaces. It accommodates up to 32 GB of DDR4 ECC SDRAM in two channels and up to 128 GB of onboard SATA NAND flash in addition to numerous I/O ports, including USB, SATA, and RS-232/422/485 through the backplane connectors. The XPedite7683 provides additional expansion capabilities with an integrated XMC site, which includes a x8 PCIe connection to the Intel® Xeon® D processor and X12d I/O mapped directly to the VPX backplane connectors.

Wind River VxWorks and X-ES Enterprise Linux Support Packages (XEL) are available. The XPedite7683 uses coreboot, powered by Intel®'s Firmware Support Package (FSP), to provide fast boot times and significantly simplify code traceability over legacy BIOS implementations.

X-ES

Extreme Engineering Solutions

*“Fast, Flexible, Customer-Focused
Embedded Solutions”*

Extreme Engineering Solutions

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Processor

- Intel® Xeon® D-1500 family processors (formerly Broadwell-DE)
- Up to 16 Xeon®-class cores in a single, power-efficient SoC package
- 4-, 8-, or 12-core SKUs available with native extended temperature support

Memory

- Up to 32 GB of DDR4 ECC SDRAM in two channels
- Up to 128 GB of SATA NAND flash
- 32 MB NOR boot flash
- 64 kB EEPROM

Security and Management

- Microsemi SmartFusion®2 security FPGA with 1 GB DDR3 ECC SDRAM and 128 MB SPI flash
- Designed with SecureCOTS™ technology to support enhanced security and trusted computing
- Microsemi SmartFusion®2 zeroization
- System voltage monitor, power-on/reset control, non-volatile write-protection control
- Non-Deterministic Random Number Generator, Encryption
- Environmental sensors (see product manual)
- Trusted Platform Module (TPM) 1.2 or 2.0
- NAND flash Secure Erase and additional NAND security features

VPX (VITA 46) P0 I/O

- Two Microsemi SmartFusion®2 I²C ports

VPX (VITA 46) P1 I/O

- x4 PCI Express Gen3-capable interface to P1.A
- x4 PCI Express Gen3-capable interface to P1.B
- Two 10GBASE-KR Ethernet ports
- XMC P16 I/O, mapping P1w9-X12d per VITA 46.9

VPX (VITA 46) P2 I/O

- Two 10/100/1000BASE-T Ethernet ports
- Four SATA ports capable of 6 Gb/s
- Two USB 2.0 ports
- Up to six RS-232 or four RS-422/485 serial ports
- GPIO from Microsemi SmartFusion®2
- GPIO from processor

Software Support

- coreboot firmware powered by Intel® FSP
- Wind River VxWorks BSP
- X-ES Enterprise Linux (XEL) BSP
- Contact factory for availability of Green Hills INTEGRITY, QNX Neutrino, and LynuxWorks LynxOS BSPs, as well as Microsoft Windows drivers

XMC Site

- x8 PCI Express Gen3-capable interface
- One SATA port
- Six Microsemi SmartFusion®2 GPIO

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
- 1.0 in. pitch with Two-Level Maintenance (2LM) support (optional)

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
- Thermal performance will vary based on CPU frequency and application
- Contact X-ES for air-cooled development options

Power Requirements

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

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

