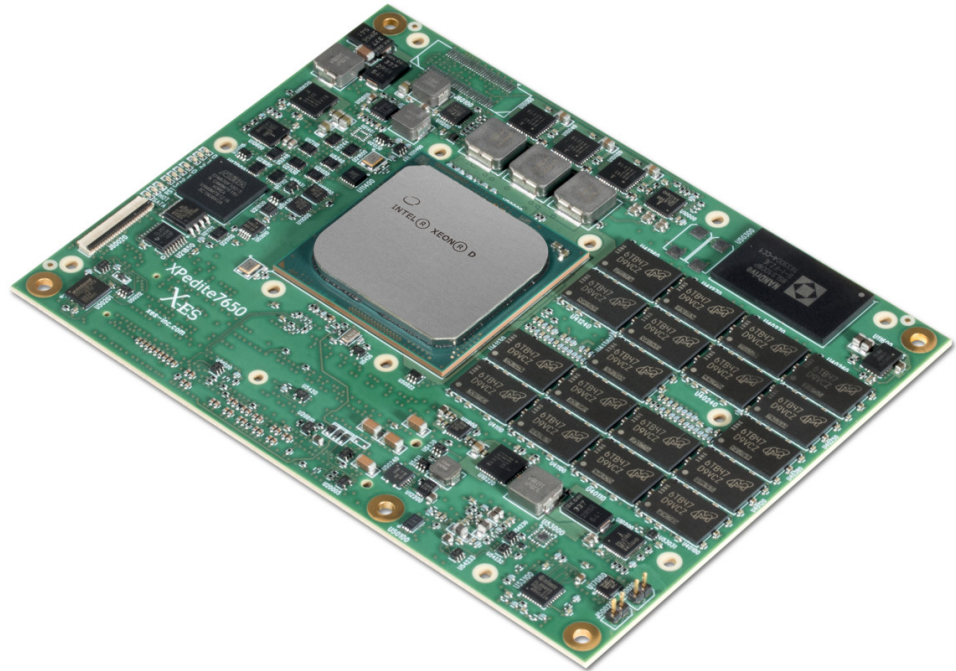# XPedite7650

Intel® Xeon® D-1500 Family Processor-Based Rugged COM Express® Basic (Type 7) Module with Dual 10 Gigabit Ethernet

- ❯ 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

- ❯ Standard COM Express® Basic form factor with ruggedization enhancements

- ❯ COM Express® enhanced Type 7 pinout

- ❯ Up to 32 GB of DDR4-2133 ECC SDRAM in two channels

- ❯ 24 lanes of PCIe Gen3, available as one x8 PCIe interface and one x16 PCIe interface

- ❯ Up to 8 lanes of PCIe Gen2 (eight x1 interfaces)

- ❯ Two 10GBASE-KR Ethernet ports

- ❯ One Gigabit Ethernet port

- ❯ Four USB 3.0 ports

- ❯ Two SATA ports

- ❯ Two LVTTL serial ports

- ❯ Wind River VxWorks BSP

- ❯ X-ES Enterprise Linux (XEL) BSP

- ❯ coreboot firmware powered by Intel® FSP

- ❯ Contact factory for availability of Green Hills INTEGRITY, QNX Neutrino, and LynuxWorks LynxOS BSPs, as well as Microsoft Windows drivers

XPedite7650

The XPedite7650 is an enhanced, Type 7 COM Express® module based on the Intel® Xeon® D-1500 family processors (formerly Broadwell-DE). COM Express® provides a standards-based form factor to bring PC processing to a wide range of applications. The XPedite7650 is ideal for the high-bandwidth and processing-intensive requirements of today's commercial, industrial, and military applications. The small footprint and standards-based form factor make the XPedite7650 perfect for portable and rugged environments, while providing an upgrade path for the future.

The XPedite7650 accommodates up to 32 GB of DDR4-2133 ECC SDRAM in two channels to support memory-intensive applications. The XPedite7650 also hosts numerous I/O ports and interfaces, including 10 Gigabit Ethernet, Gigabit Ethernet, PCI Express, SATA, USB 3.0, LPC, SMB, I²C, and LVTTL serial.

Wind River VxWorks and X-ES Enterprise Linux Support Packages (XEL) are available. The XPedite7670 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

...Always Fast

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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 DDR4-2133 ECC SDRAM in two channels
- Up to 32 GB of SLC NAND flash
- 32 MB NOR boot flash
- 64 kB EEPROM

COM Express®

- Basic form factor (95 mm x 125 mm)
- Enhanced Type 7 pinout
- Adds non-volatile write protect
- Adds two external interrupts
- Adds boot flash select

Ruggedization and Reliability

- Class III PCB fabrication and assembly
- Soldered DDR4 ECC SDRAM
- Tin whisker mitigation
- Designed and tested for extended solder joint reliability
- Additional mounting holes for rugged and conduction-cooled environments
- BIT support

Interface

- Four USB 3.0 ports
- Two SATA ports capable of 6 Gb/s
- Two 10GBASE-KR Ethernet ports with optional management sideband signals
- One 10/100/1000BASE-T Ethernet port
- One x16 PCI Express Gen3-capable interface
- One x8 PCI Express Gen3-capable interface
- Up to eight x1 PCI Express Gen2-capable interfaces
- Two LVTTL serial ports
- LPC
- Eight GPIO interfaces

Additional Features

- Non-volatile memory write protection
- Trusted Platform Module (TPM)

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

Physical Characteristics

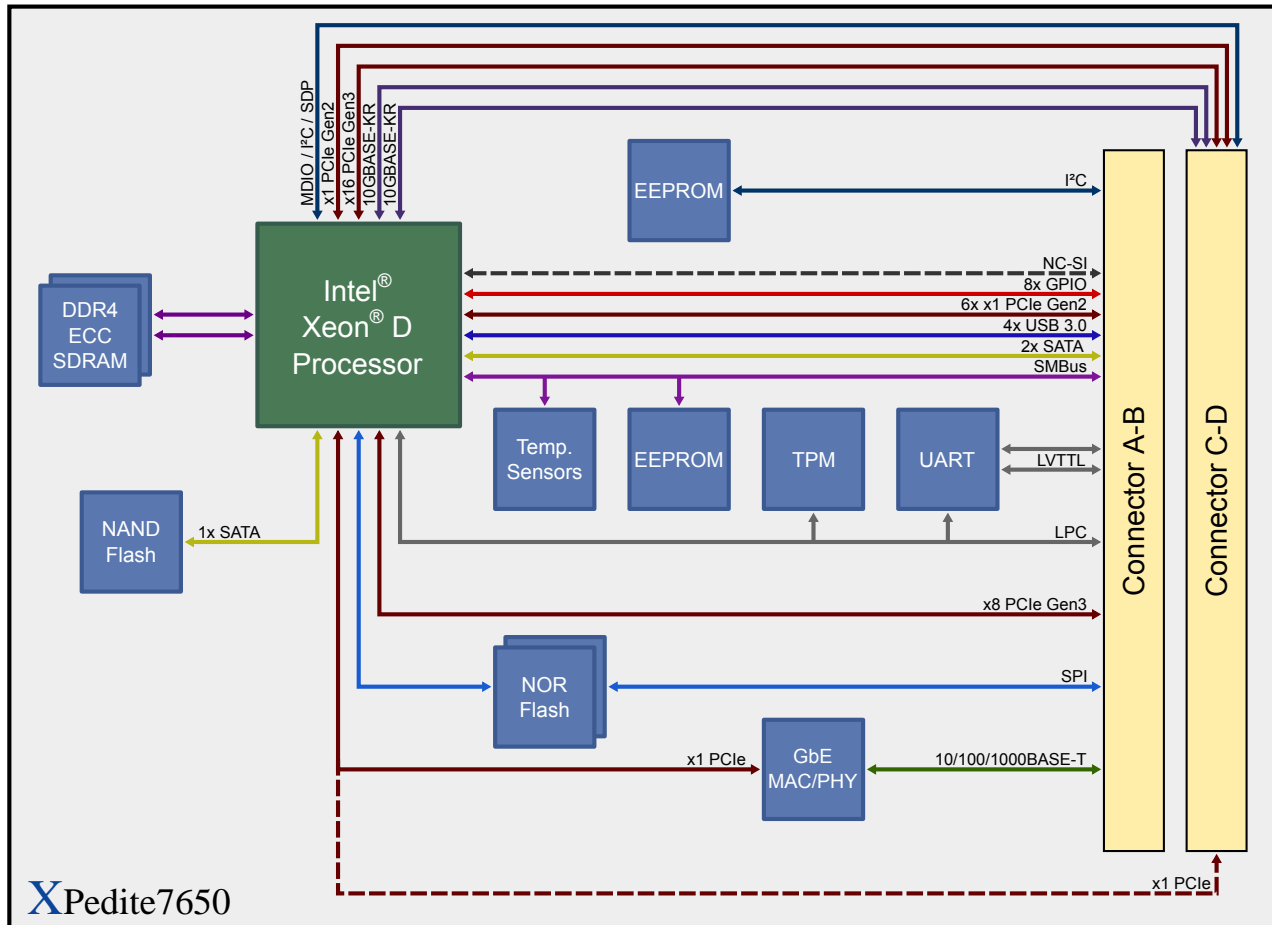- COM Express® Basic (Type 7) form factor
- Dimensions: 95 mm x 125 mm

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 (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

XPedite7650