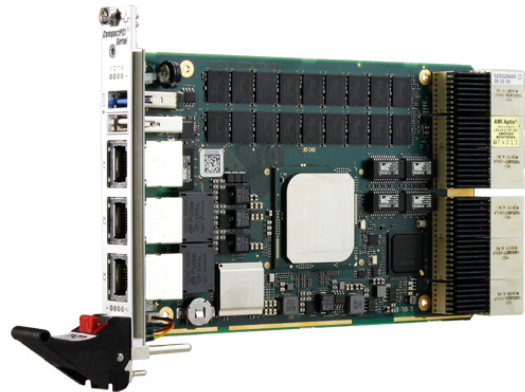# G25A

3U CompactPCI Serial Intel Xeon D CPU Board

» **Intel Xeon D-1500, up to 16 cores**

» **Up to 32 GB DDR4 DRAM soldered, ECC**

» **2 10 Gb Ethernet, 1 Gb Ethernet, 1 USB 3.0, 1 RS232 for configuration**

» **4 HP system master and peripheral slot**

» **PICMG CPCI-S.0 CompactPCI Serial**

» **microSD card slot**

» **Standard rear I/O: 28 PCIe lanes, 2 USB 3.0, 6 SATA, 4 Gb Ethernet**

» **Built-in Intel VT hardware virtualization**

» **Trusted Platform Module (TPM)**

The G25A is a high-performance multicore CPU platform based on Intel's Xeon D-1500 System-on-a-Chip (SoC). The G25A is the first member of a new family of CPU boards for CompactPCI Serial specifically designed for high data bandwidth based on PCIe 3.0, PCIe 2.0 and Gigabit Ethernet via the backplane. The G25A provides high data bandwidth on the front panel via two 10 Gigabit Ethernet interfaces on RJ45 or M12 connectors. The G25A paired with I/O cards can be ideally used for transferring data from and to storage media, the Internet via LTE, WiFi, copper or optical Ethernet. Its up to 16 processor cores and built in Intel VT-d and VT-x support make the board ideally suited for virtualization applications.

Serial interfaces at the rear I/O connectors are 2 USB 3.0, 6 SATA interfaces, four PCI Express x1 links, two PCI Express x4 links and two PCI Express x8 links and four Gigabit Ethernet interfaces.

The memory configuration of the G25A includes a state-of-the-art fast DDR4 DRAM with ECC which is soldered to the board to guarantee optimum shock and vibration resistance. A microSD card device which is connected via a USB interface offers space for user applications or as a local boot medium.
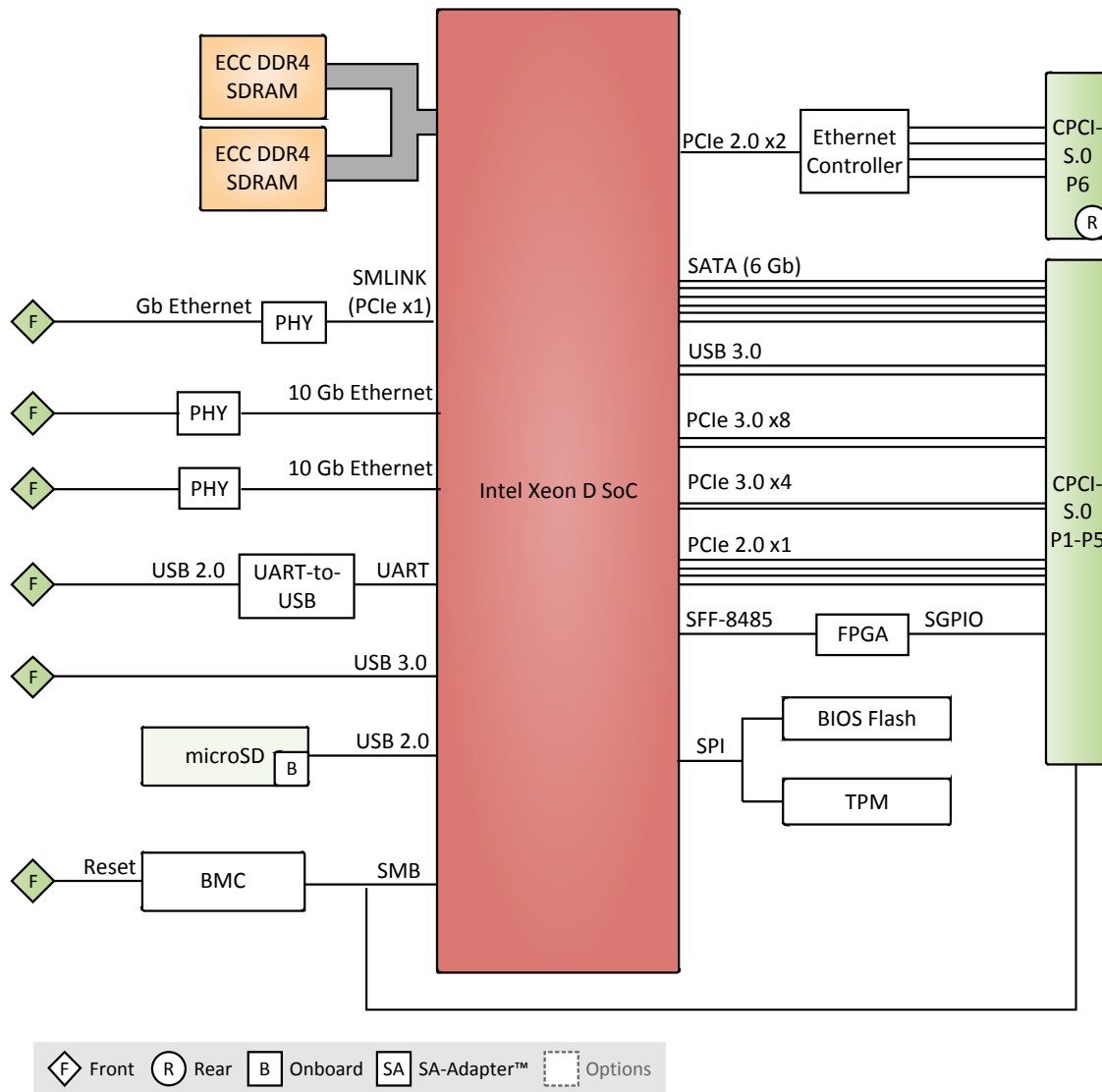
For system security, a Trusted Platform Module is assembled on the board.

A board management controller provides thermal supervision of the

processor and a watchdog for the operating system.

The G25A operates in Windows and Linux environments as well as under real-time operating systems that support Intel's multi-core architecture.

The AMI Aptio BIOS was specially designed for embedded system

applications.

The G25A comes with a tailored heat sink within 4 HP height. All components are soldered for protection against shock and vibration according to applicable DIN, EN or IEC industry standards. The G25A is also ready for coating so that it can be used in humid and dusty environments and has a guaranteed minimum standard availability of 7 years. These features make the G25A perfectly suited for harsh environments.

Data Sheet

ECC DDR4 SDRAM			PCIe 2.0 x2 → Ethernet Controller	CPCI-S.0 P6 (R)
ECC DDR4 SDRAM				

Gb Ethernet — PHY — SMLINK (PCIe x1)

10 Gb Ethernet — PHY

10 Gb Ethernet — PHY

USB 2.0 — UART-to-USB — UART

USB 3.0

microSD (B) — USB 2.0

Reset — BMC — SMB

Intel Xeon D SoC

SATA (6 Gb)

USB 3.0

PCIe 3.0 x8

PCIe 3.0 x4

PCIe 2.0 x1

SFF-8485 — FPGA — SGPIO

SPI — BIOS Flash

TPM

CPCI-S.0 P1-P5

◇ F — Front Ⓡ R — Rear ☐ B — Onboard ☐ SA — SA-Adapter™ ☐ Options

Diagram

CPU
- The following CPU types are available:
  - Intel Xeon D-1539, 8 Cores
  - Intel Xeon D-1577, 16 Cores
  - Intel Pentium D-1519, Quad Core
- Intel Virtualization Technology (Intel VT)
  - VT-d
  - VT-x
- Intel Turbo Boost Technology
- Intel Hyper-Threading Technology

Security
- Trusted platform module (TPM 2.0)

Memory
- System Memory
  - Soldered DDR4, ECC support
  - 8 GB
  - 16 GB
  - 32 GB
- Boot Flash
  - 16 MB

Mass Storage
- The following mass storage device can be assembled:
  - microSD card

Front Interfaces
- USB
  - One Series A connector, USB 3.0
  - One configuration port implemented as a USB 2.0 device interface
- Ethernet
  - Two RJ45 connectors, 10GBASE-T, or
  - Two 8-pin M12 connectors, X-coded, 10GBASE-T
  - One RJ45 connector, 1000BASE-T, or
  - One 8-pin M12 connector, X-coded, 1000BASE-T
  - Two link and activity LEDs per Ethernet channel
- Front-panel LED for board status
- Hot-plug LED
- Reset button

Rear Interfaces
- SATA
  - Six channels, SATA Revision 3.x, RAID level 0/1/5/10 support
- USB
  - Two channels, USB 3.0
- Ethernet
  - Four channels, 1000BASE-T
- PCI Express
  - Four x1 links, PCIe 2.x
  - Two x4 links, PCIe 3.x
  - Two x8 links, PCIe 3.x

Supervision and Control
- Board controller
- Watchdog timer
- Temperature measurement
- Real-time clock with supercapacitor or battery backup

Backplane Standard
- Compliance with CompactPCI Serial PICMG CPCI-S.0 Specification
- System or peripheral slot

Technical Data

Electrical Specifications	■ Supply voltages
	   □ +12V (9.5..15.5V), 6 A nominal, 8 A maximum (depending on CPU and board configuration)
	   □ +5V (-5%/+5%) standby voltage optional

Mechanical Specifications	■ Dimensions
	   □ 3U, 4 HP, or
	   □ 3U, 8 HP
	■ Weight: tbd (model tbd)

Environmental Specifications	■ Temperature range (operation)
	   □ EN 50155 class T1, T2, T3 or TX
	   □ Airflow 2.5 m/s
	   □ Depends on system configuration (CPU, hard disk, heat sink...)
	■ Temperature range (storage): -40°C to +85°C
	■ Cooling concept
	   □ Air-cooled
	   □ Conduction-cooled in MEN CCA frame
	■ Humidity: EN 60068-2-30, EN 50155
	■ Altitude: -300 m to +2000 m
	■ Shock: EN 50155 cat 1 class b
	■ Vibration: EN 50155 cat 1 class b

Reliability	■ MTBF: tbd h @ 40°C according to IEC/TR 62380 (RDF2000) (model tbd)

Safety	■ Flammability
	   □ UL 94V-0
	■ Electrical Safety
	   □ EN 62368-1 (former EN 60950-1)

EMC	■ EN 55022 class B, EN 50121-3-2 (radiated and conducted emission) ■ EN 55024, EN 50121-3-2 (immunity)
Software Support	■ Windows ■ Linux ■ For more information on supported operating system versions and drivers see Software.
BIOS	■ AMI Aptio

Technical Data

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