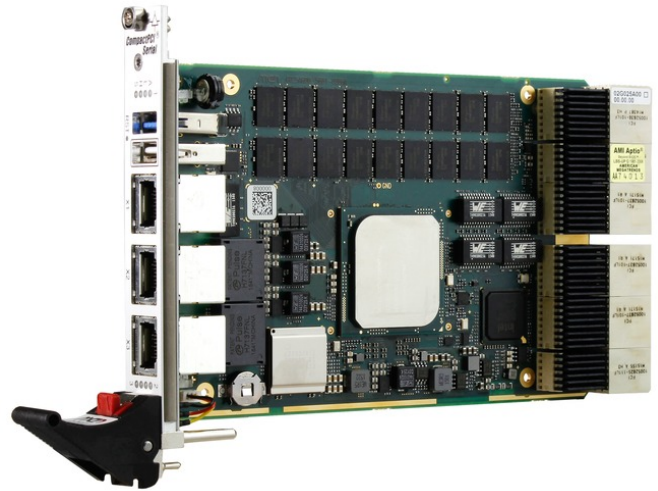


G25A

Embedded Single Board Computer with Intel Xeon D 3U CompactPCI Serial

- » *Intel Xeon D-1500 (Broadwell DE)*
- » *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*
- » *VGA, RS232, RS422/RS485 and USB 3.0 available on special I/O board*
- » *Built-in Intel VT hardware virtualization*
- » *Trusted Platform Module (TPM)*



High Performance for Virtualization Applications

The G25A is a high-performance multicore CPU platform based on Intel's Xeon D-1500 System-on-a-Chip (SoC). Paired with I/O cards, the G25A can be ideally used for transferring data from and to storage media, the Internet via LTE, wireless, 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.

The G25A offers high data bandwidth on both the front and the rear I/O interfaces. Two 10 Gigabit Ethernet interfaces are available on RJ45 or M12 connectors at the front, for example.

USB 3.0, SATA revision 3.x, PCI Express 3.0 and Gigabit Ethernet interfaces on front and rear complement the I/O possibilities of the board.

Ruggedized Memory and Mass Storage

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 offers space for user applications or as a local boot medium.

System Security and Board Management

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.

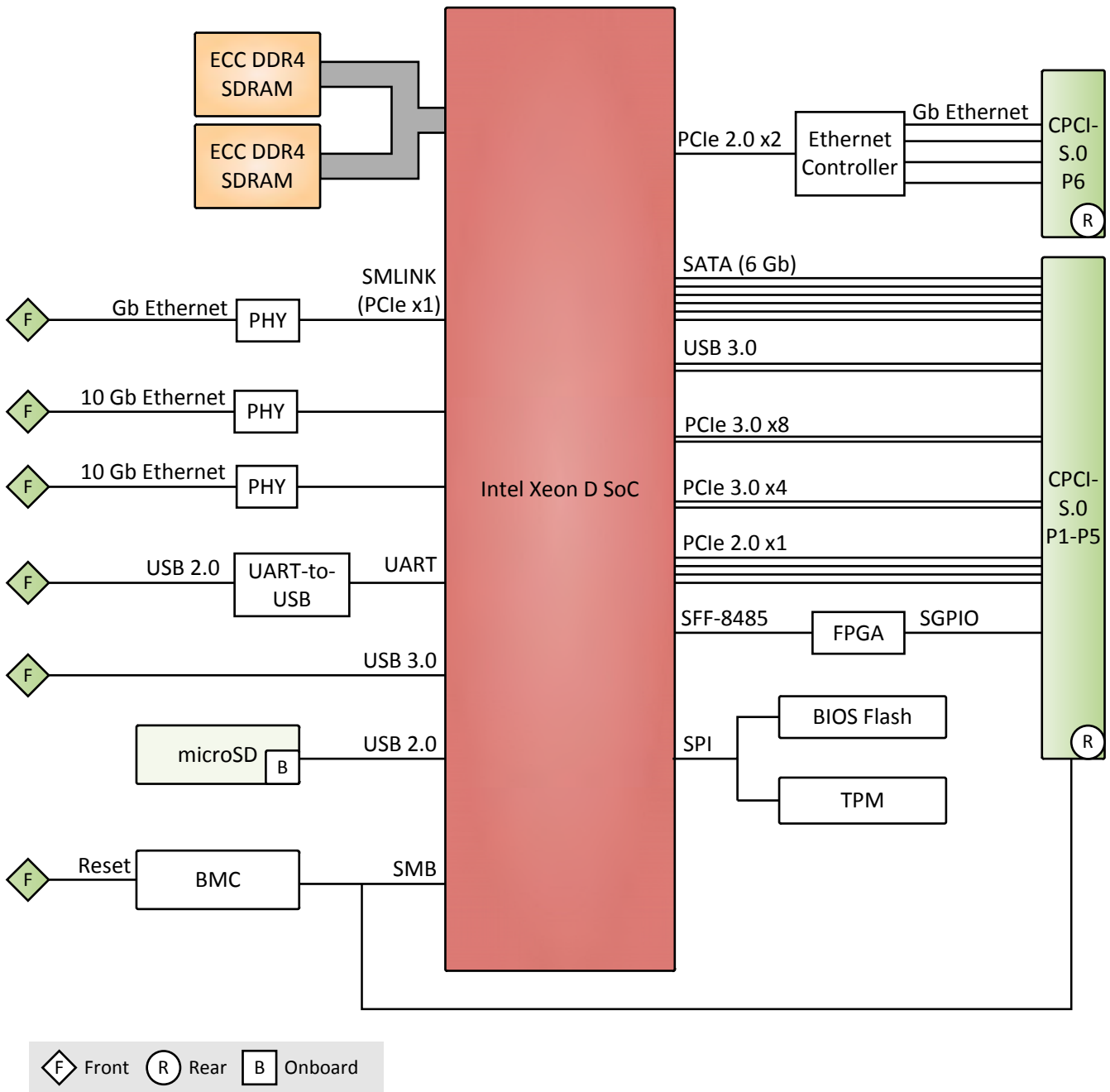
Perfect for Embedded and Harsh Environments

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

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 board is also ready for coating so that it can be used in humid and dusty environments. It is available until 2023.

G229 I/O Extension Board

The G229 offers one M.2 slot, three USB 3.0 interfaces, one RS232 interface, one RS422/RS485 interface, one VGA via PCI Express Mini card and up to three flexible slots for two additional RS232 or RS422/RS485 interfaces. It is combined with the G25A to form a space-saving solution with a bigger heat sink.



Diagram



CPU

- The following CPU types are supported:
 - Intel Xeon D-1508, 2 cores, 4 threads, 2.2 GHz, 2.6 GHz Turbo Boost, 25 W, 3 MB cache
 - Intel Xeon D-1509, 2 cores, 2 threads, 1.5 GHz, 19 W, 3 MB cache
 - Intel Pentium D1519, 4 cores, 8 threads, 1.5 GHz, 2.1 GHz Turbo Boost, 25 W, 6 MB cache
 - Intel Xeon D-1527, 4 cores, 8 threads, 2.2 GHz, 2.7 GHz Turbo Boost, 35 W, 6 MB cache
 - Intel Xeon D-1529, 4 cores, 8 threads, 1.3 GHz, 1.3 GHz Turbo Boost, 20 W, 6 MB cache
 - Intel Xeon D-1539, 8 cores, 16 threads, 1.6 GHz, 2.2 GHz Turbo Boost, 35 W, 12 MB cache
 - Intel Xeon D-1548, 8 cores, 16 threads, 2 GHz, 2.6 GHz Turbo Boost, 45 W, 12 MB cache
 - Intel Xeon D-1559, 12 cores, 24 threads, 1.5 GHz, 2.1 GHz Turbo Boost, 45 W, 18 MB cache
 - Intel Xeon D-1577, 16 cores, 32 threads, 1.3 GHz, 2.1 GHz Turbo Boost, 45 W, 24 MB cache

Memory

- System RAM
 - Soldered DDR4, ECC
 - 32 GB max.

Security

- Trusted Platform Module 2.0

Mass Storage

- The following mass storage devices can be assembled:
 - microSD card

Interfaces

- This product includes interface options
 - Different front connectors
 - I/O expansion via add-on board
- SATA
 - 6 × SATA Revision 3.x, backplane
- USB
 - 1 × USB 3.0, Type A
 - 1 × USB-to-UART, Type A
 - 2 × USB 3.0, backplane
- Ethernet
 - 2 × 1000BASE-T/10GBASE-T, M12, X-coded, receptacle
 - 1 × 10/100/1000BASE-T, M12, X-coded, receptacle
 - 2 × 1000BASE-T/10GBASE-T, RJ45
 - 1 × 10/100/1000BASE-T, RJ45
 - 4 × 10/100/1000BASE-T, backplane
- PCI Express
 - 4 × PCIe 2.0, x1, backplane
 - 2 × PCIe 3.0, x4, backplane
 - 2 × PCIe 3.0, x8, backplane
- Reset
 - Reset button
- LED
 - Status: board status (BMC)
 - Ethernet: activity, link
 - CPCI hot-plug

Supervision and Control

- Board management controller
- Temperature measurement
- Watchdog timer
- Real-time clock, buffered by battery (1 year) or supercapacitor (3 days)

Product Standard

- CompactPCI Serial: CompactPCI Serial PICMG CPCI-S.0 Specification
- Peripheral slot
- System slot

Electrical Specifications

- Supply voltage: +12 V (9.5 V to 15.5 V)
- Power consumption: 72 W max.

Mechanical Specifications

- Dimensions
 - 3U, 4 HP
 - 3U, 8 HP
 - 3U, 12 HP (with G229 peripheral board)
- Weight: 228 g (model 02G025A00 without heat sink)
- Cooling
 - Air cooling, forced convection, required airflow depending on CPU
 - Conduction cooling

Product Compliance: Rail - Rolling Stock

- Operating temperature
 - -25 °C to +70 °C (EN 50155:2007, class T1, board)
 - -25 °C to +85 °C (EN 50155:2007, class T3, board)
 - -40 °C to +70 °C (EN 50155:2007, class T2, board)
 - -40 °C to +85 °C (EN 50155:2007, class TX, board)
 - Depending on system configuration (CPU, hard disk, heat sink,...)
- Storage temperature: -40 °C (EN 60068-2-1:2007, Ab) to +85 °C (EN 60068-2-2:2007, Bb)
- Altitude: -300 m to +2000 m
- Shock: 50 m/s² / 30 ms (EN 61373:2010, vehicle body, cat. 1, class B)
- Vibration: 10 min @ 1.01 m/s² and 5 h @ 5.72 m/s² (EN 61373:2010, vehicle body, cat. 1, class B)
- EMC emission: EN 50121-3-2:2015
- EMC immunity: EN 50121-3-2:2015

Product Compliance: Information Technology Equipment

- Humidity: +55 °C and +25 °C, 90 % to 100 % RH (EN 60068-2-30:2005, Db)
- Electrical safety: EN 62368-1:2014 + AC:2015
- Flammability (PCBs): UL 94 V-0
- EMC emission: EN 55022 class B (information technology equipment)
- EMC immunity: EN 55024:2010 + A1:2015 (information technology equipment)

Reliability

- MTBF: 311 585 h predicted @ 40 °C according to IEC/TR 62380 (RDF 2000)

BIOS/Boot Loader

- AMI Aptio UEFI Firmware

Software Support

- Linux
 - Supported kernel: 4.14 or higher
 - Yocto BSP
 - Driver support
 - Tool support
 - Tested with: Yocto BSP (Sumo 2.5, Linux kernel 4.15)
- Windows
 - Driver support
 - Tool support
- See also [Application Note Recommendations for a Robust Software Setup](#)
- See section [Software](#) on the product web page for available packages

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