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Application Note

Portwell, Inc.



PCOM-B705GT: A COM Express® Type 7 Basic Size Module Featuring Intel® Xeon® D-1700 Processor Series Advancing Real-Time Performance for Edge AI Computing and Software Defined Networking (SDN) Applications

The interconnectedness of systems, processes and data demands viable and scalable computing resolutions. Inevitably, embedded computing design faces ever-emerging challenges, such as more advanced multi-core processing with AI capabilities, enhanced compute efficiency for real-time workloads, wider range of operating temperature support for critical environment deployments, and much more.

Situation

As an edge computing enabler, embedded computing solutions must meet the requirements, including but not limited to, high-performance computing, shortened processing time and real-time computing capabilities. Extending to the use cases of access edge and regional data centers, as software-defined computing technology is utilized on more and more networking applications to simplify management of system backup and failover operations, superior computing performance and enhanced network throughput have become essential requirements.

Even though this industry-wide “edge AI” transformation is proceeding with ever-increasing speed, there are dynamically complex digital transformation challenges yet to be overcome. Whether it’s connecting the industrial edge devices to enterprise networks or facilitating deterministic communications from industrial endpoints to IT edge computing servers, it must ensure effective real-time processing performance that does not impact the safe and secure operations of OT (Operational Technology) endpoints in any way.



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Solution

In response, Portwell has designed and developed PCOM-B705GT, a COM Express Type 7 Basic Size module (125mm x 95mm) featuring Intel® Xeon® D-1700 series processors providing server-grade computing power with extended temperature support on a small-form-factor platform featuring from 4 up to 10 computing cores. The Portwell PCOM-B705GT is designed to empower a multitude of IoT computing devices from the edge to data center, and cloud, delivering AI capabilities and optimized real-time, high-performance computing power. Moreover, PCOM-B705GT's modular design concept helps accelerate the development and deployment of scalable infrastructure and applications.

More specifically, to fulfill the demand and requirements of edge server computing, in addition to software technologies and infrastructure, the fundamental enabler is application-specific computing hardware and architecture designed with powerful performance. Built with the Intel Xeon D-1700 processors, Portwell's PCOM-B705GT delivers 4C/8T to 10C/20T computing power for an extensive array of multi-tasking, compute-intensive workload consolidation applications. In addition, it features Intel Time Coordinated Computing (TCC), Intel Deep Learning Boost (Intel DL Boost) including Vector Neural Network Instructions (VNNI), as well as Time-Sensitive Networking (TSN) to enable enhanced performance for demanding AI workloads in data science and machine/deep learning inference, for example. Furthermore, featuring up to 4x 10GBASE-KR Ethernet and 4x DDR4 ECC/non-ECC SO-DIMMs up to 128GB memory capacity, PCOM-B705GT also provides 16x lanes of PCIe Gen 4 and 16x lanes of PCIe Gen 3 interfaces, which double the data transfer rate over PCIe Gen 3, delivering higher bandwidth and lower latency, and facilitating extended bandwidth to external PCIe GPU/DPU cards for diverse AI and server applications.

All in all, the Portwell PCOM-B705GT, built with Intel Xeon D-1700 processor series featuring powerful edge AI-centric capabilities and support for industrial use conditions, can be the transformational building block for computing solutions in IoT appliance, edge server, real-time system applications, and much more. Plus, offered with long life product support of 10+ years, Portwell believes it could very well be the new resolution for next-gen computing designs to sustain operations in the rugged edge conditions, tackling challenges caused by abrupt climate changes, while at a concurrent pace, accelerate operational efficiency that separates your business from the competition, now and well into the future.

PCOM-B705GT

COM Express Type 7 Basic Size Module with Intel Xeon D-1700 Processor

- Intel Xeon D-1700 processor series in latest COM Express Type 7 Basic Size architecture to provide high-density compute and high I/O throughput
- Intel DL Boost enabling enhanced performance for deep learning AI workloads
- Intel TCC/TSN for low latency real-time task and management
- Up to 10C/20T and supporting industrial temperature range via selected SKUs
- 4x DDR4 ECC/non-ECC SO-DIMMs up to 128GB

PCOM-B705GT

COM Express Type 7 Module with
Intel® Xeon® D-1700 Processor for
Edge AI Computing and SDN Application



About Portwell

Portwell, Inc., an IoT Solutions Titanium Partner of the Intel Partner Alliance, designs and manufactures a full range of IPC products (SBC, backplane, redundant power supply, rack mount & node chassis), embedded architecture solutions, DVR system platforms, and communications appliances. We provide complete R&D and project management services to decrease customers' time to market and reduce project risk and cost. Portwell is also an ISO 13485, ISO 9001, and ISO 14001-certified company that deploys quality assurance through product design, verification, and manufacturing processes.

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