SiliconMotion

MonTitan™ PCIe Gen5 Enterprise SSD Reference Design Kits

MonTitan™

Enterprise Features

- **Dual Port**
- **Namespaces**
- **Advanced Telemetry**
- **Latency Monitoring**
- **E2E Data Protection**
- **Secure Boot**
- **SR-IOV and MPF**
- **PCIe VDM and VPD over SMBus**
- **Enterprise Security**
- **Flexible Data Placement**

Silicon Motion's MonTitan™ is a high-performance, user-programmable PCIe Gen5 development platform targeting the most challenging Datacenter and Enterprise SSD solutions. It is available with the production-ready SM8366 Flash controller ASIC, Turnkey and Layered Enterprise firmware, and **SSD Reference Design Kits** to enable customers' rapid time-to-market design providing the best total cost of ownership (TCO).

With best-in-class performance, power, and high-capacity support, MonTitan™ is ideal for today's data center challenges and emerging HPC, Edge, and AI applications.

MonTitan™ supports the NVM Express 2.0b, and OCP Data Center NVMe SSD 2.0 specifications with firmware optimized for power and performance in standard form factors including E1.S (9.5/15/25 mm), E3.S, and U.2.

SM8366 PCIe Gen5 x4 NVMe SSD Controller

- Dual Ported
- 16 channels @ 2400MT/s
- Blazingly fast Sequential (>14.2 GB/s) and Random (>3.5M IOPS) Performance
- Scalable Single / Dual Channel 40bit DDR4-3200 / DDR5-4800 DRAM interface

SM8366

21 x 21 mm FCBGA

Key Technologies

PerformaShape™

Configured in FW, PerformaShape™ is a multi-stage shaping algorithm to optimize SSD performance on a per user-defined QoS set bases. Combined with using true HW isolation technology, the SM8366 ensures maximum bandwidth performance while maximizing user-defined individual performance elements (QOS, Latency, RR/RW, power).

**PerformaShape™
User-defined QoS sets optimize**

Layered Firmware Stacks

Enabling NVMe and Advanced Data Placement Technologies (ZNS, FDP)

Developed with a mindset to abstract the hardware details and simplify development complexity, MonTitan™ Firmware Design Kit (FDK) is structured in layers and modules to enable seamless user configuration and customization for specific applications need.
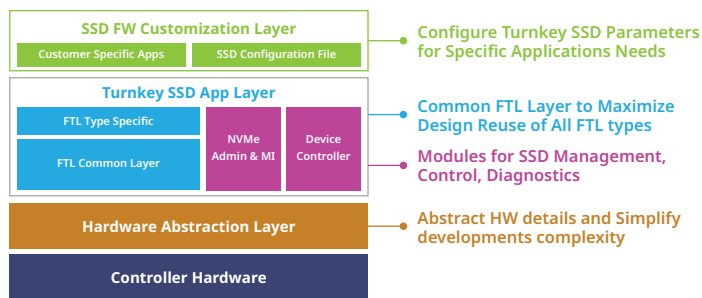
MonTitan™ Reference Design Kit Performance Specifications

The MonTitan™ Reference Design Kits (RDKs) are available in two different configurations: Conventional NVMe and the market's first QLC-based PCIe Gen5 Zoned Namespaces SSDs. Each RDK is purpose-built to support Turnkey Firmware that is power and performance-optimized per application with < 25W SSD average power and < 5W Idle SSD power.

Type	Conventional NVMe			Zone Namespaces
Flash Controller	SM8366			
Form Factor	U.2	E1.S	E3.S	U.2
Capacity	8TB	8TB	8TB	16TB
NAND	Micron B58R TLC	Micron B58R TLC	Micron B58R TLC	Micron N48R QLC
Sequential Read (MB/s)	14,200	14,200	14,200	14,000
Sequential Write (MB/s)	9,400	9,400	9,400	2,400
Random Read (KIOPs)	3,500	3,500	3,500	2,300
Random Write (KIOPs) OP%	450 @ 7% OP, 930 @ 28% OP	450 @ 7% OP	450 @ 7% OP, 930 @ 28% OP	N/A
Typical Read Latency QD1 (us)	5 + t_R	5 + t_R	5 + t_R	5 + t_R
Typical Write Latency QD1 (us)	9	9	9	9

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