**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
- Enterprise Security
- Flexible Data Placement
- Multi-Dimensional AI Storage

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 Computing, and AI applications.

MonTitan™ supports the NVM Express 2.0b, and OCP Data Center NVMe SSD 2.5 specifications with firmware optimized for power and performance in standard form factors including E1.S (9.5/15/25 mm), E3.x, and U.2/3.

## 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

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**

## Multi-Dimensional Performance for AI Storage

**High Capacity QLC AI SSDs enabled by FDP and PerformaShape™ technologies**

- Optimizes all storage workloads in different stages of the AI data pipeline
- Avoids IO blending caused by concurrent pipeline data access
- Assures subscribed performance on streams of data to maximize AI GPU performance

**Storage AI Data Pipeline**

Ingest → Prep → Train → Inference

# MonTitan™ Reference Design Kit Performance Specifications

The MonTitan™ Reference Design Kits (RDKs) are available in conventional NVMe and the market's first QLC-based PCIe Gen5, Zoned Namespaces, FDP and Multi-Dimensional SSDs for AI Support. 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 | NVMe | ZNS | NVMe w/FDP* | MD SSD* |
|---|---|---|---|---|
| Flash Controller | | | SM8366 | |
| Form Factor | E1.S / E3.S / U.2 | U.2 | U.2 | E3.S |
| Capacity | 8TB | 16TB | 16TB | 16-64TB |
| NAND | Micron B58R TLC | Micron N48R QLC | Micron N48R QLC | BiCS8 QLC |
| Sequential Read (MB/s) | 14,200 | 14,200 | 14,200 | 14,200 |
| Sequential Write (MB/s) | 9,400 | 2,900 | 2,900 | 2,900 |
| Random Read (KIOPs) | 3,500 | 2,800 | 2,800 | 2,800 |
| Random Write (KIOPs) | 450 @ 7% OP | N/A | 450 @ 7% OP | 450 @ 7% OP |

Application optimization with FDP using 8 RUHs ( WAF ~ 1.5).

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