



MonTitan™ PCIe Gen5 SSD Solutions Platform

SM8366 - High Performance PCIe Gen5 x4 NVMe Enterprise SSD Controller

MonTitan™ Platform



MonTitan™ is a high performance, user programmable PCIe Gen5 platform targeting the most challenging Datacenter and Enterprise SSD solutions. Inspired by the OCP Data Center NVMe SSD and NVMe 2.0 specifications, MonTitan™ provides a purpose-built ASIC and FW architecture supporting user SSD Application Optimization in both NVM Express (NVMe) and Host Based FTL usage models for addressing data placement in next generation NAND. Enterprise level security and rich feature set are provided without compromising performance and QoS by utilizing Silicon Motion's PerformaShape™ and NANDCommand™ technologies. Comprising the 3rd Generation NVMe controller - SM8366 (16Ch), standards-based Reference Hardware Design Kits and licensable Turnkey and FW development platforms, MonTitan™ provides the customer development option for differentiation while accelerating time to market while reducing engineering cost through a Layered FW stack.

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).

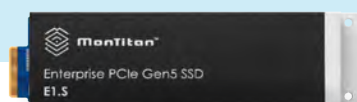
NANDCommand™

The SM8366 maximizes Enterprise NAND functionality by utilizing its 5th generation LDPC engine, machine learning, comprehensive real time media scan, data retention and endurance extension algorithms. These algorithms are efficiently combined with high performance soft-decoding, multi-pass and multi-plane handling, smart buffer management and fine granularity of read/write partitioning for optimized command of next generation low latency TLC/QLC NAND.

SM8366 PCIe Gen5 x4 NVMe SSD Controller

The SM8366 is MonTitan™ platform's high performance, dual ported Enterprise and Data Center PCIe Gen5 x4 NVMe controller containing 16 channels and supporting up to 2400MT/s. The SM8366 provides industry leading blazingly fast Sequential (>14.2 GB/s) and Random (>3.5M IOPS) SSD performance and contains a scalable Single / Dual Channel 40bit DDR4-3200 / DDR5-4800 DRAM interface.

The SM8366 is provided in a 21mm x21mm FCBGA package enabling a single chip and FW stack to be used across all new EDSFF form factors.



E1.S (9.5/15/25 mm)



E3.S



U.2

SM8366

High Performance PCIe Gen5 x4 NVMe
Enterprise SSD Controller



MonTitan™ with SM8366 Features

Host Interface	PCIe Gen5 x4/x2 or (Dual Independent) Gen5 x2/x2, Gen5 x1/x1
Specifications	<ul style="list-style-type: none"> • NVMe 2.0a protocol support • OCP Data Center NVMe SSD 2.0 Specification Optimized for power and performance in standard form factors: E1.S, E1.L E3.x, U.2/3
NAND Interface	16 independent, programmable NAND FLASH Channels supporting ONFI and Toggle interface options up to 2400MT/s
DRAM Interface	Flexible DRAM interface supporting single / dual DDR4-3200/ DDR5-4800 channels providing high performance while ensuring only enough resources are used based on SSD design requirements
Performance	<ul style="list-style-type: none"> • > 14.2 GB/s Sequential I/O • > 3.5M IOPS (4K) Random IOs
Industry leading Security	Attestation, Secure boot, Key Wrapping, AES-256, Hardware Root of Trust
MonTitan™ Platform Advanced Technologies	<ul style="list-style-type: none"> • PerformaShape™ providing ASIC based QoS sets using HW isolation to ensure maximum BW performance while maximizing user defined individual performance elements (QoS, Latency, RR/RW, power) • NANDCommand™ maximizing the Enterprise performance of next generation NAND geometries with exceptional LDPC error correction and endurance extension for QLC and beyond
Enterprise Features	<ul style="list-style-type: none"> • User programmable NVMe Standard and Host-Based-FTL FW • Supporting Advanced Data Placement Technologies <ul style="list-style-type: none"> • Zoned Namespace (ZNS) Firmware stack with preset options managing device elements Application Optimization: NVM Set, RAID Type, # of Zones, Zone Size • Flexible Data Placement (FDP) Firmware Support • Up to 128TB • 1024 Queue Pairs; 128 Namespaces

Product Ordering Information

Part Number	Description	Package
SM836GX060000-AB	PCIe Gen 5 x4, 16CH SSD Controller	21mm x 21mm