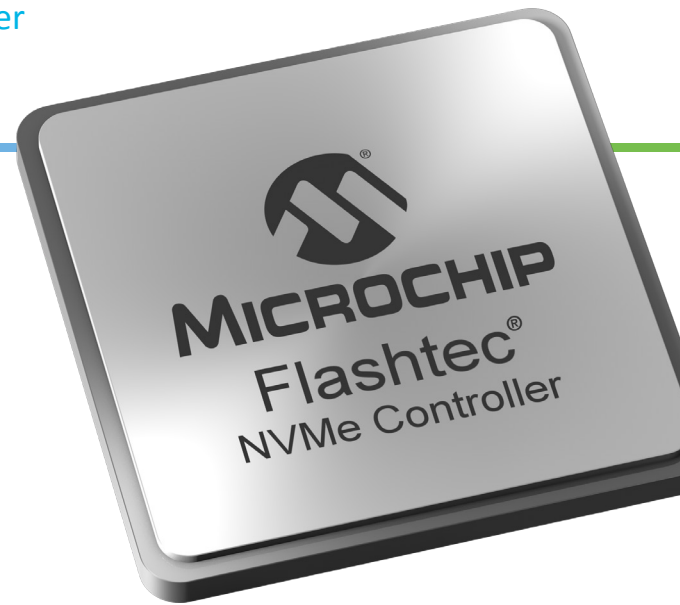# Flashtec® NVMe 3016

Performance 16-Channel Gen 4 PCIe® SSD Flash Controller

Summary

The Flashtec® third generation NVMe controller family enables the world's leading enterprises and data centers to realize the highest performance SSDs utilizing next-generation NAND technologies. Combining world-class capacity, security and flexibility, the Flashtec controller family is the reliable choice. The Flashtec NVMe3016 controller supports the standard NVM Express (NVMe) host interface and is optimized for high-performance random read/write operations, performing all Flash management operations on-chip and consuming negligible host processing and memory resources.

Error Correction

Flashtec's advanced ECC engine provides superior endurance and increases the overall reliability of today's SSD technologies. Advanced LDPC correction utilizing both hard and soft decode techniques extends memory life, significantly improving Total Cost of Ownership (TCO) and enabling differentiated solutions for both the Enterprise and Data Center Storage market segments.

Flexibility

The flexible and programmable platform gives developers total control in SSD solution optimization, supporting NVMe, open channel and kv-store SSDs. End users deploy these PCIe-SSD-based systems in their data centers for Cloud computing and business-critical applications, such as online transaction processing, financial data processing, database mining and other applications that are sensitive to latency and performance.

TCO and Reliability

Flashtec controller family provides end-to-end data integrity and reliability features expected in enterprise-class solutions. Flash reliability is ensured through a combination of exceptionally strong ECC and RAID.

Flashtec family is optimized for power savings, utilizing a combination of architectural and semiconductor design techniques. Emphasis is given to absolute power consumption and to advanced power management features, including automation idling of processor cores and autonomous power reduction capabilities. The Flashtec family leverages the Enterprise NVM Express dynamic power management interface, enabling solutions to meet power and performance objectives through firmware to meet overall total cost of ownership goals.

Features

- Flashtec NVMe3016 Controller can achieve greater than 2 million random read IOPS on 4 KB operations
- Supports U.2, U.3, add-in card, EDSFF and custom form factors
- SLC, MLC, Enterprise MLC, TLC and QLC Flash with Toggle and ONFI interface
- PCIe Gen 4 x8 or dual independent PCIe Gen 4 x4 (active, active/standby) host interface
- 16 independent flash channels
- Supports DDR4-3200
- Power fault and abrupt shutdown without data loss or corruption
- Data integrity and reliability (T10 DIF, encryption, advanced error detection and correction, RAID etc.)
- Security features for protecting the Firmware and Data and FIPS140-3 capable
- Proven signal integrity and advanced diagnostic capabilities
- Firmware leverage and reuse across product lines

Benefits

- High-performance PCIe Flash controllers optimized for enterprise and data center workloads
- Advanced ECC enables current and future architectures with next-generation NAND technologies
- Programmable architecture enables SSD developers to optimize product differentiation through firmware customization
- Supports industry's highest capacity SSD solutions
- FIPS 140-3 level 2 certifiable

Microchip provides NVMe hardware and software solutions to enterprise and data center customers, enabling world-leading performance, capacity, security and flexibility.

Solid-state drives promise to greatly enhance enterprise and data center storage performance with faster random access to data and faster transfer rates. PCI Express-based SSDs, together with the NVM Express host control, alleviate the interface bottleneck. Microchip's family of NVMe-compliant PCIe enterprise Flash controllers dramatically boost the number of random I/O operations per second that a system can process, while concurrently reducing latency and power.

Flashtec Architecture Diagram

Ordering Information

Part Number	Description	Package
PM8628C1-F3EI	x8 PCIe Gen 4	27 mm × 27 mm FCBGA 1304

DS00003594C

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