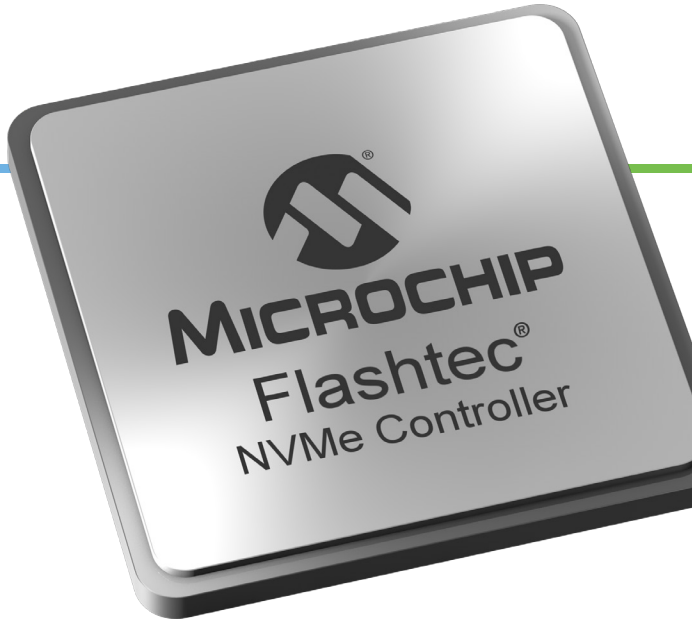
Flashtec® NVMe 3108 Controller

Mainstream 8-Channel PCIe® Gen 4 Flash Controller



Summary

The Flashtec® 3rd generation NVMe Controller Family enables the world's leading enterprises and data centers to realize the highest-performance SSDs by utilizing next-generation NAND technologies. Combining world-class capacity and flexibility, the Flashtec controller family is the reliable choice. The Flashtec NVMe3108 controller is ideal for power sensitive and small form factor PCIe Gen-4 SSD's, supporting the standard NVM Express (NVMe) host interface, and optimized for high-performance 4 KB random read/write operations. In addition, the NVMe3108 controller performs all Flash management operations on-chip, consuming negligible host processing and memory resources.

Error Correction

Flashtec controllers' advanced ECC engine provides superior endurance and increases the overall reliability of today's SSD technologies. The strong ECC allows multi-generational support of NANDs from all of the major ONFI and Toggle vendors. The Flashtec NVMe3108 controller extends memory life by implementing enhanced LDPC correction using both hard and soft decode techniques, 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. 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 any other applications that are sensitive to latency and performance.

TCO and Reliability

Microchip's Flashtec controller family provides the data integrity and reliability features expected in enterprise-class solutions. Flash reliability is ensured through a combination of exceptionally strong ECC and Flash channel RAID.

Microchip's Flashtec controller family is optimized for power savings by utilizing a combination of architectural and semiconductor design techniques. Emphasis is given not only to absolute power consumption, but also to advanced power management features including, automatic idling of processor cores and autonomous power reduction capabilities. The Flashtec controller family leverages the Enterprise NVMe dynamic power management interface, enabling solutions to meet power and performance objectives through firmware for overall total cost of ownership improvements.

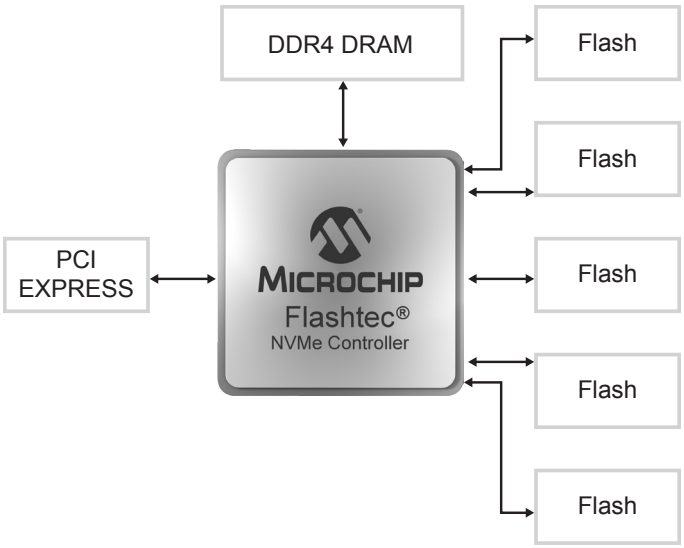
Highlights

- Leading mainstream performance PCIe® Flash controllers optimized for enterprise and data center workloads
- Advanced and enhanced ECC enables current and future architectures with next-generation NAND technologies
- Programmable architecture enables SSD product differentiation through firmware customization
- Supports industry's highest mainstream capacity SSD solutions
- Supports up to 128 GB of DDR4
- Supports U.2, U.3, add-in card, EDSFF, M.2 and custom form factors

Features

- High-performance NVMe PCIe Flash and NV-DRAM controller, delivering 1M IOPs
- Programmable architecture enables SSD developers to control product differentiation through firmware customization
- SLC, MLC, TLC and QLC Flash with Toggle and ONFI interfaces supporting up to 1200 MT/s
- Eight independent flash channels, each supporting up to 16CEs
- PCIe Gen 4 x4 or dual independent PCIe Gen 4 x2 (active/active or active/standby) host interface
- Standard Enterprise NVMe host control interface
- Configurable data rate (DDR4 up to DDR4-2400)
- Supports x4, x8 and x16 data width SDRAM devices
- Secure boot and data encryption support
- Integrated temperature sensing diode
- Power fault and abrupt shutdown without data loss or corruption
- Data integrity and reliability
- Enhanced Flash ECC
- Internal data path protection
- End-to-end host to Flash data protection

Ordering Number	PM8650A1-FEIP	PM8651A1-FEIP	PM8650A1-FEI	PM8651A1-FEI
Flash channels	8 ch, 16 CE/channel	8 ch, 16 CE/channel	8 ch, 16 CE/channel	8 ch, 16 CE/channel
Package	17 mm x 17 mm	17 mm x 17 mm	17 mm x 17 mm	17 mm x 17 mm
DRAM ranks	4-rank, x40 DDR4	4-rank, x40 DDR4	4-rank, x40 DDR4	4-rank, x40 DDR4
PCIe® Gen 4 x4	Dual-port capable	Single-port capable	Dual-port capable	Single-port capable
Part Type	Prototype	Prototype	Production	Production



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