Marvell® 88SS1098 SSD Controller

PCIe Gen3x4, 8-Channel NAND Controller with NVMe and SATA interfaces supporting up to 8TB capacity

Overview

The Marvell® 88SS1098 enables high-performance and high-capacity SSDs for use in enterprise and data center environments. Leveraging a quad-core Arm® Cortex®-R5 architecture with support for up to 8GB DRAM, these controllers can enable high-performance SSDs to meet the demands of the most challenging workloads.

For enterprise use cases, 88SS1098 can also support PCIe Gen3x4 dual port (active/active) to enable high availability systems.

88SS1098 leverages the newest Marvell Gen4 NANDEdge™ LDPC engine for extracting the highest performance from MLC and TLC memories while providing the most P/E cycles.

88SS1098 also supports TCG standards including an AES engine and OTP storage for secure drive configuration.

Block Diagram
## Key Features

<table>
<thead>
<tr>
<th>Features</th>
<th>Benefits</th>
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| Processor        | • Quad Cortex®-R5 CPUs  
                  | • Dynamic Branch Prediction  
                  | • DMA controller            |
| PCIe Interface   | • PCIe Gen 3x4 (with dual port support)                                  |
| DDR Controller   | • Up to 8GB DDR3, DDR4, LPDDR3, LPDDR4 at speeds up to 2400MT/s with ECC support |
| Flash Controller | • 8 Channels @ 800MT/s  
                  | • ONFI 2.2/2.3/3.0/4.0, JEDEC mode and Toggle 1.0/2.0  
                  | • Hardware RAID  
                  | • Marvell NANDEdge™ Gen4 LDPC engine |
| NVMe             | • NVMe Standard Revision 1.3 compliance  
                  | • 256 outstanding I/O commands  
                  | • 132 total queue pairs  
                  | • 64 Virtual Functions  
                  | • MSI and MSI-X interrupt mechanisms  
                  | • T-10 DIF and end-to-end protection |
| TCG              | • OTP support for secure drive configuration  
                  | • AES encryption hardware  
                  | • Media re-encryption hardware |
| Package          | • Available in standard 17mm x 17mm (625 ball) BGA package               |

## Target Applications

- Enterprise and data center SSDs