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>
</tr>
</thead>
</table>
| 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