

Marvell® 88NV1140/88NV1120

Small-Form Factor and Value-Line SSD Controller

Overview

The Marvell® 88NV1140/88NV1120 is its first NVM Express DRAMless SSD controller supporting X1-lane PCIe 3.0 or 6Gb/s SATA interface for small-form factor and value-line SSD markets. While NAND Flash cost is expected to bring down a value-line SSD close a hard disk drive for a 128GB SSD, this new controller offers a cost-effective solution to help SSD makers to achieve that goal. In fact, it will be instrumental in quickly driving SSD adoption in client PC market.

In addition to enabling value-line SSD, the new controller design is also optimized for small-form factor applications. By using 28nm CMOS process node technology, the new controller is perfect for multiple-chip-package (MCP) integration running on embedded SRAM without external memory. It is ideal for use for low-z-height or compact mobile devices looking for SSD performance, like premium tablets or 2-in1 notebooks. Modules

as small as M.2 2230 (3cm. in length) can be designed with the the stand-alone packed version.

The 88NV1140 supports new NVM Express standard or legacy AHCI through PCIe interface, while the 88NV1120 supports the popular SATA interface in a client PC system. The new controller also has Marvell's 3rd-generation LDPC technology for reliability enhancement, endurance boost and TLC NAND device support on top of MLC NAND.

The controller's NVMe (non-volatile memory) design has passed IOL NVMe Compliance Testing and 3rd-party OS/platform compatibility testing and is ready to enable next-generation mobile PC devices with leading SSD technologies at an affordable price points.

Benefits and Features

Features	Benefits
<ul style="list-style-type: none">• Dual PCIe or SATA interface for single firmware development	<ul style="list-style-type: none">• Fully hardware-automated NVMe 1.1a support<ul style="list-style-type: none">- Command overlay and out-of-order data return to deliver the full potential of NAND- Hardware automation on command fetch and status return
<ul style="list-style-type: none">• Optimized design for MCP and small-form factor	<ul style="list-style-type: none">• 15nm TLC/MLC and 3D NAND support with Marvell NANDEdge™ LDPC error correction control and management
<ul style="list-style-type: none">• Low-power CMOS process and new advanced NAND controller	<ul style="list-style-type: none">• No external DRAM required
<ul style="list-style-type: none">• PCIe 3.0 and NVMe support for new 2015 chipset and operating systems	<ul style="list-style-type: none">• M.2/Multiple-chip-package(MCP) small form factor support with thermal optimization
<ul style="list-style-type: none">• Proven 3rd-generation LDPC technology secures NAND	<ul style="list-style-type: none">• New low-power management (L1.2) design
	<ul style="list-style-type: none">• Advanced 28nm CMOS process

Target Applications

- Value-line client SSD
- Small-form factor SSD for low z-height mobile PC devices

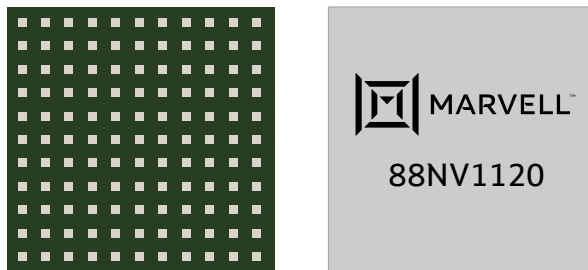


Fig 1. Photo of 88NV1120



To deliver the data infrastructure technology that connects the world, we're building solutions on the most powerful foundation: our partnerships with our customers. Trusted by the world's leading technology companies for 25 years, we move, store, process and secure the world's data with semiconductor solutions designed for our customers' current needs and future ambitions. Through a process of deep collaboration and transparency, we're ultimately changing the way tomorrow's enterprise, cloud, automotive, and carrier architectures transform—for the better.

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