

# Intel® NAND Flash Memory

## A complete range of products meets diverse application requirements

Enhance user experiences in a variety of applications with Intel® NAND Flash Memory. Single- and multi-level cell products in a broad range of densities deliver the right combination of capacity, performance, and value for your diverse needs.



### High-performance Memory

Critical applications, like solid state drives, depend on long-term reliability and high performance. Intel single-level cell (SLC) NAND products combine these attributes, delivering reliable re-writeability and retention that exceeds the requirements of most high-demand applications.

### Maximum-value Memory

MP3 players, USB drives, and memory cards need reliable performance at a value-oriented price. With twice the density in the same area as SLC, multi-level cell (MLC) memory offers the lowest cost per bit. We have extended our industry leadership with Intel StrataFlash® products to create reliable NAND MLC devices.

Intel NAND Flash Memory (MD78) is available in a range of densities including 8Gb, 16Gb, and 32Gb. All MD78 products include Dual-plane and Cache mode programming features, delivering competitive performance at multiple price levels.

### Enhanced Performance

Dual-plane and Cache modes extend NAND architecture beyond the standard command set, significantly enhancing performance.

#### Dual-plane Mode

Intel NAND simultaneously transfers data in and out of two different memory planes, nearly doubling memory performance.

#### Cache Mode

Cache mode increases performance by funneling data through a high-speed data and cache register. While one register interfaces with the external I/O signals, the other interfaces with the memory area of the device.

#### Time-to-market Advantages

Working with leading vendors, Intel has pre-enabled many controller manufacturers to use Intel NAND.

This enhancement ensures better industry alignment with our roadmaps and faster integration for our customers.

## Industry Leadership

Intel is committed to the adoption of NAND. Building on more than 20 years of industry-leading expertise in flash memory, we are defining product solutions that match density and technology to emerging customer needs. Intel is expanding the use of NAND by integrating it into Intel Architecture computing platforms, where performance gains and longer battery life will

enhance the user experience. To support NAND growth, Intel will quickly ramp multiple state-of-the-art 300mm manufacturing facilities over the next several years.

## Environmental Responsibility

As part of our environmental initiative, Intel is working with our suppliers, customers, and several industry consortia to develop and provide EU RoHS (European Union Restriction of Hazardous Substances) compliant products.

## Technical Specifications<sup>1</sup>

NAND Flash Family	SS72	SD74	MD78
Silicon Density	2 Gigabit	4 Gigabit	8 Gigabit
Unit Density (bits)	2Gb, 4Gb, 8Gb	4Gb, 8Gb, 16Gb	8Gb, 16Gb, 32Gb
Unit Density (bytes)	256MB, 512MB, 1GB	512MB, 1GB, 2GB	1 GB, 2GB, 4GB
Architecture	One-bit per cell (SLC)	One-bit per cell (SLC)	Two-bits per cell (MLC)
Cache-Mode	Yes	Yes	Yes
Plane Architecture	Single Plane	Dual Plane	Dual Plane
I/O Bus-Width	8-bit	8-bit	8-bit
Read Throughput	23 MB / sec	26 MB / sec	25 MB / sec
Write Throughput	5.5 MB / sec	7.5 MB / sec	3 MB / sec
Random Access Speed	25 micro-seconds	25 micro-seconds	50 micro-seconds
P/E Cycle Count	100,000 cycles	100,000 cycles	10,000 cycles
Operating Temperature	0° C to +70° C	-25° C to +85° C	0° C to +70° C
One-Time-Programmable	1 Page	10 Pages	Not Supported
Page Program	300 micro-seconds	220 micro-seconds	600 micro-seconds
Core Voltage	3.3 V	3.3 V	3.3 V

<sup>1</sup> See datasheet for complete specifications.

For more information, visit [www.intel.com/design/flash](http://www.intel.com/design/flash)

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