



Spansion™ WS-N Family

with MirrorBit™ technology

Spansion, the industry's leading producer of NOR Flash memory, offers a highly scalable, cost effective memory platform for 1.8-volt wireless applications. Manufactured using second-generation MirrorBit™ technology, the Spansion™ WS-N Flash memory family delivers the next industry standard for mobile handsets and is available today from AMD.

At-a-glance

- The industry's best price-performance NOR Flash memory solution
- Optimized for 1.8-volt wireless chipsets (TI, Qualcomm, Motorola, etc.)
- Consistent pinout facilitates design reuse and accelerates time-to-market
- Multi-chip product (MCP) options support memory densities up to 4 Gigabits in a consistent footprint and pinout

Industry's best price-performance for 1.8-volt wireless

Spansion's WS-N memory solutions deliver the industry's best price-performance for mobile phones by combining the industry's fastest reads with the industry's most



attractive cost structure. As a result, handset designers can create higher levels of functionality – including multimedia messaging services, push-to-talk, and location-based services – at more compelling price points.

The Spansion WS-N family has been optimized for both current and upcoming generations of 1.8-volt wireless chipsets and processor cores. For example, the WS-N Flash memory family sustains high-frequency read speeds up to 80 MHz to complement high-performance processor cores from ARM and MIPS® Technologies.

The Spansion WS-N product family also includes Advanced Sector Protection, featuring password-level protection, to fortify the security of code and data. So no matter which chipset or operating system you're using, Spansion's S29WS-N family provides outstanding performance and security for your memory subsystem.

DESIGNED FOR USE WITH LEADING CHIPSETS, SOFTWARE, AND PROGRAMMERS INCLUDING:

Processor Cores and Chipsets	Software and Operating Systems	Automated Programming
ARM	Java™	BP Microsystems
OMAP™ Platform	Linux®	Data I/O
MIPS® Technologies	Palm OS™	Flash Support Group (FSG)
Motorola	Spansion™ File System	HI-LO Systems
Philips	Symbian OS™	Minato Electronics
Qualcomm	Windows Mobile™	System General
Texas Instruments		Xeltek

Single pinout for single-die and multi-chip products

Designed to help reduce time-to-market for handset designers and manufacturers, the Spansion WS-N family utilizes a consistent pinout and command set for densities as high as 4 Gigabits. What's more, a single pinout supports both single-die and multi-chip products (e.g. Flash memory + SRAM, Flash memory + pSRAM, Flash memory + media storage).

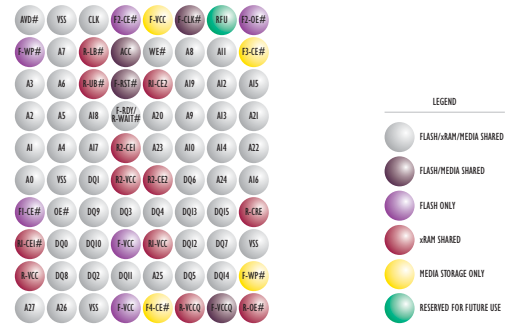
As a result, customers who standardize on Spansion's 1.8-volt memory platform can reuse and repurpose a single design for different market segments and geographies. Because future Spansion WS-N memory plans include a wide variety of densities and MCP combinations, you can easily scale your designs together with regional infrastructures or changing market demand.

In addition, Spansion's close collaboration with chipset designers, software vendors, and automated programming vendors means that we're already at work developing resources to facilitate future chipset and software upgrades.

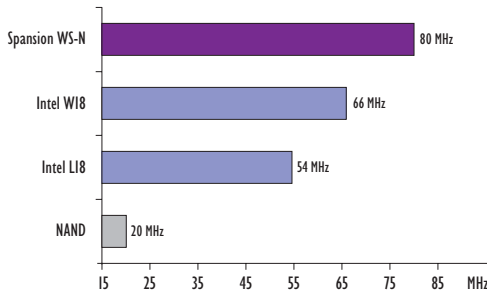
"SAMSUNG Electronics is very pleased with Spansion's focus on customer needs in the development of second-generation MirrorBit technology. Spansion's new technology provides exactly the kind of price-performance needed for us to continue delivering many of the industry's most innovative and unique mobile phones."

KS Hyun, Vice President of Telecommunication Networks
SAMSUNG Electronics

Spansion® WS-N Family Pinout

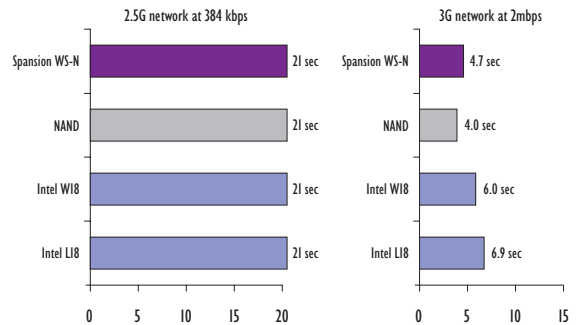


Component Read Performance



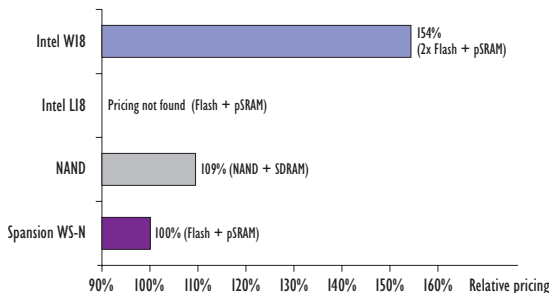
Source: Published specifications, May 2004

Write Performance – IMB MPEG4 Download



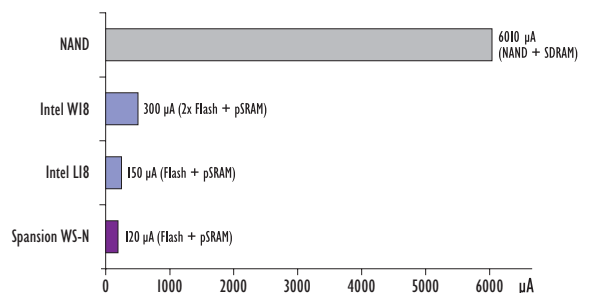
Source: Published specifications, May 2004

Total Memory Subsystem Cost



Source: Published prices, May 2004

Typical Standby Power Consumption / Total Memory Subsystem



Source: Published specifications, May 2004

Aggressive roadmap to future cost reduction

Currently manufactured using second-generation MirrorBit technology, the Spansion WS-N Flash memory family is the industry's best price-performance NOR Flash memory solution. In fact, second-generation MirrorBit technology delivers the following advantages over multi-level cell (MLC) floating gate technology:

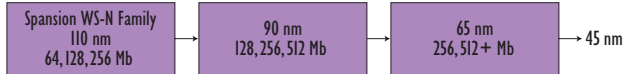
- Intrinsic manufacturing yields as much as 30% higher than multi-level cell (MLC) floating-gate technology,
- Number of critical mask layers reduced by 40% as compared to MLC floating-gate technology
- Streamlined manufacturing process for 10% higher fab throughput than MLC floating-gate technology

As the world's leading supplier of NOR Flash memory solutions, Spansion expects to move quickly along its aggressive roadmap for 1.8-volt wireless markets. With third-generation MirrorBit technology, new MCP solutions (e.g. Flash memory + media storage), and higher densities already in development, the Spansion WS-N memory platform is positioned to become the next industry standard in Flash memory.

For more information about Spansion WS-N Flash memory solutions, as well as other Spansion memory products, visit us at www.amd.com or contact your local sales office.

Technology Roadmap for Wireless Markets: 1.8 volts

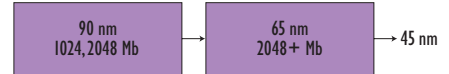
Performance Flash Memory for XIP



Flash Memory for XIP or Media



Flash Memory for Media

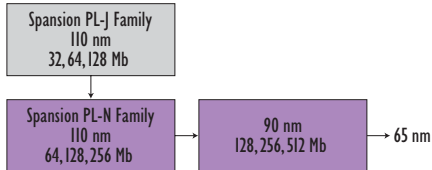


MirrorBit™ Technology

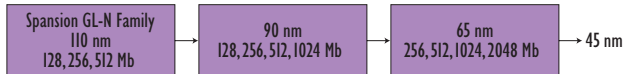
Planned roadmaps, June 2004

Technology Roadmap for Wireless Markets: 3.0 volts

Performance Flash Memory for XIP



Flash Memory for XIP or Media



Flash Memory for Media



MirrorBit™ Technology
Floating-gate Technology

Planned roadmaps, June 2004



About Spansion™ Flash Memory Products

Spansion™ Flash memory products encompass a broad spectrum of densities and features to support a wide range of markets. Spansion Flash memory customers represent leaders in the wireless, cellular, automotive, networking, telecommunications and consumer electronics markets. There are a variety of Spansion Flash memory products, such as devices based on the innovative MirrorBit™ technology; the award-winning simultaneous read-write (SRW) product family; super low-voltage 1.8-volt Flash memory devices; and burst- and page-mode devices. Information about Spansion Flash memory solutions is available at <http://www.spansion.com/overview>.

Spansion was formed by the integration of AMD's and Fujitsu's Flash memory operations in 2003. It is the largest NOR Flash memory company in the world. Spansion Flash memory solutions are available worldwide from AMD (NYSE: AMD) and Fujitsu (TSE:6702).



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About AMD

AMD (NYSE:AMD) designs and produces innovative microprocessors, Flash memory devices and low-power processor solutions for the computer, communications and consumer electronics industries. AMD is dedicated to delivering standards-based, customer-focused solutions for technology users, ranging from enterprises and governments to individual consumers. For more information visit www.amd.com.