

Succeed with Flash Technology Leadership from AMD



For Double-Density Flash Memory...

MIRRORBIT™ Architecture

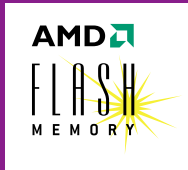
...some pairs are just **better**



AMD MirrorBit™ Architecture

AMD has developed a revolutionary new memory technology in Flash—the MirrorBit™ architecture. This groundbreaking memory cell architecture—FOR THE FIRST TIME—enables a Flash memory product to hold twice as much data without compromising data integrity.

Utilizing an innovative architecture that stores two full and distinct charges within a single memory cell, AMD's MirrorBit architecture delivers the next generation of high-density, low-cost Flash memory solutions. More significantly, MirrorBit technology breaks the traditional trade-off between cost and performance, by coupling the reliability and performance of AMD's proven single-bit products with the industry's leading cost structure.



We Don't Compromise When It Comes to Your Code and Data

At AMD, we're passionate about our Flash. We believe that we are the guardians of your valuable code and data. We know that your reputation and image depend on the integrity of your code and data, and that requires highly reliable Flash storage. As a result, we make no compromises in our determination and effort to bring you the best Flash memory solutions. We are unwavering in our commitment to reliability, endurance, performance, and data retention. We spare no efforts in our commitment to these qualities, and the result is AMD MirrorBit, a truly revolutionary Flash memory architecture.

AMD's MirrorBit is a breakthrough memory cell architecture that offers customers a low-cost, high-density Flash memory solution. MirrorBit's patented cell architecture stores two distinct charge areas within a single cell, thereby doubling the storage capacity of a Flash device without compromising either performance or data integrity. At the same time, MirrorBit's simple, symmetric cell architecture results in an efficient, low-cost manufacturing process and scales easily with lithography.

High Reliability

AMD's MirrorBit solutions "trap" two full data charges in physically distinct areas of each memory cell, thereby ensuring the integrity of code and data stored in MirrorBit devices. Each trapped bit acts as an independent "transistor" with full operating margin, thereby offering reliability and endurance comparable to AMD's single-bit Flash.

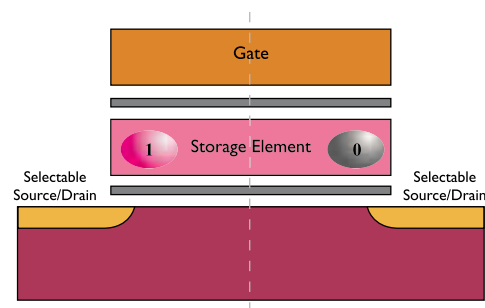
MirrorBit overcomes fundamental performance and reliability limitations inherent to competing multi-level cell (MLC) solutions. MLC technology depends on differences between small numbers of electrons in the floating gate, and the loss of even a few electrons can cause data corruption. MirrorBit avoids all these problems by storing full charge and offers high levels of reliability.

High Performance

Each bit within the MirrorBit cell acts as an independent "transistor" and can be read, programmed, or erased at full speed without any performance or reliability penalties. MirrorBit products also feature read and write page buffers that offer enhanced levels of performance—even at very high densities. In fact, AMD's MirrorBit-based family of products will offer the same outstanding performance, reliability, and endurance as AMD's proven 3 Volt (Am29LV family) Flash devices.

Competing MLC solutions require a time-consuming serial read process to distinguish between multiple threshold voltages. Therefore, read operations are intrinsically slow in MLC solutions. In order to program MLC devices, a very precise charge needs to be stored in the gate. Placing a very controlled number of electrons into the floating gate is a time-consuming operation, and this makes MLC slow to program. MirrorBit products are intrinsically faster.

AMD MirrorBit Cell



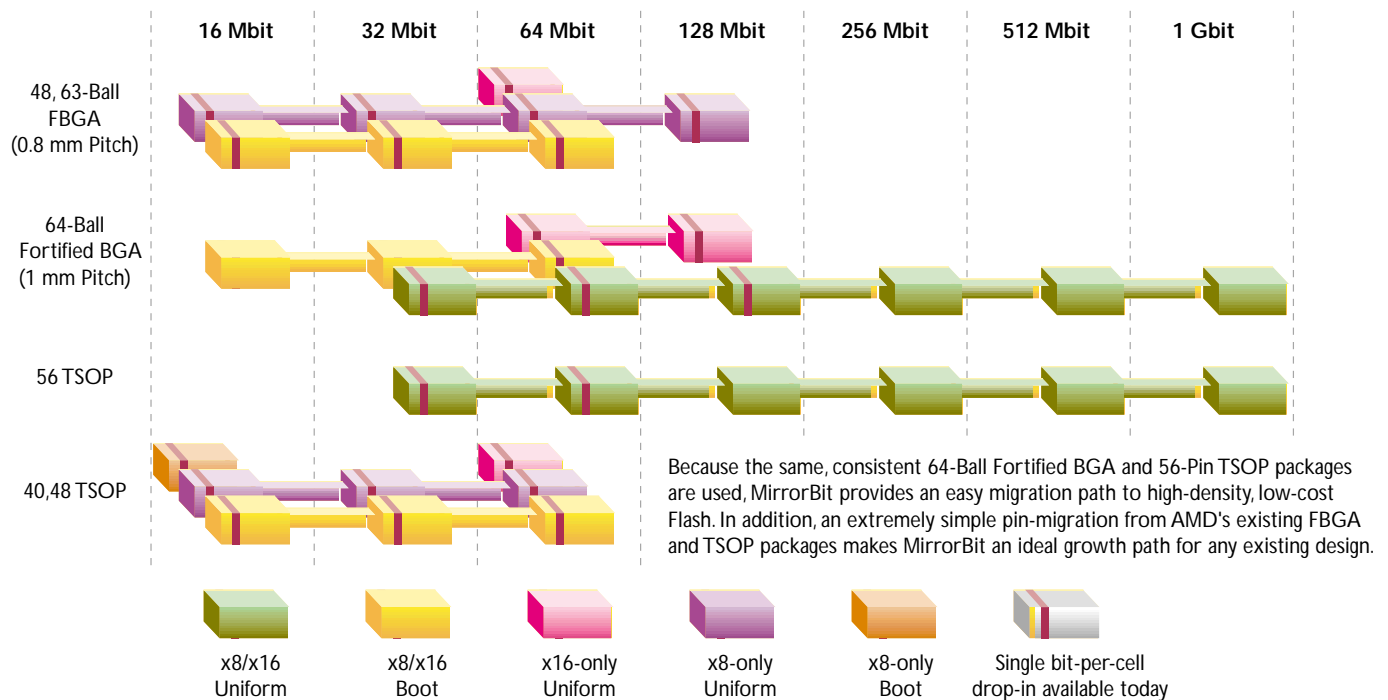
By storing two distinct charge areas within a single cell, AMD's MirrorBit delivers an unmatched combination of density, performance, and data retention. In fact, MirrorBit's innovative cell architecture offers the industry's leading cost structure while maintaining the high performance and reliability of AMD's single-bit per cell Flash.

Easy Migration Path to 1Gigabit

Most importantly, AMD's MirrorBit family of products utilizes the same packages and pinouts as AMD's current 3 Volt Am29LV family of devices so customers can easily migrate to low-cost MirrorBit. In addition, MirrorBit devices offer an easy migration path for existing sockets to 128 Mb, 256 Mb, and eventually 512 Mb and 1 Gb Flash. Customers creating new designs can immediately benefit by designing today with 16-, 32-, 64-, or 128-Mb Flash devices from AMD's single-bit per cell Am29LV family—and simply substituting in MirrorBit devices as they are introduced.

Initial MirrorBit products include AMD's Am29LV640/641 and Am29LV065 Flash devices, and will be available in a variety of packages and sector architectures in order to meet a variety of design specifications. The initial MirrorBit products will be followed by 128 Mb and 256 Mb devices.

MirrorBit Migration Summary



Key Features

Key features of the AMD MirrorBit devices include the following:

- Two distinct charge storage areas within one cell
- Industry-leading cost structure
- High-density Flash devices
- Full-speed read, program, and erase operations
- Performance-enhancing read and write page buffers
- Uncompromising endurance and reliability
- Complete pin and package compatibility with AMD's standard 3 Volt products

Applications

AMD's MirrorBit family of devices offers low-cost, high-density Flash memory solutions ideal for a variety of applications:

- Telecom Hardware
- Networking Hardware
- Digital Set-Top Boxes
- Automotive Dashboard Applications
- Cellular Handsets and Portable Applications

Features	Benefits	Features	Benefits
<ul style="list-style-type: none"> Two bits of data stored in one memory cell; simple, symmetric cell architecture 	<ul style="list-style-type: none"> Industry-leading cost structure; high-density Flash to empower next-generation systems and applications 	<ul style="list-style-type: none"> Same packages and pinouts as AMD's proven Am29LV family of 3 Volt devices 	<ul style="list-style-type: none"> Easy migration of current designs to cost-reduced MirrorBit devices
<ul style="list-style-type: none"> Two distinct charge storage areas within a single cell 	<ul style="list-style-type: none"> Uncompromising data integrity for peace-of-mind and reliable operation over time 	<ul style="list-style-type: none"> Performance-enhancing read and write page buffers 	<ul style="list-style-type: none"> Eliminate system bottlenecks and wait-states, especially in higher-density Flash devices
<ul style="list-style-type: none"> Two independently programmable units of charges per cell 	<ul style="list-style-type: none"> Uncompromising read and write performance to reduce bottlenecks and increase system performance 	<ul style="list-style-type: none"> Flexible sector architecture 	<ul style="list-style-type: none"> Multiple bootblock and uniform sector options for a variety of applications
<ul style="list-style-type: none"> Easily scalable cell architecture 	<ul style="list-style-type: none"> Reliable roadmap and future availability of high-density (e.g. 256 Mb, 512 Mb, 1 Gb) Flash 	<ul style="list-style-type: none"> AMD's award-winning service and support 	<ul style="list-style-type: none"> Proven commitment, technology leadership, and service to ensure customer success

ORDERING INFORMATION

Please contact an AMD sales representative for detailed information on which single-bit per cell Am29LVxxxD Flash devices to use during design and prototyping (in case a particular MirrorBit Flash device has not yet been introduced).

PRODUCT	DENSITY	DATA WIDTH	SECTOR ARCHITECTURE	SPEED RATINGS (NS)	PACKAGE OPTIONS
Am29LV160M Am29LV017M Am29LV116M	16 Mb	x8/x16 x8-only x8-only	Boot Uniform Boot	90, 100, 120	TSOP, RTSOP, FBGA, Fortified BGA
Am29LV320M Am29LV033M	32 Mb	x8-only x8/x16	Boot, Uniform Uniform	90, 100, 120	TSOP, RTSOP, FBGA, Fortified BGA
Am29LV640M Am29LV641M Am29LV065M	64 Mb	x8/x16, x16-only x16-only x8-only	Boot, Uniform Uniform Uniform	90, 100, 120	TSOP, RTSOP, FBGA, Fortified BGA
Am29LV128M Am29LV642M Am29LV652M	128 Mb	x8/x16 x16-only x8-only	Uniform Uniform Uniform	90, 100, 120	TSOP, RTSOP, FBGA, Fortified BGA
Am29LV256M	256 Mb	x8/x16	Uniform	90, 100, 120	TSOP, RTSOP, Fortified BGA

About AMD

AMD is a global supplier of integrated circuits for the personal and networked computer and communications markets with manufacturing facilities in the United States, Europe, Japan, and Asia.

AMD, a Fortune 500 and Standard & Poor's 500 company, produces microprocessors, Flash memory devices, and support circuitry for communications and networking applications.

Founded in 1969 and based in Sunnyvale, California, AMD had revenues of \$4.6 billion in 2000. (NYSE:AMD)

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