



The Samsung logo is a blue oval with the word "SAMSUNG" in white, uppercase letters.

Samsung Storage Solutions

Samsung Offers Broadest Line of Storage Products

Samsung is a world-leading semiconductor manufacturer whose deep expertise in hardware technology extends to the broadest line of storage products offered by any supplier. The company makes magnetic and optical storage devices as well as flash storage, including innovative product types like the all-flash Solid State Drive (SSD), that are widely used in both computing and consumer electronics applications.

Storage Technology Is Fueling Today's Electronics

Rapid advancements in storage technology are enabling the creation of new products while expanding capabilities for existing ones. The increasing storage capacity and shrinking footprint of existing technologies like hard disk and optical drives as well as solid-state storage have helped usher in the multimedia era. Meanwhile, new storage technologies like the SSD are revolutionizing key market segments. The result of these forces is strong ongoing demand for Samsung storage products. The company's different storage technologies coexist among its customer base because of the varying capabilities and features of each type of product, with a storage solution available to support virtually any customer need.

Samsung Hard Disk Drives

Samsung HDDs offer a high-capacity, low-cost storage option for computing and consumer applications. The company's HDD business is the industry's fastest-growing operation, offering the most comprehensive product portfolio of first-to-market and best-in-class products. Samsung's many customers include major OEMs who benefit from its R&D focus and vast economies of scale that result in advanced HDD products at competitive price points. Samsung's HDD line includes 3.5" and 2.5" drives aimed primarily at computers and 1.8" drives for consumer devices and small-form-factor mobile computing.

HDDs for Computing Applications

Samsung's highest-capacity 3.5" HDDs offer up to 1TB of capacity and support the most demanding storage applications. Besides desktop and server applications, these drives are ideal for

video surveillance and other digital video recording applications requiring massive storage. For example, Samsung's award-winning, 7200rpm F1 Series leads the market in performance, capacity and low power consumption. Included is the F1R RAID-class HDD, the first 3-platter drive storing 1TB of data, which utilizes the industry's best implementation of perpendicular recording technology.

Mid-range 2.5" HDDs are found in servers and notebooks, offering up to 500GB of storage. Products include the industry's first half-terabyte, 3-disk, z-height (9.5mm) drive. Its compact height outshines the competing 12.5mm drives yet Samsung's HDD still delivers 5400rpm throughput. Another featured product is a dual-disk HDD storing up to 250GB that is the fastest spin-speed 7200rpm, 2.5" drive on the market. It enables superior performance in small-form-factor PCs while moving 2.5" drives into entry-level enterprise applications.

External Drives in a sleek, attractive package are available in storage capacities up to 500GB with full data protection. The S Series includes a 2.5" drive and the credit-card-sized, 1.8" Mini, both of which can easily connect to a PC and can be used on the desktop for additional storage or as portable storage solution.

HDDs for CE Applications

Samsung's 2.5" HDDs are found in consumer applications in addition to their use in computers, with these drives chosen for gaming systems, automotive applications and printers. Samsung is also expanding its selection of the **smallest HDDs (1.8" and below)**. They combine large capacities (up to 160GB), low power consumption and phenomenal ruggedness compared to competing products. Ideal for a growing range of consumer devices — like portable media players, handheld GPS, handsets and digital camcorders.



Samsung Storage Applications

Samsung Optical Drives

Samsung's industry-leading optical storage operation has been growing rapidly, fueled by a suite of award-winning products that combines excellent technology and affordable pricing. For example, Samsung's 22x DVD RW drives are the world's fastest DVD writers. Samsung offers CD and DVD readers and writers and combo drives in various configurations that are used in a wide range of applications.

Optical Drives for Computing Applications

Although its product line is used in all types of computers, Samsung has seen particular expansion in the notebook market. This reflects the overall trend away from desktops to mobile PCs; notebooks represented 36% of the global market in 2006 and will top an estimated 45% in 2008. Samsung's product line for computing includes:

- Slim-line drives for notebooks, desktops, servers and point-of-sale systems
- Half-height drives for desktops
- External drives aimed at notebooks and desktops

Optical Drives for CE Applications

The insatiable demand for multimedia consumer products has driven Samsung's optical drive business. The company's half-height drives are particularly successful in these applications. In addition to DVD players and recorders, consumer markets for Samsung drives include car audio systems, gaming systems and set-top boxes. Samsung also develops

next-generation products to serve its customers. A recent example is the company's **TruDirect™** optical drive, which enables fast recording of DVDs from nearly any digital device without using a PC's hard drive.

Samsung Flash Storage Solutions

As the longtime world leader in NAND flash memory, Samsung has played an important role in the rapid evolution of this technology. The increasing use of NAND flash for storage has been explosive in recent years as NAND takes over from earlier technologies in areas like removable storage, portable media players and most recently, in computers.

Computing is the most revolutionary new storage market for NAND flash, where Samsung's **Solid State Drive (SSD)** has received industry awards as a "breakthrough" product. This all-flash drive offers advantages such as significantly lower power consumption, remarkable ruggedness, high reliability, less weight and outstanding performance. According to iSuppli, approximately 25% of notebooks will have flash-enabled storage by 2010.

Samsung's SSD is available in a range of 2.5" and 1.8" form factors, with storage capacities ranging from 8 to 256 gigabytes. Currently used primarily in portable PCs — including laptops from top vendors like Dell, Alienware and Lenovo — the SSD is expanding into larger systems like desktops and servers as well as into consumer devices.

Application: Computing	Hard Disk Drives	Solid State Drives	Optical Storage	Flash Storage
Mobile PCs	x	x	x	
Desktops	x	x	x	
Handheld Computing Devices	x	x		x
Ruggedized PCs		x	x	
Servers	x	x	x	
Removable Storage	x		x	x
Network Storage Devices	x	x	x	

Application: Business

Video Surveillance	x	x	x	
PoS	x	x	x	x

Application: CE

Phones				x
Digital Cameras			x	x
Digital Camcorders	x	x	x	x
Portable Media Players	x	x	x	x
Gaming Devices	x	x	x	x
GPS Devices	x		x	x
CD/DVD Devices			x	
Set-top Boxes	x	x	x	x





Samsung's Storage Products at a Glance

Hard Disk Drives

- 1.8" and below drives
 - PATA, SATA, CE-ATA, USB
 - 3600/4200rpm drives in capacities of 120 to 160GB
- 2.5" drives
 - PATA, SATA
 - 5400rpm drives in capacities of 120 to 500GB
- 3.5" drives
 - PATA, SATA 3.0Gb
 - 7200rpm drives in capacities of 120GB to 1TB
 - 5400RPM Echo Green drives in capacities of 500GB to 1TB
- External drives
 - USB 2.0 (maximum 480Mb/s)
 - 2.5" and 1.8" in capacities up to 500GB

Key computing applications: desktops, laptops, servers

Key consumer electronics applications: Camcorders, PMPs, MP3 players, set-top boxes

Optical Storage Solutions

- CD and DVD storage in popular formats
- Emphasis on recordable drives
- Maximum capacities:
 - CD — up to 700MB
 - DVD/single layer — up to 4.7GB
 - DVD/dual layer — up to 8.5GB

Key computing application: desktops, laptops, servers

Key consumer electronics applications: home DVD & CD players, games, set-top boxes

NAND Flash Storage Solutions

- Solid State Drive
 - 2.5", 1.8"
 - SATA
 - Capacities: 8 to 256GB

Key computing applications: desktop & mobile PCs, servers

Key consumer electronics applications: digital camcorders, PMPs

- Discrete NAND flash components
 - SLC densities from 256Mb to 64Gb
 - MLC densities from 2Gb to 128Gb

Key computing applications: handheld computing devices, removable storage

Key consumer electronics applications: cellphones, DSCs, digital camcorders, MP3 players, games, GPS devices



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