Toshiba Announces 1GB SD Card And 512MB High Speed SD Card Using 90 Nanometer NAND Flash Technology

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To meet continually increasing demand for greater capacity and performance in data storage cards for digital cameras, digital camcorders, MP3 players and PDAs, Toshiba America Electronic Components, Inc. announced the availability of a 1 GB SD Card and 512 MB High Speed SD Card, developed using 90 nanometer NAND Flash technology.

Designated SD-M01GS, the new 1GB SD Card requires just one of Toshiba's 8 gigabit (Gb) Multi-Level Cell (MLC) NAND memory ICs inside the postage stamp sized SD Card, eliminating the need for advanced stacking technology to achieve this high density. Toshiba's 8Gb memory cell, MLC NAND Flash (TH58NVG3D4BFT00) chip combines two of the company's 4Gb NAND chips in a single TSOP package. MLC NAND Flash stores two bits of information in each memory cell, compared to one bit-per-cell for Single Level Cell (SLC) NAND Flash, and provides excellent cost/performance value well-suited for use with a wide range of low to high-end digital still cameras, camcorders and MP3 players. Toshiba's standard SD Memory Card family now ranges in capacity from 32MB to 1GB, featuring MLC NAND Flash for densities greater than 64MB.

For applications requiring both high capacity and faster write and erase performance, TAEC has added the new 512MB SD-F5125 High Speed SD Card to its memory card offering. The device doubles the capacity

previously available in this higher performance memory card family by using one Toshiba 4Gb Single Level Cell (SLC) NAND Flash chip. The High Speed SD Memory Cards are based on SLC NAND Flash technology, which stores one bit per cell, and utilize an optimized controller with large block NAND technology to achieve higher data transfer rates with a maximum write speed of 10MB/sec. and a sustained write speed of 5MB/sec. Toshiba's High Speed SD Card family, which also includes 128MB and 256MB models, are white to help users distinguish them from the company's standard SD Memory Cards, packaged in blue. The memory card family features a fivefold increase in data transfer rate over the company's standard SD Memory Cards and are targeted for demanding applications in digital video, digital audio, cellular phones, high resolution digital still cameras, PDAs, notebook computers and other high-end portable electronics products.

"SD Memory Cards continue to grow in popularly for a wide range of applications, with end users continuing to demand higher capacities," said Brian Kumagai, business development manager for NAND Flash memory at TAEC. "Toshiba's new 1GB card enables users to store approximately 1,000 high resolution digital photos , or hours of compressed digital audio6 or even to store short video segments now available on some digital cameras. Our MLC NAND-based cards provide excellent performance for typical consumer applications, while our new 512MB High Speed SD Card offers an higher performance option for demanding applications, professional photographers and avid hobbyists using ultra-high resolution digital still cameras." For more information on MLC vs. SLC NAND performance, please see the application note, “MLC NAND Performance for Consumer Applications" at mlcnand.toshiba.com.

Toshiba's industry-standard SD cards measure 32mm x 24mm x 2.1mm. Both the standard and High Speed SD cards employ Toshiba's advanced security technology to provide key enhancements over traditional flash

cards such as cryptographic security, improved protection of copyrighted data, high data transfer rate for fast copy/download, and high storage capacity.

Pricing and Availability
Samples of Toshiba's 1GB standard SD Card and 512MB High Speed SD Cards are available now, priced at $350 and $225 each, respectively.

SD Card Background
The SD Memory Card is a revolutionary universal flash memory storage product designed to meet the converging security, capacity, ergonomic and performance requirements of emerging audio, video and multimedia consumer electronics markets. The SD Memory Card was jointly developed by Toshiba, SanDisk Corp., and Matsushita Electric Corp., best known for its Panasonic brand name products. Although its encryption capability supports security and content protection applications, its initial usage has been mostly for regular storage due to its small form factor, fast data transfer rate and storage capacities. The card utilizes a 4-bit interface that enables it to have higher performance capabilities, including a faster data transfer rate, compared to the MMC, which employs a 1-bit interface. As of February 2004, the SD Card Association reported that a consortium of more than 700 companies support the SD format.

NAND Flash Background
As a recognized pioneer in flash technology, Toshiba invented NOR-type Flash technology in 1984 and NAND-type flash technology in 1987. Toshiba maintains leadership in Flash technology today, with the industry's broadest selection of 1Gb NAND Flash memory and a complete line of NAND memory in densities from 64Mb8 to 2Gb to meet various application requirements. NAND Flash has become one of the leading technologies for solid state storage applications because of its high-speed programming capability, high-speed erasing, and low cost.

The sequential nature (serial access) of NAND-based Flash memory provides notable advantages for these block-oriented data storage applications. Toshiba's NAND Flash memory products are optimized for general solid state storage, image file storage and audio for applications such as solid state disk drives, digital cameras, audio appliances, set-top boxes and industrial storage.