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Toshiba Launches World's Smallest-class Embedded NAND Flash Memory Products

Using cutting-edge 15nm process NAND flash memory chips

2 Oct, 2014
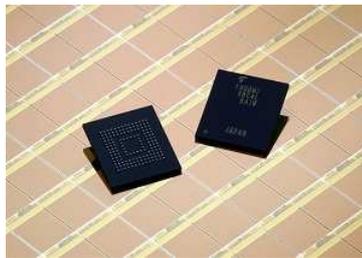
TOKYO—Toshiba Corporation (TOKYO: 6502) today announced the launch of the world's smallest-class[1] embedded NAND flash memory products integrating NAND chips fabricated with cutting-edge 15nm process technology. The new products are compliant with the latest e·MMC[TM][2] standard, and are designed for application in a wide range of digital consumer products, including smartphones, tablet PCs and wearable devices. Sample shipment of the 16GB products start from today, with 8GB, 32GB, 64GB and 128GB products to follow.

The new products integrate NAND chips fabricated with Toshiba's cutting-edge 15nm generation process technology and a controller to manage basic control functions for NAND applications in a single package.

By utilizing the 15nm NAND chips, the package size is approximately 26% smaller[3] than comparable Toshiba products[4]. They also offer faster read/write performance due to improvements in basic chip performance and controller optimization. The read speed is approximately 8% faster (max.), while the write speed is approximately 20% faster (max.).

Demand continues to grow for NAND flash memory that can support applications such as smartphones and tablet PCs. This is particularly true for embedded memories with a controller, which minimize development requirements and ease integration into system designs. Toshiba is meeting this demand by reinforcing its line-up of high performance and high density memory products and will continue to take leadership in the market.

New Product Line-up

Product Name	Capacity	Category	Package	Mass Production
THGBMFG6C1LBAIL	8GB	Supreme	11.5x13x0.8mm	2Q, 2015 (Apr.-Jun.)
THGBMFG6C1LBAIT	8GB	Supreme	11x10x0.8mm	2Q, 2015 (Apr.-Jun.)
THGBMFG7C2LBAIL	16GB	Supreme	11.5x13x0.8mm	1Q, 2015 (Jan.-Mar.)
THGBMFG7C2LBAIW	16GB	Supreme	11x10x1.0mm	1Q, 2015 (Jan.-Mar.)
THGBMFG7C1LBAIL	16GB	Premium	11.5x13x0.8mm	1Q, 2015 (Jan.-Mar.)
THGBMFG8C4LBAIR	32GB	Supreme	11.5x13x1.0mm	1Q, 2015 (Jan.-Mar.)
THGBMFG8C4LBAIW	32GB	Supreme	11x10x1.0mm	1Q, 2015 (Jan.-Mar.)
THGBMFG8C2LBAIL	32GB	Premium	11.5x13x0.8mm	1Q, 2015 (Jan.-Mar.)
THGBMFG9C8LBAIG	64GB	Supreme	11.5x13x1.2mm	1Q, 2015 (Jan.-Mar.)
THGBMFG9C8LBAIX	64GB	Supreme	11x10x1.2mm	1Q, 2015 (Jan.-Mar.)
THGBMFG9C4LBAIR	64GB	Premium	11.5x13x1.0mm	1Q, 2015 (Jan.-Mar.)
THGBMFT0CBLBAIS	128GB	Supreme	11.5x13x1.4mm	2Q, 2015 (Apr.-Jun.)

*In Toshiba e·MMC[TM] categories, "Supreme" represents products suited to high-end class applications and "Premium" represents products for middle- and low-end class applications.

Key Features

1. The JEDEC e·MMC[TM] compliant interface handles essential functions, including writing block management, error correction and driver software. It simplifies system development, allowing manufacturers to minimize development costs and speed up time to market for new and upgraded products. Additionally, new features[5] among them BKOPS control, Cache Barrier, Cache Flushing Report, and Large RPMB Write, are applied to the new products to enhance usability.

2. The 8GB to 64GB products are sealed in a small FBGA package measuring just 11mm x 10mm and are suitable for smartphones, tablet PCs and wearable devices where miniaturization and weight savings are requirements.

3. Embedded in a system, the 128GB products can record up to 16.3 hours of full spec high definition video and 39.7 hours of standard definition video[6] .

Key Specifications

Interface	JEDEC e·MMC™ V5.0 standard HS-MMC interface
Capacity	8GB, 16GB, 32GB, 64GB, 128GB
Power Supply Voltage	2.7-3.6V (Memory core) 1.7V-1.95V, 2.7V-3.6V (Interface)
Bus Width	x1, x4, x8
Temperature Range	-25º C to +85º C
Package	153Ball FBGA 11.5mm x 13.0mm, 11.0mm x 10.0mm

Notes

[1] As of October 2, 2014. Toshiba survey. Excluding the 128GB product.

[2] e•MMC™ is a product category for a class of embedded memory products built to the JEDEC e•MMC™ Standard specification and is a trademark of the JEDEC Solid State Technology Association.

[3] Excluding the 128GB product.

[4] High-speed class e•MMC™ embedded NAND flash memory products using 19nm second generation process technology.

[5] "BKOPS control" is a function where the host allows the device to perform background operation during the device's idle time. "Cache Barrier" is a function that controls when cache data is written to the memory chip. "Cache Flushing Report" is a function that informs the host if the device's flushing policy is FIFO or not. "Large RPMB write" is a function that enhances the data size that can be written to the RPMB area to 8kB.

[6] HD and SD are calculated at average bit rates of 17Mbps and 7Mbps, respectively.

*The products are labeled based on the memory chip(s) it contains, not the amount of memory capacity available for data storage by the end user. Part of the capacity is reserved for card functionality. Please refer to the data sheet or your local Toshiba sales representative.(For purposes of measuring memory capacity in this context, 1GB = 1,073,741,824 bytes.)

*Read and write speeds are calculated as 1MB/s = 1,000,000bytes/s.

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