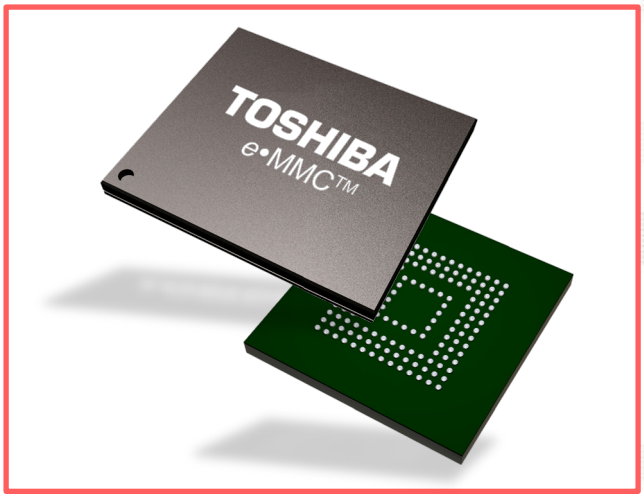
TOSHIBA
Leading Innovation

NAND FLASH MEMORY

e•MMC
Cost Effective Mass Storage



e•MMC™ is a family of advanced, highly efficient NAND flash memory with an integrated controller and enhanced memory management. Based on an interface standardized by JEDEC, Toshiba's e•MMC offers a suitable solution for applications in which higher data volumes need to be stored in a cost-efficient way. It is fully compliant with the Multimedia Card Association (MMCA) high-speed memory interface standard.

APPLICATIONS

- Industrial
- Consumer Electronics
- Multimedia
- Smart Metering & Intelligent Lighting

INVENTOR OF FLASH MEMORY

FEATURES

- 4GB – 128GB
- 15nm
- MLC technology
- Conforms to the latest JEDEC Version 5.0 and 5.1
- Integrated memory management
  - Error correction code
  - Bad block management
  - Wear-leveling
  - Garbage collection
- Standard and extended temperature range
- FBGA package

ADVANTAGES

- High Interface speed (HS400 according to JEDEC 5.x)
- Managed memory
- Package, interface, features, commands etc. are standard
- Utilizes high-quality Toshiba MLC NAND flash memory in combination with a Toshiba developed controller
- Produced in Toshiba's cutting-edge technology flash memory factory

BENEFITS

- Easy-to-integrate storage solution due to established standards
- Cost efficient design-in
- An effective relationship between price, density and performance
- Reliable storage solution based on high-quality NAND memory and an optimized controller
- Extended production capacity to fulfill customer demand

SPECIFICATIONS

Product / Features	e·MMC	Extended Temp. e·MMC
Density	4GB – 128GB	8GB – 64GB
Technology	15nm	15nm
JEDEC Version	5.0 / 5.1	5.1
Temperature	-25°C to +85°C	-40°C to +85°C
Package	FBGA	

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e•MMC – PRODUCT LIST

Density	Item Name	Technology	JEDEC Standard	Temperature	Package
4GB	THGBMDG5D1LBAIT	15nm	JEDEC 5.0	-25°C to 85°C	153FBGA 11x10
8GB	THGBMHG6C1LBAIL	15nm	JEDEC 5.1	-25°C to 85°C	153FBGA 11.5x13
	THGBMHG6C1LBAWL	15nm	JEDEC 5.1	-40°C to 85°C	153FBGA 11.5x13
16GB	THGBMHG7C1LBAIL	15nm	JEDEC 5.1	-25°C to 85°C	153FBGA 11.5x13
	THGBMHG7C2LBAWR	15nm	JEDEC 5.1	-40°C to 85°C	153FBGA 11.5x13
32GB	THGBMHG8C2LBAIL	15nm	JEDEC 5.1	-25°C to 85°C	153FBGA 11.5x13
	THGBMHG8C4LBAWR	15nm	JEDEC 5.1	-40°C to 85°C	153FBGA 11.5x13
64GB	THGBMHG9C4LBAIR	15nm	JEDEC 5.1	-25°C to 85°C	153FBGA 11.5x13
	THGBMHG9C8LBAWG	15nm	JEDEC 5.1	-40°C to 85°C	153FBGA 11.5x13
128GB	THGBMHT0C8LBAIG	15nm	JEDEC 5.1	-25°C to 85°C	153FBGA 11.5x13

e•MMC – SPECIALIZED VERSIONS

Does your application require faster data throughput? Toshiba offers enhanced versions of its 16GB and 32GB e-MMC on demand. Please contact your Toshiba representative or qualified distributor for more information.

e•MMC – DESIGN GUIDELINE & DESIGN CHECK SHEET

To support your e·MMC design, Toshiba offers a design guideline and a design check sheet. The design guideline highlights some of the key topics to be considered when selecting and utilizing a Toshiba e·MMC. The design check sheet can be used to give more detailed information about the individual usage scenario for the e·MMC. Both files are available at your local Toshiba representative or a qualified distributor.

e•MMC – ENHANCED USER DATA AREA

Toshiba's e·MMC products support the JEDEC compliant “Enhanced User Data Area," also called “pseudo-SLC.” For applications requiring the memory to perform with higher write/erase cycles than MLC NAND can offer, the e·MMC provides the option to build a partition which offers “pseudo-SLC“ performance.

INNOVATION IS OUR TRADITION: FLASH MEMORY AND MORE

In 1984, Toshiba developed a new type of semiconductor memory called flash memory, leading the industry into the next generation ahead of its competitors. Some time later in 1987, NAND flash memory was developed, and this has since been used in a variety of memory cards and electronic equipment. The NAND flash market has grown rapidly, with flash memory becoming an internationally standardized memory device. As the inventor of flash memory, Toshiba has carved out a path to a new era in which we are all able to carry videos, music and data with us wherever we go.

e·MMC™ is the trademark of JEDEC/MMCA

Product density is identified based on the maximum density of memory chip(s) within the Product, not the amount of memory capacity available for data storage by the end user Consumer-usable capacity will be less due to overhead data areas, formatting, bad blocks, and other constraints, and may also vary based on the host device and application.

Maximum read and write speed may vary depending on the host device, read and write conditions, and file size.

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