



e-MMC

Cost Effective Mass Storage

e-MMC is a family of advanced and 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 the optimal solution for applications where higher data volume needs to be stored in a cost efficient way. It is fully compliant with the Multi-media Card Association (MMCA) high speed memory interface standard.

CAPACITIES



FEATURES

- 4 GB – 128 GB
- 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 of up to 105 °C
- FBGA package

ADVANTAGES

- Higher Interface speed HS400 according to JEDEC 5.x
- Managed memory
- Package, interface, features, commands etc. are standard
- Utilizing high quality Toshiba MLC NAND flash memory in combination with a Toshiba origin developed controller
- Produced in the world's largest, leading edge technology flash factory

BENEFITS

- Easy to integrate storage solution due to established standards
- Cost efficient design in
- Optimal relation between price, density and performance
- Reliable storage solution based on high quality NAND memory and optimized controller
- Extended production capacity to fulfil customers demand

APPLICATIONS

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

SPECIFICATIONS

FEATURES	e-MMC	EXTENDED TEMP. e-MMC
Density	4 GB – 128 GB	8 GB – 64 GB
Technology	15nm	15nm
JEDEC Version	5.0 / 5.1	5.1
Temperature	-25 °C to 85 °C	-40 °C to 105 °C
Package	FBGA	

e-MMC – PRODUCT LIST

DENSITY	PART NUMBER	TECHN.	JEDEC STANDARD	TEMPERATURE	PACKAGE
4 GB	THGBMNG5D1LBAIT	15nm	JEDEC 5.0	-25 °C to 85 °C	153FBGA 11 x 10
	THGBMNG5D1LBAIL			-25 °C to 85 °C	153FBGA 11.5 x 13
8 GB	THGBMHG6C1LBAIL	15nm	JEDEC 5.1	-25 °C to 85 °C	153FBGA 11.5 x 13
	THGBMHG6C1LBAU6			-40 °C to 105 °C	153FBGA 11.5 x 13
16 GB	THGBMHG7C1LBAIL	15nm	JEDEC 5.1	-25 °C to 85 °C	153FBGA 11.5 x 13
	THGBMHG7C2LBAU7			-40 °C to 105 °C	153FBGA 11.5 x 13
32 GB	THGBMHG8C2LBAIL	15nm	JEDEC 5.1	-25 °C to 85 °C	153FBGA 11.5 x 13
	THGBMHG8C4LBAU7			-40 °C to 105 °C	153FBGA 11.5 x 13
64 GB	THGBMHG9C4LBAIR	15nm	JEDEC 5.1	-25 °C to 85 °C	153FBGA 11.5 x 13
	THGBMHG9C8LBAU8			-40 °C to 105 °C	153FBGA 11.5 x 13
128 GB	THGBMHT0C8LBAIG	15nm	JEDEC 5.1	-25 °C to 85 °C	153FBGA 11.5 x 13

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 by the developer to share more detailed information about the individual usage scenario with Toshiba. Both files are available at your local Toshiba representative or qualified distributor.

e-MMC – ENHANCED USER DATA AREA

Toshiba 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. Toshiba, the inventor of flash memory, 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.