KIOXIA



e-MMC MANAGED FLASH

KIOXIA's broad, high-performance lineup of e-MMC products integrates flash memory and an e-MMC controller in a single BGA package to perform functions such as error correction, wear leveling, logicalto-physical address translation, and bad-block management. These solutions support a high-speed memory interface compliant with JEDEC Version 5.0/5.1 and eliminate the need for the host to directly control the flash memory.

e-MMC remains an important solution for many applications that are not able to migrate to the latest generation UFS, either because the densities needed are at the lower GB range, or because the processor does not yet support a UFS interface. Fabricated with solutions that utilize either 15nm process technology or our more advanced BiCS FLASH™ 3D flash memory, our e-MMC products are well-suited for a wide range of applications that continue to need e-MMC as an embedded memory solution.

Key Features

KIOXIA controller

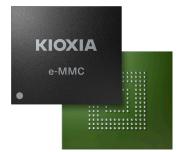
Parallel interface

BiCS FLASH[™] 3D flash memory

JEDEC standard (v5.0/v5.1)

11.5 x 13mm 153 ball BGA (11 x 10mm 4GB package option)

Standard & extended temperature ranges



Advantages

- Easy adoption for SoCs
- Widely supported MultiMediaCard (MMC) interface
- Multiple boot partitions
- Strong on-board ECC
- Low power consumption
- Small footprint

Design Considerations



supports 4640MB/s





Use UFS When:

- · Higher densities are needed (from 32GB to 1TB)*
- Enhanced performance is desired (UFS provides high-speed read/write performance with good power efficiency)
- · SoCs that interface to UFS are available

*Please see part number table for currently available densities

Applications

- IoT devices
- Smartphones
- Smart TVs
- Tablets/2-in-1
- Automotive
- Streaming Media
- Smart Speakers

supports

2320MB/s

Densities

- 128GB
- 64GB •
- 32GB
- 16GB
- 8GR* •
- 4GB*

*Based on 15nm 2D flash memory

e-MMC v5.1





Use e-MMC When:

- Lower densities are needed (4GB, 8GB, 16GB)
- · SoC-supporting UFS interface is not available



e-MMC | Managed Flash

		Capacity	e-MMC Version	Process	Max Data Rate (MB/s)	Supply Voltage			
	Part Number					V _{cc} (V)	V _{ccq} (V)	Operating Temp °C	Package (mm)
Consumer Grade	THGBMNG5D1LBAIT	4.00	5.0	FG NAND	400	2.7 to 3.6	1.70 to 1.95, 2.7 to 3.6	-25 to 85	11 × 10 × 0.8
	THGBMTG5D1LBAIL	4 GB							
	THGBMUG6C1LBAIL	8GB	5.1						11.5 × 13 × 0.8
	THGBMUG7C1LBAIL	16GB							
	THGBMUG8C2LBAIL	32GB							
	THGAMVG7T13BAIL	16GB	5.1	BiCS FLASH [™]	400	2.7 to 3.6	1.70 to 1.95		
	THGAMVG8T13BAIL	32GB							11.5 × 13 × 0.8
	THGAMVG9T23BAIL	64GB							
	THGAMVT0T43BAIR	128GB							11.5 × 13 × 1.0
	THGAMSG9T24BAIL	64GB	5.1	BiCS FLASH [™]	400	2.7 to 3.6	1.70 to 1.95		11.5 × 13 × 0.8
	THGAMST0T24BAIL	128GB							11.5 × 13 × 0.8
Industrial Grade	THGBMJG6C1LBAU7	8GB	5.1	FG NAND	400	2.7 to 3.6	1.70 to 1.95, 2.7 to 3.6	-40 to 105'	11.5 x 13 x 1.0
	THGBMJG7C2LBAU8	16GB							11.5 × 13 × 1.2
	THGBMJG8C4LBAU8	32GB							
	THGBMJG9C8LBAU8	64GB							

(1) Tc=115°C max. Contact your KIOXIA sales representative for sample schedule.

Definition of capacity: KIOXIA defines a megabyte (MB) as 1,000,000 bytes, a gigabyte (GB) as 1,000,000,000 bytes and a terabyte (TB) as 1,000,000,000 bytes. A computer operating system, however, reports storage capacity using powers of 2 for the definition of 1GB = 2²⁰ = 1,073,741,824 bytes and therefore shows less storage capacity. Available storage capacity (including examples of various media files) will vary based on file size, formatting, settings, software and operating system, such as Microsoft Operating System and/or pre-installed software applications, or media content. Actual formatted capacity may vary.

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Product image may differ from the actual product.

In every mention of a KIOXIA product: Product density is identified based on the 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. For details, please refer to applicable product specifications. The definition of 1KB = 210 bytes = 1,024 bytes. The definition of 1GB = 230 bits = 1,073,741,824 bytes. 1Tb = 240 bits = 1,099,511,627,776 bits.