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INDUSTRIAL MEDICAL AUTOMOTIVE

PRODUCT CATALOGUE

Industrial NAND Flash Storage & Memory Manufacturer

About Us

FLEXXON designs, manufactures and markets Industrial NAND Flash Storage Solutions products, serving specifically the INDUSTRIAL, MEDICAL & AUTOMOTIVE (IMA) applications and customers worldwide, who demand the very highest level of reliability, endurance and wide operating temperature ranges.

Flexxon Flash-based Storage product range:

- ☑ SSD – SATA , PATA , PCIe
- ☑ SD Card / Micro SD card
- ☑ Compact Flash Card
- ☑ USB Flash Drive
- ☑ NAND Flash Modules
- ☑ eMMC
- ☑ Drive with variety of interfaces support
- ☑ Special capacity and customized features according to customer requirement

Quality and Product Reliability Assurance

Full Product Qualification Test from Component, System to Production
Full Reliability Test includes Mechanical Test, Environmental Test, Packaging Test, Printing Test, etc

QUALITY **RELIABILITY** **EXPERTISE** **COMMITMENT**

Industrial Application

FLEXXON Industrial-Grade Products designed for industrial customers meet extreme reliability and endurance requirements. In particular, Flexxon's industrial products have undergone strict qualification testing to guarantee product reliability and longevity.

Automotive

ATM Machine

POS Machine

Medical

Musical Instrument

Test & Measurement

Payment Terminal

Vending Machine

Surveillance

Handheld Devices

Gaming

Embedded System

Solution Printer

Military

Digital Signage

Rugged Computer

Product Features

Industrial Grade

Industrial Grade	Temperature
Diamond	-40°C ~ +85°C
Gold	-25°C ~ +85°C
Silver	0°C ~ 70°C

Advance Product Functions

- Advanced Flash Management
- Advanced Self - Defense Mechanism
- Low Power Management
- Flushing Mechanism for Power Loss Protection
- SSD Lifetime Management

- Static and Dynamic Wear Leveling
- Bad Block Management
- ECC
- TRIM
- SMART
- Over-Provision
- Firmware Update

Customization Services

- ☑ F.W Customization to meet full compatibility of different customer platform requirement
- ☑ PCB re-layout design to meet different requirement
- ☑ Pre-loaded Content
- ☑ Label Printing
- ☑ Packaging
- ☑ Product ID / Parameters..etc
- ☑ Laser Etching
- ☑ Format Load

FLEXXON eMMC

Highly Integrated Embedded Storage

The trend of the size of embedded systems continues to shrink in some industrial and medical application, there is a need for even smaller form factor storage than microSD card.

FLEXXON eMMC's design to meet the rigid requirements of IMA (Industrial/ Medical/ Automotive) market where technical support, extended life, and stable roadmaps are critical for this segment industry.

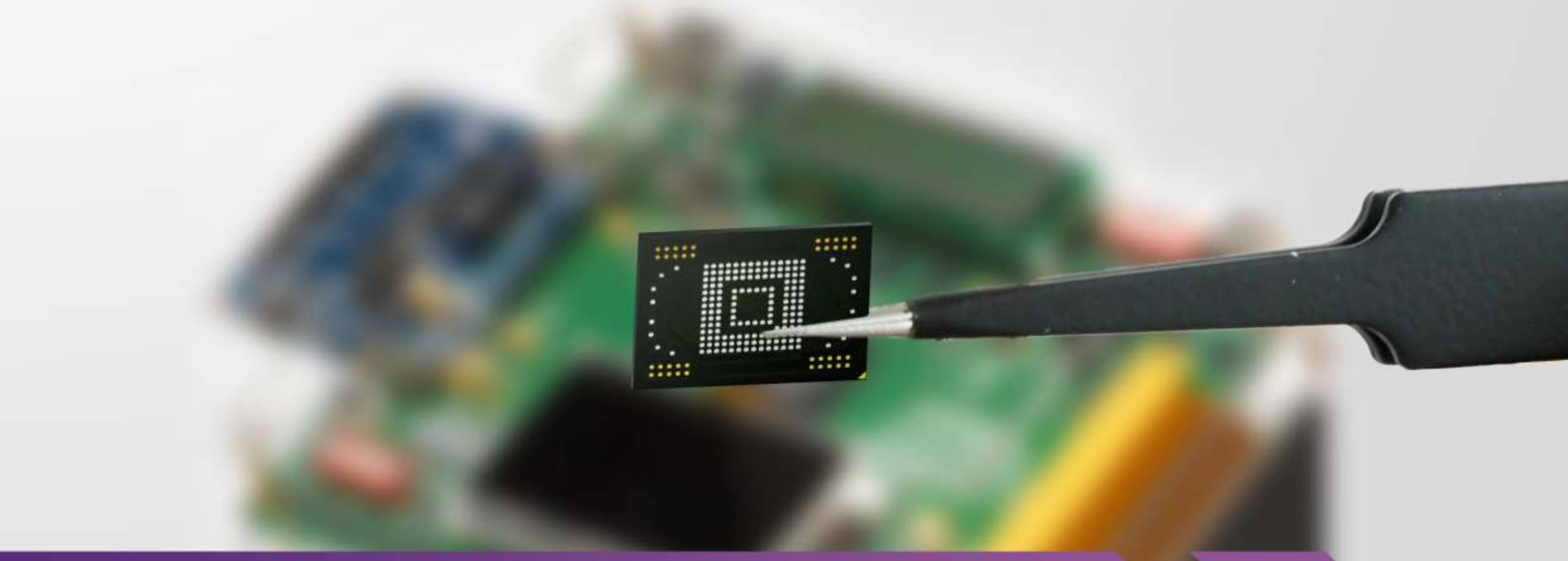
FLEXXON's eMMC Product Family is an embedded memory solution that combines NAND Flash Memory, an embedded MMC (MultiMediaCard) controller, and advanced firmware in a small BGA package (100balls/ 153balls/ 169balls) that provides a **small, robust, yet cost effective, high density** embedded NAND Flash storage solution. The eMMC products are compliant to the JEDEC® e•MMC™ v4.5 and v5.0 interface and protocol standard.

eMMC Benefit

When working with native NAND Flash components, data are written and read directly to physical locations in the NAND Flash memory. Host system needs to actively manage data at physical memory locations and correct bit errors as the data are read back from NAND Flash. Designers must implement the necessary ECC engine and data management algorithm in the host system, increasing the burden on host hardware and software design and validation. Revision to the design may be necessary each time the NAND Flash component is replaced by a newer part or a part from a different vendor. In comparison, eMMC functions as a block storage device, interacting with the host system through an abstracted interface protocol, analogous to an SSD. The host system simply writes and reads data to and from logical block addresses (LBA's), without needing to anticipate data errors and how the data would be stored and managed in the NAND Flash memory. The eMMC controller hardware and firmware handles the error correction and data management functions internally without involvement from the host system. Since the eMMC interface and protocol standardized by JEDEC® is agnostic to the underlying NAND Flash memory technology and configuration, compatibility and interoperability among different suppliers' eMMC products can be assured.

WHY FLEXXON for eMMC

- ✓ **Long product life support for embedded storage**
- ✓ **Tailor-made Firmware**
- ✓ **Advanced NAND Management Technology**
- ✓ **Customization available for Customer**
- ✓ **Industrial/ Medical/ Automotive market focus suppliers**



FLEXXON eMMC

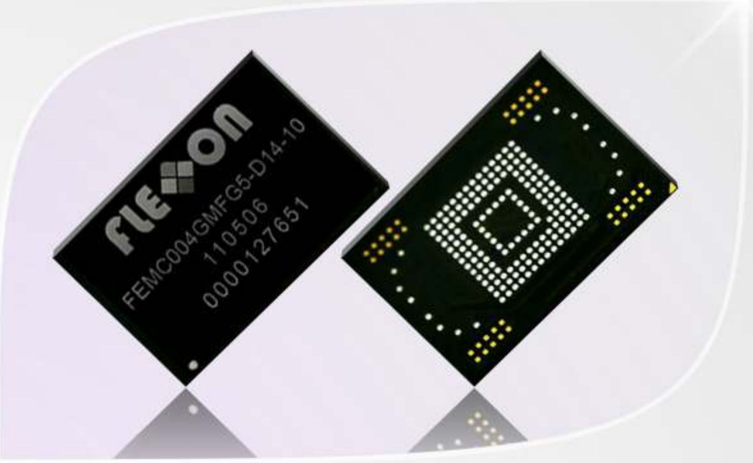
FLEXXON eMMC Feature

Features	eMMC 4.5	eMMC 5.0
Flash	MLC	MLC
Speed	HS200	HS400
Discard CMD	✓	✓
Sanitise CMD	✓	✓
Packed CMDs	✓	✓
Context ID	✓	✓
Data Tag	✓	✓
Enhanced Partition Types	✓	✓
Dynamic Device Capacity	✓	✓
Secure Erase / Secure Trim	✓	✓
HS400		✓
Field Firmware Update (FFU)		✓
Production State Awareness (PSA)		✓
Health Report		✓
Sleep Notification in Power-off		✓
Secure Removal Type		✓

FLEXXON eMMC Series

eMMC Series	XTRA I	XTRA III
Interface	eMMC 4.5	eMMC 5.0
Flash Type	MLC, pSLC	MLC, pSLC
Ball Count	MLC 4GB:153-ball Others: 169-ball	153-ball / 100-ball
Capacity	MLC: 4GB ~ 64GB pSLC: 4GB ~ 16GB	MLC: 4GB ~ 64GB pSLC: 4GB ~ 32GB
Max. Performance	Read: 140 MB/s Write: 40 MB/s	Read: 270 MB/s Write: 120 MB/s
Grade	Industrial (Gold & Diamond)	Industrial (Gold & Diamond)

Industrial eMMC 4.5 (XTRA I)



Product Features

- ☑ Complies with JEDEC eMMC 4.41 / 4.5 Specifications
- ☑ Uses Standard JEDEC 153-ball, 169-ball FBGA Packaging
- ☑ Low Power Management
- ☑ Advanced NAND Management
- ☑ RoHS Compliant

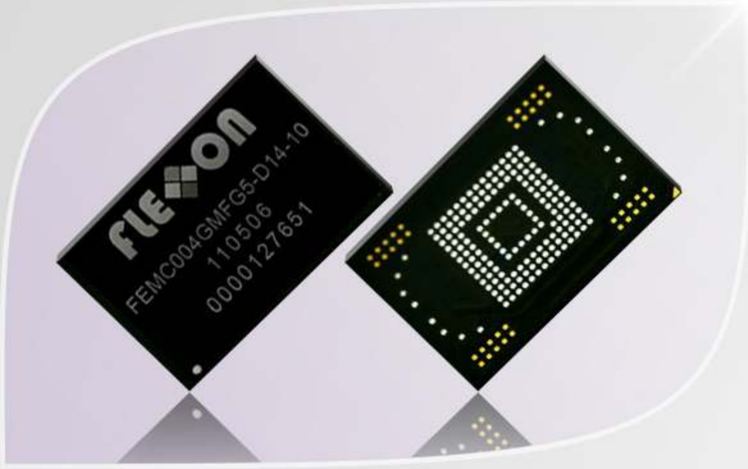
Specifications

Interface	eMMC 4.5	
Flash Type	MLC, pSLC	
Capacity	MLC: 4GB ~ 64GB	pSLC: 4GB ~ 16GB
Max. Performance (Vary by flash & density)	Read: 140MB/s	Write: 40MB/s
Operating Voltage	2.7V ~ 3.6V	
Operating Temp.	Gold Grade: -25 ~ 85°C	Diamond Grade: -40 ~ 85°C
Storage Temp.	-40 ~ +85°C	
Pin Count	153-ball, 169-ball	

Ordering Information

Flash	Capacity	Part Number		Pin Configuration
		Gold Grade	Diamond Grade	
MLC	4GB	FEMC004GMFG5-D14-10	---	153 FBGA
	8GB	FEMC008GMFG5-D12-10	---	169 FBGA
	16GB	FEMC016GMFG6-D11-10	FEMC016GMFE6-D11-10	169 FBGA
	32GB	FEMC032GMFG6-D11-20	FEMC032GMFE6-D11-20	169 FBGA
	64GB	FEMC064GMFG6-D11-40	FEMC064GMFE6-D11-40	169 FBGA
pSLC	4GB	FEMC004GMFG5-D12-13	FEMC004GMFE5-D12-13	169 FBGA
	8GB	FEMC008GMFG5-D12-23	FEMC008GMFE5-D12-23	169 FBGA
	16GB	FEMC016GMFG5-D12-43	FEMC016GMFE5-D12-43	169 FBGA

Industrial eMMC 5.0 (XTRA III – 100Balls)



Product Features

- ☑ Complies with JEDEC eMMC 4.4 / 4.41 / 4.5 / 5.0 Specifications
- ☑ Uses standard JEDEC 100-ball FBGA packaging
- ☑ Low Power Management
- ☑ Advanced NAND management
- ☑ RoHS Compliant

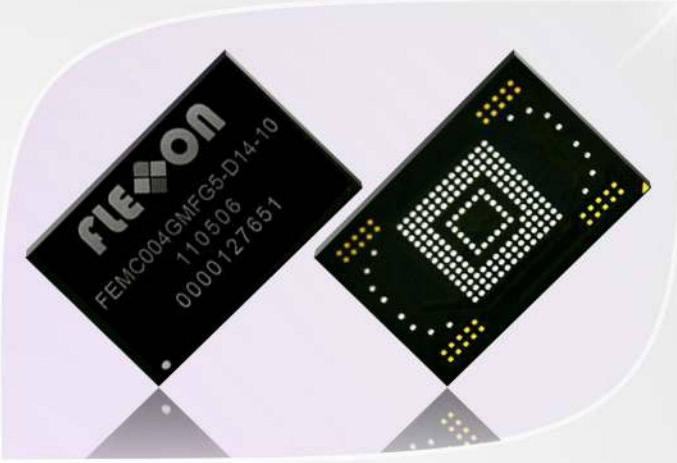
Specifications

Interface	eMMC 5.0	
Flash Type	MLC, pSLC	
Capacity	MLC: 4GB ~ 64GB	pSLC: 4GB ~ 32GB
Max. Performance (Vary by flash & density)	Read: 250MB/s	Write: 120MB/s
Operating Voltage	2.7V ~ 3.6V	
Operating Temp.	Gold Grade: -25 ~ 85°C	Diamond Grade: -40 ~ 85°C
Storage Temp.	-40 ~ +85°C	
Pin Count	100-ball	

Ordering Information

Flash	Capacity	Part Number		Pin Configuration
		Gold Grade	Diamond Grade	
MLC	4GB	FEMC004GTTG7-T13-10	FEMC004GTTE7-T13-10	100 FBGA
	8GB	FEMC008GTTG7-T13-10	FEMC008GTTE7-T13-10	100 FBGA
	16GB	FEMC016GTTG7-T13-20	FEMC016GTTE7-T13-20	100 FBGA
	32GB	FEMC032GTTG7-T13-20	FEMC032GTTE7-T13-20	100 FBGA
	64GB	FEMC064GTTG7-T13-40	FEMC064GTTE7-T13-40	100 FBGA
pSLC	4GB	FEMC004GTTG7-T13-13	FEMC004GTTE7-T13-13	100 FBGA
	8GB	FEMC008GTTG7-T13-23	FEMC008GTTE7-T13-23	100 FBGA
	16GB	FEMC016GTTG7-T13-23	FEMC016GTTE7-T13-23	100 FBGA
	32GB	FEMC032GTTG7-T13-43	FEMC032GTTE7-T13-43	100 FBGA

Industrial eMMC 5.0 (XTRA III – 153Balls)



Product Features

- ☑ Complies with JEDEC eMMC 4.4 / 4.41 / 4.5 / 5.0 Specifications
- ☑ Uses Standard JEDEC 153-ball FBGA Packaging
- ☑ Low Power Management
- ☑ Advanced NAND Management
- ☑ RoHS Compliant

Specifications

Interface	eMMC 5.0	
Flash Type	MLC, pSLC	
Capacity	MLC: 4GB ~ 64GB	pSLC: 4GB ~ 32GB
Max. Performance (Vary by flash & density)	Read: 270MB/s	Write: 120MB/s
Operating Voltage	3.3V	
Operating Temp.	Gold Grade: -25 ~ 85°C	Diamond Grade: -40 ~ 85°C
Storage Temp.	-55 ~ +125°C	
Pin Count	153-ball	

Ordering Information

Flash	Capacity	Part Number		Pin Configuration
		Gold Grade	Diamond Grade	
MLC	4GB	FEMC004GTTG7-T24-10	FEMC004GTTE7-T24-10	153 FBGA
	8GB	FEMC008GTTG7-T14-10	FEMC008GTTE7-T14-10	153 FBGA
	16GB	FEMC016GTTG7-T14-10	FEMC016GTTE7-T14-10	153 FBGA
	32GB	FEMC032GTTG7-T14-20	FEMC032GTTE7-T14-20	153 FBGA
	64GB	FEMC064GTTG7-T14-40	FEMC064GTTE7-T14-40	153 FBGA
pSLC	4GB	FEMC004GTTG7-T14-13	FEMC004GTTE7-T14-13	153 FBGA
	8GB	FEMC008GTTG7-T14-13	FEMC008GTTE7-T14-13	153 FBGA
	16GB	FEMC016GTTG7-T14-23	FEMC016GTTE7-T14-23	153 FBGA
	32GB	FEMC032GTTG7-T14-43	FEMC032GTTE7-T14-43	153 FBGA

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Why FLEXXON ?

- ☑ **Long Product Life**
- ☑ **Fixed BOM**
- ☑ **Industrial Grade**
- ☑ **Special Capacity & Customize Memory Solution**
- ☑ **Strong Technical Support**
- ☑ **Support HMLV (High-Mixed Low Volume)**