



Long-Term Support  
World Class Quality



**e.MMC Memory**  
Managed NAND Solutions for the  
Automotive, Industrial, & Medical markets



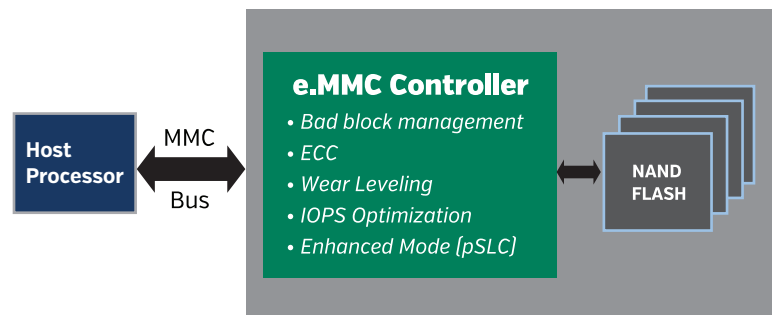
### Key Features:

- e.MMC 5.0 interface
- Density: 4GB up to 32GB
- Error Free memory access
- Security features
- Simplify system design
- Reduce Time-To-Market
- Improved system performance
- Enhanced Mode [pSLC]
- Cost-effective and higher capacity storage using MLC NAND
- High endurance
- I-Temp [-40°C ~ 85°C] and Automotive Grade Qualified
- Multiple packaging options
- Long Term Support

### Product Description:

ISSI e.MMC product family provides the ideal embedded storage solution for the Automotive, Industrial and Medical applications, which require high performance and endurance across a wide range of operating temperatures. These products are all automotive grade qualified and available in both 100-ball BGA and 153-ball BGA.

The e.MMC integrates MLC NAND Flash memory and an intelligent e.MMC controller inside one JEDEC standard package, providing a standard interface to the host. The controller directly manages the NAND flash, implementing functions like bad block management, error handling (ECC), static and dynamic wear-leveling, IOPS optimization and read sensing. ISSI e.MMC devices support Enhanced Mode where the device can be configured as pseudo-SLC (pSLC) for higher read/write performance, endurance and reliability.



### Applications:

- Infotainment
- Telematics
- Satellite Radio
- Cluster/Center Stack Displays
- Body Electronics
- Safety Systems (ADAS)
- Industrial Machine
- Medical Imaging
- Test instruments
- Switches & Routers
- Set-top boxes
- Gaming boxes

### ISSI e.MMC Part Numbers and Specifications:

Density	Part Number	Package	Temp. Grade	MMC	Seq Rd/Wr [MB/s]	Ran Rd/Wr [IOPS]
4GB	IS21ES04G-JQLI	100 BGA	I-Temp	5.0	260 / 15	5615 / 1677
	IS22ES04G-JQLA1		Auto Grade			
	IS21ES04G-JCLI	153 BGA	I-Temp			
	IS22ES04G-JCLA1		Auto Grade			
8GB	IS21ES08G-JQLI	100 BGA	I-Temp			
	IS22ES08G-JQLA1		Auto Grade			
	IS21ES08G-JCLI	153 BGA	I-Temp			
	IS22ES08G-JCLA1		Auto Grade			
16GB	IS21ES16G-JQLI	100 BGA	I-Temp			
	IS22ES16G-JQLA1		Auto Grade			
	IS21ES16G-JCLI	153 BGA	I-Temp			
	IS22ES16G-JCLA1		Auto Grade			
32GB	IS21ES32G-JQLI	100 BGA	I-Temp			
	IS22ES32G-JQLA1		Auto Grade			
	IS21ES32G-JCLI	153 BGA	I-Temp			
	IS22ES32G-JCLA1		Auto Grade			

### Feature Summary:

e.MMC Features	e.MMC 5.0
Interface Speed / Max Bandwidth	400MB/s
Clock Frequency	200MHz
Data Rate, Mode	HS400, DDR
Bus Width	x4, x8
H/W Reset	Yes
Partitioning	Yes
Enhanced Mode (pseudo-SLC / SLC + MLC)	Yes
Alternative Boot	Yes
Security Features (Trim, RPMB, Secure Erase, Secure Trim)	Yes
High Priority Interrupt	Yes
Back Ground Operation	Yes
Packed Command	Yes
Cache Handling	Yes
Discard	Yes
Dynamic Capacity	Yes
Sanitize	Yes
Power OFF Notification	Yes
Smart Reporting	Yes
Device Health Report	Yes
Field Firmware Update (FFU)	Yes