ATP e.MMC v5.1
Embedded Flash Storage Solution

Industrial-Grade Performance, Extreme Endurance & Reliability

The ATP industrial e.MMC is an advanced storage solution that integrates NAND flash memory, a sophisticated flash controller, and a fast MultiMedia Card (MMC) interface in the same package. By incorporating these components in an integrated package, ATP e.MMC manages all background operations internally, freeing the host from handling low-level flash operations for faster and more efficient processing.

Smaller than a typical postage stamp, ATP e.MMC comes in a 153-ball fine pitch ball grid array (FBGA package). The tiny footprint makes it perfectly suitable for embedded systems with space constraints but require rugged endurance, reliability and durability in harsh environments.

ATP e.MMC is built to meet the tough demands of industrial applications. As a soldered-down solution, it is secure against constant vibrations. Its industrial temperature rating means that severe scenarios from freezing cold -40°C to blistering hot 85°C will not cause adverse impact on the device or the data in it.

Compliant with the latest JEDEC e.MMC 5.1 Standard (JESD84-B51), ATP e.MMC features Command Queuing and Cache Barrier to enhance random read/write performance; High Speed 400 (HS400) DDR Mode for a bandwidth of up to 400 MB/s; and field firmware update (FFU). Cache Flushing Report ensures the data integrity on cache blocks; Enhanced Strobe in HS400 Mode facilitates faster synchronization between the host and the e.MMC device; and, Secure Write Protection ensures that only trusted entities can protect or unprotect the e.MMC device.

It is backward compatible with previous versions (v4.41/v4.5/v5.0), supporting features such as power-off notifications, packed commands, cache, boot or replay protected memory block (RPMB) partitions, high priority interrupt (HPI), and hardware (HW) reset.

Key Features

- Complies with JEDEC e.MMC v5.1 Standard (JESD84-B51)
- 153-ball FBGA (RoHS compliant, "green package")
- Industrial operating temperature range -40°C to 85°C
- LDPC ECC engine*
- Designed with 3D NAND
- Capacities: 8 GB to 128 GB
- SRAM soft error detection
- AutoRefresh, Dynamic Data Refresh read disturb management
- Extra-high endurance: 2-3X higher than standard e.MMC

* Low-density parity-check error correcting code. By product support.

Applications

- Surveillance
- IoT Gateways / 5G Small Cell
- Automation
- Test and Measurement
- Embedded PCs
- Medical
- Drones
- Transportation
- Networking
- Mobile/Handheld Computers

Specifications

Product Name		e.MMC	
Product Line		Premium	Superior
Naming		E700Pi	E600Si
IC Package		153-ball FBGA	
JEDEC Specification		v5.1, HS400	
Flash Type		3D SLC Mode	3D NAND
Density*		8 GB to 64 GB	16 GB to 128 GB
Bus Speed Modes		x1/x4/x8	x1/x4/x8
Performance**	Sequential Read/Write up to (MB/s)	300/240	300/170
	Random Read/Write up to (IOPS)	15K / 30K	15K / 30K
Operating Temperature		-40°C to 85°C (industrial)	
Endurance Max. TBW***		1320 TB	824 TB
Reliability MTBF @ 25°C		> 2,000,000 Device hours	> 2,000,000 Device hours
VCC (Typical RMS in Read/Write)		135 / 155	135 / 180
VCCQ (Typical RMS in Read/Write)		110 / 95	110 / 100
LxWxH (mm)		11.5 x 13.0 x 1.3 (max.)	

*1GB=1,000,000,000 bytes. Actual user storage may be less
**Based on internal testing; performance may vary depending upon drive capacity, file attributes, host device, OS and application. Cache On.
***Under best write amplification index (WAI) with highest sequential write value. May vary by density, test configuration, workload and applications.

To learn more about this product, contact your ATP Representative.

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