SWISSBIT e·MMC PORTFOLIO

OVERVIEW

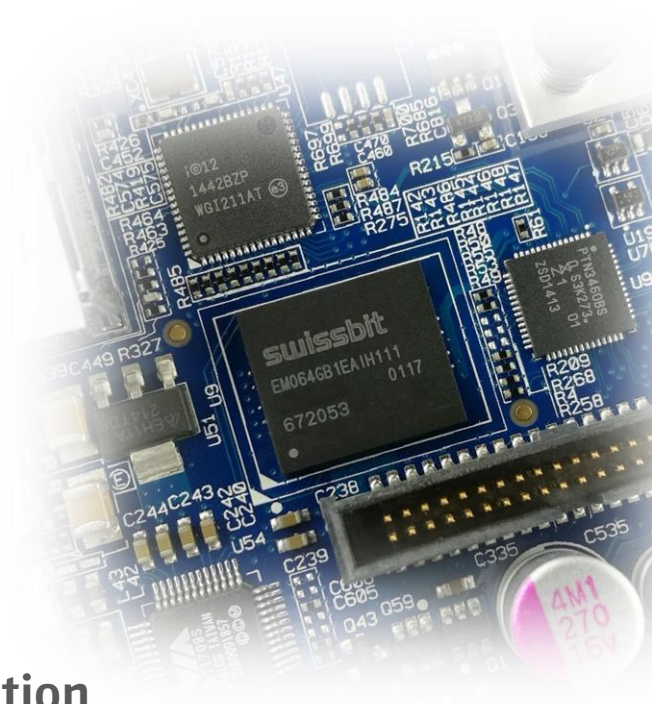REV. 1.4

Best Service Memory Company

swissbit®

WHAT IS YOUR BENEFIT

- Standardized small form factor managed NAND Flash product

- Stable and reliable storage with true industrial operating temperature range

- High performance and write endurance by page based flash organization

- Read disturb management eliminates risk of data loss for read intensive application

- Proven power fail protection. Keep your data also in instable environments

- Data protection with secure erase and replay protected memory block

SWISSBIT e·MMC
PORTFOLIO

swissbit®

Product Line	BGA Type	Temperature Grade	Capacity MLC mode / reliable mode		
Swissbit EM-20 Series **Spec:** JEDEC e·MMC 5.0 **Flash Technology:** MLC	BGA 153 11.5 x 13mm 0.5mm pitch	Industrial Operating Temperature (-40..85°C)	8 GB	/	4 GB
			16 GB	/	8 GB
			32 GB	/	16 GB
			64 GB	/	32 GB
Target Applications	• Sophisticated firmware architecture for industrial and embedded markets • Ideal for application like POS/POI, PLC, IIoT, gaming, medical • General boot medium for embedded applications • Product is optimized for long life cycle that requires superior data retention as well as power fail safety				

SWISSBIT e·MMC
PERFORMANCE DATA

swissbit®

Density	Typical Sustained Performance Sequential R/W − 4K Random R/W IOPS @ MLC mode (Crystal Disk Mark)	Max Performance Seq. Read / Write @ HS400 MLC mode	Max Performance Seq. Read / Write @ HS400 reliable mode	Combined Power Consumption (ICCQ&ICC) Read / Write
8 GB	175 / 17 MB/s − 3800 / 1300 IOPS	250 / 25 MB/s	(4GB) 260 / 60 MB/s	380 / 240 mW
16 GB	175 / 15 MB/s − 3800 / 1150 IOPS	250 / 25 MB/s	(8 GB) 270 / 80 MB/s	400 / 270 mW
32 GB	175 / 20 MB/s − 3800 / 1350 IOPS	250 / 45 MB/s	(16 GB) 270 / 110 MB/s	420 / 370 mW
64 GB	175 / 21 MB/s − 3800 / 1400 IOPS	250 / 90 MB/s	(32 GB) 270 / 160 MB/s	450 / 450 mW

FEATURES

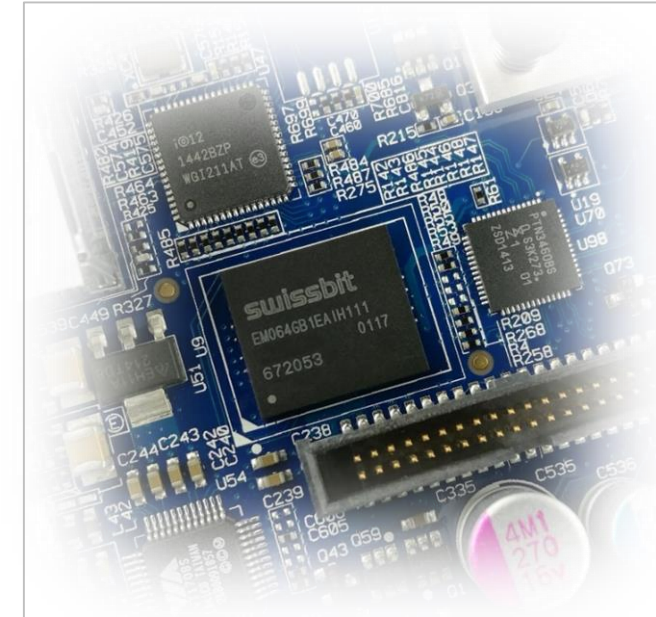## Main Features

- Fully compliant with JEDEC e·MMC 5.0 Standard (JESD84-B50)
- 153-ball BGA, 0.5mm pitch, 11.5mm x 13mm, RoHS compliant
- Industrial Temperature range, -40° up to 85°C
- MLC and pSLC option to meet lifecycle and performance

Optimized FW algorithms

- Page-based FTL, WAF reduction for increased endurance
- Power-off reliability technology
- Read Disturb Management
- Data Care Management: Interruptible background process maintains user data for Read Disturb or Retention degradation caused by high temperature
- Diagnostic features with Device Health Report according to e·MMC Spec 5.0
- Field Firmware update according to e·MMC Spec 5.0
- Discard and Sanitize, Trim
- Boot Operation Mode and Alternative Boot Operation Mode
- Two boot partitions with 4MB each
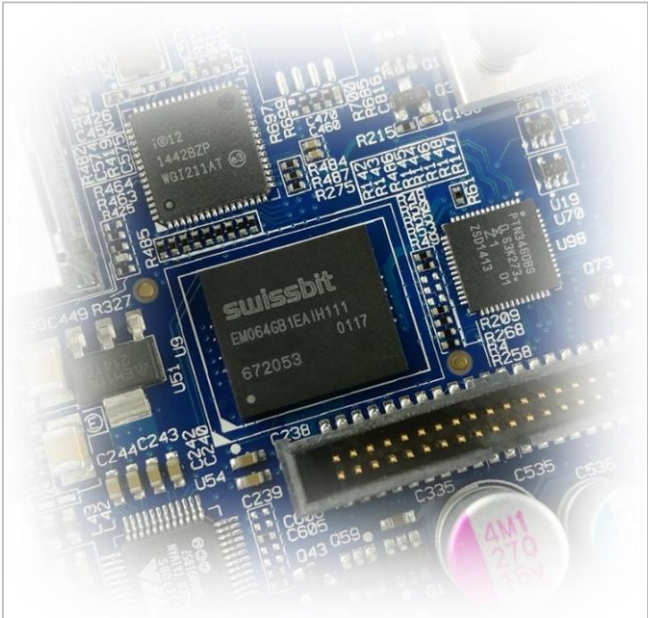- Replay Protected Memory Block (RPMB) with 4MB

SWISSBIT e·MMC
FEATURES

Improvements of e·MMC revision 5.0

Versions	4.5	4.51	5.0	Benefit
Secure Erase/TRIM		✓	✓	erase data effectively
High Speed Mode (HS400)			✓	high speed operation, fast boot
Production State Awareness			✓	protection of preloaded data during soldering process
Field Firmware Update			✓	possibility to improve features or extend functionality
Secure Removal Type			✓	overwriting of data pages with different pattern
Device Health Report			✓	status monitoring to check lifetime

swissbit®