

Robust, reliable and cost-efficient memory solution for embedded applications

Swissbit Industrial and Automotive Grade e.MMC Portfolio



Made in Germany

EM-30 and M1100 e.MMC

Swissbit has a strong focus on reliable e.MMC 5.1 BGAs with industrial or automotive temperature grade and extended longevity.

The EM-30/EM-36 product uses industrial grade 3D-NAND TLC and is available in capacities from 4 to 512 GB. With this series, Swissbit has responded to the increasing demands of embedded systems for ultra-small, vibration-resistant designs with escalating memory capacity requirements.

With the new e.MMC M1100, Swissbit is expanding its industrial storage portfolio with a compact and efficient solution for applications with low storage requirements. The 153-ball e.MMC 5.1 uses MLC NAND technology and offers a capacity of 8 GB, optimized for long-lasting industrial applications. Thanks to integrated power fail protection, optimized firmware and effective read-disturb management, the M1100 sets new standards in reliability and performance. The standard M1100 is designed for the industrial temperature range of -40 °C to +85 °C. To meet the requirements of demanding automotive environments, a special version is available for the extended temperature range of -40 °C to +105 °C.

The EM-36 and M1700 come preconfigured in pSLC enhanced mode.

Key Benefits

- Designed and tested for robustness, reliability and integrity for both device and data
- Sophisticated read disturb management
- Boot area partitioning, RPMB, general purpose partitioning and user data area
- Extended cross temperature stability range from -40°C to 105 °C
- Compliant to IATF 16949 and ISO 27001
- Advanced firmware features to keep data and device safe in critical conditions

Swissbit e.MMC Product Series



About Swissbit

Swissbit AG is the leading European manufacturer of storage, security and embedded IoT solutions for demanding applications. As trusted partner Swissbit empowers the digital and connected world by reliably storing and protecting data in industrial, security and IoT applications.

Predictable service life, data refresh and reliability

Swissbit e.MMC devices offer the option to access detailed information on device health such as write cycles and internal resources via standard access to the e.MMC registers without the need for special access methods or drivers.

In addition, similar to large SSDs, the M1100 and EM-30 firmware supports automatic back-ground data refresh of read-only areas that for instance occur

with boot media. This feature coupled with strong error correction, ensures that data availability is always highly reliable, even if the data has not been accessed under prolonged periods of exposure to high temperatures. A further special feature is the increased protection against data corruption in the event of sudden power loss.

Flexible configuration

The Swissbit e.MMC devices can be partitioned into several MLC/TLC and pSLC segments for boot area, RPMB, general purpose partitions and user data area. If the maximum possible endurance of the NAND is required, Swissbit offers both series to be preconfigured to 100% pSLC.

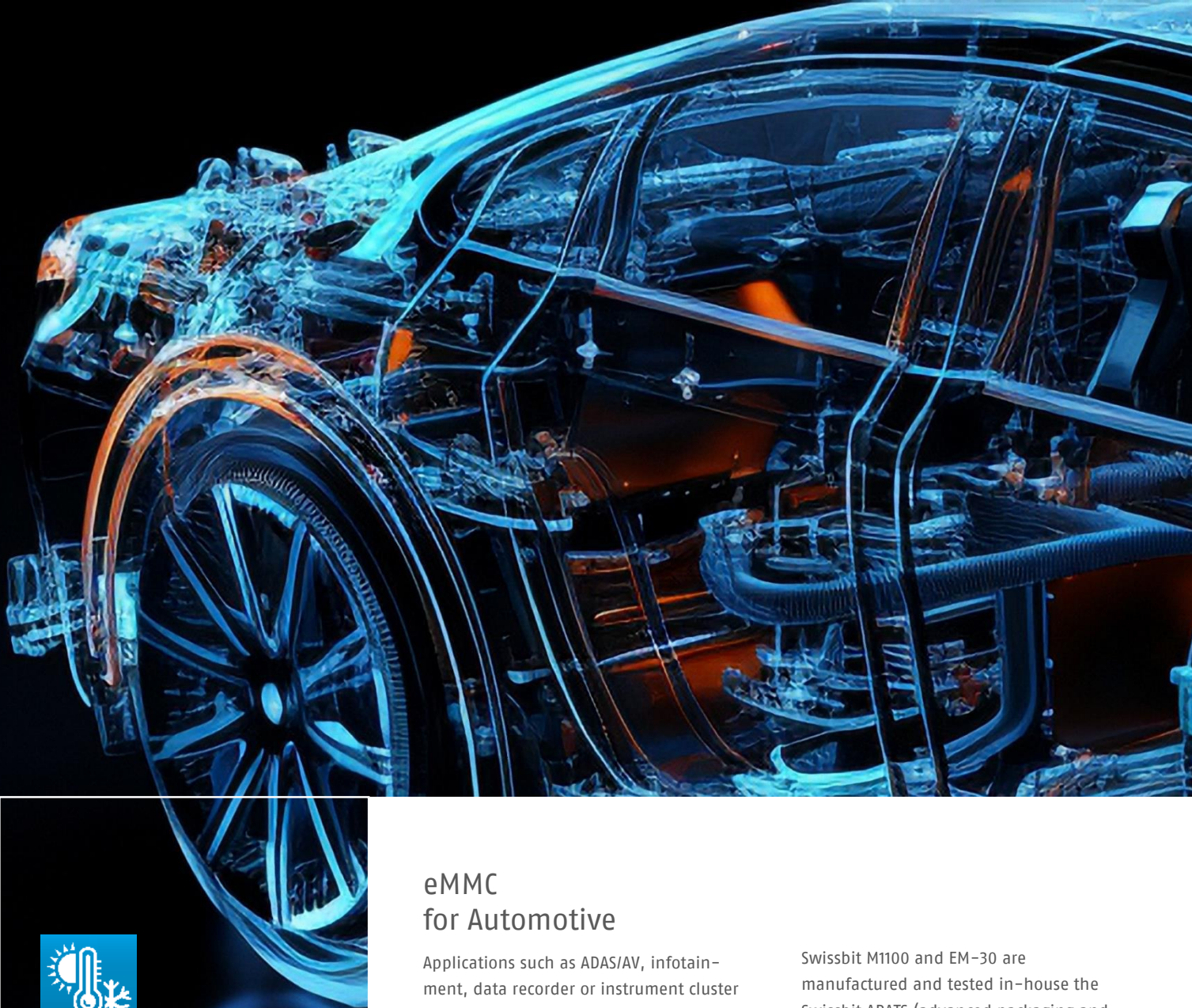
M1100 / M1700

EM-30 / EM-36

	M1100 / M1700	EM-30 / EM-36
Form factor	153b BGA, 0.5mm pitch, 11.5 x 13mm	153b BGA, 0.5mm pitch, 11.5 x 13mm 100b BGA, 1.0mm pitch, 14.0 x 18mm
Interface	JEDEC e.MMC 5.1	
Flash Type	MLC / pSLC mode	3D TLC / 3D pSLC mode
Density Range	8 GB / 4 GB	4 – 512 GB / 5 – 160 GB
Operating temperature	Industrial: -40 to 85°C Automotive -40 to 105°C	
Performance Seq Rd Seq Wr Rnd Rd Rnd WR	up to 230 / 240 MB/s up to 30 / 90 MB/s up to 4,500 / 2,000 IOPS Up to 1,200 / 1,600 IOPS	up to 230 / 320 MB/s up to 240 / 240 MB/s up to 4,450 / 4,400 IOPS up to 2,130 / 2,100 IOPS
Endurance	3K P/E / 30k P/E cycles	3K P/E / 100k P/E cycles
Operating Voltage	V _{CC} 2.7–3.6V V _{CCQ} 1.7–1.95V or 2.7–3.6V	

Key Applications

- Embedded systems and PLCs
- Automotive: infotainment, ADAS, instrument cluster, video recording
- EV charging
- HMI/POS/POI terminals
- Factory / industrial automation
- Routers and switches
- Internet of Things applications
- Medical systems



Automotive
temperature grade:
-40..105°C



EM-30:
AEC – Q100
Grade 2 certified

eMMC for Automotive

Applications such as ADAS/AV, infotainment, data recorder or instrument cluster fuel the demand for compute scalability resulting in high bandwidth and low latency. Autonomous driving requires seamless/real-time stream of an ever-increasing amount of data exchange between the vehicle and cloud services. OEMs are facing new challenges where Swissbit is a reliable partner.

(1) Decoupling of software from the hardware and serviceability across the entire lifecycle of a vehicle.

(2) No safety without security: Functional safety as defined by the ISO 26262 requires OEMs to demonstrate effective cybersecurity risk mitigation mechanisms as defined in the ISO 21434. Hardware based security solutions can enable OEMs to protect data and devices and comply to standards up to ASIL D.

Swissbit M1100 and EM-30 are manufactured and tested in-house the Swissbit APATS (advanced packaging and test) facility and under full supply chain control.

Automotive Applications

- Advanced driver assistance systems (ADAS)
- Autonomous driving platforms
- Infotainment systems
- Drive video recorder
- Motor Vehicle Event Data Recorder (MVEDR)
- Navigation
- Instrument cluster
- Dashcam
- Driver monitoring system (DMS)
- EV charging
- Fleet management

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