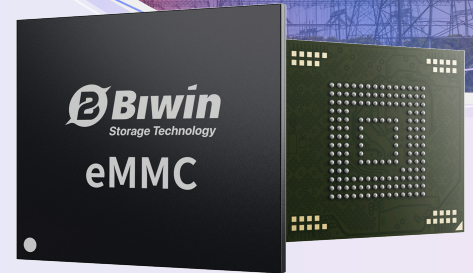


BIWIN TGE408 eMMC 5.1

The BIWIN TGE408 eMMC 5.1 integrates a fully in-house developed eMMC controller with NAND flash, packaged in a compact FBGA 153-ball form factor. Compliant with the eMMC 5.1 specification and supporting HS400 high-speed mode, it delivers strong and reliable performance across an extended industrial temperature range of -40°C to +85°C.

Powered by proprietary firmware algorithms, the TGE408 eMMC 5.1 features advanced bad block management, wear leveling, garbage collection (GC), LDPC error correction, and power-loss protection technologies for dependable performance and data integrity, even in demanding industrial environments.

The series also supports BIWIN's Win-pSLC endurance architecture, enabling TLC NAND to operate in an SLC-emulated mode for significantly enhanced performance, reliability, and endurance. Designed for mission-critical industrial applications, the TGE408 eMMC 5.1 is well suited for power and energy systems, industrial automation, and other stability-sensitive deployments, providing a secure and highly reliable storage solution for industrial platforms.



Key Features

BIWIN Firmware Delivers Enhanced Performance and Reliability

BIWIN's proprietary Win-pSLC firmware technology allows TLC NAND to operate in an SLC-emulated mode, significantly enhancing read/write performance and system responsiveness. This architecture boosts high-speed data processing capabilities while substantially improving endurance and reliability. Designed for write-intensive and high-workload industrial applications, it enables stable, long-term operation even under continuous data access and frequent read/write cycles.

Wide-Temperature Operation In Extreme Conditions

Built for industrial-grade reliability, the TGE408 eMMC 5.1 is rated for wide temperature range support of -40°C to +85°C. Combined with BIWIN's proprietary high- and low-temperature optimization algorithms, it maintains stable performance and data integrity under extreme environmental conditions.

End-to-end In-House Design for Industrial Reliability

The TGE408 eMMC 5.1 combines BIWIN's proprietary controller with NAND flash, delivering a storage solution from chip design to manufacturing. This vertically integrated approach ensures greater supply chain control, long-term reliability, and consistent product quality. Built to withstand the demands of complex power and industrial environments, the TGE408 eMMC 5.1 provides secure data storage and stable data transmission under even intensive operating conditions.

Flexible Customization Options for Diverse Applications

Powered by BIWIN's proprietary controller and firmware architecture, the TGE408 eMMC 5.1 supports multi-level customization to meet specific application requirements. Customers can tailor features and performance characteristics to the needs of their deployment scenarios, enabling optimized storage solutions for power monitoring, industrial automation, diagnostic monitors, portable medical devices, in-vehicle infotainment (IVI) systems, and other specialized industrial applications. This flexibility helps achieve system integration while maximizing overall application value.

Technologies

BIWIN's Proprietary
Win-pSLC Firmware

Bad Block
Management

Power-Loss
Protection

Global Wear
Leveling

RPMB
(Relay Protected Memory Block)

FFU
(Field Firmware Update)

ECC
(Error Correction Code)

Applications



Industrial Automation



Electric Power



Industrial Robots



Intelligent Surveillance



Rail Transportation



AIoT



Financial Retail
Equipment



Smart Healthcare

Specifications

Model Name	TGE408
Interface	eMMC5.1
Flash Type	pSLC / TLC
Capacity	8 GB / 16 GB (pSLC Mode) 64GB / 128 GB (TLC Mode)
Sequential Read (Up to)	330 MB/s
Sequential Write (Up to)	220 MB/s
Operation Current (Max.)	120 mA
Standby Current (Max.)	130 μ A
Dimensions	11.50 x 13.00 x 1.10 mm
Packaging	FBGA 153 Ball
Operating Temperature	-40°C to + 85°C
Storage Temperature	-40°C to + 85°C
Endurance	3,000 P/E cycles (TLC Mode) 100,000 P/E cycles (pSLC Mode)
MTBF	>3,000,000 hours
Certifications	RoHS, REACH
Warranty	3-Year Limited

Order Information

Capacity	Part Number	Power-Loss Protection Options
8 GB pSLC	BWEFMI008GN929	Firmware Based
16 GB pSLC	BWEFMI016GN929	Firmware Based
64 GB TLC	BWEFMI064GN929	Firmware Based
128 GB TLC	BWEFMI128GN929	Firmware Based

1. Tested by BiWIN labs. Actual performance may vary due to systems, devices, or environment.
2. Maintenance and future updates are required throughout the product lifecycle. Specifications are subject to change without notice.
3. The pictures are for illustration only. Actual products may vary due to product enhancements or changes.
4. Not all products are sold in all regions of the world.
5. As used for storage capacity, one megabyte (MB) = one million bytes, one gigabyte (GB) = one billion bytes, and one terabyte (TB) = one trillion bytes. Total accessible capacity varies depending on the operating environment. As used for buffer or cache, one megabyte (MB) = 1,048,576 bytes. As used for transfer rate or interface, megabyte per second (MB/s) = one million bytes per second, and gigabyte per second (GB/s) = one billion bytes per second.
6. MTBF = Mean Time Between Failures based on internal testing using the Telcordia stress testing standard.
7. Please visit www.biwin technology.com for warranty details in your region.
8. For more information, please contact sales@biwintech.com.

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