efficiency embedded

Datasheet

USB Evaluation Module

32GB pSLC USB Drive

hyperstone®

Description

The USB Evaluation Module USB02-U9-RBB06-M01 is a fully assembled USB drive based on the Hyperstone U9 flash memory controller. Its hyReliability™ flash management includes superior wear leveling, read disturb management, and power fail management ensuring highest reliability and durability. With a flexible error correction (ECC) and the state-of-the-art hyMap® flash translation layer, the U9 enables reaching the highest data retention and endurance, thus enabling the most reliable and safe storage systems.

Configuration

Component	Product
Interface Type	USB 3.1
NAND Flash Controller	Hyperstone U9
DRAM	None
NAND Flash	Kioxia MLC
Flash Mode	Pseudo-SLC Mode
Capacity	32GB, 62533296 LBAs
Transfer Modes	SuperSpeed, High-Speed, Full-Speed
Firmware Version	U9 firmware 180910 1.02
Revision	C1_rev1
Product Code	USB02-U9-RBB06-M01

Operation

The USB Evaluation Module is only intended as an exemplary configuration of a storage system based on the Hyperstone U9 controller. It is to be used only for evaluation of the NAND flash controller.

U9 NAND Flash Memory Controller

Note: Not all of the controller features are enabled or offered by the evaluation module

- Designed to fully satisfy industrial requirements and feature requirements
- hyReliability™ Flash Management including superior wear leveling, read disturb management, and power fail management ensuring highest reliability and durability
- hyMap® Flash Translation Layer and mapping offering second to none random write performance, minimal write amplification, and consequently highest endurance for random access heavy usage profiles (e.g. JEDEC Enterprise)
- Flexible 96-Bit/1K BCH ECC engine supporting all Flash Memory requirements
- Optimized 32-Bit RISC core, instruction set for Flash Memory handling
- Continuously updated Flash Memory chip support and long term availability
- High performance on-the-fly AES 128 and 256 encryption engine
- Custom features can be implemented with simple firmware upgrades
- Turnkey solution including firmware, manufacturing kit, test and development hardware, as well as reference schematics
- 16 GPIOs for customer specific applications supporting SPI, I2C and ISO7816 or additional flash CE
- Application Programming Interface (API) and Software Development Kit (SDK) to develop own Custom Firmware Extensions (CFE)
- Built-in temperature sensing capability

Compliance & Performance

- Fully compliant with USB 3.1 Gen 1 specifications
- USB mass storage device class (MSC)
- SuperSpeed, High-Speed, Full-Speed
- Host transfer rate of up to 5 Gbps
- Sequential read up to 200 MB/s
- Sequential write up to 150 MB/s
- Sustained 4K random write over 5 MB/s
- Secure Erase and Sanitize support
- S.M.A.R.T. and health monitoring
- -40 to +85 °C industrial grade version

Targeted Applications

- Industrial USB Flash Drive
- eUSB, embedded USB module
- Ultra-durable Flash Drive
- Security Flash Drive
- Multi-Chip-Package (MCP)
- Disk-on-Board

Contact

If you have any questions regarding the controller evaluation module, feel free to contact us either at us.sales@hyperstone.com or us.techsupport@hyperstone.com.

Handling precautions: This product includes input protection, however, precautions should be taken to prevent device damage from electro-static discharge. Hyperstone does not assume any responsibility for the use of any circuitry described. No IPR or circuit patent licences are implied. Hyperstone reserves the right at any time without notice to change the said circuitry and this product specification. Hyperstone has a policy of testing every product shipped using calibrated test equipment to ensure compliance with this product specification. Specific testing of all circuit parameters is not necessarily performed.

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