Western Digital. **iNAND® CH EM123 Embedded Flash Devices**

Best-in-class e.MMC Storage Solutions for Connected Home and IoT Applications

Western Digital.

Product Highlights

- Broad portfolio: 8GB to 64GB capacity
- Extreme write durability that meets or exceeds the most stringent time-shift-buffer specifications
- Cost effective edge buffering capabilities offloads the system and drives reduced TCO network architecture
- Smart Partition™ solution with configurable SLC and MLC partitions
- Support for multiple OS architectures, including Linux, Android TV, and RDK

Business Benefits

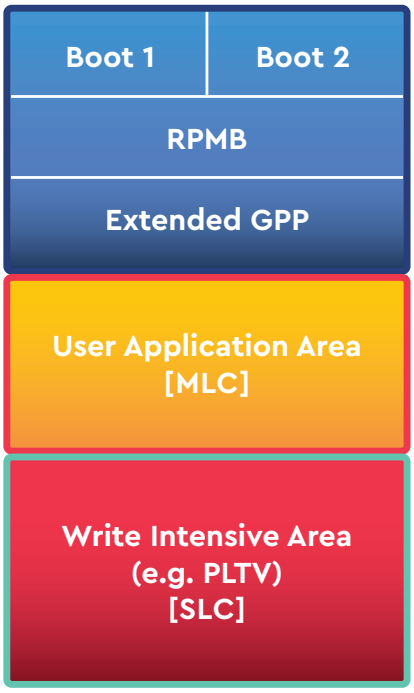
- All in one memory solution – NOR and NAND replacement with 50ms Fast Boot support
- Local video buffering capabilities — offloads network traffic at peak times
- Advanced OS and application solution that enables high reliability and longevity
- Failure prediction mechanism for enhanced user experience and serviceability

Western Digital optimized storage solutions for the Connected Home bring smart, high-endurance storage designed for write intensive applications to a wide range of home entertainment and security applications, such as Set-Top-Box (STB), Over The Top (OTT), Home Gateways, Smart TV, Smart Security Cameras and more.

The global Smart Home market is expected to increase between the years 2018–2023 at a rate of 9.5% CAGR. The driving forces behind this growth are the connectivity and compute adoption in home devices, making those devices connected and "smart".

Western Digital's iNAND CH EM123 embedded flash drive series has been designed specifically to meet both Smart Home and IoT requirements in the coming years.

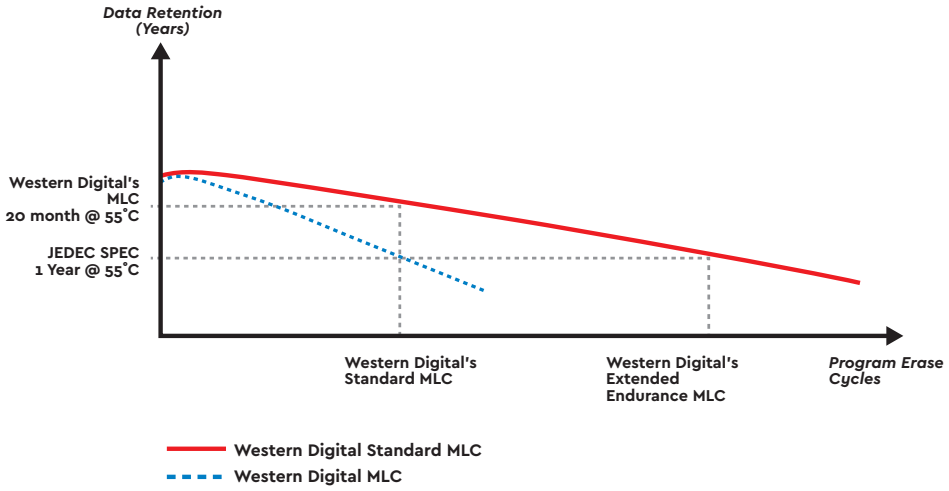
The iNAND CH EM123 Smart Partition™ feature allows designers to divide the media into three physical partitions, with each partition configured with unique physical attributes according to the type of content. Each partition has a unique management scheme and parameters to determine the tolerance and reliability as per application need.



Modern connected devices are designed according to the latest trends in industrial design and as such these devices become smaller and thinner with very little space to reduce thermal buildup. In some cases these devices no longer use a heat sink and fan to dissipate heat. These devices are found positioned outdoors on poles and exposed to extreme environments. At the same time technical requirements like the supported bit-rate and processing speed are dramatically increasing to support the ever escalating work load. The combination of these factors, in addition to Wi-Fi and BT connectivity, results in constant elevated temperatures that can exceed 90°C ambient.

The iNAND CH EM123 generates enhanced status reports that allows system integrators and service providers to better understand the latest conditions and status of the supports. The service provider can remotely access the reports and easily predict and prevent system degradation or failures, thereby providing a highly reliable level of service and an enhanced user experience.

MLC NAND Data Retention Characteristics



A flash cell, regardless of its technology, is limited by the number of times it can be erased and rewritten. The iNAND CH EM123 was designed to withstand extreme erase/rewrite cycling with the understanding that video buffering, applications and other use cases are highly desired in the connected home ecosystem.

Connected Home Applications

- Home Entertainment
- Smart TVs, OTTs, Set-Top-Boxes
- Enhanced Video Features
- Pause Live TV, Trick Play, DVR Lite, Ads Cache
- Home Networking
- Routers, modems, and other network devices
- Home Automation
- Security cameras, IoT gateways and energy management

Special Features

- High temperature tolerance: –25°C to 95°C ambient
- High endurance (Significantly higher than standard eMMC)
- Extended data retention (with manual and automatic mechanisms that maintain data integrity)

X2 (MLC) as it was never seen before

High Operating Temperature
Supports –25°C to 95°C Ambient

High Endurance
Superior in both MLC and SLC partitions

NOR & SLC Replacement
Fast Boot
Smart SLC Partitioning

Extended Data Retention
Manual and automatic refresh mechanism to maintain data integrity

Connected Home Embedded Solutions				
Capacity[1]	8GB	16GB	32GB	64GB
Interface	e.MMC 5.1			
NAND Flash Technology[2]	Configurable X1 (SLC) and X2 (MLC)			
Sequential Write [MB/s][3]	40	80	160	160
Sequential Read [MB/s][2]	300	300	300	300
Random Write [IOPS][3]	8K	14K	14K	14K
Random Read [IOPS][3]	17K	22K	22K	22K
Operating Voltage	Core: 3.3V, IO: 3/3V,1.8V			
Operating Temperatures	–25°C to 95°C			
MLC Endurance (up to [TBW])[4]	56	112	224	448
Package [mm]	11.5x13x0.8	11.5x13x0.8	11.5x13x1.0	11.5x13x1.2
Ordering Information	SDINBDG4–8G-H	SDINBDG4-16G-H	SDINBDG4–32G-H	SDINBDG4–64G-H

[1] As used for storage capacity, one gigabyte (GB) = one billion bytes and one terabyte (TB) = one trillion bytes.

[2] Smart Features Support is not available.

[3] Based on Western Digital internal testing. Read and write speed may vary depending on read/write conditions. 1 megabyte (MB) = 1 million bytes. The measurements are under HS400 mode.

[4] Approximations based on internal metrics that quantifies how much data can be written to a card in its lifespan, expressed in Terabytes Written (TBW), with Write Amplification of 1.

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