

Embedded flash storage is a key enabler for your business.



With more than 17 years of flash expertise, a focused intellectual property portfolio and millions of deployed tier-1 mobile handsets, we are a trusted partner you can rely on to fortify your brand equity and support you in your handset design process – from drawing board to mass production and beyond. Our full line of embedded flash drives offers you a clear, competitive edge, for enabling mobile services on handsets and meeting the embedded storage needs of consumer electronics devices. We ultimately enable you to provide out-of-the-box personal storage for multimedia content, corporate data, or for subscriber-generated content such as photos, music, video and MMS.

Architecture. made smarter.

- Field-deployed and proven architecture – optimized for multimedia applications
- Wide chipset support – supported by all major chipsets from TI, Freescale, ARM, Renesas, ADI, Intel, PowerPC, MIPS and x86
- TrueFFS[®] patented flash management technology - compatible with all leading OSs, including Symbian, Microsoft Windows Mobile and Window CE, Montavista, TTPCom, Nucleus, OSE, VxWorks, QNX, Integrity and OSE
- Multi-chip package solution – available with combinations of SDR and DDR in a single, compact FBGA package

Multimedia. made smarter.

- High density – scalable NAND-based solution with density range from 1Gbit to 16Gbits (128Mbytes to 2Gbytes)
- High system performance – read and write multimedia-level performance, optimized to handle high-resolution photos, video capture and music download
- Superior reliability – a field-proven combination of robust on-the-fly error correction and patented, power-loss immune TrueFFS flash management technology
- Smart power management – automatic transitioning to low power modes to extend battery life
- Privacy protection – hardware protection and security-enabling features to protect personal data, corporate information and multimedia content

mdoc[®]H3

Plug-and-play integration

Embedded flash drive. made smarter

mDOC H3 brings a smarter new approach to embedded flash drives (EFDs). A self-contained storage solution, it transparently utilizes the latest, cost-effective, raw NAND flash material from multiple sources. By integrating our patented TrueFFS flash management technology internally as firmware, mDOC H3 can effectively help you do away with traditional design trade-offs. Now, you can both tap into the latest, cost-effective NAND flash technologies and minimize integration-associated risks and delays. mDOC H3 helps you meet aggressive time-to-market schedules, within budget.

Embedded flash management for speedy integration and upgrades

Our patented flash management software, TrueFFS, is now embedded into mDOC H3 as firmware. This transparently addresses the growing complexities associated with designing raw NAND flash material, and speeds software qualification processes.

flash management. made smarter.

Multiple sources for supply continuity

mDOC H3 is the first multi-sourced embedded flash drive, using raw NAND flash material from our partners such as Toshiba and Hynix. Multiple sources help reduce supply chain risks and optimize costs.

sourcing. made smarter.

Standardized architecture for fast access to the latest NAND technologies

Raw NAND flash is one of the most unpredictable materials to work with, changing and transitioning from one generation to the next. Unfortunately, this means chipsets cannot effectively support the latest, cost-effective material in time for you to utilize it in your design. This lag in support can unnecessarily inflate your design costs.

mDOC H3 perfects the embedded flash drive architecture by building TrueFFS flash management software into its controller as firmware, rather than running it on the host processor, and by standardizing the hardware interface. This minimizes time-intensive software integration efforts, masking inherent raw NAND flaws and enabling you to transition quickly to newer flash technologies as they become available.

NAND access. made smarter.

1. Raw NAND support by chipsets:



- Multiple source (SLC NAND)
- Boot
- No MLC NAND support
- Software efforts needed

2. 1st generation embedded flash drives (EFDs):



- Single source
- Boot
- MLC NAND support
- Software efforts needed

3. 2nd generation embedded flash drives (EFDs):



- Multiple sources
- Boot
- MLC NAND support
- No software efforts needed

mDOC product family

	mDOC H3	mDOC H1	mDOC G4
Density	1Gbit to 16Gbits (128Mbytes to 2Gbytes)	8Gbits (1Gbyte)	1Gbit, 2Gbits (128Mbytes, 256Mbytes)
TrueFFS flash management	Embedded in firmware	Running from host	Running from host
NAND flash technology	MLC, SLC	MLC	MLC
Package (FBGA)	9mm x 12mm, 11mm x 14mm, 12mm x 18mm	12mm x 18mm	9mm x 12mm
XIP boot block	32Kbytes	1Kbyte	2Kbytes
RoHS compliant	Yes	Yes	Yes
Performance			
Sustained read	15-25Mbytes/sec	8Mbytes/sec	9Mbytes/sec
Sustained write	5-7Mbytes/sec	8Mbytes/sec	2.4Mbytes/sec
Power consumption			
Core I/O voltage	1.8V/1.8V, 3.3V/3.3V 3.3V/1.8V	3.3V/3.3V, 3.3V/1.8V	1.8V/1.8V, 3.3V/3.3V 3.3V/1.8V
Deep power-down mode	45µA (typ)	22µA (typ)	10-20µA (typ)
Power - save mode	Yes	No	No
Active current	30mA (typ)	44mA (typ)	7.4mA (typ)
Data protection			
Protected partitions	10	1	2

mDOC H3 based MCP offering

Package:

- With SDR SDRAM in FBGA package
 - 9mm x 12mm
 - 11mm x 14mm
- With DDR SDRAM in FBGA package
 - 11mm x 14mm

Densities:

- SDR/DDR: 128Mbits, 256Mbits, 512Mbits (16Mbytes, 32Mbytes, 64Mbytes)
- mDOC H3: 1Gbit, 2Gbits, 4Gbits (128Mbytes, 256Mbytes, 512Mbytes)

Other MCP combinations: available for volume orders

Contact us at: mobile@m-systems.com
Visit us at: www.msystem.com/mobile

msystems



m

doc

personal storage. made smarter™.

Today's mobile handsets have become multimedia centers, packed with features such as digital still cameras and players for games, music and video. High-density flash memory is the oxygen that fuels this flame. At the same time, new stand-alone consumer electronics devices are being brought to market with ever-increasing flash memory densities. All of this adds up to an unprecedented demand for more and more personal storage.

msystems' high-density mDOC embedded flash drives, with virtually plug-and-play integration, meets this need. mDOC lets handset vendors and consumer electronics device manufacturers shine in an increasingly crowded market.