TrueFFS 5.0 for DiskOnChip

Products:	DiskOnChip family	**Part Number:**	MD22xx and MD28xx
Update #:	PU0301	**Availability:**	August 1st, 2001

DESCRIPTION:

M-Systems is announcing TrueFFS 5.0 for the DiskOnChip family of products. The release covers all software tools and operating systems supported.

TrueFFS 5.0 supports the entire DiskOnChip product line, including the newly released 32MB DiskOnChip Millennium Plus and 16MB DiskOnChip 2000 TSOP. Many improvements are the direct result of customer requests and ideas, while others, initiated by M-Systems, support developments in flash technology.

New Features in TrueFFS 5.0

Refer to the feature highlight table in the next page.

Availability

DiskOnChip TrueFFS 5.0 binary drivers will be available, starting August 1st, 2001, on M-Systems' website. The new drivers will replace TrueFFS drivers and tools version 4.2. Version 4.2 will continue to be available for download on our web site until September 30, 2001.

OS Support

The release will include support for the following operating systems: DOS, Windows CE, VxWorks, Linux Windows 2000/XP, Windows NT Embedded, QNX and pSOS. Support for Neutrino will follow shortly. Customers developing for target platforms not supported by the binary drivers listed here can use the TrueFFS Software Development Kit (SDK) and DiskOnChip Boot SDK.

Compatibility

TrueFFS 5.0 is fully backward compatible, i.e., a TrueFFS 5.0 driver can work with any DiskOnChip formatted with older versions of TrueFFS.

DiskOnChip GANG Programmer Support

The DiskOnChip GANG Programmers support all DiskOnChip DIP & DIMM products, as well as the 8MB DiskOnChip Millennium, without any software update.

Evaluation Boards

Evaluation boards shipped with DiskOnChip mounted on board will be formatted using TrueFFS 5.0 tools starting August 1st.

NEW FEATURES HIGHLIGHT

Important: DiskOnChip Millennium Plus and DiskOnChip 2000 TSOP require TrueFFS 5.0.

Feature	Benefit	DiskOnChip Family			
		2000	Millennium 8MB	2000 TSOP	Millennium Plus
Multiple partitions handling	Read / Write protection of contents of selected partitions. Use partitions to store backup images or recovery programs.	No	No	Yes	Yes
Hardware read protection	Hide sensitive information.	No	No	No	Yes
Hardware write protection	Protect sensitive information from accidental or deliberate erasure or modifications.	No	No	No	Yes
Unique ID	Security Feature – allows identification of specific devices. Protect your IP and save the cost of an additional ID chip	No	No	No	Yes
One Time Programming area	ROM replacement. Store serial numbers, codes, IDs etc.	No	No	No	Yes
Larger boot code area	Saves cost and integration effort for additional Boot ROM / EEPROM.	No	No	Yes	Yes
Interleave 2 (16-bit access)	Speed-up R/W performance by up to 100%.	No	No	No	Yes
Sleep mode - Reduced power consumption	Extends battery life.	No	No	No	Yes
Improved Formatting Mechanism	Simplified programming of cascaded devices.	No	No	Yes	Yes
Supports a three Partial Page Programming limit.	Solves the PPP limit of the next-generation flash devices where the PPP flash limit is reduced to 3.	N/A	N/A	yes	Yes
MultiDOC	Combine several DiskOnChips into one disk, enabling creation of custom disk sizes and better pricing.	Yes	Yes	Yes	Yes

New Features and Benefits of TrueFFS 5.0 - Detailed Information

1. Read/Write Protection:

TrueFFS 5.0 supports the new hardware Read/Write protection features of DiskOnChip Millennium Plus. You may set up to two partitions as read or as write protected (total of four combinations). These areas are accessed through new IOCTLs and API calls. Once set – these areas are protected by hardware.

Benefit:

- Read protection hides sensitive information (passwords, serial numbers etc.) from unauthorized viewers.
- Write protection safeguards against accidental or deliberate attempts to erase or change information stored in this area.

2. Unique device ID:

Each DiskOnChip Millennium Plus has it's own unique device ID. On large-scale orders, customers may also order the DiskOnChip Millennium Plus with their own unique customer ID. TrueFFS 5.0 provides the software interface for reading these IDs.

Benefit:

- A security-enabling feature that provides a reliable method of tracking specific products, enabling the prevention of IP theft.
- Saves cost of an additional chip dedicated for this purpose.

3. One Time Programming (OTP):

The DiskOnChip Millennium Plus includes a 6KB Rom-like One Time Programming area (OTP). Once written – the information cannot be changed. R/W to the OTP area is done through APIs and IOCTLs included in TrueFFS 5.0.

Benefit:

- Useful for storing permanent data onto the device (such as customer details, serial numbers, codes, IDs, etc.). May also serve as a ROM replacement.

4. Larger XIP Boot Code Area:

The DiskOnChip Millennium Plus includes a built-in 1KB Programmable Boot Block (XIP SRAM) – giving you the ability to use the DiskOnChip as a full BOOT ROM (or BIOS) replacement.

Benefit:

- Save extra ROM/EEPROM/Flash device required for boot.
- Save PCB real estate.
- Fewer devices to program.

5. 16-bit Bus:

TrueFFS 5.0 supports full 16-bit R/W access to the DiskOnChip Millennium Plus.

Benefit:

- Dramatically increases R/W time (up to twice the speed in burst mode) in systems using a 16-bit or 32-bit word size.

6. Power Saving Mode:

TrueFFS 5.0 includes APIs and IOCTLs that switch the DiskOnChip Millennium Plus into Deep Power Down Mode when it is not accessed. DiskOnChip consumes only 15µA in this mode.

Benefit:

- Lower power consumption gives you longer battery life.

7. Multiple partition handling:

Supports up to four partitions binary or logical (i.e., flash disk) partition

Benefit:

- Hide information stored in specific partitions when using read protect. Write protect other partitions.
- Use partitions to store backup images or recovery programs.

8. Improved formatting:

Individual format of cascaded DiskOnChips.

Benefit:

- Very useful when programming cascaded DiskOnChip products. It will enable the customer to format and program the devices separately and cascade them later on, instead of having to program them on board.

9. MultiDOC:

MultiDOC is a new feature that allows customers to create custom DiskOnChip sizes by combining different capacities.

Example (1) – Build a 24MB DiskOnChip by combining one DiskOnChips 2000 16MB TSOP-I and one DiskOnChip Millennium 8MB TSOP-II.

Example (2) – Build a 588MB DiskOnChip by combining two DiskOnChip 2000 288MB DIP.

Benefit:

- Better cost for customers who require custom flash capacities.
- Enhanced flexibility in design (quickly switch between one disk to several by using TrueFFS 5.0 software).

Please contact your M-Systems representative, or refer to M-Systems' web site (www.m-sys.com), for additional information or guidance.

Key Milestones

Event	Date
Binary drivers and tools placed on the web	August 1st, 2001
Removal of TrueFFS 4.2 from the web	October 1st, 2001
Evaluation boards update to TrueFFS 5.0	August 1st, 2001
GANG update	Not needed.

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