



**For Immediate Release**  
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## **TDK Launches GBDriver RS2 Series of Serial ATA II Compatible NAND Flash Memory Controllers**

*- Includes static wear leveling function for all blocks and 128-bit AES automated encryption function; SATA controller IC is ideal for netbooks and Blu-ray disc players -*

**TOKYO JAPAN, May 12, 2009** — TDK Corporation announced today the development of the GBDriver RS2 Series of Serial ATA(SATA) II compatible NAND flash memory controller ICs. Sales are scheduled to begin in May.

The new TDK GBDriver RS2 is a high-speed SATA controller IC that supports high-speed access with an effective speed of 95 MByte/second. It is compatible with SLC(single-level cell) memories with 2 KByte/page and 4 KByte/page structures and MLC(multi-level cell) NAND Flash memories, and can be used to create high-speed SATA storage ranging from 128 MByte to 64 GByte. As a result, the GBDriver RS2 series can be used for a wide range of applications ranging from SATADOM<sup>1</sup> and other embedded storage to audiovisual devices and mobile Internet terminals such as Blu-ray disc players and netbooks. The controllers are available in a 120-pin TQFP package and a 144-pin VFBGA package.

The GBDriver RS2 series perform high-speed control and incorporate powerful error correction capabilities scalable to 15-bit ECC(error correction code) as well as the auto-recovery function(read disturbance countermeasures) and a collateral error prevention function in case of power interruption, both of which are commonly included in the TDK GBDriver series. The design serves to enhance the data reliability of NAND Flash memories.

In addition, the GBDriver RS2 series incorporates an original static wear leveling algorithm that averages the number of times each memory block is erased. This maximizes the rewritable life span of NAND Flash memories. SMART(self-monitoring and analysis reporting technology) data determines the number of times each memory block is erased, facilitating quantitative lifespan management of Flash storage.

The controllers also feature an automated encryption function using AES 128-bit<sup>2</sup> encryption. Data in the NAND Flash memory is encrypted, providing robust security against data tampering and leaks.

TDK will begin launching industrial SATA II solid state drives(SSDs) equipped with the GBDriver RS2 controller starting in May 2009.

## **Glossary**

1. SATADOM: SATADOM and SATA Disk on Module are trademarks or registered trademarks of InnoDisk of Taiwan.
2. AES: Advanced Encryption Standard. A block encryption method registered as United States Department of Commerce Federal Information Processing Standards FIPS PUB197.

## **Main Applications**

- Audio-visual devices such as digital cameras, video cameras, terrestrial digital broadcast televisions, Blu-ray televisions, Blu-ray disc players, Blu-ray disc recorders, set-top boxes(STBs), and communication satellite broadcast tuners.
- Thin client PCs and Netbook PCs such as mobile Internet devices(MIDs), and ultra-mobile PCs(UMPCs).
- Automotive devices such as car navigation systems, portable navigation devices(PNDs), digital tacographs, data loggers, drive recorders, and rearview monitors.
- Office equipment such as multifunction printers(MFPs), label printers, barcode printers, and commercial projectors.
- Amusement devices such as karaoke on demand, arcade games, and game consoles.
- Factory automation equipment such as NC machine tools, sequencers, PLCs, panel computers, touch panel systems, and embedded CPU boards.
- Railway and transport equipment such as automated ticket gates, automated ticket vending machines, commuter pass vending machines, automated air ticket vending machines, and automated check-in systems.
- Banking terminals such as POS devices, convenience store and kiosk terminals, and ATMs.
- Medical and measuring instruments such as diagnostic imaging systems, cardiography equipment, blood analysis equipment, medical PCs, and electronic records systems.
- Communications and broadcasting equipment and information system devices for base stations such as third-generation mobile phone data communications systems.
- Security terminals and security devices such as digital signage, entry control systems, and monitoring cameras.
- Disaster prevention related equipment such as earthquake early warning systems and household fire detectors.

## Main Features

### 1. Host Interface

Compliant with Serial ATA Standard Revision 2.6.

Compatible with Gen1:1.5 Gbps, and Gen2:3.0 Gbps.

Supports read access speeds up to 95 MB/sec and write access speeds up to 50 MB/sec.\*

\* Measured with Crystal Disk Mark 2.2. Actual speeds depend on the Flash connection structure and the system environment.

### 2. Supported Flash Memory

The GBDriver RS2 controllers support the latest 2 KByte/page and 4 KByte/page structure

NAND Flash memories of all vendors including new products. They are compatible with SLC and MLC Flash memories. The controllers make possible SATA Flash storage ranging from 128 MByte to 32 GByte in the case of SLC and 256 MByte to 64 GByte in the case of MLC.

### 3. Static Wear Leveling Function for All Blocks

A new static wear leveling algorithm developed by TDK counts the number of times each memory block is erased and replaces blocks uniformly. Static blocks such as OS/FAT are also periodically replaced evenly, making it possible to maximize the lifespan of the installed Flash memory and substantially lengthening the life of Flash memory storage. The scope of static wear leveling can be set to any range (areas outside the scope of static wear leveling are subject to dynamic wear leveling).

### 4. Improved Power Interruption Tolerance

An original algorithm completely prevents collateral data errors such as corruption of data other than the data being written if power is interrupted when writing data.

### 5. Error Correction and Recovery

A Flash identification function enables selection of 8 bit/sector ECC or 15 bit/sector ECC to provide error correction capabilities with room to accommodate future NAND developments. An auto-recovery function is also included to correct bit errors automatically when reading data repeatedly(read-disturbance errors).

### 6. Automated Encryption Using 128-bit AES

A 128-bit AES encryption function automatically encrypts data and writes it to the NAND Flash memory, preventing leaks of and tampering with personal data and confidential information.

### 7. Other Functions

#### (a) Total Cluster Number-Setting Function(clipping function)

The number of logical blocks allocated to a data area can be adjusted up or down in

individual sector units. For example, the number of times data can be written can be increased by reducing the number of logical blocks in the data area. Conversely, in the case of applications that do not require an extended life span, the memory capacity can be maximized by increasing the number of logical blocks in the data area.

(b) Protection Function

Incorporation of an ATA-standard protection function allows customers to set and remove a password to protect important data.

(c) SMART Command Support

The number of times all memory blocks are erased can be obtained using SMART Command, which allows for easy determination of the Flash memory status and facilitates appropriate lifespan management.

8. Solution Support

TDK has independently developed and marketed the GBDriver series of NAND Flash memory controllers since 2000 and provides technical support to customers in Japan and overseas backed up by its advanced technologies including dispatch of field application engineers and implementation of reliability monitoring functions, for which there is strong demand in the embedded system market.

**Production and Sales Plans**

- Production location: Japan
- Production capacity: 100,000 units/month
- Start of production: May 2009

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