

Data Changes World

# SATA SSD

SATA 3Gbps SSD **SDG4A** Series

## High-Reliability enterprise SSD to support the big data era

As the big data society has come, accumulated a large amount of real time data and non-structured data make secondary and tertiary data exponentially. As the result, the importance of SSDs in enterprise server is increasing more than ever to process a large amount of data. Also, besides traditional requirements of high-speed and high-capacity, now parallel processing of several data servers, reading and writing performance, and data reliability are also required. TDK's SATA 3Gbps SSD SDG4A series does not use DRAM cache. So this series limits error occurrence areas when power failure occurred. Also the series is equipped with a newly developed enhanced ECC function of maximum 71bits/512Bytes.



### □ BASIC CHARACTERISTICS / RATINGS

Data capacity	16GB to 128GB
Power supply voltage	5.0V ± 10%
Ambient operating temperature	0 to +70°C (-40 to +85°C)
Ambient storage temperature	-25 to +85°C (-40 to +85°C)
Consumption current	230mA (5.0V Read) 380mA (5.0V Write) less than 50mA (5.0V Slumber)
Shock resistance	1,000G
Vibration resistance	15G

## High-Reliability Solid State Drives (SSDs) Compatible with Serial ATA 3Gbps

Complies with RoHS directives

# SDG4A Series

16GB/32GB/64GB/128GB

### TDK SSD Controller IC GBDriver® RS4 Employed Life Monitor Software Included, Enhanced ECC Function + Read Retry Function Equipped 2.5-inch SATA II Flash Drive

TDK's SDG4A series of SSDs provides high-speed performance, data reliability, endurance, and data security at the highest levels in the industry. The series achieves high-speed access with effective speed of 215MByte/sec without using DRAMs and the like.

Also, it is equipped with an enhanced ECC function, as well as read retry function which is required for the latest flash control. A powerful error correction ability that can be extended up to 71bits/512Bytes ECC improves data reliability drastically, being combined the data randomizer function and auto refresh function.

Furthermore, an advanced static wear leveling algorithm levels the

programming (erasing) times of the flash memory in all areas of the NAND-type flash memory. Therefore, the endurance of NAND type flash memory can be fully used. Also, SSD life monitor software "TDK SMART", allows the number of times of programming (erasing) for all memory blocks to be acquired in real time as SMART information, thus enabling the drive lifespan to be quantitatively known.

At the same time, AES128bit encryption function is also implemented. The prevention of data leakage, alteration and unauthorized copying ensures high-grade storage security.

#### □ FEATURES

- Employed TDK SSD Controller GBDriver® RS4.
- Serial ATA Standard Rev.2.6-compliant.  
(Gen1: 1.5Gbps / Gen2: 3.0Gbps) Read 215MB/s, Write 95MB/s achieved. (\*1)
- Equipped with an advanced global static wear leveling function "TDK Smart Swap" algorithm. This algorithm counts the number of times each memory block is erased (programmed) and replaces blocks uniformly, which drastically improves the endurance of the installed flash memory. (\*2)
- Equipped with a data randomizer function. Data patterns are automatically randomized during the write process, to minimize the risk of bit errors due to writing the same data repeatedly. As a result of this function, data reliability achieve greater in MLC.
- Equipped with an auto refresh function. While there is no access by the host, internal data are automatically refreshed. This function is paused during access, so there is no delay in response.
- Equipped with an enhanced ECC function. An error correction ability of 71bits/1KByte is equipped as standard, and it can be extended up to 71bits/512Bytes (optional).
- Equipped with a read retry function. When an error is detected in a read operation, the GBDriver® RS4 attempts to read the data again by changing thresholds.
- TDK GBDriver® RS4 algorithm and an internal power back up circuit in SSD reduces the risk of collateral data errors such as corruption of data other than the data being written if power is interrupted when writing data.
- SSD life monitor software "TDK SMART" is included. Drive life span can be checked quantitatively in real time, allowing easy maintenance.
- Supports security functions based on ATA standards. Customers can set and remove passwords to prevent falsification of leaking of personal and confidential information.
- Equipped with an encryption function AES (Advanced Encryption Standard) 128bit.
- Support ATA Trim command (complete data erasing function).
- Complies with RoHS directives. The components, lead terminals, etc. are all free from hazardous substances prohibited by the RoHS Directives of the EU (European Union).

(\*1) Dependent on flash memory connection configuration and system environment.

(\*2) The scope of static wear leveling execution can be customized. (Outside the scope of static wear leveling execution, dynamic wear leveling is executed)

#### □ EXAMPLES OF APPLICATIONS

- Thin-client computers, tablet computers, SATA RAID SSD installations, Data servers, Enterprise servers, embedded cloud systems and other IT equipment for cloud computing systems
- Digital tachographs, data logger, drive recorders, and rear-view monitors and other automotive equipment
- Multi-function printers (MFPs), commercial-use projectors, telephone conferencing systems, electronic blackboards and other office automation equipment
- Karaoke on demand systems, arcade games and other amusement equipment
- Semiconductor manufacturing equipment, NC machine tools, sequencers, programmable logic controllers, panel computers, embedded CPU boards and other factory automation equipment
- Automated ticket gates, automated ticket vending machines, commuter pass vending machines, train movement management systems, automated air ticket vending machines, automated check-in systems and other railway and transportation services equipment
- Cash registers and other point-of-sales (POS) equipment, convenience store and kiosk terminals, ATMs and other banking terminals
- Diagnostic imaging systems, blood analysis equipment, medical PCs, electronic patient records systems, DNA microarray systems, automatic biochemistry analyzers, remote medical care devices, automated care devices and other medical equipment and data analysis equipment
- Base station equipment for 4th generation (4G) mobile data communication systems such as LTE-Advanced/WiMAX2, data broadcasting system supporting digital broadcasting and other communications and broadcasting equipment and information system devices
- Biometric authentication systems, entry/exit control systems, security terminals for surveillance cameras and other security equipment
- Earthquake emergency information systems, household fire detectors and other disaster prevention related equipment

\* GBDriver® is a trademark or registered trademark of TDK Corporation.

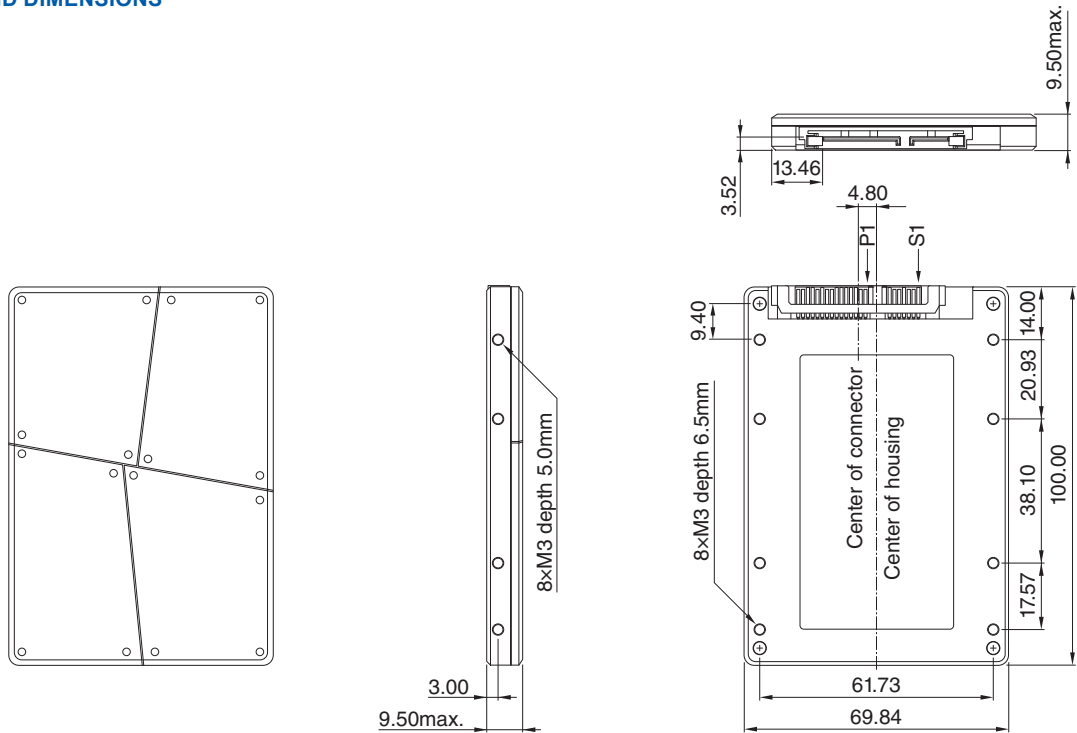
• Complies with RoHS directives :

This means that, in conformity with EU Directive 2011/65/EU, lead, cadmium, mercury, hexavalent chromium, and specific bromine-based flame retardants, PBB and PBDE, have not been used, except for exempted applications.



Please be sure to request delivery specifications that provide further details on the features and specifications of the products for proper and safe use. Please note that the contents may change without any prior notice due to reasons such as upgrading.

□ SHAPES AND DIMENSIONS



Dimensions in mm

□ CHARACTERISTICS

Series	SDG4A Series
Data capacity	16GB/32GB/64GB/128GB
Form factor	2.5-inch SATA
Memory type	8KByte/Page SLC
Controller	TDK GBDriver® RS4
Interface	Serial ATA Revision 2.6
Transfer mode	SATA Gen1: 1.5Gbps, Gen2: 3.0Gbps
Transfer speed* Read (max.)	215MByte/sec
Write (max.)	95MByte/sec
Error check and correction (ECC)	71bit/1KByte, 71bit/512Byte (eMLC)
Power supply voltage	5.0V±10%
Vibration resistance	15G
Shock resistance	1,000G
Ambient operating temperature	0 to +70°C [-40 to +85°C Industrial Option]
Ambient storage temperature	-25 to +85°C [-40 to +85°C Industrial Option]
Storage/Operating humidity	0 to 90(%)RH [No condensation]
Conformed standards	CE/FCC/VCCI
Environmental specifications	RoHS compliant

\* In 4ch Interleaved mode, measured by CrystalDiskMark 3.0. The speed may vary depending on the actual use environment/conditions.

□ ENDURANCE (Expected P/E cycles)

Data Capacity	Part No.	Expected Endurance (Unit: Million times)	Allowable accesses per second according to age of equipment (When operating 24 hrs/d, 365 ds/yr)		
			1 year	5 year	10 year
16GB	SDG4A16GXDBCS-SSA	1,576	49.97	9.99	5.00
32GB	SDG4A32GXDBCS-SSA	3,152	99.95	19.99	9.99
64GB	SDG4A64GXDBCS-SSA	6,304	199.90	39.98	19.99
128GB	SDG4A12GXDBCS-SSA	12,608	399.80	79.98	39.98

• The above products have an operating temperature of 0 to +70°C. For products with an operating temperature of -40 to +85°C, convert the blue letter "C" in the product name to "W".

(Example: SDG4A16GXDBCS-SSA [0 to +70°C product]  
 ⇒ SDG4A16GXDBWS-SSA [-40 to +85°C product])



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