

# Serial ATA 3Gbs Compatible TDK Smart CFast™ Drive with SMART Life Monitor Software CAG3B Series

Conformity to RoHS Directive

1.0-inch SATA II CompactFlash Drives with TDK SATA Controller GBDriver RS3  
Featuring Data Randomizer, Auto Refresh Function, and Read Retry Function (optional)  
1GB, 2GB, 4GB, 8GB, 16GB, 32GB, 64GB CFast™

TDK's highly reliable CFast™ drive CAG3B Series, is a high-speed CompactFlash drive supporting serial ATA 3Gbps. CFast™ is the next-generation CompactFlash standard established by the CompactFlash Association. This series features high-speed data transfer speed of twice that of existing products with the same size as an IDE CompactFlash card (CF card) by equipped with a serial ATA (SATA) interface. For example, an embedded CPU board generally uses a CF card as its boot device, but, recently, SATA I/F instead of parallel ATA (PATA) I/F has increasingly been adopted in many CPUs and chipsets, resulting in less opportunities to connect a CF card directly to a CPU. Even when a CF card is connected to a CPU via a SATA bridge IC, PATA data transfer speed and bridge IC performance create bottlenecks, and the advantages of high-speed SATA transfer are lost.

The TDK Smart CFast™ CAG3B Series has achieved an effective high-speed data transfer of 105MByte/sec, giving very rapid system booting. The CAG3B Series ensures absolute data reliability and minimizes data error risks with a newly adopted 44bit ECC, data randomizer function, auto refresh function and read retry function(optional).

Furthermore, "TDK Smart Swap" a high-level global static wear leveling algorithm unique developed by TDK, has achieved the longest CFast™ life in the industry. Also, CFast™ life monitor software TDK SMART, allows the number of times of writing(erasing) for all memory blocks to be acquired in real time as SMART information, thus enabling the drive lifespan to be quantitatively known.

The CAG3B Series has also adopted AES128bit encryption function, ATA-standard security function, and TDK's unique password lock function, it is able to prevent falsification leakage, and unauthorized copying of private and business information. The series also supports the ATA Trim command allowing complete and easy deletion of all drive data when the drive is disposed of or replaced.

## TDK Smart CFast™ CAG3B SERIES FUNCTIONAL FEATURES

High reliability		High-speed performance		Security	
High reliability		Long lifespan		Security	
Single Level Cell (SLC) flash memory		Single Level Cell (SLC) flash memory		AES128bit encryption function	
Strong ECC function Extendible up to 44bit ECC		Global static wear leveling function TDK Smart Swap		ATA security: password lock, secure erase	
Data randomizer: lesser ECC booting		Data randomizer: lesser ECC booting		TDK original password function (Read/Write Protect)	
Auto refresh function		Small writes accumulation		ATA Trim command	
Auto recovery function		Read retry function: lesser ECC booting(option)		Technical support by the dedicated FAE registration system	
Algorithm against power disconnection		Lifespan management by SSD life monitor software TDK SMART			

• Conformity to RoHS Directive: This means that, in conformity with EU Directive 2002/95/EC, lead, cadmium, mercury, hexavalent chromium, and specific bromine-based flame retardants, PBB and PBDE, have not been used, except for exempted applications.

• All specifications are subject to change without notice.

## FEATURES

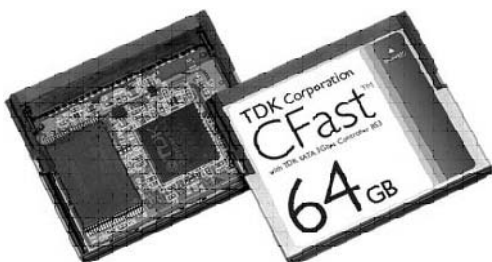
- Compatible with TDK SATA controller IC GBDriver RS3.
- Compatible with ATA Standard Rev 2.6 (Gen1: 1.5Gbps; Gen2: 3.0Gbps). High-speed access with read speed of 105MByte/sec and write speed of 60MByte/sec.\*1
- Equipped with 8bit, 15bit/512Byte, 30bit, 44bit/1KByte ECC: Automatically selected by the flash memory.
- Data Randomizer function randomizes data writing pattern not to repeat the same bits, reducing bit error risks.
- Auto refresh function periodically executes ECC for all data areas, keeping data retention reliability. Also, auto recovery function incorporated.
- Equipped with an advanced global static wear leveling system "TDK Smart Swap" algorithm. The CFast™ lifespan has been greatly enhanced and overwriting is dispersed for all areas of memory.\*2  
(As reference, a flash memory with a 32GByte capacity can be rewritten (erased) 3.1 billion times. This is equivalent to 5-times rewriting (erasing) per second over 20-year period.)\*3
- High durability against power disconnection due to the TDK GBDriver RS3 algorithm against power disconnection.
- CFast™ life monitor software "TDK SMART" is included. Drive lifespan can be checked quantitatively in real time, allowing easy maintenance.
- Equipped with a function to set the number of total sectors (clipping function).  
CHS parameters can also be customized, facilitating the system introduction.\*4
- Equipped with Advanced Encryption Standard function AES128bit.
- Supports security functions based on ATA standards. Customers can set Secure Erase or cancel passwords. By using the AES encryption function, it is possible to prevent unauthorized copying.
- Supports ATA-standard Trim command allowing complete deletion of all drive data and easy replacement or safe disposal.
- A dedicated FAE (Field Application Engineer) registration system provides fast and reliable solutions such as for system compatibility verification and customizing.
- These CFast™ Drives are RoHS compliant. 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).

\*3 This applies to a product equipped with an SLC flash memory with a structure of 8 KByte/page.

\*4 Setting the number of total sectors and CHS parameters is optional.



## MAIN APPLICATIONS

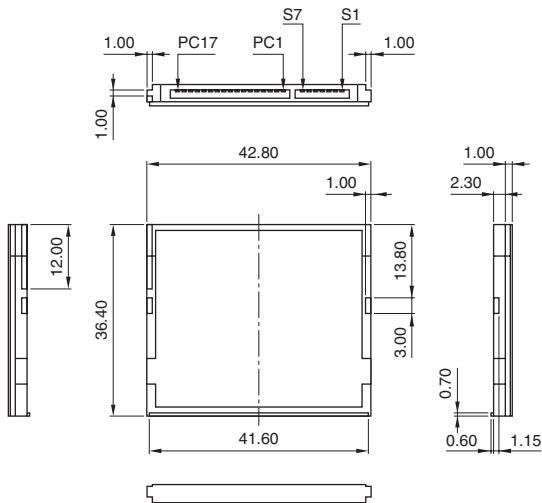
- Replacing HDDs and configuring SATA RAID systems and Quad SSD systems.
- Storage devices requiring a high frequency of data rewriting such as POS systems and station equipment.
- Usages requiring vibration resistance, energy conservation, and compact size such as Green IT equipment, medical equipment, logistics systems, and FA machine tools.
- Usages requiring strict data security such as terminals for financial institutions and digital signage.

## APPLICATION EXAMPLES

- Thin client PC, tablet PC, SATA RAID SSD, and other IT devices, as well as cloud computing systems.
- Data servers, Enterprise servers, embedded cloud systems, and cloud computing devices.
- General marine navigation equipment: fish finders, GPS plotters, satellite compasses, Navtex, Navi Net 3D navigation radar, VTS (Vessel Transportation System) devices and overland AIS(Automatic Identification System), Inmarsat, weather FAX machines, National Oceanic and Atmospheric Administration, and Electronic Chart Display and Information Systems (ECDIS).
- General OA equipment: multifunction printers (MFPs), business use projectors, TV conference systems, and electronic blackboards.
- Entertainment equipment such as online karaoke and amusement arcades.
- Advertising display units, such as digital posters, digital signboards, and digital signage devices.
- General FA equipment such as semiconductor manufacturing equipment, NC machine tools, sequencers, PLCs, panel computers, and embedded CPU boards.
- General transportation facility equipment such as automatic ticket vending and checking, and commuter pass-vending machines, train traffic control systems, automatic airline ticketing machines, and automatic check-in machines.
- Financial institution terminals such as cash registers and other POS (point-of-sales) equipment, convenience stores and kiosk terminals, electric money terminals including Suica, and ATMs (Automatic Teller Machines).
- General medical equipment and data analysis equipment: imaging CTs, blood analyzers, medical computers, electronic medical records, DNA micro array synthesizers, automated biochemical analyzers, remote medical systems, and automatic nursing-care systems.
- General communication/broadcast and information system equipment for communication base station: fourth-generation (4G) mobile phone data communication systems(LTE-Advanced/WiMax2), data broadcasting system supporting digital broadcasting, VCR-editing devices, digital mixing consoles, digital multi-track recorders, master sound displays, multi-format routing switchers, broadcasting equipment including FPU devices, and information system equipment.
- General smart grid system equipment: smart meters, power grid communication infrastructure, next-generation power grid systems, power equipment control systems, energy management systems and building A/C systems.
- General security terminals and equipment such as digital signage, biometric authentication systems, room entering/leaving management systems, and surveillance cameras.
- Disaster prevention equipment such as earthquake notification systems, residential fire alarms, and other devices including simulators for danger avoidance, training and disaster prevention.

## SHAPES AND DIMENSIONS

### 1.0-inch CFast™ SSD SATA



Dimensions in mm



## SPECIFICATIONS

Series	Serial ATA3Gbps CFast™ Drive RS3 Series		
Product name	TDK Smart CFast™ CAG3B Series		
Data capacity	1GB/2GB/4GB/8GB/16GB/32GB	64GB	
Size	1.0-inch SATA(CFast™)		
Memory type	SLC(Single Level Cell) NAND Flash Memory	MLC(Multi Level Cell) NAND Flash Memory	
Controller	TDK GBDriver RS3		
Interface	Serial ATA Revision 2.6		
Transfer mode	SATA Gen1: 1.5Gbps, Gen2: 3.0Gbps		
Transfer speed*	Read(max.)	105MByte/sec	(Currently under measurement)
	Write(max.)	60MByte/sec	(Currently under measurement)
Error-Correcting function(ECC)	8bit/15bit ECC (512Byte), 30bit/44bit ECC (1KByte)		
Endurance	With/Without fixed area	Effective blocks×50,000 times	With/Without fixed area
		(Ex: 3.1billion for 32GB CFast™)	Effective blocks×1,500 times (Ex: 90million for 64GB CFast™)
MTBF	500,000 hours		
Operating temperature range	0 to 70°C		
Ambient storage temperature range	-25 to +85°C		
Storage/Operation humidity range	0 to 90(%) RH [No condensation]		
Power supply voltage	3.3V±5%		
Acquired standards	CE/FCC/VCCI		
Environmental specifications	RoHS compliant		
Country of origin	Taiwan		

\* Measured by CrystalDiskMark 3.0 in 4ch Interleaved mode.