Data Center SSDs

Leveraging state-of-the-art BiCS FLASH™ 3D flash memory with in-house designed controllers and firmware, KIOXIA data center SSDs are designed for cloud-based applications running on scale-out cloud and traditional server deployments. These data center SSDs are optimized for a balance of performance, low latency and data protection, and provide power loss protection (PLP)[1] to safeguard data in case of unexpected power loss.

| 2.5 inch | M.2 22110 | 2.5 inch | 2.5 inch |
| **CD5 Series** PCIe® / NVMe™ SSD | | **XD5 Series** PCIe® / NVMe™ SSD | **HK6 Series** SATA SSD |

Product image may differ from the actual product.

CD5 Series

Based on 64-layer BiCS FLASH™ 3D flash memory, the CD5 Series of PCIe® Gen3 x4 / NVMe™ SSDs is available in a 2.5 inch (15 mm Z-height) form factor with capacities up to 7.68 TB, 9-13 W of active power consumption and security options[2].

Model Number	DWPD[3]	Interface	Form Factor	User Capacity (GB)[4]	Performance (up to)				Typical Power Consumption (W)[8]	Operating Temperature (°C)	Dimensions H / W / L (mm)
					Sequential (128 KiB) (MB/s)[5][6]		Random (4 KiB) (KIOPS)[5][6][7]				
					Read	Write	Read	Write			
KCD51LUG7T68	< 1	PCIe® Gen3 x4, single-port	2.5 inch (15 mm Z-height)	7,680	3,140	1,980	550	50	13	0 to 60	15.0 / 70.1 / 100.45
KCD51LUG3T84				3,840		1,520	465	40	12		
KCD51LUG1T92				1,920		780	270	20	11		
KCD51LUG960G				960		880	305				

XD5 Series

Based on 64-layer BiCS FLASH™ 3D flash memory, the XD5 Series of PCIe® Gen3 x4 / NVMe™ SSDs is available in an M.2 Type 22110 or a 2.5 inch (7mm Z-height) form factor with capacities up to 3.84 TB and <7 W of active power consumption.

Model Number	DWPD[3]	Interface	Form Factor	User Capacity (GB)[4]	Performance (up to)[9]				Typical Power Consumption (W)	Operating Temperature (°C)	Dimensions H / W / L (mm)
					Sequential (128 KiB) (MB/s)[5][6]		Random (4 KiB) (KIOPS)[5][6][7]				
					Read	Write	Read	Write			
KXD5YLN13T84	< 1	PCIe® Gen3 x4	M.2 22110	3,840	2,700	815	240		21	< 7 W	0 to 70	3.88 / 22.15 / 110.15
KXD51LN11T92				1,920		895	250				
KXD51RUE3T84	1	PCIe® Gen3 x4	2.5 inch (7 mm Z-height)	3,840	2,700	815	240		21	< 7 W	0 to 70	7.2 / 70.1 / 100.75
KXD51RUE1T92				1,920		895	250				
KXD51RUE960G				960							

*KXD5YLN13T84 (3,840GB) is Sanitize Instant Erase (SIE) model. Regarding SIE feature, please refer to *2 note.
*Regarding XD5 series performance, please refer to *9 notes.

HK6-V Series

The HK6-V Series of 6 Gbit/s SATA SSDs is built with 64-layer BiCS FLASH™ 3D flash memory, and comes in a 2.5 inch (7mm Z-height) form factor and capacities up to 3.84 TB. The HK6-V Series delivers a balance of reliability, performance and low power, and is designed for mixed workloads running on servers and hyperconverged systems.

Model Number	DWPD *3	Interface	Form Factor	User Capacity (GB) *4	Performance (up to)				Typical Power Consumption (W) *8	Operating Temperature (°C)	Dimensions H / W / L (mm)
					Sequential (128 KiB) (MB/s) *5 *6		Random (4 KiB) (KIOPS) *5 *6 *7				
					Read	Write	Read	Write			
KHK61VSE3T84	3	SATA 6 Gbit/s	2.5 inch (7 mm Z-height)	3,840	550	530	84	58	5.5	0 to 70	7.2 / 70.1 / 100.4
KHK61VSE1T92				1,920							
KHK61VSE960G				960					5.0		
KHK61VSE480G				480		450	82	45	4.0		

*There is no optional lineup which has security features in the HK6-V series.

HK6-R Series

The HK6-R Series of 6 Gbit/s SATA SSDs is built with 64-layer BiCS FLASH™ 3D flash memory, and comes in a 2.5 inch (7mm Z-height) form factor and capacities up to 7.68 TB. The HK6-R Series delivers a balance of reliability, performance and low power, and is designed for read-intensive workloads running on servers.

Model Number	DWPD *3	Interface	Form Factor	User Capacity (GB) *4	Performance (up to)				Typical Power Consumption (W) *8	Operating Temperature (°C)	Dimensions H / W / L (mm)
					Sequential (128 KiB) (MB/s) *5 *6		Random (4 KiB) (KIOPS) *5 *6 *7				
					Read	Write	Read	Write			
KHK61RSE7T68	1	SATA 6 Gbit/s	2.5 inch (7 mm Z-height)	7,680	550	530	84	24	5.5	0 to 70	7.2 / 70.1 / 100.4
KHK61RSE3T84				3,840				26			
KHK61RSE1T92				1,920				25			
KHK61RSE960G				960			85	22	5.0		
KHK61RSE480G				480		450	82	20	4.0		

*There is no optional lineup which has security features in the HK6-R series.

*1 : PLP (Power Loss Protection): PLP supports to record data in buffer memory to flash memory, utilizing back up power of a capacitor in case of sudden supply shut down.
*2 : Optional security features
  - Drive models with security options have different model numbers
  - CD5 Series security options: Sanitize Instant Erase (SIE), Self-Encrypting Drive (SED) and Self-Encrypting Drive (SED) with FIPS are available.
  - The Sanitize Instant Erase (SIE) option supports Crypto Erase, which is a standardized feature defined by the technical committees (T13) of INCITS (the Inter National Committee for Information Technology Standards) or by NVM Express Inc.
  - SED (Self-Encrypting Drive) supports TCG Opal SSC (Unsupported features are included in CD5 / SED optional model).
  - FIPS drives are designed to comply with FIPS 140-2 Level 2, which defines "Security Requirements for Cryptographic Modules" by NIST (the National Institute of Standards and Technology). CD5 series is planning to make FIPS 140-2 validated drives available.
  - For more details and the latest validation status of each drive, please send an inquiry through the "Contact us" form in each region's website, https://business.kioxia.com/
  - Optional security feature compliant drives are not available in all countries due to export control and local regulations.
*3 : DWPD: Drive Write Per Day. One full drive write per day means the drive can be written and re-written to full capacity once a day every day for five years, the stated product warranty period. Actual results may vary due to system configuration, usage and other factors.
*4 : Definition of capacity: 1 terabyte (1 TB) = 1,000 gigabytes (GB), 1 GB = 1,000,000,000 (10^9) bytes
*5 : A kibibyte (KiB) means 2^10, or 1,024 bytes.
*6 : Read and Write speeds may vary depending on the host device, read and write conditions, and file size.
*7 : IOPS: Input Output Per Second (or the number of I/O operations per second)
*8 : Power Consumption
  - The CD5 Series can operate in a range of power modes: 9 W/11 W/14 W/16 W/18 W.
  - HK6 - V/R series power consumption measurements are based on "mixed use" active typical RMS.

*9 : XD5 performance is measured under the following conditions.
  1) Each of these benchmark test runs is preceded by an NVMe format to 4 KiB sector size, and then two loops of 128 KiB sequential writes to pre-condition the drive. This pre-conditioning is done before each workload.
  2) Sequential Read/Write: Runs for 3 hours to measure performance.
  3) Random Read: Runs for 8 hours, only the last three hours are measured.
  4) Random Write: Runs for 24 hours, only the last three hours are measured.

Customers must refer to and comply with the latest versions of all relevant KIOXIA information, including without limitation, this document, the specifications, the data sheets and application notes for Product and the precautions and conditions set forth in the KIOXIA Corporation Reliability Handbook and the instructions for the application with which the Product will be used with or for.

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