



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.



Product image may differ from the actual product.



BiCS FLASH™

CD6 Series

Based on 96-layer BiCS FLASH™ 3D flash memory, the CD6 Series of PCIe® 4.0 and Gen4 x4 / NVMe™ SSDs is available in a 2.5-inch (15 mm Z-height) form factor with capacities up to 15.36 TB, 5-15 W of active power consumption and security options^{*2}.

Model Number	*3 DYPD	Interface	Form Factor	*4 User Capacity (GB)	Performance (up to)				*8 Typical Power Consumption (W)	*10 Operating Temperature (°C)	*11 Dimensions H / W / L (mm)
					Sequential (128 KiB) *5 *6 (MB/s)		Random (4 KiB) *5 *6 *7 (KIOPS)				
					Read	Write	Read	Write			
KCD61VUL12T8	3	PCIe® Gen4 x4	2.5-inch (15 mm Z-height)	12,800	5,500	4,000	750	110	19	0 to 70	15.0 / 70.1 / 100.45
KCD61VUL6T40				6,400	6,200		1,000	250			
KCD61VUL3T20				3,200	2,350	700	85	13			
KCD61VUL1T60				1,600	1,150						
KCD61VUL800G				800	1,300						
KCD61LUL15T3	1	PCIe® Gen4 x4	2.5-inch (15 mm Z-height)	15,360	5,500	4,000	750	30	19	0 to 70	15.0 / 70.1 / 100.45
KCD61LUL7T68				7,680	6,200		1,000	85			
KCD61LUL3T84				3,840	2,350	700	60	15			
KCD61LUL1T92				1,920	1,150						
KCD61LUL960G				960	1,300						

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) ^{*5}				Typical Power Consumption (W) ^{*8}	Operating Temperature (°C) ^{*10}	Dimensions H / W / L (mm) ^{*11}			
					Sequential (128 KiB) (MB/s) ^{*5 *6}		Random (4 KiB) (KIOPS) ^{*5 *6 *7}							
					Read	Write	Read	Write						
KCD51LUG7T68	< 1	PCIe® Gen3 x4	2.5-inch (15 mm Z-height)	7,680	3,140	1,980	550	50	13	0 to 70	15.0 / 70.1 / 100.45			
KCD51LUG3T84				3,840								1,520	465	40
KCD51LUG1T92				1,920								780	270	20
KCD51LUG960G				960								880	305	20

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) ^{*8}	Operating Temperature (°C) ^{*10}	Dimensions H / W / L (mm) ^{*11}		
					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		
KXD5YLN11T92				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								895	250

*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 Series

The HK6 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 with capacities up to 7.68TB.

Model Number	DWPD ^{*3}	Interface	Form Factor	User Capacity (GB) ^{*4}	Performance (up to) ^{*5}				Typical Power Consumption (W) ^{*8}	Operating Temperature (°C) ^{*10}	Dimensions H / W / L (mm) ^{*11}
					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							
KHK61VSE480G				480							
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							
KHK61RSE1T92				1,920							
KHK61RSE960G				960							
KHK61RSE480G				480							

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

*1 : PLP (Power Loss Protection): PLP allows to record data in buffer memory to flash memory, utilizing back up power of solid capacitor in case of sudden supply shut down.

*2 : Optional security features

- Drive models with different security options have different model numbers.
- CD6 and CD5 Series security options: The Sanitize Instant Erase (SIE), Self-Encrypting Drive (SED), FIPS (Federal Information Processing Standards) optional models are available.
- SIE option supports Crypto Erase, which is a standardized feature defined by NVMe Express Inc.
- CD5 Series: SED supports TCG Opal SSCs. It has a few unsupported TCG Opal features.
- CD6 Series: SED supports TCG Opal and Ruby SSCs. It has a few unsupported TCG Opal features.
- FIPS drives are designed to comply with FIPS 140-2 Level 2, which define security requirements for cryptographic module by NIST (National Institute of Standards and Technology). CD6 series is planning to make FIPS 140-2 validated drives available.
- For more details and the latest validation status of each drive, please make inquiries through "Contact us" 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 the specified lifetime. 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 (10⁹) bytes

*5 : A kibibyte (KiB) means 2¹⁰, or 1,024 bytes.

*6 : Read and write speeds may vary depending on various factors such as host devices, software (drivers, OS etc.), and read/write conditions.

*7 : IOPS: Input Output Per Second (or the number of I/O operations per second)

*8 : Power Consumption

- The CD6 Series can operate in a range of power modes: 9 W, 11 W, 14 W, 16 W, 18 W, 25 W.
- 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.

*10 : Case surface temperature

*11 : Dimensions represent the maximum measured values.

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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