

CD5 SERIES (KCD51LUG/KCD5XLUG/KCD5DLUG/KCD5FLUG) DATA CENTER NVMe™ SSD

SSD



The CD5 Series is a read-intensive data center NVMe™ SSD that is optimized to support a broad range of scale-out and cloud applications that include Big Data/IoT, Online Transaction Processing, and Virtualization. CD5 SSDs, with a PCIe® Gen3x4 lane interface, deliver consistent performance up to 550K IOPS (random read) and 50K IOPS (random write), with active power consumption of 11-13W.

Featuring Toshiba Memory Corporation's 64-layer BiCS FLASH™ 3D TLC memory, CD5 SSDs deliver <1 DWPD (Drive Writes Per Day) of endurance and storage capacities up to 7.68TB in a 2.5 inch form factor, making them suited for hyperscale data center applications.

> KEY FEATURES

- PCIe® Gen3 x4 lane interface with single port support
- NVMe™ Rev. 1.3a compliant
- Capacities from 960GB to 7.68TB
- Up to 550K random read IOPS (single port (1x4) mode)
- Low power consumption of 11-13W active power
- 2.5 inch small form factor, 15mm Z-Height
- Power loss protection
- End-to-end data protection
- Sanitize Instant Erase (SIE) option *Note 1,4
- Self-encrypting drive (SED) option *Note 2,4
- Self-encrypting drive (SED), FIPS 140-2 option *Note 2,3,4
- 5-year limited warranty

> APPLICATIONS

- Hyperscale
- IoT and Big data analytics
- Online transaction processing (OLTP) (transactional and relational databases)
- Virtualized environments
- Streaming media (Content delivery networks(CDN))

> MAIN SPECIFICATIONS

| Model Number | KCD51LUG7T68 | KCD51LUG3T84 | KCD51LUG1T92 | KCD51LUG960G | |
|---|--|--------------------------------|--------------|--------------|--------------|
| SIE Model Number | KCD5XLUG7T68 | KCD5XLUG3T84 | KCD5XLUG1T92 | KCD5XLUG960G | |
| SED Model Number | KCD5DLUG7T68 | KCD5DLUG3T84 | KCD5DLUG1T92 | KCD5DLUG960G | |
| SED FIPS Model Number | KCD5FLUG7T68 | KCD5FLUG3T84 | KCD5FLUG1T92 | KCD5FLUG960G | |
| Interface | PCIe® Rev. 3.1a Gen3 x 4 lane; NVMe™ Rev. 1.3a | | | | |
| Formatted Capacity | 7,680 GB | 3,840 GB | 1,920 GB | 960 GB | |
| Performance in single port (1x4) mode (Up to) | Interface Speed | 32 GT/s (Gen3 x 4 lane) | | | |
| | Memory Type | BiCS FLASH™ TLC | | | |
| | Sustained 128KiB Sequential Read | 3,140 MB/s | | | |
| | Sustained 128KiB Sequential Write | 1,980 MB/s | 1,520 MB/s | 780 MB/s | 880 MB/s |
| | Sustained 4KiB Random Read | 550,000 IOPS | 465,000 IOPS | 270,000 IOPS | 305,000 IOPS |
| Sustained 4KiB Random Write | 50,000 IOPS | 40,000 IOPS | 20,000 IOPS | | |
| Supply Voltage | Allowable Voltage | 12 V ± 10 % 3.3 Vaux ± 15 % | | | |
| Power Consumption (Active) | 13 W Typ. | 12 W Typ. | 11 W Typ. | | |

> RELIABILITY

| Model Number | KCD51LUGxxxx KCD5XLUGxxxx KCD5DLUGxxxx KCD5FLUGxxxx |
|--------------|--|
| MTTF | 2,500,000 hours |
| DWPD | < 1 |
| Warranty | 5 years |

> MECHANICAL SPECIFICATIONS

| Model Number | KCD51LUGxxxx KCD5XLUGxxxx KCD5DLUGxxxx KCD5FLUGxxxx |
|--------------|--|
| Height | 15.0 mm + 0, - 0.5 mm |
| Width | 69.85 ± 0.25 mm |
| Length | 100.45 mm Max. |
| Weight | 130 g Max. |

> ENVIRONMENTAL LIMITS

| Model Number | KCD51LUGxxxx KCD5XLUGxxxx KCD5DLUGxxxx KCD5FLUGxxxx | |
|--------------|--|--|
| Temperature | Operating | 0 °C to 60 °C |
| Humidity | Operating | 5 % to 95 % R.H. |
| Vibration | Operating | 21.27 m/s ² { 2.17 Grms } (5 to 800 Hz) |
| Shock | Operating | 9,800 m/s ² { 1,000 G } (0.5 ms duration) |

Definition of capacity: Toshiba Memory Corporation defines a megabyte (MB) as 1,000,000 bytes, a gigabyte (GB) as 1,000,000,000 bytes and a terabyte (TB) as 1,000,000,000,000 bytes. A computer operating system, however, reports storage capacity using powers of 2 for the definition of 1GB = 2³⁰ = 1,073,741,824 bytes and therefore shows less storage capacity. Available storage capacity (including examples of various media files) will vary based on file size, formatting, settings, software and operating system, such as Microsoft Operating System and/or pre-installed software applications, or media content. Actual formatted capacity may vary.

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

MTTF (Mean Time to Failure) is not a guarantee or estimate of product life; it is a statistical value related to mean failure rates for a large number of products which may not accurately reflect actual operation. Actual operating life of the product may be different from the MTTF.

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.

Read and write speed, based on the sustained state of SSD, may vary depending on the host device, read and write conditions, and file size.

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

*Note 1: The Sanitize Instant Erase (SIE) option supports Crypto Erase, which is a standardized feature defined by NVMe Express Inc.

*Note 2: SED (Self-Encrypting Drive) supports TCG Opal SSC. Unsupported features are included in these series. For more details, please make inquiries through "Contact us" in each region's website, <https://business.toshiba-memory.com/>

*Note 3: FIPS drives are designed to comply with FIPS 140-2 Level 2, which defines security requirements for cryptographic module by NIST (National Institute of Standards and Technology). For the latest certification status of each model, please contact us above.

*Note 4: Optional security feature compliant drives are not available in all countries due to export and local regulations.

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