

## CM5-R SERIES (KCM51RUG/KCM5XRUG/KCM5DRUG/KCM5FRUG) ENTERPRISE NVMe™ READ INTENSIVE SSD

The CM5-R series is a read-intensive SSD that is optimized to support a broad range of enterprise applications and associated workloads that include Business Intelligence, Online Transaction Processing, and Software Defined Storage and Virtualization. This NVMe™ series of CM5 SSDs deliver excellent performance up to 770K random read IOPS, with maximum power consumption of 18W.

Featuring Toshiba Memory Corporation's 64-layer BiCS FLASH™ 3D TLC memory, the CM5-R Series of enterprise NVMe™ SSDs deliver 1 DWPD (Drive Writes Per Day) of endurance and supports storage capacities up to 15.36TB, making them ideally suited for read-intensive enterprise applications.

### SSD



Product image may differ from the actual model.

### > KEY FEATURES

- PCIe® Gen3 x4 lane Interface with single/dual port support (for high availability applications and redundancy)
- NVMe™ Rev. 1.3a compliant
- Capacities from 960GB to 15.36TB
- Up to 770K random read IOPS in single port (1x4) mode
- Low power consumption with 18W maximum
- 2.5 inch small form factor, 15mm Z-Height
- 1 DWPD with 100% random write workload
- Power loss protection and end-to-end data protection, including T10 DIF
- 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

- Software Defined Storage and Virtualization
- Data warehousing
- Online transaction processing (OLTP) (transactional and relational databases)
- Business intelligence (BI) (data analytics, artificial intelligence and machine learning)

### > MAIN SPECIFICATIONS

| Model Number                                  | KCM51RUG15T3                                   | KCM51RUG7T68                   | KCM51RUG3T84 | KCM51RUG1T92 | KCM51RUG960G |
|---|--|--------------------------------|--------------|--------------|--------------|
| SIE Model Number                              | KCM5XRUG15T3                                   | KCM5XRUG7T68                   | KCM5XRUG3T84 | KCM5XRUG1T92 | KCM5XRUG960G |
| SED Model Number                              | KCM5DRUG15T3                                   | KCM5DRUG7T68                   | KCM5DRUG3T84 | KCM5DRUG1T92 | KCM5DRUG960G |
| SED FIPS Model Number                         | KCM5FRUG15T3                                   | KCM5FRUG7T68                   | KCM5FRUG3T84 | KCM5FRUG1T92 | KCM5FRUG960G |
| Interface                                     | PCIe® Rev. 3.1a Gen3 x 4 lane; NVMe™ Rev. 1.3a |                                |              |              |              |
| Formatted Capacity                            | 15,360 GB                                      | 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               | 3,350 MB/s                     |              | 3,250 MB/s   |              |
|   | Sustained 128KiB Sequential Write              | 3,040 MB/s                     |              | 2,460 MB/s   | 1,250 MB/s   |
|   | Sustained 4KiB Random Read                     | 590,000 IOPS                   | 770,000 IOPS | 750,000 IOPS | 650,000 IOPS |
| Sustained 4KiB Random Write                   | 35,000 IOPS                                    | 80,000 IOPS                    | 70,000 IOPS  | 65,000 IOPS  | 50,000 IOPS  |
| Supply Voltage                                | Allowable Voltage                              | 12 V ± 10 %<br>3.3 Vaux ± 15 % |              |              |              |
| Power Consumption (Ready)                     | 6.0 W Typ.                                     |                                |              |              |              |

## > RELIABILITY

| Model Number | KCM51RUGxxxx<br>KCM5XRUGxxxx<br>KCM5DRUGxxxx<br>KCM5FRUGxxxx |
|--------------|--|
| MTTF         | 2,500,000 hours  |
| DWPD         | 1  |
| Warranty     | 5 years  |

## > MECHANICAL SPECIFICATIONS

| Model Number | KCM51RUGxxxx<br>KCM5XRUGxxxx<br>KCM5DRUGxxxx<br>KCM5FRUGxxxx |
|--------------|--|
| 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

| Item        | KCM51RUGxxxx<br>KCM5XRUGxxxx<br>KCM5DRUGxxxx<br>KCM5FRUGxxxx     |
|-------------|--|
| Temperature | Operating 0 °C to 60 °C  |
| Humidity    | Operating 5 % to 95 % R.H.                                       |
| Vibration   | Operating 21.27 m/s <sup>2</sup> { 2.17 Grms } ( 5 to 800 Hz )   |
| Shock       | Operating 9,800 m/s <sup>2</sup> { 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 = 2<sup>30</sup> = 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.

GT/s: Giga Transfers per second.

A kibibyte (KiB) means 2<sup>10</sup>, 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 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 NVM 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 validation 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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