TOSHIBA

# PM5-R (KPM51RUG/KPM5XRUG/ KPM5VRUG/KPM5WRUG) SERIES

## ENTERPRISE READ INTENSIVE SSD

SSD


Product image may differ from the actual model.

PM5-R 12.0 Gbit/s enterprise SAS SSD is optimized for read intensive applications, including web services, data warehousing, media streaming and video on demand. The Series provides high levels of performance, reliability and endurance, and is designed to minimize total cost of ownership.

Featuring Toshiba Memory Corporation's 64-layer BiCS FLASH™ 3D memory, this 5th generation enterprise SAS SSD PM5-R Series offers 1 DWPD (Drive Write Per Day) with capacities up to 30.72 TB.

## KEY FEATURES

- 12.0 Gbit/s SAS interface with single/dual port and MultiLink SAS™ support
- Capacities from 480 GB to 30.72 TB
- T10 Multi-Stream Write support
- Up to 385 K random read IOPS (4 KiB) in dual port mode
- 2.5-type form factor, 15mm Z-Height
- 1 DWPD with 100 % Random Write Workload
- Power-Loss-Protection and End-to-End Data Protection including T10 DIF
- Pin-3 Power Disable Support
- Sanitize Instant Erase (SIE) option
- Self-Encrypting (SED) option
- Self-Encrypting (SED), FIPS certified option
- 5-year limited warranty

## APPLICATIONS

- Media streaming
- Data warehousing
- Web servers
- Video on demand (VOD)

## MAIN SPECIFICATIONS

| Model Number<br>SIE Model Number<br>SED Model Number<br>SED FIPS Model Number | | KPM51RUG30T7<br>KPM5XRUG30T7<br>KPM5VRUG30T7<br>KPM5WRUG30T7 | KPM51RUG15T3<br>KPM5XRUG15T3<br>KPM5VRUG15T3<br>KPM5WRUG15T3 | KPM51RUG7T68<br>KPM5XRUG7T68<br>KPM5VRUG7T68<br>KPM5WRUG7T68 | KPM51RUG3T84<br>KPM5XRUG3T84<br>KPM5VRUG3T84<br>KPM5WRUG3T84 | KPM51RUG1T92<br>KPM5XRUG1T92<br>KPM5VRUG1T92<br>KPM5WRUG1T92 | KPM51RUG960G<br>KPM5XRUG960G<br>KPM5VRUG960G<br>KPM5WRUG960G | KPM51RUG480G<br>KPM5XRUG480G<br>KPM5VRUG480G<br>KPM5WRUG480G |
|---|---|---|---|---|---|---|---|---|
| Interface | | SAS-3.0 | | | | | | |
| Formatted Capacity | | 30,720 GB | 15,360 GB | 7,680 GB | 3,840 GB | 1,920 GB | 960 GB | 480 GB |
| Performance (in dual port mode) | Interface Speed | 12.0 Gbit/s , 6.0 Gbit/s , 3.0 Gbit/s , 1.5 Gbit/s | | | | | | |
| | Memory Type | BiCS FLASH™ TLC | | | | | | |
| | Sustained 128 KiB Sequential Read | TBD | Up to 2,100 MB/s | 2,100 MB/s | | | | 1,470 MB/s |
| | Sustained 128 KiB Sequential Write | TBD | Up to 2,100 MB/s | 2,100 MB/s | | | 1,260 MB/s | 680 MB/s |
| | Sustained 4 KiB Random Read | TBD | Up to 300,000 IOPS | 385,000 IOPS | 370,000 IOPS | 340,000 IOPS | 270,000 IOPS | 180,000 IOPS |
| | Sustained 4 KiB Random Write | TBD | Up to 35,000 IOPS | 55,000 IOPS | | | 45,000 IOPS | |
| Supply Voltage | Allowable Voltage | 5 V + 10% / - 7%<br>12 V ± 10 % | | | | | | |
| Power Consumption | | 5.0 W Typ. | | | | | | |

## RELIABILITY

| Model Number | KPM51RUGxxxx<br>KPM5XRUGxxxx<br>KPM5VRUGxxxx<br>KPM5WRUGxxxx |
|---|---|
| MTTF | 2,500,000 hours |
| DWPD | 1 |
| Warranty | 5 years |

## MECHANICAL SPECIFICATIONS

| Model Number | KPM51RUGxxxx<br>KPM5XRUGxxxx<br>KPM5VRUGxxxx<br>KPM5WRUGxxxx |
|---|---|
| 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 | | KPM51RUGxxxx<br>KPM5XRUGxxxx<br>KPM5VRUGxxxx<br>KPM5WRUGxxxx |
|---|---|---|
| Temperature | Operating | 0 °C to 60 °C |
| Humidity | Operating | 5 % to 95 % R.H. (No condensation) |
| 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 ) |

Product image may represent a design model.

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 = $2^{30}$ = 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 $2^{10}$, or 1,024 bytes, a mebibyte (MiB) means $2^{20}$, or 1,048,576 bytes, and a gibibyte (GiB) means $2^{30}$, or 1,073,741,824 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 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)

There are some models of Toshiba Memory Corporation SSD Products which deliver various security functions as optional feature. For more information of security options, please contact your Toshiba Memory Corporation sales representative.