

BLACK Series

Extreme Ruggedization SSD's 2.5" SATA

OVERVIEW

The 2.5" SATA SFF-8223 is the most popular solid state drive form factor in Military and Industrial applications. Its dimensions of 100.2 L x 69.8 W x 9.5 H [mm] allow to build the highest capacity and the best ruggedized SSD as compared to other standard small form factors. The use of Memkor HiVibe connector eliminates standard 15+7 pin SATA connector weaknesses such as limited allowable number of insertions and plug-receptacle connection integrity when subjected to shock and vibration. Through the use of various ruggedization techniques, Memkor BLACK Series 2.5" drives can operate in environments for up to 30GRMS and can be optionally delivered for operating temperatures between -50oC and 95oC operating. Increased height multi-board solutions to scale capacity are also available.

MEMKOR M+ SECURITY - CUTTING-EDGE DATA PROTECTION

A number of Memkor's BLACK Series 2.5" SSDs are validated under FIPS 140-2, Level 2 program that includes strength testing of encryption engine, security algorithms and methods used to authenticate users, safe-keeping of security parameters and a nti-tempering measures. Others are FIPS 197 validated. All BLACK Series SSDs are self-encrypted drives (SED). The encryption management are either FIPS validated procedures or TCG OPAL method. Most models use the concept of Shadow MBR thus allowing for pre-boot authentication and the use of the SSD as a boot drive.

Data protection includes Write Protect function option which ensures data integrity and prevents malicious or accidental Data alteration. The Write Protect function can be enabled and disabled by the user through software or hardware triggering.

RELIABILITY

Through the use of the highest reliability MLC and SLC NAND, combined with the state of the art flash management techniques, strong EDC/ECC/CRC, end-to-end data protection strategy and sudden power loss safeguards integrated in software and hardware, Memkor's BLACK Series SSDs provide the highest level of reliability, durability and endurance.

CLIENT or ENTERPRISE CLASS OPERATIONS

Designed for extreme temperatures, Memkor's BLACK Series 2.5" SSDs can be optimized for Client operations such as boot drives or Enterprise class operations to maximize performance and reduce latencies.



SUMMARY

- ❑ Rugged 2.5" SFF-8223 up to 30 GRMS
- ❑ SATA 6G, 3G, 1.5G
- ❑ Client and Enterprise versions

2.5" SATA FORM FACTOR (FF) APPLICATIONS

- ❑ Most popular SSD form factor
- ❑ Provides highest capacity per SATA port
- ❑ Boot drive and/or Data recorder
- ❑ Suitable for removable storage

MEMKOR 2.5" BLACK SERIES ADDED VALUE

- ❑ 2.5" SATA rugged to the extreme
- ❑ Selected models FIPS 140-2 Level 2 validated
- ❑ All models FIPS 197 validated
- ❑ Optional TCG OPAL
- ❑ 30 GRMS and 20,000 insertion HiVibe© SATA connector option
- ❑ HW or SW triggered Crypto and Secure Erase
- ❑ HW or SW enabled Write Protect
- ❑ End-to-end Data protection
- ❑ End-to-end operation monitoring and recording
- ❑ Sudden power loss safeguards
- ❑ Standard conformal coating and low CTE underfill
- ❑ Use of high reliability components
- ❑ Best available SLC NAND (M73A) option
- ❑ Each SSD thoroughly tested
- ❑ Locked BOM and obsolescence management
- ❑ Custom firmware and features when required
- ❑ 7 year/TBW limited warranty

ABOUT BLACK SERIES

Memkor's 2nd generation BLACK Series SATA and PCIe SSDs combine innovative ruggedization strategy through mechanical design, manufacturing and assembly processes, built upon ORANGE and BLUE Series SSD architecture and capabilities. The BLACK Series drives are successfully deployed in applications where the most challenging shock and vibration are the norm. The BLACK series includes a standard form factor 2.5" SFF-8201 and also some proprietary, application specific fixed or removable storage solutions. The BLACK Series shares the security and functional features with the ORANGE and BLUE Series devices.

MEMKOR—PART OF YOUR PROJECT

- We will support your design process
- Each SSD undergoes ESS test
- We offer Locked BOM Management
- We offer obsolescence management

MEMKOR 2.5" BLACK SERIES SATA SPECIFICATION⁽⁵⁾

Standard Form Factor	2.5" SFF-8223 9.5 mm and 15 mm H
Interface	SATA 6G option for maximum performance, or SATA 3G option for minimized power consumption
Data throughput	SATA 6G: up to 500 MB/s SATA 3G: up to 250 MB/s
Maximum Capacity	• up to 512/1,024 GB in 9.5/15.0 mm H, SLC NAND • up to 1,024/2,048 GB in 9.5/15.0 mm H, pSLC NAND • up to 2,048/8,192 GB in 9.5/15.0 mm H, MLC NAND
Temperature Range	• -40°C to 85°C Industrial/Military
Vibration/shock	• 30 GRMS 10-2000Hz / 100G 11ms
Operating voltage	• 5.0V ±10%
Data Reliability	• Flash managed by static and dynamic wear leveling and powerful ECC/CRC • Uncorrectable bit error rate (UBER): less than 10 ⁻¹⁶
Data Retention	• 1 year at 30°C when power off and TBW reached ⁽⁴⁾
Endurance ⁽²⁾	• 800 TBW (512 GB MLC NAND) • 8,200 TBW (512 GB pSLC NAND) • 25,600 TBW (512 GB SLC NAND)
Data Security	• FIPS 140-2 Level 2 validated ⁽¹⁾ • FIPS 197 validated • Optional TCG OPAL • HW or SW triggered military grade Crypto Erase and Data Elimination • HW and/or SW enabled Write Protect
Component reliability	• MTBF: >1,000,000 hrs ⁽³⁾
Health monitoring	• S.M.A.R.T. to report system health • Thermal performance monitoring and management
Warranty	• 7 year limited warranty

- (1) Selected models
 (2) Per JEDEC219. Contact Memkor for TBW for other capacities and specific workloads.
 (3) Contact Memkor for MTBF prediction for specific environmental conditions and field MTBF data.
 (4) Per JESD47/JEP122. Contact Memkor for Data Retention prediction for your application.
 (5) Refer also to ORANGE Series and Industrial TLC/QLC NAND based WHITE Series 2.5" SATA SSD options

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Memkor® is an American engineering company dedicated to providing flash solid state storage solutions for defense, industrial and enterprise applications. We create secure, reliable, robust and innovative solutions with rich feature sets, tailored, as required, to meet your technology investment objectives. We are dedicated to delivering on our promises. We simply believe that your satisfaction enables the continuous success of our company.



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