MEMKOR

ORANGE Series

Rugged 2.5" SATA SSD

OVERVIEW

The 2.5" SATA SFF-8223 is still the most popular solid state drive form factor in Enterprise rugged Military and Industrial applications. Its dimensions of 100.2 x 69 [mm] LxW provide sufficient room for NAND to match the capacity of the largest mechanical hard drives while offering all the performance and reliability advantages of the solid state technology. It allows about 2x more NAND chips as on the largest M.2, hence provides twice the M.2 capacity when the same flash technology is used. In addition, the 9.5mm or 7mm height allow to well ruggedize the module. The Memkor ORANGE Series 2.5" SSDs are rugged for up to 16.3 GRMS vibration, and industrial temperature range operations. The 2.5" SFF-8223 is designed for hot-plugging and Memkor's HiVibe©, highly ruggedized SATA connector, can drastically improve allowable number of insertions.

MEMKOR M+ SECURITY - CUTTING-EDGE DATA PROTECTION

Memkor's ORANGE Series 2.5" SSDs ensure Data at Rest (DAR) protection through the embedded FIPS 197 validated encryption engine. In addition, some models are validated under FIPS 140-2, Level 2 program that includes strength testing of algorithms and methods used to authenticate users, safe-keeping of security parameters and anti-tempering measures. The encryption management are either FIPS validated procedures or TCG OPAL method. Both 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 a 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 ORANGE Series SSDs provide the highest level of reliability, durability and endurance.

CLIENT or ENTERPRISE CLASS OPERATIONS

Designed for extreme temperatures, Memkor's ORANGE 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

☐ SATA 6G, 3G, 1.5G

☐ Client and Enterprise versions

2.5" SATA FORM FACTOR (FF) APPLICATIONS

☐ Provides highest capacity per SATA port

☐ Boot drive and/or Data recorder

☐ Best FF where SSD shock/vibration resilience is required

☐ Best FF where high performance in extreme temperature is required

☐ Suitable for removable storage

MEMKOR ORANGE SERIES ADDED VALUE

☐ Selected models FIPS 140-2 Level 2 validated

☐ All models FIPS 197 validated

☐ Optional TCG OPAL

☐ HiVibe© SATA connector to provide virtually unlimited insertion number

☐ HW or SW triggered Crypto and Secure Erase

☐ HW or SW enabled Write Protect

☐ Use of high reliability components

☐ End-to-end Data protection

☐ End-to-end operation monitoring

☐ Sudden power loss safeguards

☐ Standard conformal coating on Industrial/ Defense grade SSD

☐ Excellent for extreme temperature operations

☐ Each SSD thoroughly tested

☐ Locked BOM and obsolescence management

☐ Custom firmware and features when required

☐ 5 year/TBW warranty

Secure — Rugged — Reliable

ABOUT ORANGE SERIES

Memkor's 3rd generation Orange Series SATA and PCIe SSDs aim to provide the highest throughput performance combined with the highest capacities available in the standard form factors. They are built with high quality industrial grade MLC, pSLC NAND or the most reliable SLC NAND available today. With carefully selected BOM and mature firmware, it is backed by 5 year limited warranty. The family supports SATA, PCIe/NVMe, USB, SAS or PATA interface. All Memkor products are available with locked BOM configurations and Supply Chain component management for long-term deployment applications.

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" ORANGE SERIES SATA SSD SPECIFICATION[5]

Form Factor	• Standard 2.5" SFF-8223 • Standard SATA 15+7 or HiVibe© Connector
Dimensions	• 100.2mm L x 69.8mm W x 9.5mmH • 100.2mm L x 69.8mm W x 7.0mmH
Interface	• SATA 6G/3G/1.5G
Data throughput	• SATA 6G: up to 500/550 MB/s Write/Read • SATA 3G: up to 250/250 MB/s Write/Read
Maximum Capacity	• up to 4,192 GB MLC NAND • up to 2,048 GB pSLC NAND • up to 1,280 GB SLC NAND
Temperature Range	• -40°C to 85°C Industrial/Military • 0°C to 70°C Commercial
Vibration/shock	• 16.3 GRMS 10-2000Hz / 50G 11 ms
Data Reliability	• Flash managed by static and dynamic wear leveling and powerful ECC/CRC • End-to-end Data Protection • 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 197 validated, optional FIPS 140-2 validated[1] • Optional TCG OPAL V2.0 Self Encrypted Drive (SED) • Military grade Data Elimination • HW and/or SW Write Protect
Component reliability	• MTBF: >1,000,000[3]
Health monitoring	• S.M.A.R.T. to report system health • Thermal performance monitoring and management

(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 highly rugged BLACK Series and Industrial TLC/QLC NAND based WHITE Series 2.5" SSD specifications

DISCLAIMER: Memkor, Inc. reserves the right to change products, specifications and information without notice.

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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ISO 9001:2015 Certified

ANAB ACCREDITED
MANAGEMENT SYSTEMS
CERTIFICATION BODY

PRG
Preferred Registrar Group Inc.

FIPS VALIDATED 140-2