



## ORANGE Series

# mSATA Solid State Drives

### OVERVIEW

The mSATA form factor targets Client SSD class, embedded SATA applications. The mSATA advantage is its compact volume while offering true SSD resilience, performance and feature sets, and providing the sufficient storage capacity for most mobile and small form factor computers.

Memkor ORANGE Series SSDs offer up to 512/256 GB of high reliability, industrial grade MLC and SLC NAND in a standard mSATA MO-300B form factor.

The mSATA form factor offers better thermal, shock and vibration characteristics than an equivalent M.2 form factor SSD. This could be a consideration in applications requiring a prolonged exposure to extreme environments.

**M+ SECURITY PROVIDES CUTTING-EDGE DATA PROTECTION**  
Memkor's ORANGE Series mSATA modules have built-in FIPS 197 validated and government approved encryption engine. They also inherit the architecture, the features from the Memkor FIPS 140-2 validated cryptographic modules. The mSATA modules optionally supports TCG OPAL security management. With multiple ways to support Key Management, Memkor mSATA offers deployment flexibility with the ability to tailor the implementation to your specific program requirements.

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.

The mSATA modules include the Crypto and Secure Erase functions. The Secure Erase consists of Fast Erase and Purge. The Crypto Erase purges all critical security parameters in milliseconds rendering the data unreadable and unrecoverable. The Fast Erase eliminates the Data within seconds. The Purge procedures follow the government standards and eliminates the Data Remanence executing multiple erase and overwrite cycles within minutes.

### RELIABILITY

Through the use of the highest reliability MLC and SLC NAND, combined with 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. Memkor's ORANGE Series SSDs are designed for extreme temperature operations.



### SUMMARY

- mSATA (MO-300B)
- SATA 6/3/1.5G
- Client and Enterprise versions

### mSATA FORM FACTOR (FF) APPLICATIONS

- FF optimized for embedded applications
- Where low SWaP is the driving factor
- High performance boot drive
- Better thermal and vibration characteristics than equivalent M.2
- Lower profile than 1.8" or 2.5" form factors
- Where highest performance is not required
- For low shock/vibration applications

### MEMKOR ORANGE SERIES ADDED VALUE

- All models FIPS 197 validated
- Leverages FIPS 140-2 validated module architecture and implementation
- Optional TCG OPAL
- 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
- Good for extreme temperature operations
- Each SSD thoroughly tested
- Locked BOM options
- Obsolescence management
- 5 year/TBW warranty

### 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

### M.2 SPECIFICATION

Standard Form Factor	mSATA (MO-300B)
Interface	SATA 6G, 3G 1.5G Can be set to SATA 3Gbps or 1.5Gbps for minimum power and/or maximum signal resilience
Data throughput	SATA 6Gbps: up to 500/500 MB/s read/write SATA 3Gbps: up to 250/250 MB/s read/write
Maximum Capacity	• up to 512 GB MLC NAND • up to 256 GB SLC NAND
Temperature Range	• -40°C to 85°C Industrial/Military • 0°C to 70°C Commercial
Vibration/shock	• 4 GRMS 20-2000Hz / 50G 11ms
Operating voltage	• 3.3V±10%
Data Reliability	• Flash managed by static and dynamic wear leveling and powerful ECC/EDC/CRC • End-to-end data protection • Uncorrectable bit error rate (UBER): less than 10 <sup>-16</sup>
Data Retention	• 1 year at 30°C when power off and TBW reached <sup>(3)</sup>
Endurance <sup>(1)</sup>	• 200 TB (128 GB MLC NAND) • 2000 TB (128 GB pSLC NAND) • 3840 TB (128 GB SLC NAND)
Data Security	• FIPS 197 certified • Optional TCG OPAL V2.0 SED management • Optional FIPS 140-2 compliant (based on NIST validated architecture and methods) • Enhanced ATA Security/Authentication support • Military grade Data Elimination • HW and/or SW Write Protect
Component reliability	• MTBF: >1,000,000 <sup>(2)</sup>
Health monitoring	• S.M.A.R.T. to report system health • Thermal performance monitoring and management

(1) Per JEDEC219. Contact Memkor for TBW for other capacities and specific workloads.

(2) Contact Memkor for MTBF prediction for specific environmental conditions and field MTBF data.

(3) Per JESD47/JEP122. Contact Memkor for Data Retention prediction for your application.

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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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