MEMKOR
Solid Advantage

ORANGE Series

MKD18ST1T0IO-O21

mSATA Solid State Drives

Overview

Memkor's 3rd generation Orange Series SATAe (SATA and PCIe) SSDs aim to provide the highest throughput performance combined with the highest densities currently available. Memkor offers up to 512/256 GB of MLC/SLC NAND in a standard mSATA MO-300B form factor.

The mSATA format advantage is the sufficient solid state storage capacity for most mobile applications, enclosed in a very compact volume while offering true SSD performance and feature set.

Memkor's Orange Series SSDs includes on all models options for Write Protect, military grade Secure Erase features, provide built-in hardware AES-256 encryption engine and built in firmware functions enabling either traditional FIPS-like or OPAL or CSfC data at rest protection management scenarios.

State of the art flash management techniques combined with a strong EDC/ECC/CRC and end-to-end data protection approach ensures performance stability and consistency, along with the highest reliability and unparalleled user data integrity.

Sudden power loss safeguards integrated in software and hardware ensures data at rest protection and integrity.

Memkor Orange Series SSDs are built to meet both Commercial and Defense focused environmental requirements.

Loyal to Defense and Industrial Markets, Memkor offers locked Bill-of-Materials utilizing high reliability components, firmware tailoring and is committed to providing excellent customer service throughout product life cycle and Supply Chain component management for long-term deployment applications.
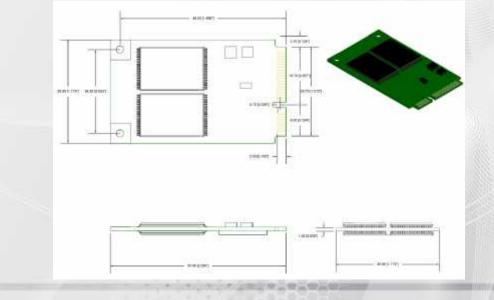
Features and Values

- Designed for embedded applications
- SATA Form factor defined to leverage mini PCIe ports
- Lower profile than 1.8″ or 2.5″ form factors
- High performance boot drive
- Storage for space constrained devices
- Easy integration with computer board, no cables
- Enables build of a small scalable storage/RAID device
- Rugged design for Defense and Industrial applications
- Extensive SMART for health monitoring
- Military grade Data Elimination
- Hardware and/or software triggered Data Elimination
- Hardware or software enabled Write Protect
- AES-256, various SED management schemes
- Sudden Power Loss Safeguard logic and circuit
- Custom firmware and feature set are available
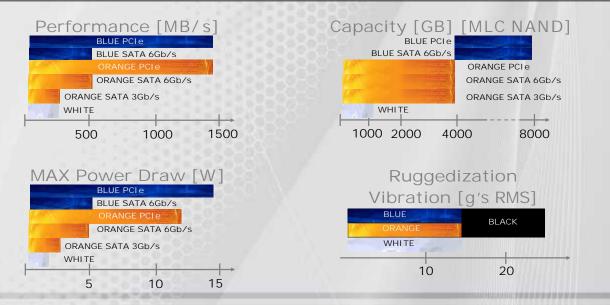- Ask us if you want to use it as a PCIe device

Specification

Standard Form Factor	mSATA (MO-300B)
Interface	SATA 6Gbps option for maximum performance, or SATA 3Gbps option for minimum power consumption
Data throughput	SATA III: up to 350/200 MB/s read/write SATA II: up to 200/200 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	• 16.3 GRMS/50G
Operating voltage	• 3.3V±10%
Data Reliability	• Flash managed by static and dynamic wear leveling and powerful ECC/EDC/CRC • Uncorrectable bit error rate (UBER): less than 10^{-16}
Data Retention	• 10 y beginning of SSD life • 1 y at the end of life
Endurance	• up to 384 TB (1024 GB MLC NAND) • up to 3072 TB (512 GB SLC NAND)
Data Security	• Optional TCG OPAL V2.0 Self Encrypted Drive (SED) • Optional FIPS 140-2 SED • Enhanced ATA Security/Authentication support • Military grade Data Elimination • HW and/or SW Write Protect
Component reliability	• MTBF: 1,000,000
Health monitoring	• S.M.A.R.T. to report system health • Thermal performance monitoring and management

Memkor Orange Series mSATA—Mechanical

Memkor General Application and Product Guide

Performance [MB/s]

BLUE PCIe
BLUE SATA 6Gb/s
ORANGE PCIe
ORANGE SATA 6Gb/s
ORANGE SATA 3Gb/s
WHITE

500   1000   1500

Capacity [GB] [MLC NAND]

BLUE PCIe
BLUE SATA 6Gb/s
ORANGE PCIe
ORANGE SATA 6Gb/s
ORANGE SATA 3Gb/s
WHITE

1000 2000   4000   8000

MAX Power Draw [W]

BLUE PCIe
BLUE SATA 6Gb/s
ORANGE PCIe
ORANGE SATA 6Gb/s
ORANGE SATA 3Gb/s
WHITE

5   10   15

Ruggedization Vibration [g's RMS]

BLUE
ORANGE
BLACK
WHITE

10   20

Ordering Information

Model: MKD ff ii xxx y O - tt s n ee w

Model: MKD ff ii xxx y O					
Memkor SSD	Form Factor ff:	Interface ii:	Capacity xxx:	Operating temp	Series
MKD	P2 - Full Size MO-300B mSATA	ST - SATA	Ex: 256 - 256 GB 512 – 512 GB	C – 0° to 70°C I – -40° to 85°C	O - ORANGE

- O2 s n ee ww				
Technology Code	Secure Erase: s	NAND: n	Encryption: e	Write Protect: ww
O1 - SATA III L2 - SATA III	0 - no SE (D) Ask us about available option	- SLC (D) M - MLC	- No Encryption (D) Ask us about available option	- no WP (D) Ask us about available option

D - default
I - Low
H - High
E - Enabled
SE - Secure Erase
WP - Write Protect