swissbit®

Product Fact Sheet

Industrial
SLIM SATA SSD (M0-297)

X-60s Series
SATA Gen3 – 6.0 Gbit/s, MLC

Commercial and Industrial
Temperature Grade

Date: September 14, 2023
Revision: 1.07

durabit™

"the better MLC"



Made in Germany

Product Summary

- **Capacities:** 30 GBytes, 60 GBytes, 120 GBytes, 240 GBytes, 480 GBytes
- **Form Factor:** MO-297 Slim SATA Solid State Drive (54 mm x 39 mm x 4 mm)
- **Compliance:** SATA Gen3 – 6 Gbit/s (Gen2 – 3 Gbit/s and Gen1 – 1.5 Gbit/s backward compatible)
- **Command Sets:** Supports ATA/ATAPI-8 and ACS-2
- **Performance:**
  - Read Performance: Sequential Read up to 520 MBytes/s, Random Read IOPs up to 75,000 IOPS
  - Write Performance: Sequential Write up to 450 MBytes/s, Random Write IOPs up to 75,000 IOPS
- **Operating Temperature Range[1]:**
  - Commercial: 0 °C to 70 °C / Industrial: -40 °C to 85 °C
- **Storage Temperature Range:** -40 °C to 85 °C
- **Operating Voltage:** 3.3 V ± 5% / 5 V ± 10%
- **Power (Max Capacity):**
  - Read (Active): 1. 5 W (3.3 V), 1.7 W (5 V) / Write (Active): 3.2 W (3.3 V), 3.7 W (5 V)
  - Idle: 380 mW (3.3 V), 550 mW (5 V) / Slumber: 115 mW (3.3 V), 275 mW (5 V)
- **Data Retention:** 10 Years @ Life Begin / 1 Year @ Life End
- **Endurance: TeraBytes Written (TBW) @ Max Capacity[2]:** Client > 1080; Embedded > 300; Enterprise > 280
- **Shock/Vibration:** 1,500 *g* / 50 *g*
- **High-Performance 32-Bit Processor with Integrated, Parallel Flash Interface Engines:**
  - Multi-Level Cell (MLC) NAND Flash
  - Hardware BCH Code ECC (up to 66 bit correction per 1 KByte page)
- **Mean Time Between Failure (MTBF):** > 2,000,000 hours
- **Data Reliability:** < 1 non-recoverable error per 10^{16} bits read

Product Features

- Best-in-Class Performance and Endurance with durabit™ Technology
- Dynamic and Static Wear Leveling
- Subpage Mode Flash Translation Layer (FTL)
- Data Care Management
  - Active: Adaptive Read Refresh / Passive: Background Media Scan
- Lifetime Enhancements
  - Dynamic Bad Block Remapping / Write Amplification Reduction
- On-Board Power Fail Protection, AHCI, TRIM, and NCQ Support
- ATA Security Feature Set Support / In-Field Firmware Update
- Enterprise-Grade Self-Monitoring, Analysis, and Reporting Technology (S.M.A.R.T.)
- 15 µinch Gold-Plated Connector
- Life Cycle Management / Controlled "Locked" BOM
- AES256 Encryption (on request)
- Swissbit Life Time Monitoring (SBLTM) Tool and SDK for SBLTM (on request)

Why Swissbit?

Swissbit is focused on the design, development, manufacture, and support of leading edge memory and storage solutions for the worldwide OEM/ODM marketplace. As a global supplier, Swissbit recognizes and addressees the higher level of application requirements of today's industrial, Netcom, and automotive customers by providing best-in-class products and services, with uncompromised attention to driving overall value and quality.

[1] Adequate airflow is required to ensure the temperature, as reported in the S.M.A.R.T. data, does not exceed 115°C (industrial temperature drive) and 100°C (commercial temperature drive) respectively.

[2] According to JEDEC (JESD47I), the time to write the full TBW is a minimum of 18 months. Higher average daily data volume reduces the specified TBW. The values listed are estimates and are subject to change without notice.