swissbit®

Product Fact Sheet

Industrial M.2 SATA SSD

X-78m2 2242 Series

SATA Gen3 – 6.0 Gbit/s, 3D pSLC

Commercial and Industrial Temperature Grade

Date: November 28, 2021
Revision: 1.00



Made in Germany

Product Fact Sheet
X-78m2 2242 Series

Product Summary

- **Capacities:** 40 GBytes, 80 GBytes, 160 GBytes, 320 GBytes
- **Form Factor:** PCI Express™ M.2 (2242) (42 mm x 22 mm x 3.58 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 560 MBytes/s, Random Read 4K up to 72,900 IOPS
  - Write Performance: Sequential Write up to 485 MBytes/s, Random Write 4K up to 85,900 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%
- **Power (Max):** Read (Active): 2.0 W; Write (Active): 2.3 W; Idle: 380 mW; Partial: 115 mW
- **Data Retention:** Seq / Client WL: 10 Years at Start, 1 Year at EOL; Enterprise WL: 10 Years at Start, 1 Year at 75% of TBW limit, 3 months at EOL
- **Endurance in TeraBytes Written (TBW) @ Max Capacity[2]:** Sequential WL ≥ 28,060; Client WL ≥ 21,200; Enterprise WL ≥ 5,515
- **Shock/Vibration:** 1,500 *g* / 50 *g*
- **LDPC ECC** with up to 165 bit correction per 1 KByte page
- **NAND Flash Technology:** Triple-Level Cell (TLC) 3D NAND Flash in pSLC Mode
- **Mean Time Between Failure:** > 2,000,000 hours
- **Data Reliability:** < 1 non-recoverable error per 10^{16} bits read

Product Features

- Dynamic and Static Wear Leveling
- Active and Passive Data Care Management
- Lifetime Enhancements
  - Dynamic Bad Block Remapping
  - Write Amplification Reduction
- On-Board Power Fail Protection
- 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.)
- 30 µinch Gold-Plated Connector (IPC-6012B Class 2 Compliant)
- End-to-End (E2E) Data Protection
- AES256 Encryption (on request)
- TCG OPAL 2.0 Compliant (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 addresses 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.

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[1] Adequate airflow is required to ensure the temperature, as reported in the S.M.A.R.T. data, does not exceed 110°C (industrial temperature drive) and 95°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.