

ST250-M242 (CET) Commercial Extended Temperature

Overview

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ApacerST250-M242 is the next-generation Solid State Drive (SSD) with compact and high-speed storage. Designed with a SATA 6 Gb/s interface, ST250-M242 provides full compliance with the latest SATA Revision 3.2 interface specifications and delivers exceptional read/write speeds, making it the leading add-in storage solution for future host computing systems.

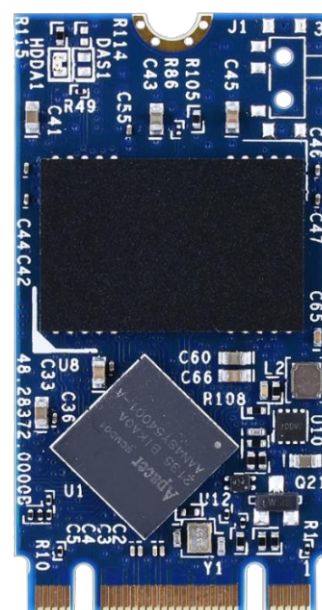
Utilizing 3D NAND technology for capacities up to 1TB and offering superior power efficiency than 2D NAND, ST250-M242 is equipped with a robust SATA controller supporting on-the-module ECC and efficient wear leveling scheme. It also features an LDPC (Low Density Parity Check) ECC engine to enhance SSD endurance and data reliability. Additionally, ST250-M242 includes a built-in thermal sensor for monitoring SSD temperature via S.M.A.R.T commands, preventing overheating. Operating at a 6 Gb/s interface, it comes with Apacer's latest S.M.A.R.T. technology, tailored for monitoring and analyzing the lifespan of SATA interface SSDs. For demanding applications, End-to-End Data Protection ensures data integrity at multiple transfer points, facilitating reliable data delivery.

In terms of security, ST250-M242 offers robust data protection with Advanced Encryption Standard to safeguard against unauthorized access. It also incorporates various advanced features, including bad block management, DataDefender, ATA secure erase, TRIM, page mapping, device sleep, Hyper Cache technology, power saving modes, and Smart Read Refresh.

With exceptional performance, proven reliability, and enhanced data protection, ST250-M242 is the ideal storage or cache solution for a variety of applications, including industrial, imaging, computing, and enterprise markets.

Features

- Low-Density Parity-Check (LDPC) Code
- Global Wear Leveling
- Flash Bad-block Management
- Flash Translation Layer: Page Mapping
- S.M.A.R.T.
- DataDefender™
- Device Sleep
- ATA Secure Erase
- TRIM
- Hyper Cache Technology
- SATA Power Management
- SMART Read Refresh™



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Specifications

Model Name	ST250-M242 Commercial Extended Temperature
Interface	SATA 3.2 (6Gb/s)
Connector	75-pin SATA-based M.2 module pinout
Form Factor	Double-sided M.2 2242-D5-B-M
NAND Flash Type	3D TLC
Capacity	128GB~1TB
External DRAM	No
Sustained Read Performance (MB/sec.)	Up to 555
Sustained Write Performance (MB/sec.)	Up to 505
ECC Engine	Low-Density Parity-Check (LDPC) Code
IOPS (4K Random Write)	68K
Standard Operating Temperature (°C)	CET: -25 ~ 85
Extended Operating Temperature (°C)	-
Storage Temperature (°C)	-55 ~ 100
Housing	-
Thermal Sensor	Yes
Shock	Operation: 50G, 11ms Non-operation: 1500G, 0.5ms (Compliant with MIL-STD-883K)
Vibration	Operation: 7.69 GRMS, 20~2000 Hz/random (Compliant with MIL-STD-810G) Non-operation: 4.02 GRMS, 15~2000 Hz/random (Compliant with MIL-STD-810G)
Operating Voltage	3.3 V ± 5%
Power Consumption	Active Mode: 400 mA / Idle Mode: 65 mA
Dimension (L x W x H)	42.00 x 22.00 x 3.80, unit: mm
MTBF (Hours)	>3,000,000

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Figure 1 is a mechanical drawing of the PCB assembly, showing top, side, and detail views with dimensions and tolerances.

Top View:

- Overall width: 42 ± 0.15
- Overall height: 22 ± 0.15
- Top edge features: $\phi 5.5 \pm 0.1$ and $\phi 3.5 \pm 0.08$
- Bottom edge features: $2 \times \phi 0.5 \pm 0.15$
- Central feature: $4 \times$ component zone limit
- Bottom edge feature: $4 \times$ for PCB

Side View:

- Overall height: 5.2 Min
- Top edge feature: $T = 0.8 \pm 0.08$
- Bottom edge feature: $\phi 6 \pm 0.1$
- Internal features: $\text{Max } 1.5$ Component

Detail A:

- Scale: 2.000
- Feature: $\phi 5.5 \pm 0.1$

Detail B:

- Scale: 2.000
- Feature: $2 \times 20^\circ \pm 5^\circ$
- Feature: 0.2 Min
- Feature: $2 \times 0.3 \pm 0.25$