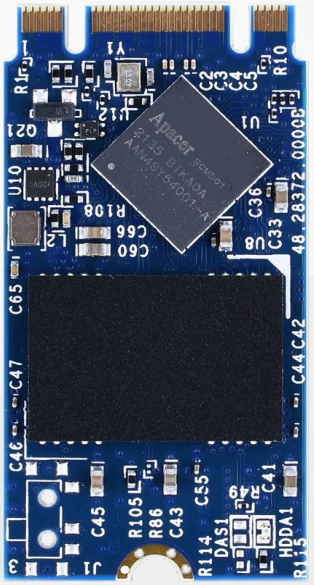
Apacer

RoHS Compliant

M.2 2242 Flash Drive

Industrial ST250-M242 BiCS5 Product Specifications (Commercial Extended Temperature)



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Version 1.0

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Specifications Overview:

- **Compliance with SATA Revision 3.2**
  - SATA 6 Gb/s interface
  - ATA-8 command set
  - Backward compatible with SATA 1.5/3 Gb/s
- **Capacity**
  - 128, 256, 512 GB
  - 1 TB
- **Performance**[1]
  - Burst read/write: 600 MB/sec
  - Sequential read: Up to 555 MB/sec
  - Sequential write: Up to 505 MB/sec
  - Random read (4K): Up to 50,000 IOPS
  - Random write (4K): Up to 68,000 IOPS
- **Flash Management**
  - Low-Density Parity-Check (LDPC) Code
  - Bad Block Management
  - Global Wear Leveling
  - DataDefender™
  - ATA Secure Erase
  - TRIM
  - Flash Translation Layer: Page Mapping
  - Device Sleep
  - Hyper Cache Technology
  - SATA Power Management
  - Smart Read Refresh™
  - S.M.A.R.T.
- **NAND Flash Type:** 3D TLC (BiCS5)
- **MTBF:** >3,000,000 hours
- **Endurance (in drive writes per day: DWPD)**
  - 128 GB: 2.27 DWPD
  - 256 GB: 2.15 DWPD
  - 512 GB: 2.18 DWPD
  - 1 TB: 2.20 DWPD
- **Temperature Range**
  - Operating (Tc): -25°C to 85°C
  - Storage (Ta): -55°C to 100°C
- **Supply Voltage**
  - 3.3V ± 5%
- **Power Consumption**[1]
  - Active mode (Max.): 400 mA
  - Idle mode: 65 mA
- **Security**
  - AES 256-bit hardware encryption
- **Reliability**
  - Thermal Sensor
  - End-to-End Data Protection
- **Connector Type**
  - 75-pin SATA-based M.2 module pinout
- **Physical Characteristics**
  - Form factor: Double-sided M.2 2242-D5-B-M
  - Dimensions: 42.00 x 22.00 x 3.88(max.), unit: mm
  - Net weight: 3.71g ± 5%
- **LED Indicator for Drive Behavior**
- **RoHS Compliant**

Note:
1. Varies from capacities. The values for performance and power consumption presented are typical and may vary depending on flash configurations or platform settings. The term idle refers to the standby state of the device.

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2. Product Specifications

2.1 Capacity

Table 2-1 Capacity Specifications

Capacity	Total bytes	Cylinders	Heads	Sectors	Total LBA
128 GB	120,034,123,776	16,383	16	63	234,441,648
256 GB	240,057,409,536	16,383	16	63	468,862,128
512 GB	480,103,981,056	16,383	16	63	937,703,088
1 TB	960,197,124,096	16,383	16	63	1,875,385,008

Notes:
- Display of total bytes varies from operating systems.
- 1 GB = 1,000,000,000 bytes; 1 sector = 512 bytes.
- LBA count addressed in the table above indicates total user storage capacity and will remain the same throughout the lifespan of the device. However, the total usable capacity of the SSD is most likely to be less than the total physical capacity because a small portion of the capacity is reserved for device maintenance usages.

2.2 Performance

Table 2-2 Performance Specifications

Capacity / Performance	128 GB	256 GB	512 GB	1 TB
Sequential Read (MB/s)	535	555	555	555
Sequential Write (MB/s)	490	505	505	505
4K Random Read (IOPS)	14,000	32,000	50,000	50,000
4K Random Write (IOPS)	67,000	68,000	65,000	64,000

Notes:
- Results may differ from various flash configurations or host system setting.
- Sequential performance is based on CrystalDiskMark 8.0.4 with file size 1,000MB.
- Random performance measured using IOMeter with Queue Depth 32.

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3. Product Ordering Information

3.1 Product Code Designations

Apacer's ST250-M242 SSD is available in different configurations and densities. See the chart below for a comprehensive list of options for the ST250-M242 series devices.

Code	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	A	3	2	.	2	5	C	X	2	B	.	0	0	1	B	E

Code 1-3 (Product Line & Form Factor)	SATA M.2 2242
Code 5-6 (Model/Solution)	ST250
Code 7-8 (Product Capacity)	CH: 128GB CJ: 256GB CK: 512GB CL: 1TB
Code 9 (Flash Type & Product Temp)	3D TLC Commercial Extended Temperature
Code 10 (Product Spec)	Double-sided B+M key
Code 12-14 (Version Number)	Random numbers generated by system
Code 15-16 (Firmware Version)	Thermal Sensor DEVSLP

3.2 Valid Combinations

The following table lists the available models of the ST250-M242 series which are in mass production or will be in mass production. Consult your Apacer sales representative to confirm availability of valid combinations and to determine availability of new combinations.

Capacity	Valid Combination
128GB	A32.25CH2B.001BE
256GB	A32.25CJ2B.001BE
512GB	A32.25CK2B.001BE
1TB	A32.25CL2B.001BE

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