

M.2 SATA

SMART Modular Technologies' industrial grade M.2 SATA module solid state drive products specifically supports OEM markets, such as server, storage, networking, and data communications. The M.2 SATA products are designed to serve applications that require reliable internal storage, yet demand a small footprint. The M.2 modules can be used for storing and executing boot up code, operating systems, and also for data tables and general purpose storage.

Utilizing an industry standard M.2 SATA interface and connector, the M.2 SATA X10 is SMART's latest SATA module with enterprise class features, including end-to-end protection and over provisioning to increase endurance.

The M.2 SATA XL+ product in 2242-D3-B-M form factor provides SATA III interface performance for industrial embedded applications with lower drive capacity needs.

SMART's XR+ M.2 with SafeDATA™ technology adds another layer of protection for data. SafeDATA Technology is a safeguard data against data corruption during power loss.

SMART offers both single-level cell (SLC) and multi-level cell (MLC) M.2 SATA modules. SMART's industrial grade products address enhanced reliability by incorporating onboard error detection and correction as well as static and dynamic wear leveling algorithms, providing reliable operation over the product life cycle.

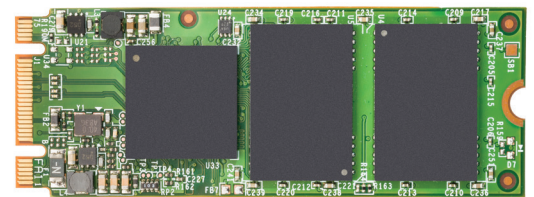
SMART's M.2 SATA products support self monitoring analysis and reporting technology (S.M.A.R.T.), which is designed to reduce field failures and unscheduled service maintenance. By providing an accurate forecast of the expected lifespan, S.M.A.R.T. enables reliable monitoring applications that efficiently guarantee 24/7 service availability.

Features & Benefits

- Whole drive static and dynamic wear leveling
- Advanced error detection/correction circuitry for superior data reliability
- Support for 48-bit LBA addressing for larger transfer sizes
- ATA and SATA Interface Power Management support
- Native Command Queuing (NCQ) support with a maximum queue depth of 32

Product Family Overview

	Capacity	Performance Sequential
M.2 SATA X10		
2260-D3-B-M MLC	60GB to 240GB	530MB/s Read (max) 140MB/s Write (max)
2280-D2-B-M MLC	60GB to 960GB	530MB/s Read (max) 470MB/s Write (max)
M.2 SATA XL+		
2242-D3-B-M SLC	8GB to 64GB	510MB/s Read (max) 140MB/s Write (max)
M.2 XR+, SafeData™		
2280-D3-B-M MLC	60GB to 480GB	530MB/s Read (max) 330MB/s Write (max)



Applications

- NAS / SAN storage systems
- x86 server-storage appliances
- Distributed scale-out cloud servers
- Telecom and networking routers and switches
- ATCA compute blades
- Industrial control
- Single board computers for defense, gaming and industrial control applications
- Printers

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Specifications

	M.2 XR+	M.2 XL+	M.2 X10
Performance			
	MLC	SLC	MLC
Host Interface Rate (Maximum)	6.0 Gbps		
Number of Flash Channels	4		
Capacities	60GB to 480GB	8GB to 64GB	60GB to 960GB
Sequential Read (maximum)	530MB/s	510MB/s	530MB/s
Sequential Write (maximum)	330MB/s	140MB/s	470MB/s
Random Read (maximum)	80K	46K	>80K
Random Write (maximum)	50K	27K	>88K
Reliability			
Data Reliability	< 1 Non-Recoverable Error in 10 ¹⁷ bits read (for XR+ and X10)		
Data Retention	10 years >90% life remaining 1 year at the end of life		
Endurance	2.5TB per GB in capacity	87TB per GB in capacity	2.5TB per GB in capacity
Error Correction / Error Detection (BCH)	Up to 75 bits per 2KBytes	Up to 68 bits per Kbyte	Up to 75 bits per 2KBytes
Environmental			
Shock - Non-Operating	1500 g half-sine, 0.5 msec, 1 shock along each axis, X,Y,Z in each direction		
Shock - Operating	50 g half sine, 11 msec, 3 shocks along each axis, X,Y,Z in each direction		
Vibration - Operating	16.4 g rms 10-2000Hz, 3 axis for XL+ and XR+ 20 g rms 80-2000Hz, 1.52mm 20-80Hz, 3 axis for M.2 X10		
Operating Temperature	C-temp: 0°C to 70°C (MLC and SLC) I-temp: -40°C to +85°C (SLC only)		
Storage Temperature	-40°C to +85°C		
Humidity	10% to 90%, non-condensing, relative humidity		
Physical			
Length	80.0 mm	42.0 mm	80.0 mm/60.0 mm
Width	22.0 mm	22.0 mm	22.0 mm
Height	3.50 mm	3.65 mm	3.80 mm/3.50 mm

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