

## mSATA

SMART Modular Technologies' mSATA industrial-grade embedded SATA module solid state drive products support the server, storage, networking and data communications OEM markets. The mSATA products are ideal for applications requiring reliable internal storage, yet demand a small footprint. These embedded products can also be employed for embedded computing, medical, automotive and industrial applications. The mSATA modules can be used for storing and executing boot up code, OS systems, and also for data tables and general purpose storage. The low power consumption and fast data throughput are major advantages of the SMART's mSATA products over traditional rotating hard disk drives (HDDs).

The mechanical dimensions of the mSATA products are compatible with both standoff and card guide mounting methods. The mSATA modules are fully MO-300 compliant. Utilizing an industry standard SATA interface and connector, mSATA products easily integrate into a host system without any special BIOS modifications or additional device drivers.

The X10 is SMART's latest mSATA module and has enterprise class features, including end-to-end data protection and over provisioning for better endurance. The mSATA XL+ provides SATA III interface performance for industrial embedded applications with lower drive capacity needs.

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

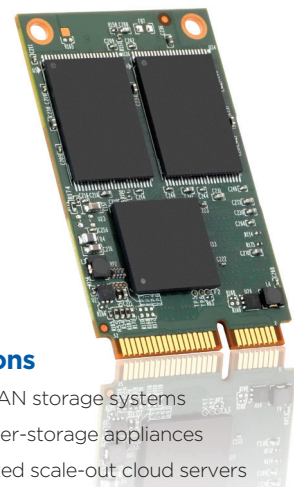
SMART's mSATA products support Self-Monitoring Analysis and Reporting Technology (S.M.A.R.T.), which is designed to reduce field failures and unscheduled service maintenance. By providing an accurate forecast of the expected lifespan, S.M.A.R.T. enables a reliable monitoring application that efficiently guarantees a 24/7 service availability.

### Features & Benefits

- Advanced wear leveling – static and dynamic wear leveling
- Advanced Error Detection/Correction circuitry for superior data reliability
- Self-Monitoring Analysis and Reporting Technology (S.M.A.R.T. support)
- Supports for 48bit LBA addressing with larger maximum transfer size
- Improved shock and vibration performance over rotating media

### Product Family Overview

	Capacity	Performance Sequential
<b>mSATA X10</b>		
MO-Standard MLC	60GB to 480GB	530MB/s Read (max) 380MB/s Write (max)
<b>mSATA XL+</b>		
MO-300 Standard SLC	8GB to 64GB	510MB/s Read (max) 140MB/s Write (max)
MO-300 Standard MLC I-temp	16GB to 256GB	530MB/s Read (max) 190MB/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
- Single board computers for defense, gaming and industrial control applications

# Specifications

	mSATA XL+	mSATA X10
<b>Performance</b>		
	<b>MLC (I-Temp)</b>	<b>SLC</b>
		<b>MLC</b>
Host Interface Rate (maximum)		6.0Gbps
Number of Flash Channels		4
Capacities	16GB to 256GB	8GB to 64GB
Sequential Read (maximum)	530MB/s	510MB/s
Sequential Write (maximum)	190MB/s	140MB/s
Random Read (maximum)	45K IOPS	46K IOPS
Random Write (maximum)	30K IOPS	27K IOPS
<b>Reliability</b>		
Data Reliability	1 Non-Recoverable Error in 10 <sup>15</sup> bits read	1 Non-Recoverable Error in 10 <sup>17</sup> bits read
Data Retention	10 years >90% life remaining 1 year at the end of life	
Endurance	2.5TB per GB in capacity (MLC) 85TB per GB in capacity (SLC)	2.5TB per GB in capacity
Error Correction / Error Detection (BCH)	Up to 43 bits per 1 KByte for MLC Up to 68 bits per 1 KByte for SLC	Up to 75 bits for every 2Kbytes sector
<b>Environmental</b>		
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 axes	
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 (MLC) -55°C to 85°C (SLC)	
Humidity	10% to 90%, non-condensing, relative humidity	
Altitude	24,384 m [80,000 ft]	
<b>Physical</b>		
Length	50.80 mm	
Width	29.9 mm	
Height	< 4.85 mm	

## Contact information

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