

## 2.5" SATA XP+

SMART Modular Technologies' industrial-grade 2.5" SATA XP+ and X10 solid state drives bring the advantages of non-volatile memory to embedded computing applications. They provide low power, high reliability mass storage in a 2.5" form factor and can be used as direct replacements for hard disk drives. Low power requirements make the 2.5" SATA SSD ideally suited for mobile applications where power savings can result in longer battery life. In fixed applications, lower power dissipation can also reduce cooling requirements and costs in blade or server environments.

The 2.5" SATA XP+ SATA III product line offers high level sequential and random read/write performance in high capacity drives for transaction intensive applications. The X10 is SMART's latest product which has enterprise class features, including End-to-End data protection, and over provisioning for better endurance.

SMART's 2.5" SATA SSDs are offered in Multi-Level Cell (MLC) and Single-Level Cell (SLC) NAND flash. They provide enhanced reliability by incorporating onboard error detection and correction and static wear leveling algorithms to provide reliable operation over the product life cycle. The 2.5" SATA SSDs 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 can efficiently guarantee 24/7 service availability.

### Features & Benefits

- Whole drive static and dynamic wear leveling
- Enhanced Self-Monitoring Analysis and Reporting Technology (S.M.A.R.T.) support
- Support for 48-bit LBA addressing for larger transfer sizes
- Support TRIM command and Native Command Queuing (NCQ) with a maximum queue depth of 32
- Supports firmware in system programming (ISP) for firmware upgrades

### Product Family Overview

	Capacity	Sustained Performance
<b>2.5" SATA XP+</b>		
SLC	16GB to 128GB	220MB/s Read (max) 380MS/s Write (max)
MLC	32GB to 256GB	520MB/s Read (max) 350MS/s Write (max)
<b>2.5" SATA X10</b>		
MLC	60GB to 960GB	530MB/s Read (max) 500MB/s Write (max)



### Applications

- Communications
- Embedded computing
- Defense
- HPC
- Industrial
- Networking
- Servers
- Storage

2.5" SATA XP+

## Specifications

	2.5" SATA XP+		2.5" SATA X10
	MLC	SLC	MLC
<b>Performance</b>			
Host Interface Rate (max)	6.0Gbps		
Number of Flash Channels	8		
Capacities	32GB to 256GB	16GB to 128GB	60GB to 960GB
Sequential Read (max)	520MB/s	510MB/s	530MB/s
Sequential Write (max)	350MB/s	380MB/s	500MB/s
Random Read (max)	>35K IOPS	>40K IOPS	85K IOPS
Random Write (max)	>57K IOPS	>60K IOPS	>85K IOPS
<b>Reliability</b>			
Data Reliability	< 1 Non-Recoverable Error in 10 <sup>15</sup> bits read		
Data Retention	10 years >90% life remaining 1 year at the end of life		
Endurance	0.9TB per GB in capacity (MLC)		
Error Correction / Error Detection (BCH)	Up to 43 bits per 1 KByte	Up to 24 bits per 1 KByte	Up to 75 bits per 2KByte
<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 axis		20 g rms 80-2000Hz, 3 axis
Operating Temperature	C-temp: 0°C to 70°C	C-temp: 0°C to 70°C I-temp: -40°C to 85°C	
Storage Temperature	-25°C to 85°C	-55°C to 85°C	-40°C to 85°C
Humidity	10% to 90%, non-condensing, relative humidity		
Altitude	24,384 m [80,000 ft]		
<b>Standard</b>			
<b>Physical</b>			
Length	100.00 mm [3.94 in]		
Width	70.00 mm [2.76 in]		
Height	7.00 mm [0.28 in]		

1. TBW is calculated per JESD218

## Ordering Information

Part Number	Capacity
<b>2.5" SATA XP+ SLC Commercial Grade</b>	
SH9SAT6E016GS02	16GB
SH9SAT6E032GS02	32GB
SH9SAT6E064GS02	64GB
SH9SAT6E128GS02	128GB
<b>2.5" SATA XP+ MLC Commercial Grade</b>	
SH9SAT6E032GM11	32GB
SH9SAT6E064GM11	64GB
SH9SAT6E128GM11	128GB
SH9SAT6E256GM11	256GB
<b>2.5 SATA X10 MLC Commercial Grade</b>	
SV9SAT6B060GLM21	60GB
SV9SAT6B120GLM21	120GB
SV9SAT6B240GLM21	240GB
SV9SAT6B480GLM21	480GB
SV9SAT6B960GLM21	960GB
<b>2.5 SATA X10 MLC Industrial Grade</b>	
SV9SAT6B060GLMI21	60GB
SV9SAT6B120GLMI21	120GB
SV9SAT6B240GLMI21	240GB
SV9SAT6B480GLMI21	480GB
SV9SAT6B960GLMI21	960GB

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