

# 1200.2 SAS SSD Family

## Data Sheet

### Key Features and Benefits

- Dual port 12Gb/s SAS interface for the highest level of enterprise reliability, availability and scalability
- Industry-leading storage density range including 4TB-class capacity in a 2.5-inch form factor
- Ultra-fast performance of up to 1900MB/s that nearly saturates both 12Gb/s ports
- Endurance options to match the needs of a wide range of enterprise workloads
- SAS dual-port communication path for redundant, failover I/O communication to ensure data availability in critical production systems
- Power loss data protection circuit to help prevent loss of data in the event of unexpected power interruptions or hot swap
- Superior data security including Secure Downloads & Diagnostics, and Seagate Secure™ Self-Encrypting Drive (SED) and FIPS SED models<sup>1</sup>
- Advanced error correction for high level of data integrity

The Seagate 1200.2 SSD family includes the next-generation of high-capacity, high-performance SAS SSDs designed with multiple endurance offerings optimized for demanding enterprise applications and maximum TCO savings.

### Industry Leading Performance up to 1900MB/s

The 1200.2 SAS SSD family delivers ultra-fast, consistent and easily scalable performance that exceeds 12Gb/s SAS single port bandwidth. By removing the storage bottleneck, it closes the gap between processor and data storage performance and significantly improves overall system and application responsiveness. The 1200.2 SAS SSD family also provides consistent low-latency data access, reliably accelerating enterprise and cloud storage systems.

### High Capacity Solution with Multiple Endurance Offerings

Enterprise applications have different storage workload requirements for performance, endurance and cost. The optimal storage solution for databases or virtualization with a typically mixed read/write workload, for example, requires the highest random read/write IOPS, ultra-low latency, and high endurance; content streaming applications with highly intensive read workloads, however, demand high sequential read throughput and high storage density at the lowest cost per gigabyte.

The 1200.2 SAS SSD family offers, industry-leading range of capacities including 4TB-class in a 2.5-inch form factor, to increase enterprise storage density in data centers. It also enables the maximum TCO savings by offering four endurance categories to match cost and performance requirements of all enterprise workloads.

### Enhanced Enterprise Reliability, Data Protection and Security

The 1200.2 SAS SSD family leverages Seagate's decades of enterprise SAS expertise and proven feature set to deliver the highest levels of reliability, data integrity and data security for mission critical enterprise applications.

The 1200.2 SAS SSD family delivers best-in-class data protection and reliability by integrating full internal and external data path protection (T10 DIF), Seagate's advanced ECC algorithms, media life cycle management and other techniques for extending flash memory life. With advanced power-loss data protection, the 1200.2 SSD maintains high data integrity to help prevent loss of user data in the event of unexpected power interruptions.

The 1200.2 family implements security features to prevent unauthorized access to a drive and safeguards stored data with three levels of security, including Secure Downloads & Diagnostics, TCG-compliant Self-Encrypting Drive and FIPS drive<sup>1</sup>.

<sup>1</sup> Self-Encrypting Drives (SED) and FIPS 140-2 Validated drives are not available in all models or countries. May require TCG-compliant host or controller support.



# 1200.2 SAS SSD Family



Specifications	High Endurance			Mainstream Endurance		
	400GB <sup>1</sup>	200GB <sup>1</sup>	3200GB <sup>1</sup>	1600GB <sup>1</sup>	800GB <sup>1</sup>	400GB <sup>1</sup>
Standard Model	ST400FM0323	ST200FM0133	ST3200FM0023	ST1600FM0003	ST800FM0173	ST400FM0233
Seagate Secure™ SED Model	ST400FM0333 <sup>2</sup>	ST200FM0143 <sup>2</sup>	ST3200FM0033 <sup>2</sup>	ST1600FM0013 <sup>2</sup>	ST800FM0183 <sup>2</sup>	ST400FM0243 <sup>2</sup>
Seagate Secure FIPS 140-2 Model	—	—	ST3200FM0043 <sup>2</sup>	ST1600FM0023 <sup>2</sup>	ST800FM0213 <sup>2</sup>	ST400FM0293 <sup>2</sup>
Interface	Dual 12Gb/s SAS	Dual 12Gb/s SAS	Dual 12Gb/s SAS	Dual 12Gb/s SAS	Dual 12Gb/s SAS	Dual 12Gb/s SAS
NAND Flash Type	eMLC	eMLC	eMLC	eMLC	eMLC	eMLC
Form Factor	2.5 in × 7mm	2.5 in × 7mm	2.5 in × 15mm	2.5 in × 15mm	2.5 in × 7mm	2.5 in × 7mm
<b>Performance<sup>3</sup></b>						
Sequential Read (MB/s) Peak, 128KB (Dual port/Single port)	1700/1100	1550/1100	1900/1100	1900/1100	1850/1100	1550/1100
Sequential Write (MB/s) Peak, 128KB	850	600	800	850	850	625
Random Read (IOPS) Peak, 4KB QD32	200,000	200,000	200,000	200,000	200,000	180,000
Random Write (IOPS) Peak, 4KB QD32	120,000	120,000	80,000	80,000	80,000	67,000
Average Latency (µs)	115	115	115	115	115	115
<b>Endurance/Reliability</b>						
Lifetime Endurance (DWPD) <sup>4</sup>	25	25	10	10	10	10
Nonrecoverable Read Errors per Bits Read	1 per 10E17	1 per 10E17	1 per 10E17	1 per 10E17	1 per 10E17	1 per 10E17
Annualized Failure Rate (AFR)	0.35%	0.35%	0.35%	0.35%	0.35%	0.35%
<b>Power Management</b>						
+5/+12V Max Start Current (A)	0.44/0.42	0.44/0.41	0.44/0.47	0.44/0.42	0.44/0.41	0.44/0.41
Average Sleep Power (W)	2.6	2.7	5.2	4.0	2.6	2.7
Configurable Power Limit Settings (W)	9 to 12	9 to 12	9 to 12	9 to 12	9 to 12	9 to 12
Average Idle Power (W)	3.6	3.5	6.2	5.0	3.6	3.5
<b>Environmental</b>						
Temperature, Operating Internal (°C)	0 to 70	0 to 70	0 to 70	0 to 70	0 to 70	0 to 70
Temperature, Nonoperating (°C)	-40 to 75	-40 to 75	-40 to 75	-40 to 75	-40 to 75	-40 to 75
Temperature Change Rate/Hr, Max (°C)	20	20	20	20	20	20
Relative Humidity, Noncondensing (%)	5 to 95	5 to 95	5 to 95	5 to 95	5 to 95	5 to 95
Shock, 0.5ms (Gs)	1000	1000	1000	1000	1000	1000
Vibration, 10Hz to 500Hz (Grms)	1.98	1.98	1.98	1.98	1.98	1.98
<b>Physical</b>						
Height (in/mm, max) <sup>5</sup>	0.276/7.00	0.276/7.00	0.591/15.00	0.591/15.00	0.276/7.00	0.276/7.00
Width (in/mm, max) <sup>5</sup>	2.760/70.10	2.760/70.10	2.760/70.10	2.760/70.10	2.760/70.10	2.760/70.10
Depth (in/mm, max) <sup>5</sup>	3.955/100.45	3.955/100.45	3.955/100.45	3.955/100.45	3.955/100.45	3.955/100.45
Weight (lb/g)	0.1874/85	0.1764/80	0.3638/165	0.3417/155	0.1874/85	0.1764/80
Carton Unit Quantity	10	10	10	10	10	10
Cartons per Pallet	90	90	90	90	90	90
Cartons per Layer	9	9	9	9	9	9
<b>Warranty</b>						
Limited Warranty (years)	5	5	5	5	5	5

1 One gigabyte, or GB, equals one billion bytes and one terabyte, or TB, equals one trillion bytes when referring to drive capacity.  
 2 Not all drives may be available in all countries. Seagate Secure drives meet ISO/IEC 27040 and NIST 800-88 standards and may require use of TCG-compliant host or controller support.  
 3 Performance measured at beginning of life. System application performance may vary based on SAS host and prior system workload.  
 4 DWPD = full drive writes per day  
 5 These base deck dimensions conform to the Small Form Factor Standard (SFF-8201) found at [www.sffcommittee.org](http://www.sffcommittee.org). For connector-related dimensions, see SFF-8223 (SAS models).





# 1200.2 SAS SSD Family



Specifications	Light Endurance							
	3840GB <sup>1</sup>	3200GB <sup>1</sup>	1920GB <sup>1</sup>	1600GB <sup>1</sup>	960GB <sup>1</sup>	800GB <sup>1</sup>	480GB <sup>1</sup>	400GB <sup>1</sup>
Standard Model	ST3840FM0003	ST3200FM0063	ST1920FM0003	ST1600FM0073	ST960FM0003	ST800FM0233	ST480FM0003	ST400FM0303
Seagate Secure SED Model	ST3840FM0023 <sup>2</sup>	ST3200FM0073 <sup>2</sup>	ST1920FM0023 <sup>2</sup>	ST1600FM0083 <sup>2</sup>	ST960FM0013 <sup>2</sup>	ST800FM0243 <sup>2</sup>	ST480FM0013 <sup>2</sup>	ST400FM0343 <sup>2</sup>
Seagate Secure FIPS 140-2 Model	—	—	—	—	—	—	—	—
Interface	Dual 12Gb/s SAS	Dual 12Gb/s SAS	Dual 12Gb/s SAS	Dual 12Gb/s SAS	Dual 12Gb/s SAS	Dual 12Gb/s SAS	Dual 12Gb/s SAS	Dual 12Gb/s SAS
NAND Flash Type	eMLC	eMLC	eMLC	eMLC	eMLC	eMLC	eMLC	eMLC
Form Factor	2.5 in × 15mm	2.5 in × 15mm	2.5 in × 15mm	2.5 in × 15mm	2.5 in × 7mm	2.5 in × 7mm	2.5 in × 7mm	2.5 in × 7mm
Performance <sup>3</sup>								
Sequential Read (MB/s) Peak, 128KB (Dual port/Single port)	1850/1100	1600/1100	1850/1100	1600/1100	1700/1100	1400/1100	1550/1100	1400/1100
Sequential Write (MB/s) Peak, 128KB	770	850	850	850	850	710	615	490
Random Read (IOPS) Peak, 4KB QD32	180,000	180,000	180,000	180,000	180,000	180,000	180,000	180,000
Random Write (IOPS) Peak, 4KB QD32	30,000	20,000	30,000	20,000	30,000	20,000	30,000	20,000
Average Latency (µs)	115	115	115	115	115	115	115	115
Endurance/Reliability								
Lifetime Endurance (DWPD) <sup>4</sup>	3	2	3	2	3	2	3	3
Nonrecoverable Read Errors per Bits Read	1 per 10E17	1 per 10E17	1 per 10E17	1 per 10E17	1 per 10E17	1 per 10E17	1 per 10E17	1 per 10E17
Annualized Failure Rate (AFR)	0.35%	0.35%	0.35%	0.35%	0.35%	0.35%	0.35%	0.35%
Power Management								
+5/-12V Max Start Current (A)	0.44/0.42	0.44/0.41	0.44/0.47	0.44/0.42	0.44/0.41	0.44/0.41	0.44/0.41	0.44/0.41
Average Sleep Power (W)	4.8	4.8	4.1	4.1	2.6	2.6	2.7	2.7
Configurable Power Limit Settings (W)	9 to 12	9 to 12	9 to 12	9 to 12	9 to 12	9 to 12	9 to 12	9 to 12
Average Idle Power (W)	5.8	5.8	5.1	5.1	3.9	3.9	3.5	3.5
Environmental								
Temperature, Operating Internal (°C)	0 to 70	0 to 70	0 to 70	0 to 70	0 to 70	0 to 70	0 to 70	0 to 70
Temperature, Nonoperating (°C)	-40 to 75	-40 to 75	-40 to 75	-40 to 75	-40 to 75	-40 to 75	-40 to 75	-40 to 75
Temperature Change Rate/Hr, Max (°C)	20	20	20	20	20	20	20	20
Relative Humidity, Noncondensing (%)	5 to 95	5 to 95	5 to 95	5 to 95	5 to 95	5 to 95	5 to 95	5 to 95
Shock, 0.5ms (Gs)	1000	1000	1000	1000	1000	1000	1000	1000
Vibration, 10Hz to 500Hz (Grms)	1.98	1.98	1.98	1.98	1.98	1.98	1.98	1.98
Physical								
Height (in/mm, max) <sup>5</sup>	0.591/15.00	0.591/15.00	0.591/15.00	0.591/15.00	0.276/7.00	0.276/7.00	0.276/7.00	0.276/7.00
Width (in/mm, max) <sup>5</sup>	2.760/70.10	2.760/70.10	2.760/70.10	2.760/70.10	2.760/70.10	2.760/70.10	2.760/70.10	2.760/70.10
Depth (in/mm, max) <sup>5</sup>	3.955/100.45	3.955/100.45	3.955/100.45	3.955/100.45	3.955/100.45	3.955/100.45	3.955/100.45	3.955/100.45
Weight (lb/g)	0.3638/165	0.3638/165	0.3417/155	0.3417/155	0.1874/85	0.1874/85	0.1764/80	0.1764/80
Carton Unit Quantity	10	10	10	10	10	10	10	10
Cartons per Pallet	90	90	90	90	90	90	90	90
Cartons per Layer	9	9	9	9	9	9	9	9
Warranty								
Limited Warranty (years)	5	5	5	5	5	5	5	5

1 One gigabyte, or GB, equals one billion bytes and one terabyte, or TB, equals one trillion bytes when referring to drive capacity.  
 2 Not all drives may be available in all countries. Seagate Secure drives meet ISO/IEC 27040 and NIST 800-88 standards and may require use of TCG-compliant host or controller support.  
 3 Performance measured at beginning of life. System application performance may vary based on SAS host and prior system workload.  
 4 DWPD = full drive writes per day  
 5 These base deck dimensions conform to the Small Form Factor Standard (SFF-8201) found at [www.sffcommittee.org](http://www.sffcommittee.org). For connector-related dimensions, see SFF-8223 (SAS models).





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Specifications	Scalable Endurance	
	3840GB <sup>1</sup>	1920GB <sup>1</sup>
Standard Model	ST3840FM0043	ST1920FM0043
Seagate Secure SED Model	ST3840FM0053 <sup>2</sup>	ST1920FM0053 <sup>2</sup>
Seagate Secure FIPS 140-2 Model	—	—
Interface	Dual 12Gb/s SAS	Dual 12Gb/s SAS
NAND Flash Type	eMLC	eMLC
Form Factor	2.5 in × 15mm	2.5 in × 15mm
<b>Performance<sup>3</sup></b>		
Sequential Read (MB/s) Peak, 128KB (Dual port/Single port)	1700/1100	1700/1100
Sequential Write (MB/s) Peak, 128KB	770	850
Random Read (IOPS) Peak, 4KB QD32	190,000	190,000
Random Write (IOPS) Peak, 4KB QD32	15,000	12,000
Average Latency (µs)	115	115
<b>Endurance/Reliability</b>		
Lifetime Endurance (DWPD) <sup>4</sup>	1	1
Nonrecoverable Read Errors per Bits Read	1 per 10E17	1 per 10E17
Annualized Failure Rate (AFR)	0.35%	0.35%
<b>Power Management</b>		
+5/+12V Max Start Current (A)	0.44/0.41	0.44/0.42
Average Sleep Power (W)	4.8	4.1
Configurable Power Limit Settings (W)	9 to 12	9 to 12
Average Idle Power (W)	5.8	5.1
<b>Environmental</b>		
Temperature, Operating Internal (°C)	0 to 70	0 to 70
Temperature, Nonoperating (°C)	-40 to 75	-40 to 75
Temperature Change Rate/Hr, Max (°C)	20	20
Relative Humidity, Noncondensing (%)	5 to 95	5 to 95
Shock, 0.5ms (Gs)	1000	1000
Vibration, 10Hz to 500Hz (Grms)	1.98	1.98
<b>Physical</b>		
Height (in/mm, max) <sup>5</sup>	0.591/15.00	0.591/15.00
Width (in/mm, max) <sup>5</sup>	2.760/70.10	2.760/70.10
Depth (in/mm, max) <sup>5</sup>	3.955/100.45	3.955/100.45
Weight (lb/g)	0.3638/165	0.3417/155
Carton Unit Quantity	10	10
Cartons per Pallet	90	90
Cartons per Layer	9	9
<b>Warranty</b>		
Limited Warranty (years)	5	5

1 One gigabyte, or GB, equals one billion bytes and one terabyte, or TB, equals one trillion bytes when referring to drive capacity.

2 Not all drives may be available in all countries. Seagate Secure drives meet ISO/IEC 27040 and NIST 800-88 standards and may require use of TCG-compliant host or controller support.

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