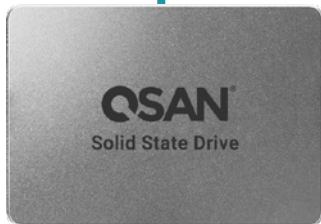


Data Sheet



QSAN NVMe SSD

SD4 Series

Enterprise PCIe Gen 4x4 Dual / Single Port

Features

- Dual / Single NVMe 1.4 compliant controller, PCIe 4.0
- 3D eTLC NAND
- 1 DWPD
- Performance up to 7,000 MB/s
- MTBF rating of 2.5M hours
- Security options: SE (Secure Erase), ISE (Instant Secure Erase), and SED (Self-Encrypted Drive)
- 5-year limited warranty¹
- Enterprise features: Namespace, Reservation, Metadata Protection, Power Loss Protection
- Support NVMe-MI (Management Interface)

Applications

- HPC (High-Performance Computing)
- AI (Artificial Intelligence)
- Machine Learning
- Deep Learning
- OLTP (Online Transaction Processing) Databases
- OLAP (OnLine Analytical Processing)
- Virtualization

High Performance NVMe SSDs Power Up Enterprise Workloads

QSAN SD4 NVMe SSD delivers all the advantages of flash drive technology with PCIe Gen 4x4 interface, supports the industry's new U.3 interface and is fully backward compatible with U.2 slots. SD4 series offers a wide range of capacities up to 15.36 TB. Based on the latest 3D NAND technology, its performance can reach up to 7,000 MB/s for sequential read and 6,800 MB/s for sequential write. Moreover, the power consumption of SD4 SSD is much lower than traditional hard drives, making it the best embedded solution for new platforms.

High Performance NVMe SSDs Fulfill Modern Applications

As modern applications and workloads demand higher performance, NVMe adoption in the enterprise continues to grow. High-performance NVMe SSDs are designed for HPC (High-Performance Computing) primary storage servers or arrays. They require low data latency and high data availability for fulfill enterprise workloads. These applications include AI (Artificial Intelligence), machine learning, deep learning, OLTP (OnLine Transaction Processing) or OLAP (OnLine Analytical Processing) databases, virtualization, and more. QSAN SD4 delivers 1,600K IOPS and 80 µs low latency for 4K random reads to quickly complete these complex tasks.

Flash Management Technology Makes SSDs Last Longer

We know that flash cells degrade with use, which can lead to SSD failures affecting enterprise data. Sophisticated flash management can extend SSD life. In SSD, it has wear leveling to evenly distribute write and erase cycles, bad block management to improve data reliability, TRIM function to reclaim unused blocks, S.M.A.R.T. to monitor SSD health, over-provisioning to reduce write amplification, and thermal throttling to prevent any components over-heating. The ever-changing SSD technology is nothing more than improving the shortcomings of flash and extending its service life.

Nothing Important than Data Security

QSAN SD4 provides TCG-Opal with security options to support SED (Self-Encrypting Drives) as well as SE (Secure Erase) and ISE (Instant Secure Erase) with AES-256 encryption engine on-device encryption. It also includes power loss protection for data at rest and in motion and enterprise data path protection for user and metadata.

¹ The warranty for the product is subject to the conditions stated herein for the shorter of :
(a) the expiration of time period associated with the product.

or
(b) the period ending on the date when the SSD has exceeded its TBW (Total Bytes Written) threshold as may be indicated by SSD's firmware.

Specifications

Model Name	SD43T840-00	SD47T640-00	SD415T40-00	SD430T40-00
Capacity	3,840 GB	7,680 GB	15,360 GB	30,720 GB
Endurance	1 DWPD			
Encryption	Non-SED			
TBW (Total Bytes Written)	7,008 TB	14,016 TB	28,032 TB	56,064 TB
Configuration				
Interface	Dual-port PCIe Gen 4x4, NVMe 1.4			
Form Factor	U.3 (backward compatible with U.2), 2.5-inch, 15 mm			
NAND Flash Type	3D eTLC			
Performance				
Sequential Read	7,000 MB/s	7,000 MB/s	7,000 MB/s	7,000 MB/s
Sequential Write	6,700 MB/s	6,800 MB/s	6,800 MB/s	6,000 MB/s
4K Random Read	1,600K IOPS	1,600K IOPS	1,600K IOPS	1,600K IOPS
4K Random Write	170K IOPS	180K IOPS	180K IOPS	180K IOPS
4K Random Read Latency	100 µs	100 µs	100 µs	90 µs
4K Random Write Latency	15 µs	15 µs	15 µs	15 µs
Reliability				
UBER (Uncorrectable Bit Error Rate)	< 1 sector per in 10 ¹⁸ bits read			
MTBF (Mean Time Between Failure)	2.5M hours			
Limited Warranty	5 years or 7,008 TBW	5 years or 14,016 TBW	5 years or 28,032 TBW	5 years or 56,064 TBW
Power				
Requirement (DC)	12 V +/- 10 % 3.3 V +/- 15 %			
Random Read	13.3 W	15.7 W	16.2 W	18.5 W
Random Write	15.5 W	17.4 W	19.6 W	20.6 W
Sequential Read	10.6 W	11.6 W	12.3 W	13.7 W
Sequential Write	17.9 W	19.1 W	20.1 W	20.1 W
Idle	5.8 W	5.75 W	7.32 W	8.16 W
Physical Size				
Dimension (W x L x H)	69.85 mm x 100.1 mm x 14.65 mm			
Weight	200 g	203 g	205 g	208g
Environmental				
Operating Temperature	0 °C ~ 70 °C			
Non-Operating Temperature	-40 °C ~ 85 °C			
Operating Relative Humidity	5 % ~ 95 %			
Non-Operating Relative Humidity	5 % ~ 95 %			

Specifications

Model Name	SD43T840-10	SD47T640-10	SD415T40-10	SD430T40-10
Capacity	3,840 GB	7,680 GB	15,360 GB	30,720 GB
Endurance	1 DWPD			
Encryption	SED			
TBW (Total Bytes Written)	7,008 TB	14,016 TB	28,032 TB	56,064 TB
Configuration				
Interface	Dual-port PCIe Gen 4x4, NVMe 1.4			
Form Factor	U.3 (backward compatible with U.2), 2.5-inch, 15 mm			
NAND Flash Type	3D eTLC			
Performance				
Sequential Read	7,000 MB/s	7,000 MB/s	7,000 MB/s	7,000 MB/s
Sequential Write	6,700 MB/s	6,800 MB/s	6,800 MB/s	6,000 MB/s
4K Random Read	1,600K IOPS	1,600K IOPS	1,600K IOPS	1,600K IOPS
4K Random Write	170K IOPS	180K IOPS	180K IOPS	180K IOPS
4K Random Read Latency	100 µs	100 µs	100 µs	90 µs
4K Random Write Latency	15 µs	15 µs	15 µs	15 µs
Reliability				
UBER (Uncorrectable Bit Error Rate)	< 1 sector per in 10 ¹⁸ bits read			
MTBF (Mean Time Between Failure)	2.5M hours			
Limited Warranty	5 years or 7,008 TBW	5 years or 14,016 TBW	5 years or 28,032 TBW	5 years or 56,064 TBW
Power				
Requirement (DC)	12 V +/- 10 % 3.3 V +/- 15 %			
Random Read	13.3 W	15.7 W	16.2 W	18.5 W
Random Write	15.5 W	17.4 W	19.6 W	20.6 W
Sequential Read	10.6 W	11.6 W	12.3 W	13.7 W
Sequential Write	17.9 W	19.1 W	20.1 W	20.1 W
Idle	5.8 W	5.75 W	7.32 W	8.16 W
Physical Size				
Dimension (W x L x H)				
Weight	200 g	203 g	205 g	208g
Environmental				
Operating Temperature	0 °C ~ 70 °C			
Non-Operating Temperature	-40 °C ~ 85 °C			
Operating Relative Humidity	5 % ~ 95 %			
Non-Operating Relative Humidity	5 % ~ 95 %			

Specifications

Model Name	SD41T941-00	SD43T841-00	SD47T641-00
Capacity	1,920 GB	3,840 GB	7,680 GB
Endurance		1 DWPD	
Encryption		Non-SED	
TBW (Total Bytes Written)	3,504 TB	7,008 TB	14,016 TB
Configuration			
Interface	Single-port PCIe Gen 4x4, NVMe 1.4		
Form Factor	U.3 (backward compatible with U.2), 2.5-inch, 15 mm		
NAND Flash Type	3D eTLC		
Performance			
Sequential Read	6,650 MB/s	6,650 MB/s	6,650 MB/s
Sequential Write	3,325 MB/s	6,460 MB/s	6,460 MB/s
4K Random Read	1,520K IOPS	1,520K IOPS	1,520K IOPS
4K Random Write	90.25K IOPS	161.5K IOPS	171K IOPS
4K Random Read Latency	91 μ s	91 μ s	91 μ s
4K Random Write Latency	16 μ s	16 μ s	16 μ s
Reliability			
UBER (Uncorrectable Bit Error Rate)	< 1 sector per in 10^{18} bits read		
MTBF (Mean Time Between Failure)	2.5M hours		
Limited Warranty	5 years or 3,504 TBW	5 years or 7,008 TBW	5 years or 14,016 TBW
Power			
Requirement (DC)	12 V +/- 10 % 3.3 V +/- 15 %		
Random Read	11.8 W	12.7 W	15 W
Random Write	11.4 W	14.8 W	16.6 W
Sequential Read	9.6 W	10.1 W	11.1 W
Sequential Write	12.2 W	17.1 W	18.2 W
Idle	5.2 W	5.6 W	5.5 W
Physical Size			
Dimension (W x L x H)	69.85 mm x 100.1 mm x 14.65 mm		
Weight	198 g	200 g	203 g
Environmental			
Operating Temperature	0 °C ~ 70 °C		
Non-Operating Temperature	-40 °C ~ 85 °C		
Operating Relative Humidity	5 % ~ 95 %		
Non-Operating Relative Humidity	5 % ~ 95 %		