

C O N S U M E R



SATA with Security and Savings

Phison PS3117-S17T (Phison S17T) is a mature NAND controller IC solution operating on the SATA III interface. Featuring a single-core processor and DRAM-less hardware design, the S17T enables SSDs with superior power- and cost-efficiency compared to traditional hard drives. Equipped with Phison's advanced ECC technology and multi-layered security protection, the S17T is the most reliable SATA solution worth your trust.

Application



Entry-level Client Platforms Security-sensitive Industrial Applications

Product Features

Excellent Scalability

The S17T supports up to 2 NAND flash data transmitting channels with up to 16 Chip-Enables (CE) counts running on mainstream NAND flash interfaces in ONFI and Toggle and allowing capacity scaling from 128 GB up to 4096 GB.

TCG Opal Compliance

The S17T is fully compliant to the TCG Opal 2.0 standards and ready to enable self-encrypting SATA drives with comprehensive security features like hardware encryption and LBA-based read/write permissions that protect user data from unauthorized access.

Phison 4th Generation LDPC ECC engine

Phison's proprietary fourth-generation ECC engine based on the LDPC coding scheme effectively maintains NAND flash data reliability. Relative to the prior generation, the 4th Gen engine grants extended NAND flash variation support, working flexibly with a wide range of solutions including those based on QLCs.

End-to-End Data Path Protection

From the entry through PHY to the access of NAND flash memory, data packages go through a series of encryption/decryption using various coding schemes, including but not limited to AES, CRC, and SEDEC, to gain a multi-layered protection over the course of delivery.

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CONTROLLER

PS3117-S17T

Features	Specifications			
Host Interface	- SATA III (Bandwidth: 6Gb/s) - Compliance with SATA Revision 3.2 - Backward compatible with existing SATA generation transfer rates			
Processor	- Single-CPU architecture with built-in 32-bit microcontroller - UMC 28nm process technology			
Flash Controller	 Up to 2 Channels with 16 Chip Enable (CE) counts Flash transfer rate up to 533MT/s Capacity up to 4TB Support 3D TLC/QLC NAND flash memory Compliance with Toggle 2.0 and ONFi 4.0 Flash I/O operating voltage supply 1.2V/1.8V 			
Data Reliability	- Phison 4nd generation LDPC ECC engine - End-to-End Data Path Protection			
Security	- Opal AES			
Performance	- Sequential Read up to 550MB/s - Sequential Write up to 510MB/s - 4K Random Read up to 97K IOPS - 4K Random Write up to 86K IOPS			
Power Management	- DEVSLP < 5mW			
Temperature Range	- Operating range: 0~70 °C - Storage range: -40~85 °C			
Package	- 169-ball TFBGA, 9 mm x 9 mm - 88-Ld QFN, 9 mm x 9 mm			
Peripheral	- GPIO pins - Built-in JTAG function - Built-in UART function - I2C and SPI for external ROM			



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Solutions PS3117-S17T

Capacity ⁽¹⁾	128GB	256GB	512GB	1024GB	2048GB	4096GB		
Interface	SATAIII 6Gb/s							
Form Factor	M.2 2280, 2.5", mSATA							
NAND Flash	3D TLC/QLC							
Performance ⁽²⁾								
Sequential Read	550 MB/s	550 MB/s	550 MB/s	550 MB/s	550 MB/s	540 MB/s		
Sequential Write	450 MB/s	490 MB/s	500 MB/s	510 MB/s	510 MB/s	510 MB/s		
4K Random Read	50K IOPS	86K IOPS	97K IOPS	97K IOPS	97K IOPS	96K IOPS		
4K Random Write	80K IOPS	85K IOPS	86K IOPS	86K IOPS	86K IOPS	86K IOPS		
Power ⁽³⁾								
Supply Voltage	M.2 2242, mSATA 3.3V ±5% 2.5" 5V ±5%							
Active (Average)	1160 mW	1180 mW	1235 mW	1320 mW	1320 mW	1540 mW		
Idle	200 mW	200 mW	210 mW	210 mW	210 mW	210 mW		
DEVSLP ⁽⁴⁾	4.9 mW	4.9 mW	4.9 mW	4.9 mW	4.9 mW	4.9 mW		
Environmental								
Operating Temperature	0°C - 70°C							
Non-Operating Temperature	-40°C - 85°C							
Certification	-RoHS -WHQL							
Reliability & Warranty								
TBW ⁽⁵⁾	60TB	120TB	240TB	480TB	960TB	1920TB		
MTBF	2,000,000 hours							
UBER	<10 ⁻¹⁵ bits							
Advanced Features								
- End-to-End Data Protection - Opal Support - Thermal Monitoring								

(1) 1 GB = 1,000,000,000 bytes

(2) Performance is based on CrystalDiskMark 6.0.0, 1GB range for sequential read/write and IOMeter, 1GB range for 4K random read/write.

(a) Power consumption is measured during the sequential read and write operations performed by CrystalDiskMark 6.0.0(1GB range, QD=32T1)
 (4) The value of DEVSLP mode is measured while entering device sleep mode for 5 minutes. DEVSLP Mode is the optional function for device.

(5) TBW is Terabytes written and the results are obtained in compliance with JEDEC SSD endurance workload JESD219A.

(6) All the value may differ according to flash configuration and platform.



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