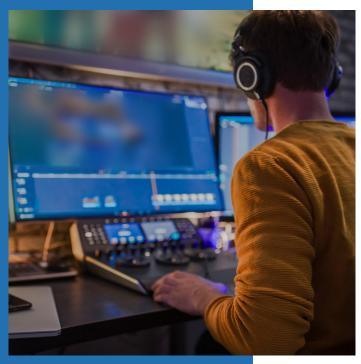


#### C O N S U M E R



# PS3111-S11T

Phsion PS3111-S11T (Phison S11T) is a mature NAND controller IC solution operating on SATA 3 6.0Gb/s interface. Without on-board DRAM, its single-core hardware design includes 2 flash channels with 16 Chip Enable (CE) counts to sustain both performance and affordability. Complementing its conventional SATA design, Phison's proprietary data compression and protection technology provides a lift to the read and write efficiency while maintaining robust overall reliability.

Application Embedded and OEM SSD Client SSD Products Industrial SSD Products



### **Product Features**

#### **Flash and Form Factor Versality**

Not only does PS3111-S11T accommodate a wide variety of solutions from NAND flash vendors, but it also complements its NAND flash adaptability with its diversity in enabled module form factors to add to the deployment flexibility within consumer platforms and applications.

#### **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 protecton over the course of delivery.

#### Phison 2<sup>nd</sup> Gen LDPC ECC Engine

Phison's proprietary second-generation ECC engine based on the LDPC coding scheme effectively maintains NAND flash data reliability. Relative to the prior generation, the 2<sup>nd</sup> Gen engine has not only become more cost effective but also ready for soft-bit decoding that is higher in correction strength.

#### SmartZIP<sup>™</sup>

A compression technique to improve SSD write performance by eliminating redundancy in data patterns and thus the amount of physical transaction flow. It also benefits the overall drive endurance as the amount of write operations directly impacts the wear and tear of flash cells.

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# CONTROLLER

## PS3111-S11T

Features	Specifications		
Host Interface	- SATA III (Bandwidth: 6Gb/s) - Compliance with SATA Revision 3.2		
Processor	- Single-CPU architecture with built-in 32-bit microcontroller - UMC 40nm process technology		
Flash Controller	<ul> <li>Up to 2 Channels with 16 Chip Enable (CE) counts</li> <li>Flash transfer rate up to 533MT/s</li> <li>Capacity up to 1TB</li> <li>Support 2D SLC/MLC and 3D TLC/QLC NAND flash memory</li> <li>Compliance with Toggle 2.0 and ONFi 4.0</li> <li>Flash I/O operating voltage supply 1.2V/1.8V</li> </ul>		
DRAM Controller	- DRAM-less		
Data Reliability	- Phison 2nd generation LDPC ECC engine - End-To-End Data Path Protection		
Performance	- Sequential Read up to 550MB/s - Sequential Write up to 500MB/s - 4K Random Read up to 90K IOPS - 4K Random Write up to 85K IOPS		
Power Management	- DEVSLP < 5mW		
Temperature Range	- Operating range: 0~70 °C - Storage range: -40~85 °C		
Package	- 169-ball LFBGA, 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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Find more information and resources at: phisonblog.com and phison.com

## Solutions PS3111-S11T

SSD Solutions	PS3111-S11T				
Capacity <sup>(1)</sup>	120/128GB	240/256GB	480/512GB	960/1024GB	
Interface	SATAIII 6Gb/s				
Form Factor	M.2 2242/2260/2280, 2.5", Half Slim, mSATA, Cfast, uSSD				
NAND Flash	2D MLC, 3D TLC/QLC				
		Performance (2)			
Sequential Read	550 MB/s	550 MB/s	550 MB/s	550 MB/s	
Sequential Write	465 MB/s	500 MB/s	500 MB/s	500 MB/s	
4K Random Read	70K IOPS	75K IOPS	80K IOPS	90K IOPS	
4K Random Write	80K IOPS	80K IOPS	80K IOPS	85K IOPS	
		Power <sup>(3)</sup>			
Supply Voltage	M.2 2242/2260/2280 , mSATA, Cfast, uSSD 3.3V ±5% 2.5", Half Slim 5V ±5%				
Active (Average)	1300mW	1800mW	2000mW	2100mW	
Idle	320 mW	335mW	335mW	335mW	
DEVSLP <sup>(4)</sup>	4.9 mW	4.9mW	4.9mW	4.9mW	
		Environmental			
Operating Temperature	0°C - 70°C				
Non-Operating Temperature	-40°C - 85°C				
Certification	-RoHS -WHQL				
		Reliability & Warranty			
TBW <sup>(5)</sup>	60TB	120TB	250TB	500TB	
MTBF	2,000,000 hours	2,000,000 hours	2,000,000 hours	2,000,000 hours	
UBER	<10 <sup>-15</sup> bits	<10 <sup>-15</sup> bits	<10 <sup>-15</sup> bits	<10 <sup>-15</sup> bits	
		Advanced Features			
- End-to-End Data Protect - Thermal Monitoring - SmartZIP <sup>™</sup>	ion				

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

(2) Performance is based on CrystalDiskMark 6.0.0, 1GB range, QD=32 for sequential read/write and IOMeter, 1GB range, 4K data size, QD=32 for 4K random read/write.

(3) 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.



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