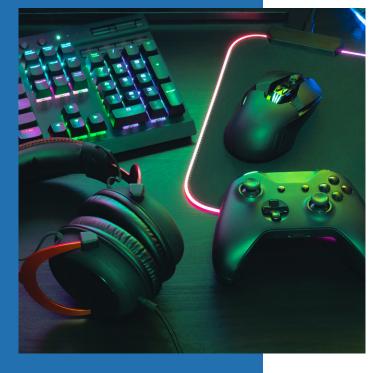


### CONSUMER



# Pinnacle of Gen4 Power and Value

Phison PS5027-E27T is a game-changing DRAM-less PCIe Gen4 SSD controller IC solution that pushes for true PCIe Gen4 bandwidth above 7GB/s and takes cost-centric SSD performance to new heights. On top of its refined power efficiency and advanced cost-effective DRAM-less design, Phison PS5027-E27T practically eliminates the need to choose between high-performance and affordable pricing for PC builders and consumers.

# **Application**

High-performance PCs / Workstations Gaming PCs Gaming Consoles



## **Product Features**

### **Market-leading Performance**

Manufactured using TSMC's 12nm process technology, PS5027-E27T is optimized for a PCle Gen4x4 interface, enabling SSDs with maximized bandwidths and link efficiency. Paired with state-of-the-art 3D NAND flash memory chips, the PS5027-E27T handles application payloads immaculately with minimal latency.

#### **Superb Power Efficiency**

Through its DRAM-less configuration and a range of design enhancements, PS5027-E27T offers up to a 15% reduction in power consumption compared to DRAM-equipped solutions. With advanced power management measures such as support of the L1.2 low power state, PS5027-E27T is able to effectively help motherboards with power reduction during idle periods.

#### **Outstanding Cost-effectiveness**

As a cutting-edge DRAM-less solution, PS5027-E27T not only saturates the PCle Gen4 interface bandwidth as well as any DRAM-boosted solution does, but it does so while retaining compelling cost-savings, creating invaluable design-in opportunities in cost-sensitive consumer markets.

#### Phison 5th Generation LDPC ECC Engine

Phison's proprietary fifth-generation ECC engine based on the LDPC coding scheme effectively maintains NAND flash data reliability. Relative to the prior generation, the 5th Gen engine now operates fully on 4KB-sized frames at high efficiency while supporting future-gen NAND flash from industry partners.

# **CONTROLLER**

# PS5027-E27T

Features	Specifications		
Host Interface	- PCIe 4.0x4 (Bandwidth: 16GT/s x4) - Backward compatible with existing PCIe generation transfer rates - Compliance with PCI Express Base Specification Revision 4.0 - Compliance with NVMe 2.0 - Host Memory Buffer (HMB) support		
Processor	- Single-CPU architecture with built-in 32-bit microcontroller - TSMC 12nm process technology		
Flash Controller	- Up to 4 Channels with 16 Chip Enable (CE) counts - Flash transfer rate up to 3600MT/s - Capacity up to 8TB - Support 3D TLC and QLC NAND flash memory - Compliance with Toggle 5.0 and ONFi 5.0 - Flash I/O operating voltage supply 1.2V		
Data Reliability	- Phison 5th generation LDPC ECC & RAID ECC - SRAM ECC engine - End-to-End Data Path Protection		
Security	- Pyrite - AES 256 - SHA 512 - RSA 4096 - TCG Opal		
Performance	- Sequential Read up to 7400MB/s - Sequential Write up to 6700MB/s - 4K Random Read up to 1200K IOPS - 4K Random Write up to 1200K IOPS		
Power Management	- L1.2 < 5mW		
Temperature Range	- Operating range: 0~70 °C - Storage range: -40~85 °C		
Package	- 228-ball HSFCCSP, 8.0mm x 12.5mm		
Peripheral	- Built-in internal thermal sensor - GPIO pins - Built-in UART function - I2C and SPI for external ROM - I3C supported		



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# **Solutions**

## PS5027-E27T

SSD Solutions		PS5027-E27T		
Capacity (1)	512GB	1TB	2TB	
Interface	PCIe Gen 4.0 x4 NVMe 2.0			
Form Factor		M.2 2280		
NAND Flash	3D TLC	3D TLC	3D TLC	
Performance (2)(3)				
Sequential Read	6700 MB/s	7350 MB/s	7350 MB/s	
Sequential Write	4150 MB/s	5750 MB/s	6500 MB/s	
4K Random Read	550K IOPS	1050K IOPS	1200K IOPS	
4K Random Write	950K IOPS	1100K IOPS	1100K IOPS	
Power Consumption (4)				
Supply Voltage	M.2 3.3V ± 5%			
Active (Average)	TBD	TBD	TBD	
Idle	30 mW	30 mW	30 mW	
Low Power PS4 (L1.2)	5 mW	5 mW	5 mW	
Environmental Environmental				
Operating Temperature	0°C - 70°C			
Non-Operating Temperature	-40°C - 85°C			
Reliability & Warranty				
TBW <sup>(5)</sup>	300 TB	600 TB	1200 TB	
MTBF	1.5 million hours			
UBER	<10 <sup>-16</sup> bits			
Advanced Features				

- End-to-End Data Protection
- TCG Pyrite Support
- Thermal Monitoring



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<sup>(1) 1</sup> GB = 1,000,000,000 bytes

<sup>(2)</sup> Sequential Performance is based on CrystalDiskMark 8.0.4, 1 GB range, QD=8, Thread=1, and test drive set as secondary (3) Random Performance is based on IOMeter, 1 GB range, 4K data size, QD=128, 16 worker, 4K aligned

<sup>(4)</sup> Power consumption is measured during the sequential read and write operations performed by CrystalDiskMark with the conditions described in (2)

<sup>(5)</sup> TBW is Total Bytes Written and the results are obtained in compliance with JESD218 Standards