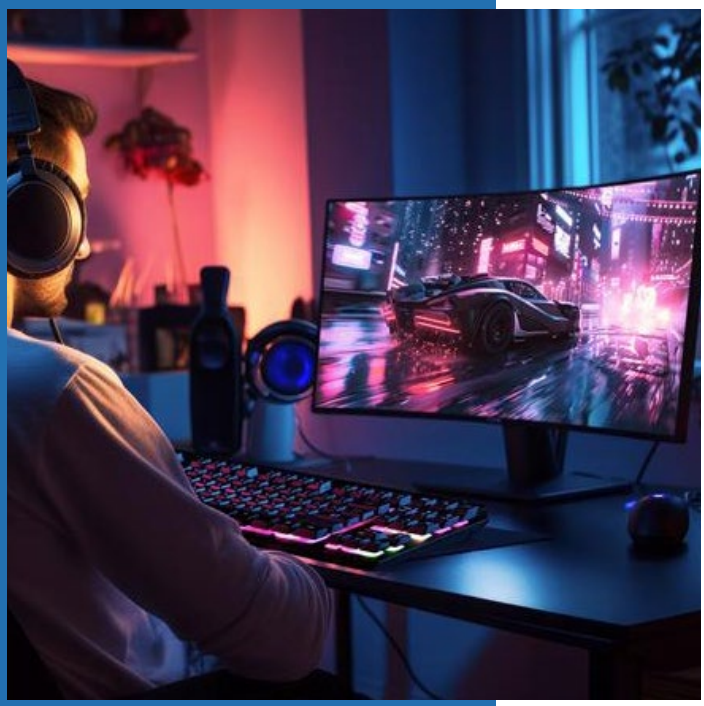
PHISON

CONSUMER



The Weapon of Choice for Serious Gaming and Productivity

Meet the Phison E28: the world's fastest SSD controller. Built for those who refuse to settle, the E28 pushes performance into uncharted territory — powering gamers, creators, and AI innovators with lightning-fast speeds and colossal capacities. From intense battles to heavy workloads to next-gen computation, the E28 doesn't just compete — it dominates, setting a new standard for what storage can be.

Application

High-performance PCs

Workstations

Gaming Systems

AI PCs

Product Features

Market-leading Performance

Built on TSMC's advanced 6nm process, the E28 delivers best-in-class PCIe Gen5x4 experience. Supporting the latest 3D TLC and QLC NAND, it achieves performance up to 14,900 MB/s and 3000K IOPS, powering through all workloads with maximum efficiency and speed.

Phison 8th Generation LDPC ECC Engine

E28 uses Phison's proprietary 8th-generation LDPC ECC engine, which operates on optimized 4K frame sizes with expanded spare area, delivering enhanced error correction and endurance. Support for advanced machine learning algorithms further boosts performance and adaptability, ensuring superior NAND flash reliability across workloads.

Superb Power Efficiency

E28 leverages advanced power management features such as APST and ASPM to minimize energy draw—consuming less than 5mW in the ultra-low L1.2 standby state. Designed for resilience, it operates reliably from 0°C to 70°C and withstands non-operational extremes from -40°C to 85°C.

Cutting Edge Security and Data Recovery

E28 supports TCG Opal 2.0 as well as AES, SHA512, and RSA4096 to provide absolute end-to-end data protection, and is equipped with internal RAID ECC capabilities, ensuring maximum data reliability and recovery.

CONTROLLER

PS5028-E28

CONSUMER

Features	Specifications
Host Interface	- PCIe 5.0x4 (Bandwidth: 32GT/s x4) - Backward compatible with existing PCIe generation transfer rates - Compliance with PCI Express Base Specification Revision 5.1 - Compliance with NVMe 2.0
Processor	- Quad-CPU architecture with built-in 32-bit microcontroller - TSMC 6nm process technology
Flash Controller	- Up to 8 Channels with 32 Chip Enable (CE) counts - Flash transfer rate up to 4CH@4200MT/s; 8CH@3200MT/s - Capacity up to 32TB - Support 3D TLC and QLC NAND flash memory - Compliance with Toggle 5.2 and ONFi 5.2 - Flash I/O operating voltage supply 1.2V
DRAM Controller	- LPDDR4/4X and LPDDR5/5X both supported, transfer rate up to 5600Mbp/s
Data Reliability	- Phison 8th 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 14,900MB/s - Sequential Write up to 14,500MB/s - 4K Random Read up to 3000K IOPS - 4K Random Write up to 3000K IOPS
Power Management	- L1.2 < 5mW
Temperature Range	- Operating range: 0~70 °C - Storage range: -40~85 °C
Package	- 552-ball HSECUF, 16.0 mm x 15.0 mm
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

PS5028-E28

Capacity [1]	1TB	2TB	4TB	8TB
Interface	PCIe Gen 5.0 x4 NVMe 2.0			
Form Factor	M.2 2280			
NAND Flash	3D TLC			
Performance [2] [3]				
Sequential Read	14900 MB/s	14900 MB/s	14900 MB/s	14900 MB/s
Sequential Write	13500 MB/s	14000 MB/s	14000 MB/s	14000 MB/s
4K Random Read	1300K IOPS	2500K IOPS	2600K IOPS	2600K IOPS
4K Random Write	2800K IOPS	3000K IOPS	3000K IOPS	3000K IOPS
Power Consumption [4]				
Supply Voltage	M.2 3.3V ± 5%			
Active (Average)	6200 mW	6500 mW	6500 mW	7000 mW
Idle	30 mW	30 mW	30 mW	50 mW
Low Power PS4 (L1.2)	5 mW	5 mW	5 mW	5 mW
Environmental				
Operating Temperature	0°C - 70°C			
Non-Operating Temperature	-40°C - 85°C			
Reliability & Warranty				
TBW [5]	>700 TB	>1400 TB	>2800 TB	>5600 TB
MTBF	1.5 million hours			
UBER	$<10^{-16}$ bits			
Advanced Features				
- End-to-End Data Protection - TCG Pyrite Support - Thermal Monitoring				

[1] 1 GB = 1,000,000,000 bytes
[2] 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 FIO, 1 GB range, 4K data size, QD=32, Thread=16, 4K aligned
[4] Power consumption is measured during the sequential read and write operations performed by CrystalDiskMark with the conditions described in (2)
[5] TBW is Total Bytes Written and the results are obtained in compliance with JESD218 Standards

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