Consumer

Controller **PS5016-E16**

Features	Specifications
Host Interface	• PCIe Gen 4x4 (Bandwidth: 16GT/s x4) • Compatible with PCIe Gen I(2.5Gbps), Gen II(5Gbps), Gen III(8Gbps), Gen IIII(16Gbps) • Compliance with PCI Express Base Specification Revision 3.1 • Compliance with NVMe 1.3
Processor	• Dual-CPU architecture with built-in 32-bit Arm Cortex-R5 • TSMC 28nm process technology
Flash Controller	• Up to 8 Channels with 32 chips enable (CE) • Flash transfer rate up to 800MT/s • Capacity up to 8TB • Support 3D TLC and QLC NAND flash memory • Compliance with Toggle 3.0 and ONFi 4.0 • Flash I/O operating voltage supply 1.2V/1.8V
DRAM Controller	• DDR4 (8/16 bit, 1600Mbps)
Data Reliability	• Phison 4th generation LDPC ECC & RAID ECC • DDR ECC engine • End-To-End Data Path Protection
Security	• Pyrite • AES256
Performance	• Sequential Read up to 5000MB/s • Sequential Write up to 4400MB/s • 4K Random Read up to 720K IOPS • 4K Random Write up to 750K IOPS
Power Management	• L1.2 < 5mW
Temperature Range	• Operating range: 0~70˚C • Storage range: -40~85˚C • Operating junction temperature: -40~125˚C
Package	• 529-ball TFBGA, 16 mm x 16 mm
Peripheral	• Built-in internal thermal sensor • GPIO pins • Built-in UART function • I2C and SPI for external ROM

PHISON Knows What You Need

Consumer

Solutions

PS5016-E16

Capacity[1]	500GB	1000GB	2000GB	4000GB[6]
Interface	PCIe Gen4x4 NVMe 1.3			
Form Factor	M.2 2280-D2			
NAND Flash	3D TLC / QLC			3D QLC
Performance (Up to)[2, 3, 4]				
Sequential Read	5000 MB/s	5000 MB/s	5000 MB/s	4850 MB/s
Sequential Write	2500 MB/s	4400 MB/s	4400 MB/s	3600 MB/s
4K Random Read	400K IOPS(*a) 450K IOPS(*b)	750K IOPS(*a) 600K IOPS(*b)	750K IOPS(*a) 600K IOPS(*b)	600K IOPS(*b)
4K Random Write	550K IOPS(*a) 550K IOPS(*b)	750K IOPS(*a) 600K IOPS(*b)	750K IOPS(*a) 600K IOPS(*b)	600K IOPS(*b)
Power				
Supply Voltage	M.2 3.3V ± 5%			
Active (Average)[5]	Read : 6.2W Write : 4.6W	Read : 6.1W Write : 5.9W	Read : 6.7W Write : 6.6W	Read : 6.8W Write : 7.6W
Idle				
Low Power PS4 (L1.2)	2 mW	2 mW	2 mW	2.5mW
Temperature				
Operating	0°C - 70°C			
Non-Operating	0°C - 85°C			
Advanced Features	• End-to-End Data Protection • Pyrite Support • Thermal Monitoring			

[1] 1GB = 1,000,000,000 bytes
[2] 1MB/s = 1,000,000 bytes / second
[3] Sequential Performance is based on Crystal Disk Mark 6.0.0, test size 1GiB, and test drive set as secondary
[4] Random Performance is based on IOMeter, 1GB range, 4K data size, QD=128
(*a) Performance is based on Intel Gen3 Z270 + PLDA Gen4 switch
(*b) Performance is based on AMD Gen4 X570 + 8 Core CPU
[5] Measured with Crystal Disk Mark
[6] Customer sample ready now, MP in Jun 2020

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