

Controller

PS5019-E19T

Features	Specifications
Host Interface	<ul style="list-style-type: none"> • 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 1.4 • Host Memory Buffer (HMB) support
Processor	<ul style="list-style-type: none"> • Single-CPU architecture with built-in 32-bit microcontroller • TSMC 28nm process technology
Flash Controller	<ul style="list-style-type: none"> • Up to 4 Channels with 16 chips enable (CE) • Flash Transfer rate up to 1400MT/s • Capacity up to 2TB • Support 3D TLC NAND flash memory • Compliance with Toggle 3.0 and ONFi 4.2 • Flash I/O operating voltage supply 1.2V
DRAM Controller	<ul style="list-style-type: none"> • DRAM-less
Data Reliability	<ul style="list-style-type: none"> • Phison 4th generation LDPC ECC & RAID ECC • End-To-End Data Path Protection
Security	<ul style="list-style-type: none"> • AES 256 • TCG Opal • Pyrite
Performance	<ul style="list-style-type: none"> • Sequential Read up to 3700MB/s • Sequential Write up to 3000MB/s • 4K Random Read up to 440K IOPS • 4K Random Write up to 630K IOPS
Power Management	<ul style="list-style-type: none"> • L1.2 < 3.6mW
Temperature Range	<ul style="list-style-type: none"> • Operating range: 0~70°C • Storage range: -40~85°C • Operating junction temperature: -40~125°C
Package	<ul style="list-style-type: none"> • 198-ball HSTFBGA, 7 mm x 11 mm
Peripheral	<ul style="list-style-type: none"> • Built-in internal thermal sensor • GPIO pins • Built-in UART function • I2C and SPI for external ROM

Solutions

PS5019-E19T

Capacity ¹	512 GB	1024 GB
Interface	PCIe Gen4x4 NVMe 1.3	
Form Factor	M.2 2280/2230	
NAND Flash	WDC Bics 4.5	
Performance (Up to)^{2,3}		
Sequential Read	3500 MB/s	3600 MB/s
Sequential Write	2000 MB/s	3000 MB/s
4K Random Read	380K MB/s	500K MB/s
4K Random Write	450K MB/s	550K MB/s
Power		
Supply Voltage	3.3V ± 5%	
Active (Average) ⁴	4.7W	4.7W
Idle		
Low Power PS4 (L1.2)	2.7mW	2.7mW
Temperature		
Operating	0°C - 70°C	
Non-Operating	-40°C - 85°C	
Advanced Features	<ul style="list-style-type: none"> • DRAM-Less • Pyrite/OPAL Support • End-to-End Data Protection • Thermal Monitoring 	

¹ 1GB = 1,000,000,000 bytes

² 1MB/s = 1,000,000 bytes / second

³ Performance is based on Crystal Disk Mark 6.0.0, test size 1GiB, and test drive set as secondary

⁴ Measured with MobileMark 2014

⁵ Host memory buffer enabled