Controller

PS5021-E21T

Features	Specifications				
Host Interface	PCle Gen 4 x4Compliant with NVMe 1.4				
Processor	Single-CPU architecture with built-in ARM Cortex-R5TSMC 12nm process technology				
Flash Controller	 Up to 4 Channels with 16 chips enable (CE) Flash Transfer rate up to 1600MT/s Capacity up to 4TB Support 3D TLC, and QLC NAND flash memory Compliance with Toggle 4.0 and ONFi 4.2 Flash IO operating voltage supply 1.2V 				
DRAM Controller	· DRAM-less				
Data Reliability	 Phison 4th generation LDPC ECC End-To-End Data Path Protection Smart ECC 2.0 (RAID ECC) 				
Security	· TCG OPAL2.0/Pyrite, AES256, SHA512, RSA4096				
Performance	 Sequential Read up to 5000MB/s Sequential Write up to 4500MB/s 4K Random Read up to 780K IOPS 4K Random Write up to 800K IOPS 				
Power Management	• L1.2 < 2.7mW				
Temperature Range	 Operating range: 0~70°C Storage range: -40~85°C 				
Package	• 198-ball FCCSP, 7.5 mm x 12 mm				
Peripheral	 GPIO pins Built-in UART function I2C and SPI for external ROM SMbus support				



Solutions

PS5021-E21T

Capacity¹ 512GB 1024GB 2048GB 4096GB Interface PCIe Gen 4x4 NVMe 1.4 Form Factor M.22280/2230 NAND Flash Micron N48R (QLC) Performance (Up to) ^{2,3,4} Sequential Read 4500 MB/s 4800 MB/s 4800 MB/s 4800 MB/s 4800 MB/s 4500 MB/s 4							
NAND Flash	Capacity ¹	512GB	1024GB	2048GB	4096GB		
NAND Flash Micron N48R (QLC) Performance (Up to) ^{2.3.4} Sequential Read 4500 MB/s 4800 MB/s 4800 MB/s 4800 MB/s 4800 MB/s 4500 MB/s <th< td=""><td>Interface</td><td colspan="5">PCIe Gen 4x4 NVMe 1.4</td></th<>	Interface	PCIe Gen 4x4 NVMe 1.4					
Performance (Up to)²-3-4 Sequential Read 4500 MB/s 4800 MB/s 4800 MB/s 4800 MB/s 4800 MB/s 4800 MB/s 4800 MB/s 4500 MB/s <td< td=""><td>Form Factor</td><td colspan="5">M.22280/2230</td></td<>	Form Factor	M.22280/2230					
Sequential Read 4500 MB/s 4800 MB/s 4500 MB/s	NAND Flash	Micron N48R (QLC)					
Sequential Write 1650 MB/s 3300 MB/s 4500 MB/s 4500 MB/s	Performance (Up to) ^{2, 3, 4}						
4K Random Read 250K IOPS 500K IOPS 780K IOPS 780K IOPS 4K Random Write 350K IOPS 700K IOPS 800K IOPS 800K IOPS Power Supply Voltage 3.3V ± 5% Active (Average)s 4.6W Idle - Emberature Temperature Operating 0°C - 70°C Non-Operating 0°C - 85°C - End-to-End Data Protection - HMB Support	Sequential Read	4500 MB/s	4800 MB/s	4800 MB/s	4800 MB/s		
## Active (Average)s Continue	Sequential Write	1650 MB/s	3300 MB/s	4500 MB/s	4500 MB/s		
Power Supply Voltage 3.3V ± 5% Active (Average)s 4.6W Idle Low Power PS4 (L1.2) < 2mW Temperature Operating 0°C - 70°C Non-Operating 0°C - 85°C • End-to-End Data Protection • HMB Support	4K Random Read	250K IOPS	500K IOPS	780K IOPS	780K IOPS		
Supply Voltage Active (Average)s Idle Low Power PS4 (L1.2) Temperature Operating O°C - 70°C Non-Operating • End-to-End Data Protection • HMB Support	4K Random Write	350K IOPS	700K IOPS	800K IOPS	800K IOPS		
Active (Average)5 Active (Average)5 Low Power PS4 (L1.2) Temperature Operating Operating O°C - 70°C Non-Operating • End-to-End Data Protection • HMB Support	Power						
Idle Low Power PS4 (L1.2) Temperature Operating O°C - 70°C Non-Operating O°C - 85°C • End-to-End Data Protection • HMB Support	Supply Voltage	3.3V ± 5%					
Low Power PS4 (L1.2) Temperature Operating O°C - 70°C Non-Operating • End-to-End Data Protection • HMB Support	Active (Average)5	4.6W					
Temperature Operating O°C - 70°C Non-Operating • End-to-End Data Protection • HMB Support	Idle						
Operating O°C - 70°C Non-Operating O°C - 85°C • End-to-End Data Protection • HMB Support	Low Power PS4 (L1.2)	<2mW					
Non-Operating O°C - 85°C • End-to-End Data Protection • HMB Support	Temperature						
• End-to-End Data Protection • HMB Support	Operating	0°C - 70°C					
• HMB Support	Non-Operating	0°C-85°C					
	Advanced Features	· HMB Support					



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 1GB, and test drive set as secondary

⁴ Random performance is based on IOMeter, 1GB range, 4K data size, OD = 128

⁵ Measured with Crystal Disk Mark

⁶ Customer sample ready Q3 2021, MP in Q4 2021