

Reliability Summary Report

Product Type: 4-8GB eMMC

Capacity	Part Number
4GB	KTM4GH1AHI01
8GB	KTM8GH2AHI01

1. Product Information

Product No.	Dimensions	Package	JEDEC Standard
KTM4GH1AHI01 KTM8GH2AHI01	11.5 x 13.0 x 0.8mm	153 ball FBGA	eMMC v5.1

2. Test Summary

Product Test Result				
<input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL				
	Test Items	Test Results		Notes
1	Performance	<input checked="" type="checkbox"/> PASS	<input type="checkbox"/> FAIL	
2	Electrical Performance	<input checked="" type="checkbox"/> PASS	<input type="checkbox"/> FAIL	
3	Reliability	<input checked="" type="checkbox"/> PASS	<input type="checkbox"/> FAIL	

3. Performance

3.1. Crystal-Disk Mark Benchmark V5.0.2

Capacity	Sequential (Q32T1)		Random 4KB (Q32T1)		Sequential		Random 4KB	
	Read	Write	Read	Write	Read	Write	Read	Write
4 GB (native) No pre-configuration	178.7	13.79	13.30	3.58	179.5	13.63	11.39	3.46
8 GB (native) No pre-configuration	169.1	28.91	12.77	3.91	171.1	28.94	11.61	3.76

(Unit : MB/s)

3.2. TestMetrix_Performance

Performance Characteristics (MLC Partition Performance)

Capacity	HS400 Performance MLC MODE			
	Seq. Read (MB/s)	Seq. Write (MB/s)	Random Read 4KB (IOPS)	Random Write 4KB (IOPS)
4 GB (native) No pre-configuration	170	15	5345	980
8 GB (native) No pre-configuration	250	65	10000	2000

Capacity	HS200 Performance MLC MODE			
	Seq. Read (MB/s)	Seq. Write (MB/s)	Random Read 4KB (IOPS)	Random Write 4KB (IOPS)
4 GB (native) No pre-configuration	155	15	4890	980
8 GB (native) No pre-configuration	180	65	9800	2000

Capacity	DDR52 Performance MLC MODE			
	Seq. Read (MB/s)	Seq. Write (MB/s)	Random Read 4KB (IOPS)	Random Write 4KB (IOPS)
4 GB (native) No pre-configuration	95	15	4610	980
8 GB (native) No pre-configuration	95	65	8000	2200

4. Electrical Performance

4.1. Power Consumption

Test Item	Capacity	MLC					
		ICCQ (mA)			ICC (mA)		
		DDR52	HS200	HS400	DDR52	HS200	HS400
Write Current	4 GB (native) No pre-configuration	43	43	43	32	33	33
Read Current		145	100	110	49	89	92
Idle		470 (uA)			110 (uA)		
Write Current	8 GB (native) No pre-configuration	80	80	82	42	58	59
Read Current		145	130	144	47	88	111
Idle		470 (uA)			110 (uA)		

(1) Bus in x8 I/O mode; 25°C; V_{CCQ} = 1.95 V in HS200 and HS400 V_{CCQ} = 3.6V in DDR52. The testing result is measured by TestMetrix VTE-4100.

5. Reliability

Test Item	Test Reference	Sample Size	Test Result
Pre-condition Test (PC)	JEDEC/ JESD22 A113	214	Pass
High Acceleration Stress Test (HAST with bias)	JEDEC/ JESD22 A110	74	Pass
High Acceleration Stress Test (HAST unbiased)	JEDEC/ JESD22 A118	70	Pass
Temperature Cycling Test (TCT)	JEDEC/ JESD22 A104	69	Pass
High Temperature Storage Life Test (HTSL)	JEDEC/ JESD22 A103	74	Pass

Test Item	Test Reference	Sample Size	Test Result
Nonvolatile Memory Cycling Endurance (NVCE) and Post Cycling High Temperature Data Retention (PCHTDR)	JEDEC/ JESD22 A117	231	Pass
Nonvolatile Memory Cycling Endurance (NVCE) and Post Cycling Low Temperature Data Retention (LTDR)	JEDEC/ JESD22 A117	231	Pass

Test Item	Test Reference	Sample Size	Test Result
ESD Test (Human-Body Model, HBM)	JEDEC/ JS-001	18	Pass
ESD Test (Charged Device Model, CDM)	JEDEC/ JS-002	18	Pass
Latch Up	JEDEC/ JESD78	6	Pass