SERIAL PRESENCE DETECT

M471A1K43BB1-CRC00

Organization : 1Gb x 64
Composition : 1Gb x8 *8ea
Used component part # : K4A8G085WB-BCRCM00
# of rows in module : 1Rows
# of banks in component : 4Banks 4BG
Feature : 30.0mm height & Single sided component
Refresh : 8K/64ms
Bin Sort : RC(DDR4 2400@CL=17)
RCD Vendor and Revision : N/A

Byte #	Function Described	Function Supported	Hex Value	Note
		CRC00	CRC00	
0	Number of Bytes Used / Number of Bytes in SPD Device / CRC Coverage	512B Total, 384B Used	23h	
1	SPD Revision	Ver 1.1	11h	
2	Key Byte / DRAM Device Type	DDR4 SDRAM	0Ch	
3	Key Byte / Module Type	SODIMM	03h	
4	SDRAM Density and Banks	8Gb, 4BG&4Banks	85h	
5	SDRAM Addressing	Row bits 16, Column bits 10	21h	
6	SDRAM Device Type	Monolithinc Device	00h	
7	SDRAM Optional Features	Unlimited MAC	08h	
8	SDRAM Thermal and Refresh Option	Reserved	00h	
9	Other SDRAM Optional Features	sPPR supported	60h	
10	Reserved	Reserved	00h	
11	Module Nominal Voltage, VDD	1.2V	03h	
12	Module Organization	1Rx8	01h	
13	Module Memory Bus Width	64bit, Non-ECC	03h	
14	Module Thermal Sensor	without TS	00h	
15~16	Reserved	Reserved	00h	
17	Timebases	MTB 125ps, FTB 1ps	00h	
18	SDRAM Minimum Cycle Time(tckavg min)	0.833ns	07h	
19	SDRAM Minimum Cycle Time(tckavg max)	1.6ns	0Dh	
20	Cas Latency Supported, First Byte	10,11,12,13,14,15,16,17,18	F8h	
21	Cas Latency Supported, Second Byte	10,11,12,13,14,15,16,17,18	0Fh	
22	Cas Latency Supported, Third Byte	10,11,12,13,14,15,16,17,18	00h	
23	Cas Latency Supported, Fourth Byte	10,11,12,13,14,15,16,17,18	00h	
24	Minimum Cas Latency Time (tAAmin)	13.75ns	6Eh	
25	Minimum RAS to CAS Delay Time(tRCD min)	13.75ns	6Eh	
26	Minimum Raw Precharge Delay Time(tRP min)	13.75ns	6Eh	
27	Upper Nibbles for tRASmin and tRCmin	tRAS=32ns, tRC=45.75ns	11h	
28	Minimum Active to Precharge Delay Time (tRASmin), Least Significant Byte	tRAS=32ns	00h	
29	Minimum Active to Active/Refresh Delay Time (tRCmin), Least Significant Byte	tRC=45.75ns	6Eh	
30	Minimum Refresh Recovery Delay Time (tRFC1min), LSB	350ns	F0h	
31	Minimum Refresh Recovery Delay Time (tRFC1min), MSB	350ns	0Ah	
32	Minimum Refresh Recovery Delay Time (tRFC2min), LSB	260ns	20h	
33	Minimum Refresh Recovery Delay Time (tRFC2min), MSB	260ns	08h	
34	Minimum Refresh Recovery Delay Time (tRFC4min), LSB	160ns	00h	
35	Minimum Refresh Recovery Delay Time (tRFC4min), MSB	160ns	05h	
36	Minimum Four Active Window Time (tFAWmin), Most Significant Nibble	21ns	00h	
37	Minimum Four Activate Window Time (tFAWmin), Least Significant Byte	21ns	A8h	
38	Minimum Active to Active Delay Time (tRRD_smin), different Bank Group	3.3ns	1Bh	
39	Minimum Active to Active Delay Time (tRRD_Lmin), Same Bank Group	4.9ns	28h	
40	Minimum CAS to CAS Delay Time(tCCD_Lmin), same bank group	5ns	28h	

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Byte #	Function Described	Function Supported	Hex Value	Note
		CRC00	CRC00	
41	Upper Nibble for tWRmin	15ns	00h	
42	Minimum Write Recovery Time(tWRmin)	15ns	78h	
43	Upper Nibbles for tWTRmin	2.5ns	00h	
44	Minimum Write to Read Time(tWTR_smin), different bank group	2.5ns	14h	
45	Minimum Write to Read Time(tWTR_Lmin), same bank group	7.5ns	3Ch	
46~59	Reserved	Reserved	00h	
60	Connector to SDRAM Bit Mapping	DQ0-3(NEEC SoDIMM R/C A1)	0Ch	
61	Connector to SDRAM Bit Mapping	DQ4-7(NECC SoDIMM R/C A1)	2Bh	
62	Connector to SDRAM Bit Mapping	DQ 8-11(NECC SoDIMM R/C A1)	2Dh	
63	Connector to SDRAM Bit Mapping	DQ 12-15(NECC SoDIMM R/C A1)	04h	
64	Connector to SDRAM Bit Mapping	DQ 16-19(NECC SoDIMM R/C A1)	16h	
65	Connector to SDRAM Bit Mapping	DQ 20-23(NECC SoDIMM R/C A1)	35h	
66	Connector to SDRAM Bit Mapping	DQ 24-27(NECC SoDIMM R/C A1)	23h	
67	Connector to SDRAM Bit Mapping	DQ 28-31(NECC SoDIMM R/C A1)	0Dh	
68	Connector to SDRAM Bit Mapping	CB0-3(NECC)	00h	
69	Connector to SDRAM Bit Mapping	CB4-7(NECC)	00h	
70	Connector to SDRAM Bit Mapping	DQ 32-35(NECC SoDIMM R/C A1)	2Ch	
71	Connector to SDRAM Bit Mapping	DQ 36-39(NECC SoDIMM R/C A1)	0Bh	
72	Connector to SDRAM Bit Mapping	DQ 40-43(NECC SoDIMM R/C A1)	03h	
73	Connector to SDRAM Bit Mapping	DQ 44-47(NECC SoDIMM R/C A1)	24h	
74	Connector to SDRAM Bit Mapping	DQ 48-51(NECC SoDIMM R/C A1)	35h	
75	Connector to SDRAM Bit Mapping	DQ 52-55(NECC SoDIMM R/C A1)	0Ch	
76	Connector to SDRAM Bit Mapping	DQ 56-59(NECC SoDIMM R/C A1)	03h	
77	Connector to SDRAM Bit Mapping	DQ 60-63(NECC SoDIMM R/C A1)	2Dh	
78~116	Reserved	reserved	00h	
117	Fine Offset for Minimum CAS to CAS Delay Time(tCCD_Lmin), same bank group	5ns	00h	
118	Fine Offset for Minimum Activate to Acticate Delay Time(tRRD_L_min), Same Bank Group	4.9ns	9Ch	
119	Fine Offset for Minimum Activate to Acticate Delay Time(tRRD_Smin), Different Bank Group	3.3ns	B5h	
120	Fine Offset for Minimum Activate to Acticate/Refresh Delay Time(tRCmin)	45.75ns	00h	
121	Fine Offset for Minimum Row Precharge Delay Time(tRPmin)	13.75ns	00h	
122	Fine Offset for Minimum RAS to CAS Delay Time(tRCD_min)	13.75ns	00h	
123	Fine Offset for Minimum CAS Latency Delay Time(tAA_min)	13.75ns	00h	
124	Fine Offset for DRAM Maximum Cycle Time(tCKAVG_max)	1.6ns	E7h	
125	Fine Offset for DRAM Minimum Cycle Time(tCKAVG_min)	0.833ns	D6h	
126	Cyclical Redundancy Code	-	3Eh	
127	Cyclical Redundancy Code	-	FEh	
128	Raw Card Extension, Module Nominal Height	R/C A 1.0,30mm	0Fh	
129	Module Maximum Thickness	(Each side)1<thickness&l t;2mm	11h	
130	Reference Raw Card Used	R/C A 1.0	20h	
131	Address Mapping from Edge Connector to DRAM	Standard	00h	
132~253	Reserved	Reserved	00h	
254	Cyclical Redundancy Code	-	EFh	
255	Cyclical Redundancy Code	-	55h	
256~319	Reserved	Reserved	00h	
320	Module Manufacturer's ID Code, Least Significant Byte	Samsung	80h	
321	Module Manufacturer's ID Code, Most Significant Byte	Samsung	CEh	

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		CRC00	CRC00	
322	Module Manufactoring Location	Samsung	00h	
323	Module Manufactoring Date	Year	00h	
324	Module Manufactoring Date	Week	00h	
325	Module Serial Number	-	00h	
326	Module Serial Number	-	00h	
327	Module Serial Number	-	00h	
328	Module Serial Number	-	00h	
329	Module Part Number	M	4Dh	
330	Module Part Number	4	34h	
331	Module Part Number	7	37h	
332	Module Part Number	1	31h	
333	Module Part Number	A	41h	
334	Module Part Number	1	31h	
335	Module Part Number	K	4Bh	
336	Module Part Number	4	34h	
337	Module Part Number	3	33h	
338	Module Part Number	B-die	42h	
339	Module Part Number	B	42h	
340	Module Part Number	1	31h	
341	Module Part Number	-	2Dh	
342	Module Part Number	C	43h	
343	Module Part Number	R	52h	
344	Module Part Number	C	43h	
345	Module Part Number	Blank	20h	
346	Module Part Number	Blank	20h	
347	Module Part Number	Blank	20h	
348	Module Part Number	Blank	20h	
349	Module Revision Code	0.0	00h	
350	DRAM Manufacturer's ID Code, Least Sgnificant Byte	SAMSUNG	80h	
351	DRAM Manufacturer's ID Code, Most Sgnificant Byte	SAMSUNG	CEh	
352	DRAM Stepping	Ver 0.0	00h	
353~381	Module Manufacturer's Specific Data	Reserved	00h	
382~383	Reserved	Reserved	00h	
384~511	End User Programmable	Reserved	00h	

Note : 1. ??? ?????.
2. ??? ?????.
3. ??? ?????.