

Serial Presence Detect

Byte	Function described	UH T0		VK T0		WM T0		XN T0	
		Function support	HEX	Function support	HEX	Function support	HEX	Function support	HEX
0	Number of Serial PD Bytes Written / SPD Device Size	SPD Bytes Used : 384 / SPD Bytes Total : 512	23	SPD Bytes Used : 384 / SPD Bytes Total : 512	23	SPD Bytes Used : 384 / SPD Bytes Total : 512	23	SPD Bytes Used : 384 / SPD Bytes Total : 512	23
1	SPD Revision	Rev. 1.1	11	Rev. 1.1	11	Rev. 1.1	11	Rev. 1.1	11
2	Key Byte / DRAM Device Type	DDR4 SDRAM	0C	DDR4 SDRAM	0C	DDR4 SDRAM	0C	DDR4 SDRAM	0C
3	Key Byte / Module Type	ECC SO-DIMM	09	ECC SO-DIMM	09	ECC SO-DIMM	09	ECC SO-DIMM	09
4	SDRAM Density and Banks	4BG/4BK/8Gb	85	4BG/4BK/8Gb	85	4BG/4BK/8Gb	85	4BG/4BK/8Gb	85
5	SDRAM Addressing	1610	21	1610	21	1610	21	1610	21
6	Primary SDRAM Package Type	Flipchip SDP	00	Flipchip SDP	00	Flipchip SDP	00	Flipchip SDP	00
7	SDRAM Optional Features	Unlimited MAC	08	Unlimited MAC	08	Unlimited MAC	08	Unlimited MAC	08
8	SDRAM Thermal and Refresh Options	Reserved	00	Reserved	00	Reserved	00	Reserved	00
9	Other SDRAM Optional Features (PPR)	hPPR, sPPR supported	60	hPPR, sPPR supported	60	hPPR, sPPR supported	60	hPPR, sPPR supported	60
10	Secondary SDRAM Package Type	Blank	00	Blank	00	Blank	00	Blank	00
11	Module Nominal Voltage, VDD	1.2V	03	1.2V	03	1.2V	03	1.2V	03
12	Module Organization	1Rx8	01	1Rx8	01	1Rx8	01	1Rx8	01
13	Module Memory Bus Width	LPx72	08	LPx72	08	LPx72	08	LPx72	08
14	Module Thermal Sensor	Termal sensor incorporated	80	Termal sensor incorporated	80	Termal sensor incorporated	80	Termal sensor incorporated	80
15	Extended Module Type	Reserved	00	Reserved	00	Reserved	00	Reserved	00
16	Reserved	Blank	00	Blank	00	Blank	00	Blank	00
17	Timebases	MTB : 125ps, FTB : 1ps	00	MTB : 125ps, FTB : 1ps	00	MTB : 125ps, FTB : 1ps	00	MTB : 125ps, FTB : 1ps	00
18	SDRAM Minimum Cycle Time (tCKAVGmin)	0.833ns	07	0.75ns	06	0.682ns	06	0.625ns	05
19	SDRAM Maximum Cycle Time (tCKAVGmax)	1.6ns	0D	1.6ns	0D	1.6ns	0D	1.6ns	0D
20	CAS Latencies Supported, First Byte	14, 13, 12, 11, 10	F8	10, 11, 12, 13, 14	F8	10, 11, 12, 13, 14	F8	10, 11, 12, 13, 14	F8
21	CAS Latencies Supported, Second Byte	18, 17, 16, 15	0F	15, 16, 17, 18, 19, 20	3F	15, 16, 17, 18, 19, 20, 21, 22	FF	15, 16, 17, 18, 19, 20, 21, 22	FF
22	CAS Latencies Supported, Third Byte		00		00		00	24	02
23	CAS Latencies Supported, Fourth Byte		00		00		00		00
24	Minimum CAS Latency Time (tAmin)	13.75ns	6E	13.75ns	6E	13.75ns	6E	13.75ns	6E
25	Minimum RAS to CAS Delay Time (tRCDmin)	13.75ns	6E	13.75ns	6E	13.75ns	6E	13.75ns	6E
26	Minimum RAS to CAS Delay Time (tRPMin)	13.75ns	6E	13.75ns	6E	13.75ns	6E	13.75ns	6E
27	Upper Nibbles for tRASmin and tRCmin	32ns / 45.75ns	11	32ns / 45.75ns	11	32ns / 45.75ns	11	32ns / 45.75	11
28	tRASmin, Least Significant Byte	32ns	00	32ns	00	32ns	00	32	00
29	tRCmin, Least Significant Byte	45.75ns	6E	45.75ns	6E	45.75ns	6E	45.75ns	6E
30	tRFC1min, LSB	350ns	F0	350ns	F0	350ns	F0	350ns	F0
31	tRFC1min, MSB	350ns	0A	350ns	0A	350ns	0A	350ns	0A
32	tRFC2min, LSB	260ns	20	260ns	20	260ns	20	260ns	20
33	tRFC2min, MSB	260ns	08	260ns	08	260ns	08	260ns	08
34	tRFC3min, LSB	160ns	00	160ns	00	160ns	00	160ns	00
35	tRFC3min, MSB	160ns	05	160ns	05	160ns	05	160ns	05
36	Upper Nibble for tFAW	21ns	00	21ns	00	21ns	00	21ns	00
37	tFAWmin, LSB	21ns	A8	21ns	A8	21ns	A8	21ns	A8
38	tRRD_Smin	3.3ns	1B	3ns	18	2.7ns	16	2.5ns	14
39	tRRD_L min	4.90ns	28	4.90ns	28	4.90ns	28	4.90ns	28
40	tCCD_Lmin, same bank group	5.0ns	28	5ns	28	5ns	28	5ns	28
41	tWRmin Upper Nibbles	15ns	00	15ns	00	15ns	00	15ns	00
42	tWRmin	15ns	78	15ns	78	15ns	78	15ns	78
43	tWTRmin Upper Nibbles	2.5ns/7.5ns	00	2.5ns/7.5ns	00	2.5ns/7.5ns	00	2.5ns/7.5ns	00
44	tWTR_Smin	2.5ns	14	2.5ns	14	2.5ns	14	2.5ns	14
45	tWTR_Lmin	7.5ns	3C	7.5ns	3C	7.5ns	3C	7.5ns	3C
46~59	Reserved	Blank	00	Blank	00	Blank	00	Blank	00
60	Connector to SDRAM Bit Mapping	DQ0-3	0C	DQ0-3	0C	DQ0-3	0C	DQ0-3	0C
61	Connector to SDRAM Bit Mapping	DQ4-7	2B	DQ4-7	2B	DQ4-7	2B	DQ4-7	2B
62	Connector to SDRAM Bit Mapping	DQ8-11	2D	DQ8-11	2D	DQ8-11	2D	DQ8-11	2D
63	Connector to SDRAM Bit Mapping	DQ12-15	04	DQ8-11	04	DQ8-11	04	DQ8-11	04
64	Connector to SDRAM Bit Mapping	DQ16-19	16	DQ16-19	16	DQ16-19	16	DQ16-19	16
65	Connector to SDRAM Bit Mapping	DQ20-23	35	DQ20-23	35	DQ20-23	35	DQ20-23	35
66	Connector to SDRAM Bit Mapping	DQ24-27	23	DQ24-27	23	DQ24-27	23	DQ24-27	23
67	Connector to SDRAM Bit Mapping	DQ28-31	0D	DQ28-31	0D	DQ28-31	0D	DQ28-31	0D
68	Connector to SDRAM Bit Mapping	CB0-3	36	CB0-3	36	CB0-3	36	CB0-3	36
69	Connector to SDRAM Bit Mapping	CB4-7	0C	CB4-7	0C	CB4-7	0C	CB4-7	0C
70	Connector to SDRAM Bit Mapping	DQ32-35	2C	DQ32-35	2C	DQ32-35	2C	DQ32-35	2C
71	Connector to SDRAM Bit Mapping	DQ36-39	0B	DQ36-39	0B	DQ36-39	0B	DQ36-39	0B
72	Connector to SDRAM Bit Mapping	DQ40-43	03	DQ40-43	03	DQ40-43	03	DQ40-43	03
73	Connector to SDRAM Bit Mapping	DQ44-47	24	DQ44-47	24	DQ44-47	24	DQ44-47	24
74	Connector to SDRAM Bit Mapping	DQ48-51	35	DQ48-51	35	DQ48-51	35	DQ48-51	35
75	Connector to SDRAM Bit Mapping	DQ52-55	0C	DQ52-55	0C	DQ52-55	0C	DQ52-55	0C
76	Connector to SDRAM Bit Mapping	DQ56-59	03	DQ56-59	03	DQ56-59	03	DQ56-59	03
77	Connector to SDRAM Bit Mapping	DQ60-63	2D	DQ60-63	2D	DQ60-63	2D	DQ60-63	2D
78~116	Reserved	Blank	00	Blank	00	Blank	00	Blank	00
117	Fine offset for tCCD_Lmin, same bank group	5.0ns	00	5ns	00	5ns	00	5ns	00
118	tRRD_L min offset	4.90ns	9C	4.90ns	9C	4.90ns	9C	4.90ns	9C
119	tRRD_Smin offset	3.3ns	B5	3.0ns	00	2.7ns	CE	2.5ns	00
120	Fine offset for tRCmin	46.75ns	00	45.75ns	00	45.75ns	00	45.75ns	00
121	Fine offset for tRPMin	13.75ns	00	13.75ns	00	13.75ns	00	13.75ns	00
122	Fine offset for tRCDmin	13.75ns	00	13.75ns	00	13.75ns	00	13.75ns	00
123	Fine offset for tAmin	13.75ns	00	13.75ns	00	13.75ns	00	13.75ns	00
124	Fine offset for tCKAVGmax	1.6ns	E7	1.6ns	E7	1.6ns	E7	1.6ns	E7
125	Fine offset for tCKAVGmin	0.833ns	D6	0.75ns	00	0.682ns	00	0.625ns	00
126	CRC for Base Configuration Section, LSB	CRC cover 0-125 byte	B7	CRC cover 0-125 byte	59	CRC cover 0-125 byte	8C	CRC cover 0-125 byte	6D
127	CRC for Base Configuration Section, MSB	CRC cover 0-125 byte	05	CRC cover 0-125 byte	64	CRC cover 0-125 byte	7A	CRC cover 0-125 byte	85
128	RC Extension, Module Nominal Height	30.00	0F	30.00	0F	30.00	0F	30.00	0F
129	Module Maximum Thickness	1.2/1.2	11	1.2/1.2	11	1.2/1.2	11	1.2/1.2	11
130	Reference Row Cord Used	D1	23	D1	23	D1	23	D1	23
131	Address Mapping from Edge Connector to x_DRAM	Standard	00	Standard	00	Standard	00	Standard	00
132	Reserved	Blank	00	Blank	00	Blank	00	Blank	00
133	Reserved	Blank	00	Blank	00	Blank	00	Blank	00
134	Reserved	Blank	00	Blank	00	Blank	00	Blank	00
135	Reserved	Blank	00	Blank	00	Blank	00	Blank	00
136	Reserved	Blank	00	Blank	00	Blank	00	Blank	00
137	Reserved	Blank	00	Blank	00	Blank	00	Blank	00
138	Reserved	Blank	00	Blank	00	Blank	00	Blank	00
139	Reserved	Blank	00	Blank	00	Blank	00	Blank	00
140~154	Reserved	Must be coded as 0x00	00	Must be coded as 0x00	00	Must be coded as 0x00	00	Must be coded as 0x00	00
155~253	Reserved	Must be coded as 0x00	00	Must be coded as 0x00	00	Must be coded as 0x00	00	Must be coded as 0x00	00
254	CRC for Module Specific Section, LSB	CRC cover 128-253 byte	BE	CRC cover 128-253 byte	BE	CRC cover 128-253 byte	BE	CRC cover 128-253 byte	BE
255	CRC for Module Specific Section, MSB	CRC cover 128-253 byte	A2	CRC cover 128-253 byte	A2	CRC cover 128-253 byte	A2	CRC cover 128-253 byte	A2
256~319	Reserved	Blank	00	Blank	00	Blank	00	Blank	00
320	Module Manufacturer's ID Code, LSB	SK hynix	80	SK hynix	80	SK hynix	80	SK hynix	80
321	Module Manufacturer's ID Code, MSB	SK hynix	AD	SK hynix	AD	SK hynix	AD	SK hynix	AD
322	Module Manufacturing Location	SK hynix	01	SK hynix	01	SK hynix	01	SK hynix	01
323	Module Manufacturing Date	Variable	00	Variable	00	Variable	00	Variable	00
324	Module Manufacturing Date	Variable	00	Variable	00	Variable	00	Variable	00
325~328	Module Serial Number	Undefined	00	Undefined	00	Undefined	00	Undefined	00
329	Module Part Number	H	48	H	48	H	48	H	48
330	Module Part Number	M	4D	M	4D	M	4D	M	4D
331	Module Part Number	A	41	A	41	A	41	A	41
332	Module Part Number	8Gb	38	8Gb	38	8Gb	38	8Gb	38
333	Module Part Number	8Gb	31	8Gb	31	8Gb	31	8Gb	31
334	Module Part Number	8Gb	47	8Gb	47	8Gb	47	8Gb	47
335	Module Part Number	SODIMM	53	SODIMM	53	SODIMM	53	SODIMM	53
336	Module Part Number	LPx72	37	LPx72	37	LPx72	37	LPx72	37
337	Module Part Number	C die	43	C die	43	C die	43	C die	43
338	Module Part Number	Flipchip SDP	4A	Flipchip SDP	4A	Flipchip SDP	4A	Flipchip SDP	4A
339	Module Part Number	Lead & Halogen Free	52	Lead & Halogen Free	52	Lead & Halogen Free	52	Lead & Halogen Free	52
340	Module Part Number	s8	38	s8	38	s8	38	s8	38
341	Module Part Number	Commercial Temp & 1.2V	4E	Commercial Temp & 1.2V	4E	Commercial Temp & 1.2V	4E	Commercial Temp & 1.2V	4E
342	Module Part Number	-	2D	-	2D	-	2D	-	2D
343	Module Part Number	2400T	55	2666V	56	2933Y	57	3200AA	58
344	Module Part Number	2400T	48	2666V	48	2933Y	48	3200AA	48
345	Module Part Number	Blank Space	20	Blank Space	20	Blank Space	20	Blank Space	20
346	Module Part Number	Blank Space	20	Blank Space	20	Blank Space	20	Blank Space	20
347	Module Part Number	Blank Space	20	Blank Space	20	Blank Space	20	Blank Space	20
348	Module Part Number	Blank Space	20	Blank Space	20	Blank Space	20	Blank Space	20
349	Module Revision Code	Revision 0	00	Revision 0	00	Revision 0	00	Revision 0	00
350	DRAM Manufacturer's ID code, LSB	SK hynix	80	SK hynix	80	SK hynix	80	SK hynix	80
351	DRAM Manufacturer's ID code, MSB	SK hynix	AD	SK hynix	AD	SK hynix	AD	SK hynix	AD
352	DRAM Stepping	Undefined	FF	Undefined	FF	Undefined	FF	Undefined	FF
353~381	Module Manufacturer's Specific Data		00		00		00		00
382	Reserved	Blank	00	Blank	00	Blank	00	Blank	00
383	Reserved	Blank	00	Blank	00	Blank	00	Blank	00
384~511	End User Programmable		00		00		00		00