DDR4 SDRAM SODIMM Addendum

MTA18ASF2G72HBZ – 16GB

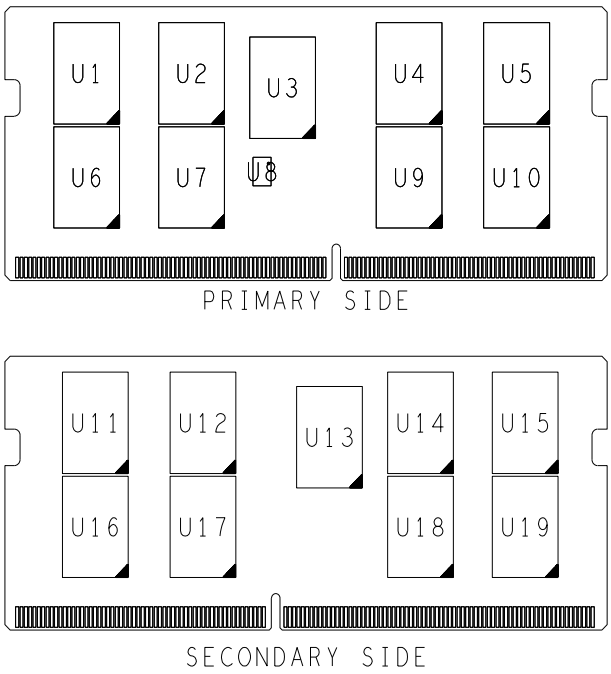
Introduction

Information provided here is in addition to or supersedes information provided in the Micron DDR4 SODIMM Core data sheet.

Features

- DDR4 functionality and operations supported as defined in the component data sheet
- Features and specifications supported in the Micron DDR4 SODIMM Core data sheet
- 260-pin, small-outline dual in-line memory module (SODIMM)
- Fast data transfer rate: PC4-3200
- 16GB (2 Gig x 72)
- Data bus inversion (DBI) for data bus
- Supports ECC error detection and correction
- Dual-rank
- Onboard I^2C temperature sensor with integrated serial presence-detect (SPD) EEPROM
- 16 internal banks; 4 groups of 4 banks each

Figure 1: 260-Pin SODIMM



Options	Marking
• Operating temperature	
– Extended ($-40°C \le T_{OPER} \le 105°C$)	B
• Package	
– 260-pin DIMM (Green)	Z
• Frequency/CAS latency	
– 0.625ns @ CL = 22 (DDR4-3200)	-3G2

Table 1: Addressing

Parameter	16GB
Row address	64K A[15:0]
Column address	1K A[9:0]
Device bank group address	4 BG[1:0]
Device bank address per group	4 BA[1:0]
Device configuration	8Gb (1 Gig x 8), 16 banks
Module rank address	CS_n[1:0]

Table 2: Part Numbers and Timing Parameters – 16GB Modules

Base device: MT40A1G8,[1] 8Gb DDR4 SDRAM

Part Number[2]	Module Density	Configuration	Module Bandwidth	Memory Clock/ Data Rate	Clock Cycles ($CL\text{-}_nRCD\text{-}_nRP$)
MTA18ASF2G72HBZ-3G2__	16GB	2 Gig x 72	25.6 GB/s	0.625ns/3200 MT/s	22-22-22

Notes:
1. The data sheet for the base device can be found on Micron's web site.
2. All part numbers end with a two-place code (not shown) that designates component and PCB revisions. Consult factory for current revision codes. Example: MTA18ASF2G72HBZ-3G2E1.

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DQ Maps

Table 3: Component-to-Module DQ Map, Front

Component Reference Number	Component DQ	Module DQ	Module Pin Number	Component Reference Number	Component DQ	Module DQ	Module Pin Number
U1	0	11	42	U2	0	27	84
	1	8	28		1	25	71
	2	10	41		2	26	83
	3	9	29		3	24	70
	4	14	38		4	31	80
	5	12	24		5	29	67
	6	15	37		6	30	79
	7	13	25		7	28	66
U3	0	CB3	105	U4	0	34	187
	1	CB0	92		1	33	173
	2	CB2	101		2	35	186
	3	CB1	91		3	32	174
	4	CB6	100		4	39	182
	5	CB4	88		5	36	170
	6	CB7	104		6	38	183
	7	CB5	87		7	37	169
U5	0	51	229	U6	0	2	20
	1	49	215		1	0	8
	2	50	228		2	3	21
	3	48	216		3	1	7
	4	55	225		4	6	16
	5	53	212		5	4	4
	6	54	224		6	7	17
	7	52	211		7	5	3
U7	0	22	58	U9	0	42	207
	1	20	46		1	40	195
	2	23	59		2	43	208
	3	21	45		3	41	194
	4	18	62		4	46	203
	5	16	50		5	45	190
	6	19	63		6	47	204
	7	17	49		7	44	191

Table 3: Component-to-Module DQ Map, Front (Continued)

Component Reference Number	Component DQ	Module DQ	Module Pin Number	Component Reference Number	Component DQ	Module DQ	Module Pin Number
U10	0	59	250				
	1	57	236				
	2	58	249				
	3	56	237				
	4	63	246				
	5	61	233				
	6	62	245				
	7	60	232				

Table 4: Component-to-Module DQ Map, Back

Component Reference Number	Component DQ	Module DQ	Module Pin Number	Component Reference Number	Component DQ	Module DQ	Module Pin Number
U11	0	49	215	U12	0	33	173
	1	51	229		1	34	187
	2	48	216		2	32	174
	3	50	228		3	35	186
	4	53	212		4	36	170
	5	55	225		5	39	182
	6	52	211		6	37	169
	7	54	224		7	38	183
U13	0	CB0	92	U14	0	25	71
	1	CB3	105		1	27	84
	2	CB1	91		2	24	70
	3	CB2	101		3	26	83
	4	CB4	88		4	29	67
	5	CB6	100		5	31	80
	6	CB5	87		6	28	66
	7	CB7	104		7	30	79

Table 4: Component-to-Module DQ Map, Back (Continued)

Component Reference Number	Component DQ	Module DQ	Module Pin Number	Component Reference Number	Component DQ	Module DQ	Module Pin Number
U15	0	8	28	U16	0	57	236
	1	11	42		1	59	250
	2	9	29		2	56	237
	3	10	41		3	58	249
	4	12	24		4	61	233
	5	14	38		5	63	246
	6	13	25		6	60	232
	7	15	37		7	62	245
U17	0	40	195	U18	0	20	46
	1	42	207		1	22	58
	2	41	194		2	21	45
	3	43	208		3	23	59
	4	45	190		4	16	50
	5	46	203		5	18	62
	6	44	191		6	17	49
	7	47	204		7	19	63
U19	0	0	8				
	1	2	20				
	2	1	7				
	3	3	21				
	4	4	4				
	5	6	16				
	6	5	3				
	7	7	17				

I_{DD} Specifications

Table 5: DDR4I_{DD} Specifications and Conditions – 16GB (Die Revision E)

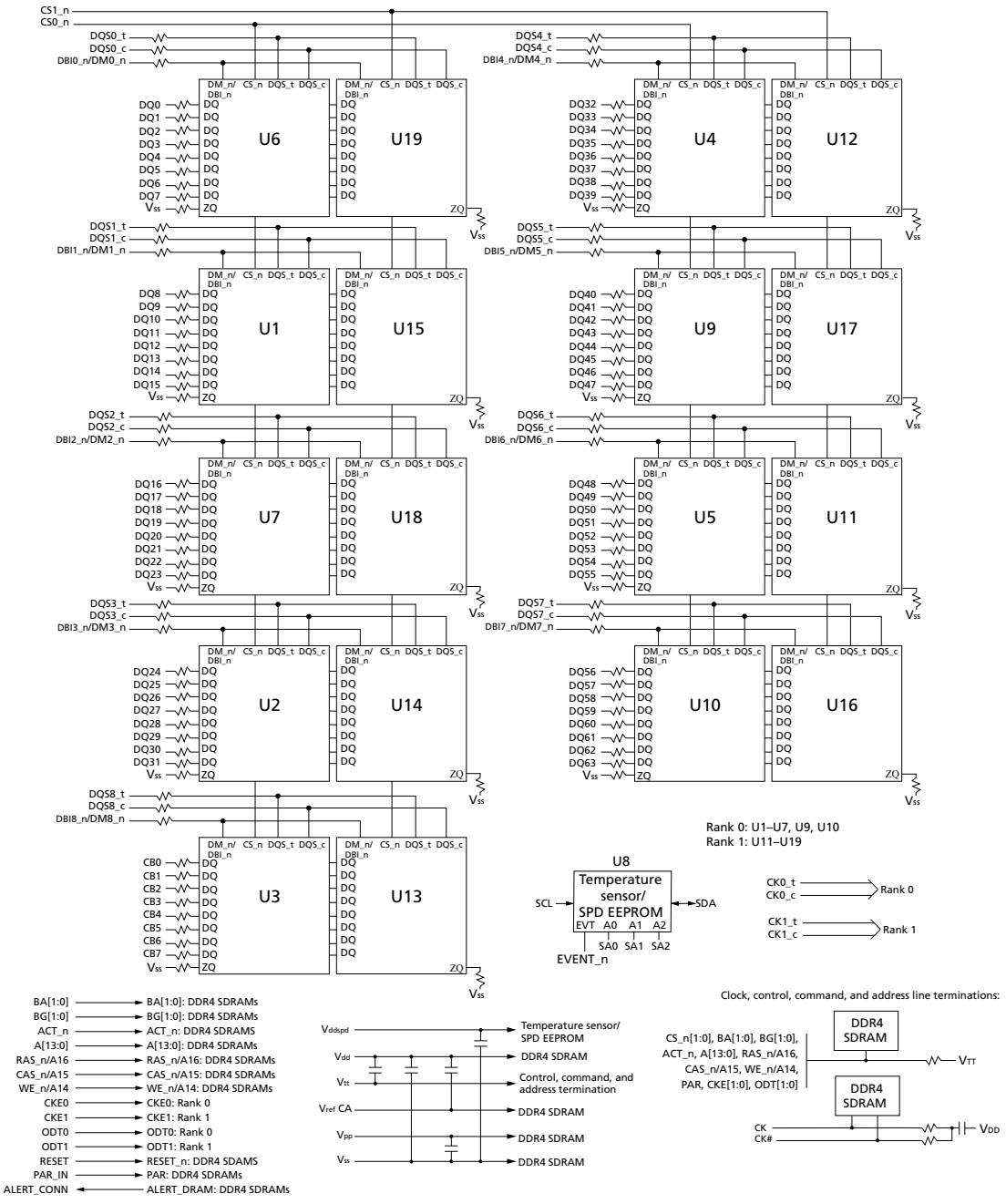
Values are for the MT40A1G8 DDR4 SDRAM only and are computed from values specified in the 8Gb (1 Gig x 8) component data sheet

Parameter	Symbol	3200	Units
One bank ACTIVATE-PRECHARGE current	I_{DD0}[1]	693	mA
One bank ACTIVATE-PRECHARGE, Word Line Boost, IPP current	I_{PP0}[1]	54	mA
One bank ACTIVATE-READ-PRECHARGE current	I_{DD1}[1]	837	mA
Precharge standby current	I_{DD2N}[2]	648	mA
Precharge standby ODT current	I_{DD2NT}[1]	666	mA
Precharge power-down current	I_{DD2P}[2]	468	mA
Precharge quite standby current	I_{DD2Q}[2]	522	mA
Active standby current	I_{DD3N}[2]	846	mA
Active standby I_{PP} current	I_{PP3N}[2]	54	mA
Active power-down current	I_{DD3P}[2]	666	mA
Burst read current	I_{DD4R}[1]	1935	mA
Burst write current	I_{DD4W}[1]	1674	mA
Burst refresh current (1x REF)	I_{DD5R}[1]	1134	mA
Burst refresh I_{PP} current (1x REF)	I_{PP5R}[1]	72	mA
Self refresh current: Normal temp range (0–85°C)	$I_{DD6N\ (0–85°C)}$[2]	612	mA
Self refresh current: Extended temp range (0–95°C)	$I_{DD6E\ (0–95°C)}$[2]	1710	mA
Self refresh current: Reduced temp range (0–45°C)	$I_{DD6R\ (0–45°C)}$[2]	378	mA
Auto self refresh current (25°C)	$I_{DD6A\ (25°C)}$[2]	155	mA
Auto self refresh current (45°C)	$I_{DD6A\ (45°C)}$[2]	378	mA
Auto self refresh current (75°C)	$I_{DD6A\ (75°C)}$[2]	558	mA
Auto self refresh current (95°C)	$I_{DD6A\ (95°C)}$[2]	1710	mA
Auto self refresh I_{PP} current	I_{PP6X}[2]	108	mA
Bank interleave read current	I_{DD7}[1]	1989	mA
Bank interleave read IPP current	I_{PP7}[1]	144	mA
Maximum Power Down Current	I_{DD8}[2]	360	mA

Notes:
1. One module rank in the active $I_{DD/PP}$, the other rank in $I_{DD2P/PP3N}$.
2. All ranks in this $I_{DD/PP}$ condition.

Functional Block Diagrams

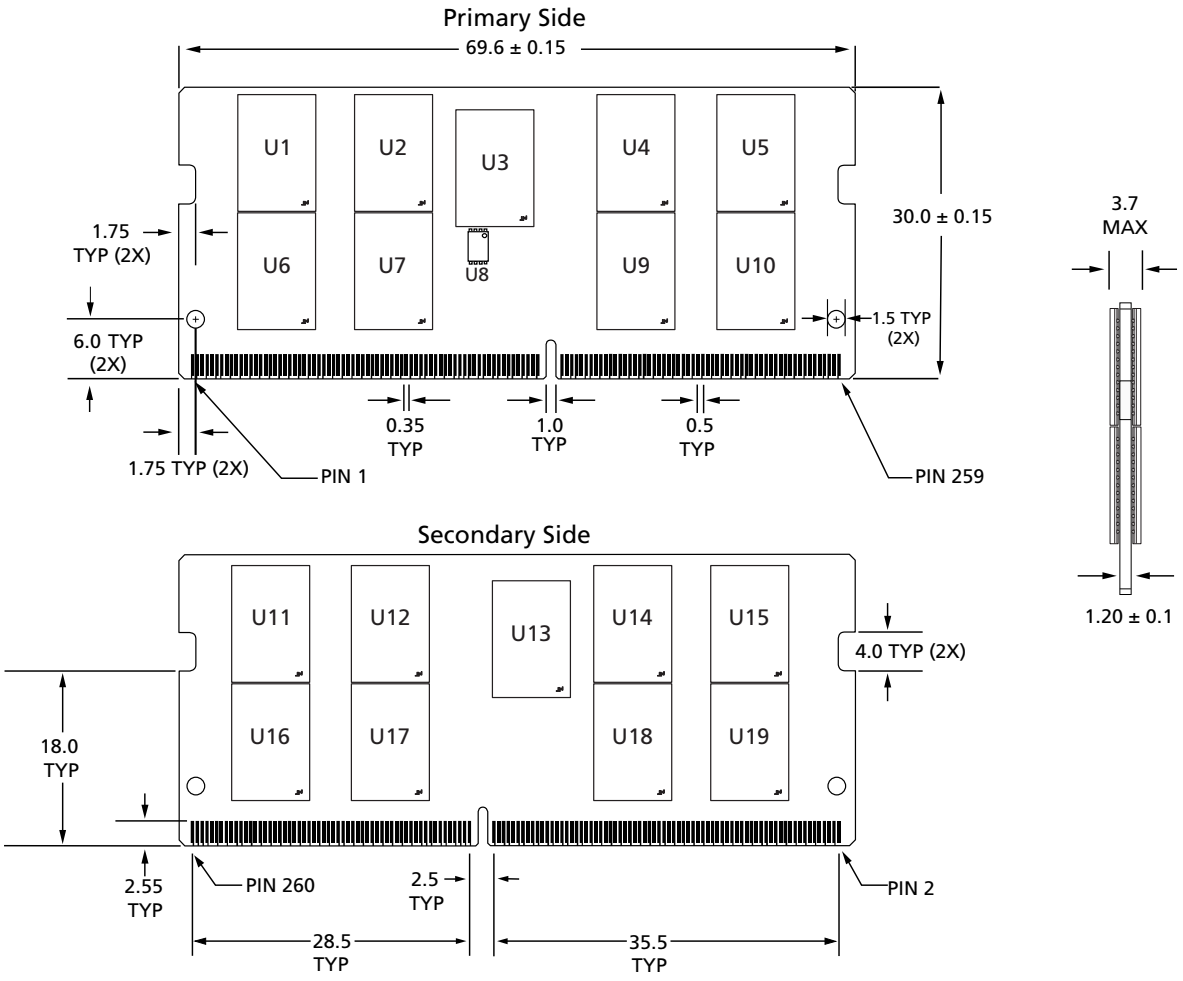
Figure 2: Functional Block Diagram



Note: 1. The ZQ ball on each DDR4 component is connected to an external 240Ω ±1% resistor that is tied to ground. It is used for the calibration of the component's ODT and output driver.

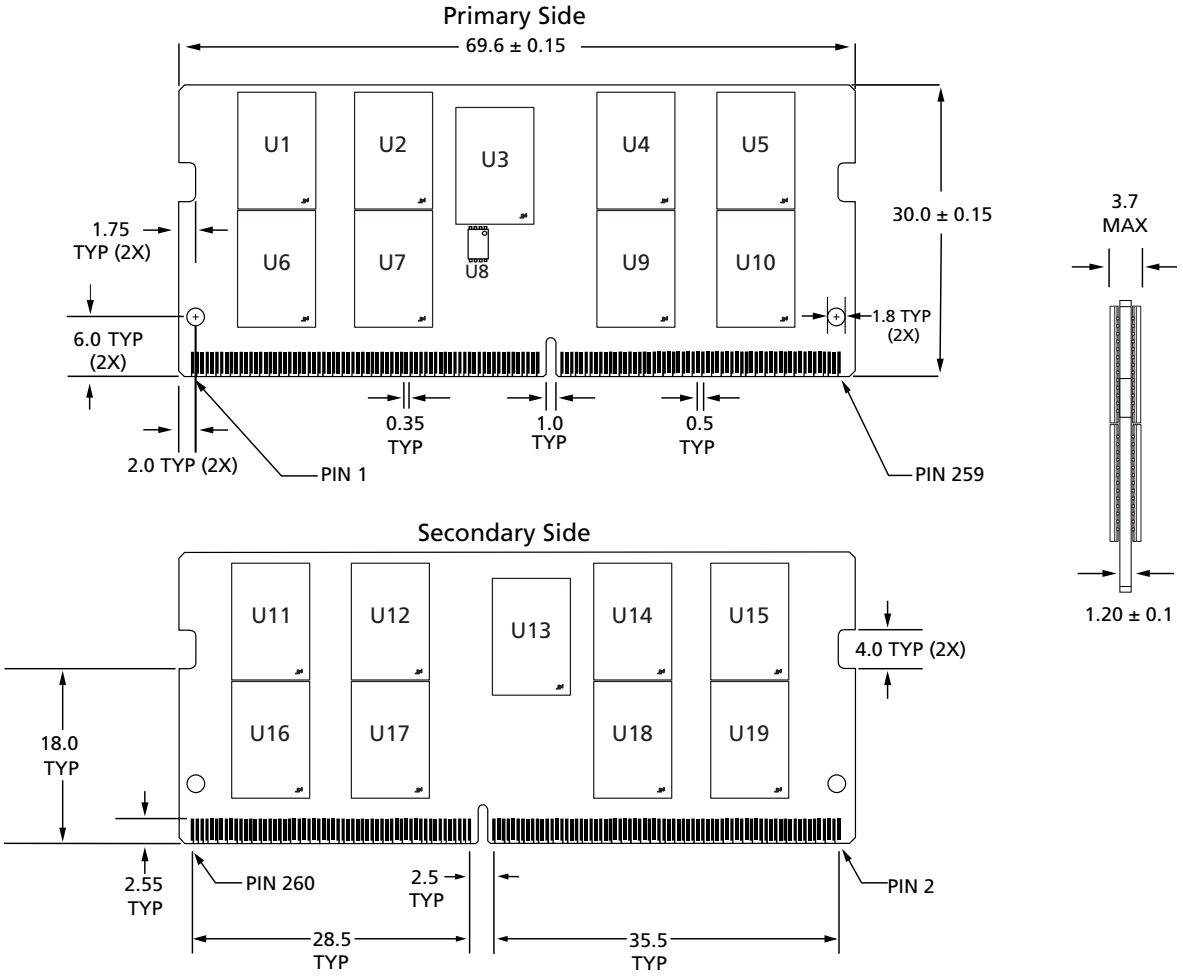
Module Dimensions

Figure 3: 260-Pin DDR4 SODIMM - PCB 2975



Notes:
1. All dimensions are in millimeters; MAX/MIN or typical (TYP) where noted.
2. Tolerance on all dimensions ±0.15mm unless otherwise specified.
3. The dimensional diagram is for reference only.

Figure 4: 260-Pin DDR4 SODIMM - PCB 3218



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