

# DDR4 SDRAM VLP RDIMM Addendum

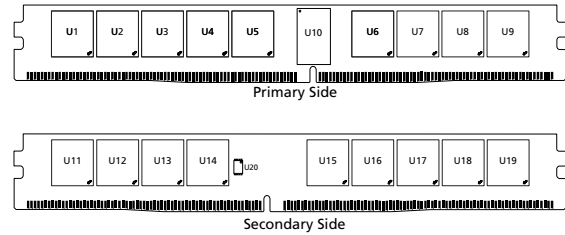
## MTA18ADF4G72PZ – 32GB

### Features

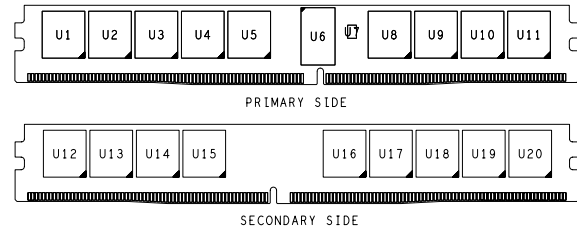
Information provided here is in addition to or supersedes information provided in the Micron DDR4 RDIMM Core data sheet.

- DDR4 functionality and operations supported as defined in the component data sheet
- Features and specifications defined in the Micron DDR4 RDIMM core data sheet
- 288-pin, very low profile registered dual in-line memory module (VLP RDIMM)
- Fast data transfer rate: PC4-3200, PC4-2933
- 32GB (4 Gig x 72)
- Single-rank
- 16 internal banks; 4 groups of 4 banks each

**Figure 1: 288-Pin VLP RDIMM (R/C-F1, PCB 2718)**



**Figure 2: 288-Pin VLP RDIMM (R/C-F2, PCB 2954)**



### Options

- Operating temperature
  - Commercial ( $0^{\circ}\text{C} \leq T_{\text{OPER}} \leq 95^{\circ}\text{C}$ )
- Package
  - 288-pin DIMM (Green)
- Frequency/CAS latency
  - 0.625ns @ CL = 22 (DDR4-3200)
  - 0.682ns @ CL = 21 (DDR4-2933)

### Marking

None  
Z  
-3G2  
-2G9

**Table 1: Addressing**

Parameter	32GB
Row address	256K A[17:0]
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	16Gb (4 Gig x 4), 16 banks
Module rank address	1 CS_n[0]



## 32GB (x72, ECC, SR) 288-Pin DDR4 VLP RDIMM Features

**Table 2: Part Numbers and Timing Parameters – 32GB Modules**

Base device: MT40A4G4,<sup>1</sup> 16Gb DDR4 SDRAM

Part Number <sup>2</sup>	Module Density	Configuration	Module Bandwidth	Memory Clock/ Data Rate	Clock Cycles (CL <sub>-n</sub> RCD <sub>-n</sub> RP)
MTA18ADF4G72PZ-3G2__	32GB	4 Gig x 72	25.6 GB/s	0.625ns/3200 MT/s	22-22-22
MTA18ADF4G72PZ-2G9__	32GB	4 Gig x 72	23.47 GB/s	0.625ns/2933 MT/s	21-21-21

- Notes: 1. The data sheet for the base device can be found on [micron.com](http://micron.com).  
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: MTA18ADF4G72PZ-3G2F1.



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## DQ Map

**Table 3: Component-to-Module DQ Map - PCB 2718**

Component Reference Number	Component DQ	Module DQ	Module Pin Number	Component Reference Number	Component DQ	Module DQ	Module Pin Number
U1	0	7	155	U2	0	15	166
	1	5	148		1	13	159
	2	6	10		2	14	21
	3	4	3		3	12	14
U3	0	23	177	U4	0	31	188
	1	21	170		1	29	181
	2	22	32		2	30	43
	3	20	25		3	28	36
U5	0	CB7	199	U6	0	39	247
	1	CB5	192		1	37	240
	2	CB6	54		2	38	102
	3	CB4	47		3	36	95
U7	0	47	258	U8	0	55	269
	1	45	251		1	53	262
	2	46	113		2	54	124
	3	44	106		3	52	117
U9	0	63	280	U11	0	56	130
	1	60	128		1	58	137
	2	62	135		2	57	275
	3	61	273		3	59	282
U12	0	48	119	U13	0	40	108
	1	50	126		1	42	115
	2	49	264		2	41	253
	3	51	271		3	43	260
U14	0	32	97	U15	0	CB1	194
	1	34	104		1	CB3	201
	2	33	242		2	CB0	49
	3	35	249		3	CB2	56
U16	0	25	183	U17	0	17	172
	1	27	190		1	19	179
	2	24	38		2	16	27
	3	26	45		3	18	34
U18	0	9	161	U19	0	1	150
	1	11	168		1	3	157
	2	8	16		2	0	5
	3	10	23		3	2	12



## 32GB (x72, ECC, SR) 288-Pin DDR4 VLP RDIMM DQ Map

**Table 4: Component-to-Module DQ Map - PCB 2954**

Component Reference Number	Component DQ	Module DQ	Module Pin Number	Component Reference Number	Component DQ	Module DQ	Module Pin Number
U1	0	6	10	U2	0	14	21
	1	4	3		1	13	159
	2	7	155		2	15	166
	3	5	148		3	12	14
U3	0	22	32	U4	0	30	43
	1	21	170		1	28	36
	2	23	177		2	31	188
	3	20	25		3	29	181
U5	0	CB6	54	U8	0	39	247
	1	CB4	47		1	37	240
	2	CB7	199		2	38	102
	3	CB5	192		3	36	95
U9	0	47	258	U10	0	55	269
	1	45	251		1	53	262
	2	46	113		2	54	124
	3	44	106		3	52	117
U11	0	62	135	U12	0	56	130
	1	61	273		1	59	282
	2	63	280		2	57	275
	3	60	128		3	58	137
U13	0	48	119	U14	0	41	253
	1	51	271		1	43	260
	2	49	264		2	40	108
	3	50	126		3	42	115
U15	0	33	242	U16	0	CB0	49
	1	35	249		1	CB2	56
	2	32	97		2	CB1	194
	3	34	104		3	CB3	201
U17	0	24	38	U18	0	16	27
	1	26	45		1	18	34
	2	25	183		2	17	172
	3	27	190		3	19	179
U19	0	8	16	U20	0	0	5
	1	10	23		1	3	157
	2	9	161		2	1	150
	3	11	168		3	2	12



## I<sub>DD</sub> Specifications

**Table 5: DDR4 I<sub>DD</sub> Specifications and Conditions (0° ≤ T<sub>C</sub> ≤ 85°) – 32GB (Die Revision B)**

Values are for the MT40A4G4 DDR4 SDRAM only and are computed from values specified in the 16Gb (4 Gig x 4) component data sheet

Parameter	Symbol	3200	2933	Units
One bank ACTIVATE-PRECHARGE current	I <sub>DD0</sub>	1080	1062	mA
One bank ACTIVATE-PRECHARGE, word line boost, I <sub>pp</sub> current	I <sub>pp0</sub>	72	72	mA
One bank ACTIVATE-READ-PRECHARGE current	I <sub>DD1</sub>	1260	1242	mA
Precharge standby current	I <sub>DD2N</sub>	936	918	mA
Precharge standby ODT current	I <sub>DD2NT</sub>	1008	990	mA
Precharge power-down current	I <sub>DD2P</sub>	774	774	mA
Precharge quiet standby current	I <sub>DD2Q</sub>	846	846	mA
Active standby current	I <sub>DD3N</sub>	1404	1386	mA
Active standby I <sub>pp</sub> current	I <sub>pp3N</sub>	54	54	mA
Active power-down current	I <sub>DD3P</sub>	1242	1224	mA
Burst read current	I <sub>DD4R</sub>	3096	2952	mA
Burst write current	I <sub>DD4W</sub>	2952	2826	mA
Burst refresh current (1x REF)	I <sub>DD5R</sub>	1458	1404	mA
Burst refresh I <sub>pp</sub> current (1x REF)	I <sub>pp5R</sub>	90	90	mA
Self refresh current: Normal temperature range (0°C to 85°C)	I <sub>DD6N</sub> (0–85°C)	1206	1206	mA
Self refresh current: Extended temperature range (0°C to 95°C)	I <sub>DD6E</sub> (0–95°C)	2178	2178	mA
Self refresh current: Reduced temperature range (0°C to 45°C)	I <sub>DD6R</sub> (0–45°C)	522	522	mA
Auto self refresh current (25°C)	I <sub>DD6A</sub> (25°C)	180	180	mA
Auto self refresh current (45°C)	I <sub>DD6A</sub> (45°C)	522	522	mA
Auto self refresh current (75°C)	I <sub>DD6A</sub> (75°C)	1098	1098	mA
Auto self refresh current (95°C)	I <sub>DD6A</sub> (95°C)	2178	2178	mA
Auto self refresh I <sub>pp</sub> current	I <sub>pp6X</sub>	198	198	mA
Bank interleave read current	I <sub>DD7</sub>	4284	4158	mA
Bank interleave read I <sub>pp</sub> current	I <sub>pp7</sub>	198	198	mA
Maximum power-down current	I <sub>DD8</sub>	720	720	mA

Notes: 1. When T<sub>C</sub> > 85°C, the I<sub>DD</sub> and I<sub>pp</sub> values must be derated. Refer to the base device data sheet I<sub>DD</sub> and I<sub>pp</sub> specification tables for derating values for the applicable die-revision.



## 32GB (x72, ECC, SR) 288-Pin DDR4 VLP RDIMM I<sub>DD</sub> Specifications

**Table 6: DDR4 I<sub>DD</sub> Specifications and Conditions (0° ≤ T<sub>C</sub> ≤ 85°) – 32GB (Die Revision F)**

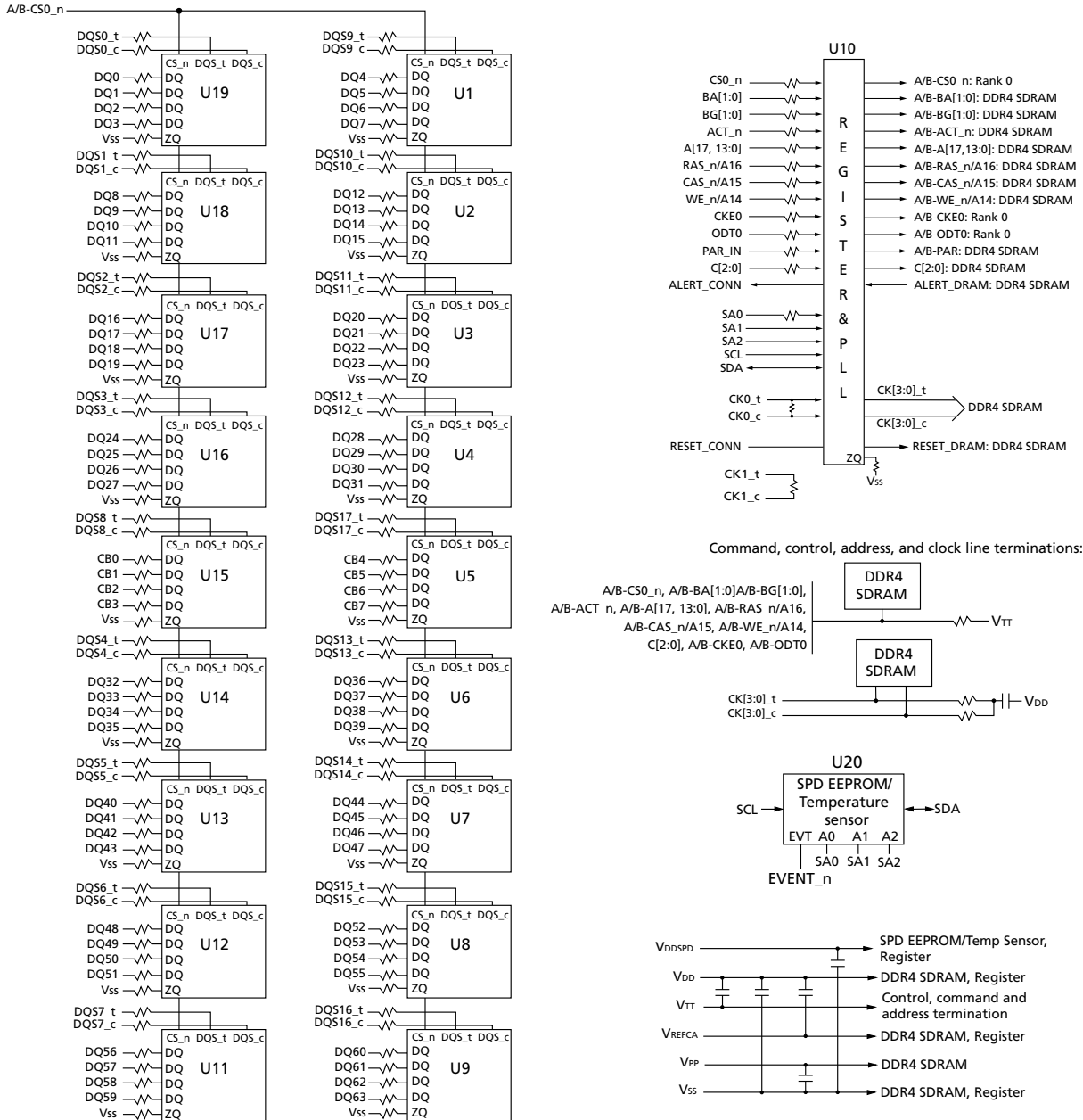
Values are for the MT40A4G4 DDR4 SDRAM only and are computed from values specified in the 16Gb (4 Gig x 4) component data sheet

Parameter	Symbol	3200	2933	Units
One bank ACTIVATE-PRECHARGE current	I <sub>DD0</sub>	882	873	mA
One bank ACTIVATE-PRECHARGE, word line boost, I <sub>pp</sub> current	I <sub>pp0</sub>	45	45	mA
One bank ACTIVATE-READ-PRECHARGE current	I <sub>DD1</sub>	981	972	mA
Precharge standby current	I <sub>DD2N</sub>	810	792	mA
Precharge standby ODT current	I <sub>DD2NT</sub>	801	792	mA
Precharge power-down current	I <sub>DD2P</sub>	684	684	mA
Precharge quiet standby current	I <sub>DD2Q</sub>	756	756	mA
Active standby current	I <sub>DD3N</sub>	1098	1080	mA
Active standby I <sub>pp</sub> current	I <sub>pp3N</sub>	36	36	mA
Active power-down current	I <sub>DD3P</sub>	900	882	mA
Burst read current	I <sub>DD4R</sub>	1602	1530	mA
Burst write current	I <sub>DD4W</sub>	1350	1305	mA
Burst refresh current (1x REF)	I <sub>DD5R</sub>	954	954	mA
Burst refresh I <sub>pp</sub> current (1x REF)	I <sub>pp5R</sub>	54	54	mA
Self refresh current: Normal temperature range (0°C to 85°C)	I <sub>DD6N (0-85°C)</sub>	954	954	mA
Self refresh current: Extended temperature range (0°C to 95°C)	I <sub>DD6E (0-95°C)</sub>	1620	1620	mA
Self refresh current: Reduced temperature range (0°C to 45°C)	I <sub>DD6R (0-45°C)</sub>	360	360	mA
Auto self refresh current (25°C)	I <sub>DD6A (25°C)</sub>	198	198	mA
Auto self refresh current (45°C)	I <sub>DD6A (45°C)</sub>	360	360	mA
Auto self refresh current (75°C)	I <sub>DD6A (75°C)</sub>	918	918	mA
Auto self refresh current (95°C)	I <sub>DD6A (95°C)</sub>	1620	1620	mA
Auto self refresh I <sub>pp</sub> current	I <sub>pp6X</sub>	108	108	mA
Bank interleave read current	I <sub>DD7</sub>	1845	1827	mA
Bank interleave read I <sub>pp</sub> current	I <sub>pp7</sub>	144	144	mA
Maximum power-down current	I <sub>DD8</sub>	648	648	mA

Notes: 1. When T<sub>C</sub> > 85°C, the I<sub>DD</sub> and I<sub>pp</sub> values must be derated. Refer to the base device data sheet I<sub>DD</sub> and I<sub>pp</sub> specification tables for derating values for the applicable die-revision.

## Functional Block Diagram

Figure 3: Functional Block Diagram



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

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This data sheet contains minimum and maximum limits specified over the power supply and temperature range set forth herein. Although considered final, these specifications are subject to change, as further product development and data characterization sometimes occur.