

DDR4 SDRAM SODIMM

Addendum

MTA9ASF1G72HBZ – 8GB

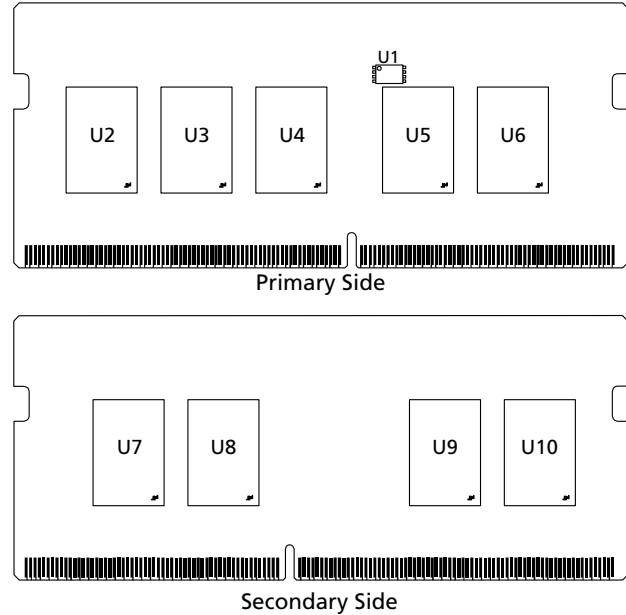
Introduction

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
- 8GB (1 Gig x 72)
- Data bus inversion (DBI) for data bus
- Supports ECC error detection and correction
- Single-rank
- On-board I²C temperature sensor with integrated serial presence-detect (SPD) EEPROM
- 16 internal banks; 4 groups of 4 banks each

Figure 1: 260-Pin SODIMM



Options

- Operating temperature
 - Extended (–40°C ≤ T_{OPER} ≤ 105°C)
- Package
 - 260-pin DIMM (Green)
- Frequency/CAS latency
 - 0.625ns @ CL = 22 (DDR4-3200)

Marking

B
Z
-3G2

Table 1: Addressing

| Parameter | 8GB |
|-------------------------------|---------------------------|
| 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 | CS0_n |



Table 2: Part Numbers and Timing Parameters – 8GB Modules

Base device: MT40A1G8,¹ 8Gb DDR4 SDRAM

| Part Number ² | Module Density | Configuration | Module Bandwidth | Memory Clock/ Data Rate | Clock Cycles (CL-nRCD-nRP) |
|--------------------------|----------------|---------------|------------------|----------------------------|-------------------------------|
| MTA9ASF1G72HBZ-3G2__ | 8GB | 1 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 at 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: MTA9ASF1G72HBZ-3G2E1.

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DQ Map

Table 3: Component-to-Module DQ Map (PCB 2450, 2974, 3219, 3239)

| Component Reference Number | Component DQ | Module DQ | Module Pin Number | Component Reference Number | Component DQ | Module DQ | Module Pin Number |
|----------------------------|--------------|-----------|-------------------|----------------------------|--------------|-----------|-------------------|
| U2 | 0 | 3 | 21 | U3 | 0 | 19 | 63 |
| | 1 | 0 | 8 | | 1 | 17 | 49 |
| | 2 | 2 | 20 | | 2 | 18 | 62 |
| | 3 | 1 | 7 | | 3 | 16 | 50 |
| | 4 | 6 | 16 | | 4 | 22 | 58 |
| | 5 | 4 | 4 | | 5 | 21 | 45 |
| | 6 | 7 | 17 | | 6 | 23 | 59 |
| | 7 | 5 | 3 | | 7 | 20 | 46 |
| U4 | 0 | CB7 | 104 | U5 | 0 | 38 | 183 |
| | 1 | CB4 | 88 | | 1 | 36 | 170 |
| | 2 | CB6 | 100 | | 2 | 39 | 182 |
| | 3 | CB5 | 87 | | 3 | 37 | 169 |
| | 4 | CB3 | 105 | | 4 | 35 | 186 |
| | 5 | CB1 | 91 | | 5 | 32 | 174 |
| | 6 | CB2 | 104 | | 6 | 34 | 187 |
| | 7 | CB0 | 92 | | 7 | 33 | 173 |
| U6 | 0 | 55 | 225 | U7 | 0 | 56 | 237 |
| | 1 | 52 | 211 | | 1 | 58 | 249 |
| | 2 | 54 | 224 | | 2 | 57 | 236 |
| | 3 | 53 | 212 | | 3 | 59 | 250 |
| | 4 | 50 | 228 | | 4 | 61 | 233 |
| | 5 | 49 | 215 | | 5 | 62 | 245 |
| | 6 | 51 | 229 | | 6 | 60 | 232 |
| | 7 | 48 | 216 | | 7 | 63 | 246 |
| U8 | 0 | 40 | 195 | U9 | 0 | 29 | 67 |
| | 1 | 42 | 207 | | 1 | 30 | 79 |
| | 2 | 41 | 194 | | 2 | 28 | 66 |
| | 3 | 43 | 208 | | 3 | 31 | 80 |
| | 4 | 44 | 191 | | 4 | 24 | 70 |
| | 5 | 47 | 204 | | 5 | 26 | 83 |
| | 6 | 45 | 190 | | 6 | 25 | 71 |
| | 7 | 46 | 203 | | 7 | 27 | 84 |



Table 3: Component-to-Module DQ Map (PCB 2450, 2974, 3219, 3239) (Continued)

| Component Reference Number | Component DQ | Module DQ | Module Pin Number | Component Reference Number | Component DQ | Module DQ | Module Pin Number |
|----------------------------|--------------|-----------|-------------------|----------------------------|--------------|-----------|-------------------|
| U10 | 0 | 12 | 24 | | | | |
| | 1 | 15 | 37 | | | | |
| | 2 | 13 | 25 | | | | |
| | 3 | 14 | 38 | | | | |
| | 4 | 9 | 29 | | | | |
| | 5 | 10 | 41 | | | | |
| | 6 | 8 | 28 | | | | |
| | 7 | 11 | 42 | | | | |

I_{DD} Specifications

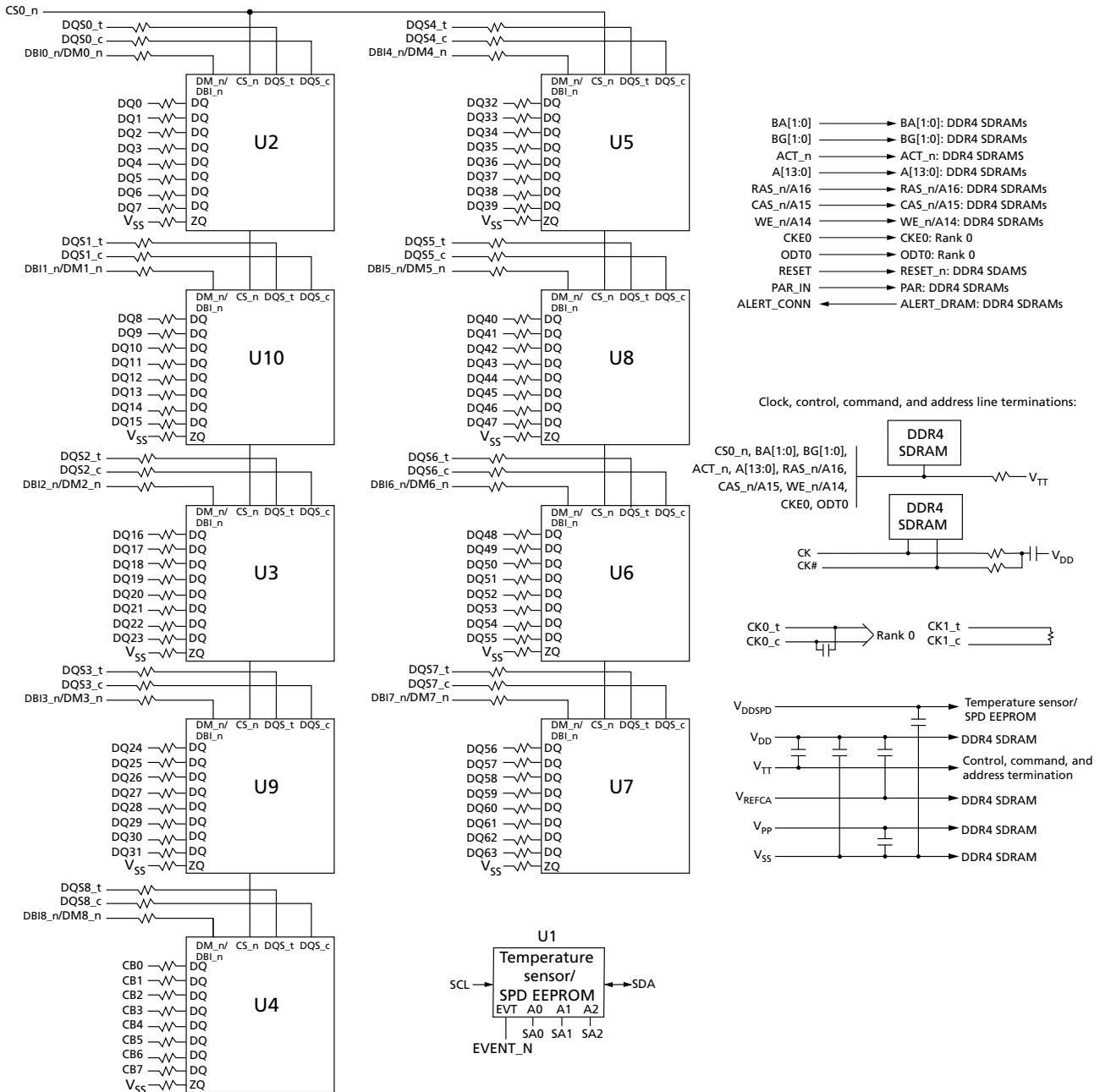
Table 4: DDR4 I_{DD} Specifications and Conditions – 8GB (Die Revision E)

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} | 459 | mA |
| One bank ACTIVATE-PRECHARGE, wordline boost, I _{pp} current | I _{PP0} | 27 | mA |
| One bank ACTIVATE-READ-PRECHARGE current | I _{DD1} | 603 | mA |
| Precharge standby current | I _{DD2N} | 324 | mA |
| Precharge standby ODT current | I _{DD2NT} | 432 | mA |
| Precharge power-down current | I _{DD2P} | 234 | mA |
| Precharge quiet standby current | I _{DD2Q} | 261 | mA |
| Active standby current | I _{DD3N} | 423 | mA |
| Active standby I _{pp} current | I _{PP3N} | 27 | mA |
| Active power-down current | I _{DD3P} | 333 | mA |
| Burst read current | I _{DD4R} | 1701 | mA |
| Burst write current | I _{DD4W} | 1440 | mA |
| Burst refresh current (1x REF) | I _{DD5R} | 900 | mA |
| Burst refresh I _{pp} current (1x REF) | I _{PP5R} | 45 | mA |
| Self refresh current: Normal temperature range (0°C to 85°C) | I _{DD6N} (0–85°C) | 306 | mA |
| Self refresh current: Extended temperature range (0°C to 95°C) | I _{DD6E} (0–95°C) | 855 | mA |
| Self refresh current: Reduced temperature range (0°C to 45°C) | I _{DD6R} (0–45°C) | 189 | mA |
| Auto self refresh current (25°C) | I _{DD6A} (25°C) | 78 | mA |
| Auto self refresh current (45°C) | I _{DD6A} (45°C) | 189 | mA |
| Auto self refresh current (75°C) | I _{DD6A} (75°C) | 279 | mA |
| Auto self refresh current (95°C) | I _{DD6A} (95°C) | 855 | mA |
| Auto self refresh I _{pp} current | I _{PP6X} | 54 | mA |
| Bank interleave read current | I _{DD7} | 1755 | mA |
| Bank interleave read I _{pp} current | I _{PP7} | 117 | mA |
| Maximum power-down current | I _{DD8} | 180 | mA |

Functional Block Diagram

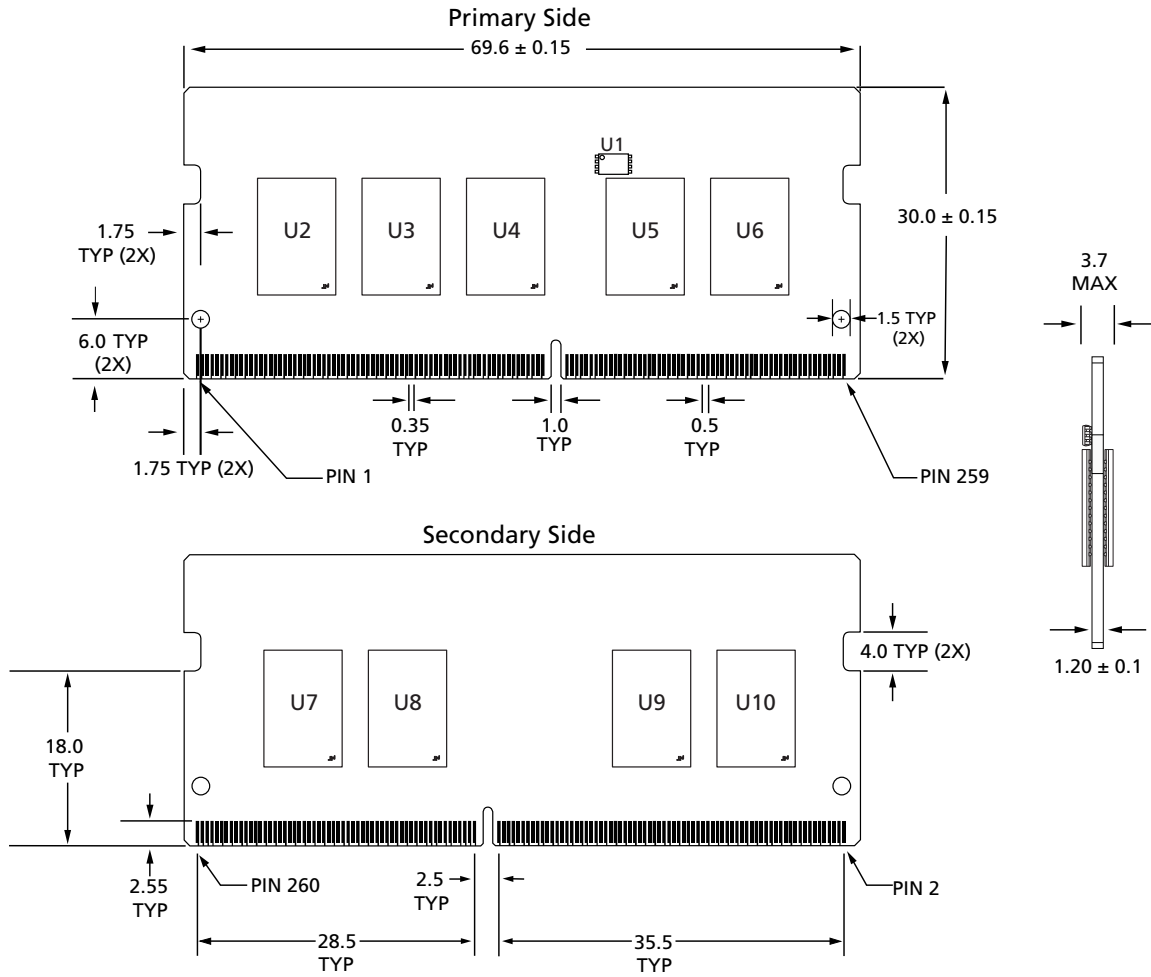
Figure 2: Functional Block Diagram



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.

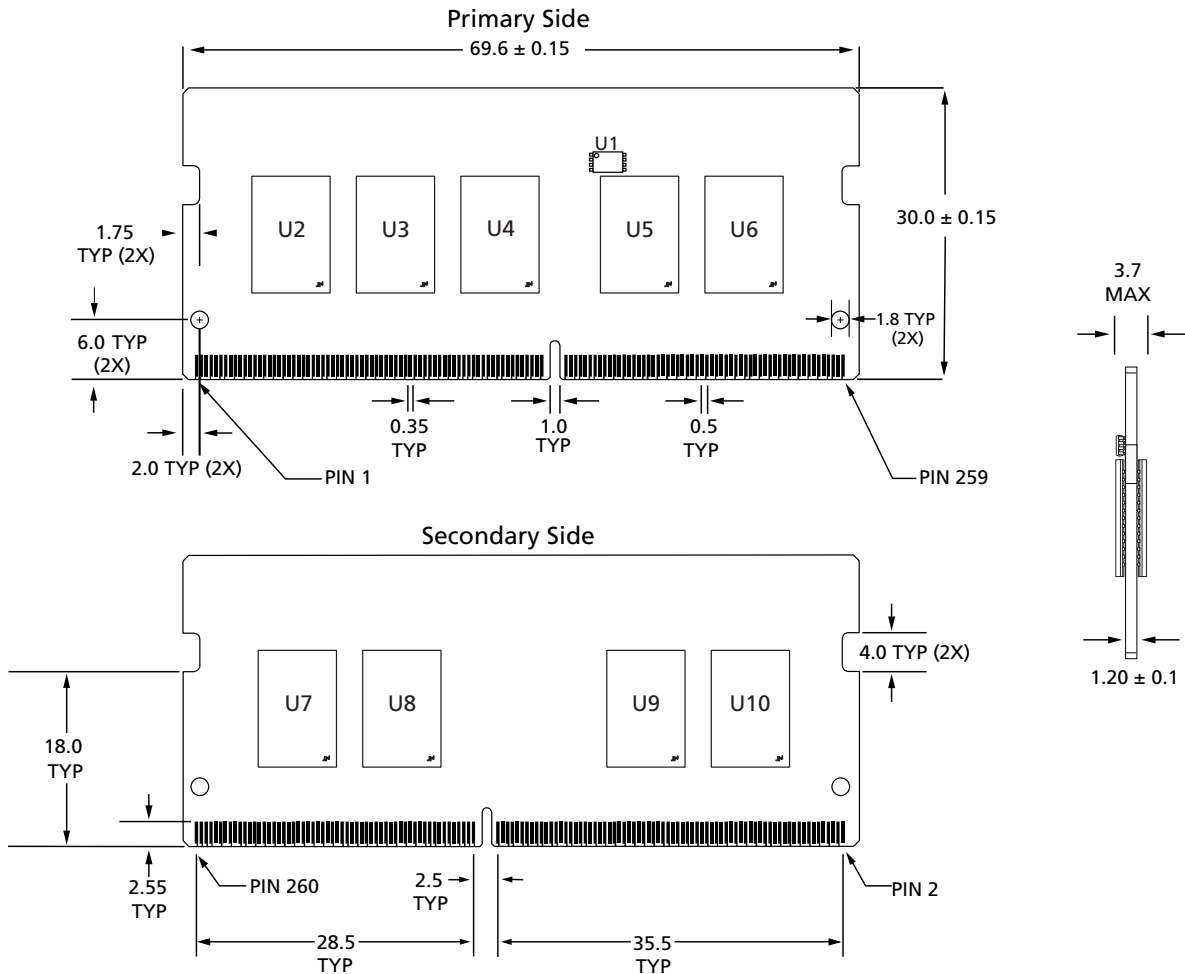
Module Dimensions

Figure 3: 260 Pin DDR4 SODIMM - PCB 2974



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

Figure 4: 260 Pin DDR4 SODIMM - PCB 3219



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

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