

# SDR SDRAM Data Sheet Addendum

**MT48LC64M4A2 – 16 Meg x 4 x 4 banks**

**MT48LC32M8A2 – 8 Meg x 8 x 4 banks**

**MT48LC16M16A2 – 4 Meg x 16 x 4 banks**

## Features

- PC100- and PC133-compliant
- Fully synchronous; all signals registered on positive edge of system clock
- Internal, pipelined operation; column address can be changed every clock cycle
- Internal banks for hiding row access/precharge
- Programmable burst lengths: 1, 2, 4, 8, or full page
- Auto precharge, includes concurrent auto precharge and auto refresh modes
- Self refresh mode (not available on AT devices)
- Auto refresh
  - 64ms, 8192-cycle refresh (commercial and industrial)
  - 16ms, 8192-cycle refresh (automotive)
- LVTTL-compatible inputs and outputs
- Single 3.3V ±0.3V power supply

## Options

- Configurations
 

– 64 Meg x 4 (16 Meg x 4 x 4 banks)	64M4
– 32 Meg x 8 (8 Meg x 8 x 4 banks)	32M8
– 16 Meg x 16 (4 Meg x 16 x 4 banks)	16M16
- Write recovery (<sup>t</sup>WR)
 

– <sup>t</sup> WR = 2 CLK	A2
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- Plastic package – OCPL<sup>1</sup>

– 54-pin TSOP II OCPL <sup>1</sup> (400 mil) (standard)	TG
– 54-pin TSOP II OCPL <sup>1</sup> (400 mil) Pb-free	P

## Marking

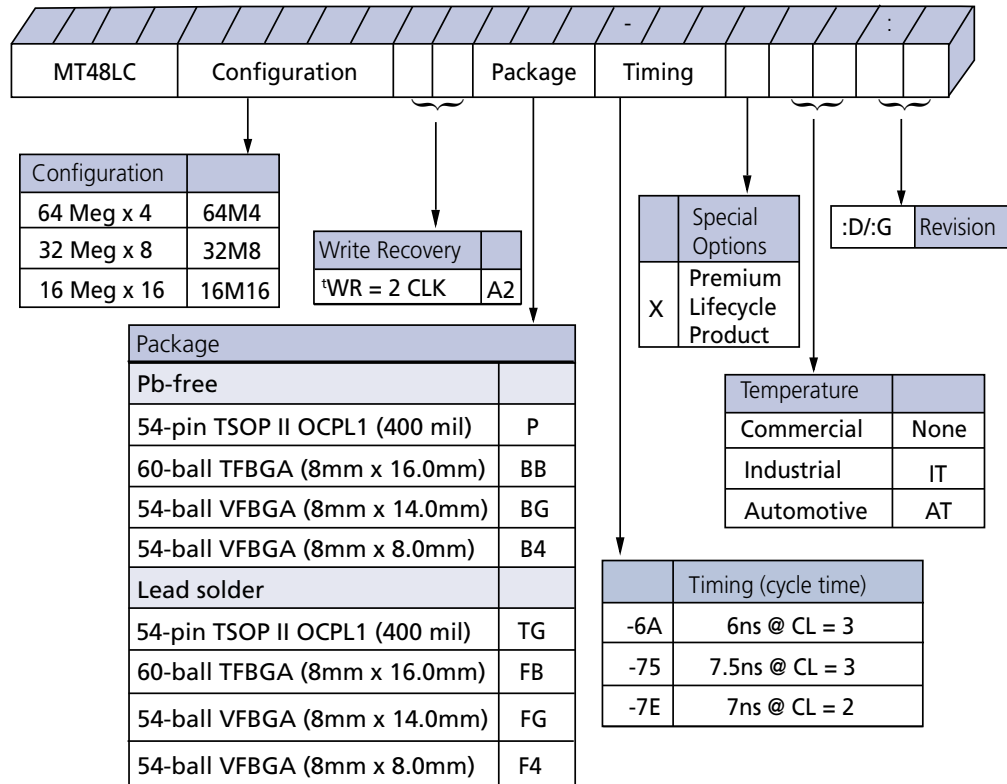
## Options

- 60-ball TFBGA (x4, x8) (8mm x 16mm) FB
- 60-ball TFBGA (x4, x8) (8mm x 16mm) Pb-free BB
- 54-ball VFPGA (x16) (8mm x 14 mm) FG<sup>2</sup>
- 54-ball VFPGA (x16) (8mm x 14 mm) Pb-free BG<sup>2</sup>
- 54-ball VFPGA (x16) (8mm x 8 mm) F4<sup>3</sup>
- 54-ball VFPGA (x16) (8mm x 8 mm) Pb-free B4<sup>3</sup>
- Timing – cycle time
  - 6ns @ CL = 3 (x8, x16 only) -6A
  - 7.5ns @ CL = 3 (PC133) -75<sup>2</sup>
  - 7.5ns @ CL = 2 (PC133) -7E
- Special Options
  - Premium Lifecycle Product (PLP) X
- Self refresh
  - Standard None
  - Low power L<sup>2</sup>, <sup>4</sup>
- Operating temperature range
  - Commercial (0°C to +70°C) None
  - Industrial (–40°C to +85°C) IT
  - Automotive (–40°C to +105°C) AT<sup>4</sup>
- Revision :D/:G

- Notes:
1. Off-center parting line.
  2. Only available on Revision D.
  3. Only available on Revision G.
  4. Contact Micron for availability.

**Figure 1: Part Numbers**

Example Part Number: MT48LC16M16A2BG-75 AT



Note: 1. Not all options listed can be combined to define an offered product. Use the part catalog search on <http://www.micron.com> for available offerings.



## **Revision History**

### **Rev. A – 11/13**

- Initial release based on the 256Mb x32 SDRAM, Rev. U 05/13 data sheet

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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.