# DDR2 SDRAM

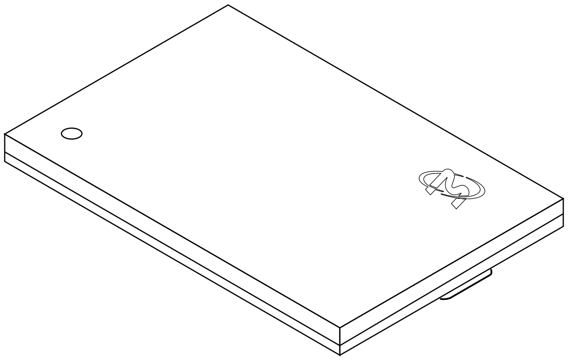
## MT47H128M4 – 32 Meg x 4 x 4 banks
## MT47H64M8 – 16 Meg x 8 x 4 banks
## MT47H32M16 – 8 Meg x 16 x 4 banks

For functional and parametric specifications, refer to the product data sheet on Micron’s Web site: www.micron.com

## Features

- FBGA balls use leaded solder

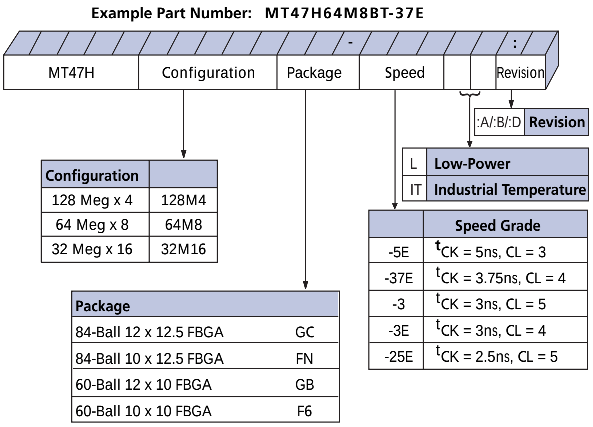
| Options | Marking |
|---|---|
| • Configuration | |
| – 128 Meg x 4 (32 Meg x 4 x 4 banks) | 128M4 |
| – 64 Meg x 8 (16 Meg x 8 x 4 banks) | 64M8 |
| – 32 Meg x 16 (8 Meg x 16 x 4 banks) | 32M16 |
| • FBGA package (leaded solder) | |
| – 84-ball FBGA (12mm x 12.5mm, :B) | GC |
| (10mm x 12.5mm, :D) | FN |
| – 60-ball FBGA (12mm x 10mm, :B) | GB |
| (10mm x 10mm, :D) | F6 |
| • Timing – cycle time | |
| – 5.0ns @ CL = 3 (DDR2-400) | -5E |
| – 3.75ns @ CL = 4 (DDR2-533) | -37E |
| – 3.0ns @ CL = 5 (DDR2-667) | -3 |
| – 3.0ns @ CL = 4 (DDR2-667) | -3E |
| – 2.5ns @ CL = 6 (DDR2-800) | -25 |
| – 2.5ns @ CL = 5 (DDR2-800) | -25E |



| Options (Continued) | Marking |
|---|---|
| • Self refresh | |
| – Standard | None |
| – Low-Power | L |
| • Operating temperature | |
| – Commercial (0°C ≤ $T_C$ ≤ 85°C) | None |
| – Industrial | IT |
| (–40°C ≤ $T_C$ ≤ 95°C; –40°C ≤ $T_A$ ≤ 85°C) | |
| • Revision | :A/:B/:D |

## Part Numbers

### Figure 1: 512Mb DDR2 (Leaded Solder) Part Numbers



| Configuration | |
|---|---|
| 128 Meg x 4 | 128M4 |
| 64 Meg x 8 | 64M8 |
| 32 Meg x 16 | 32M16 |

| Package | |
|---|---|
| 84-Ball 12 x 12.5 FBGA | GC |
| 84-Ball 10 x 12.5 FBGA | FN |
| 60-Ball 12 x 10 FBGA | GB |
| 60-Ball 10 x 10 FBGA | F6 |

| | Speed Grade |
|---|---|
| -5E | $^tCK$ = 5ns, CL = 3 |
| -37E | $^tCK$ = 3.75ns, CL = 4 |
| -3 | $^tCK$ = 3ns, CL = 5 |
| -3E | $^tCK$ = 3ns, CL = 4 |
| -25E | $^tCK$ = 2.5ns, CL = 5 |

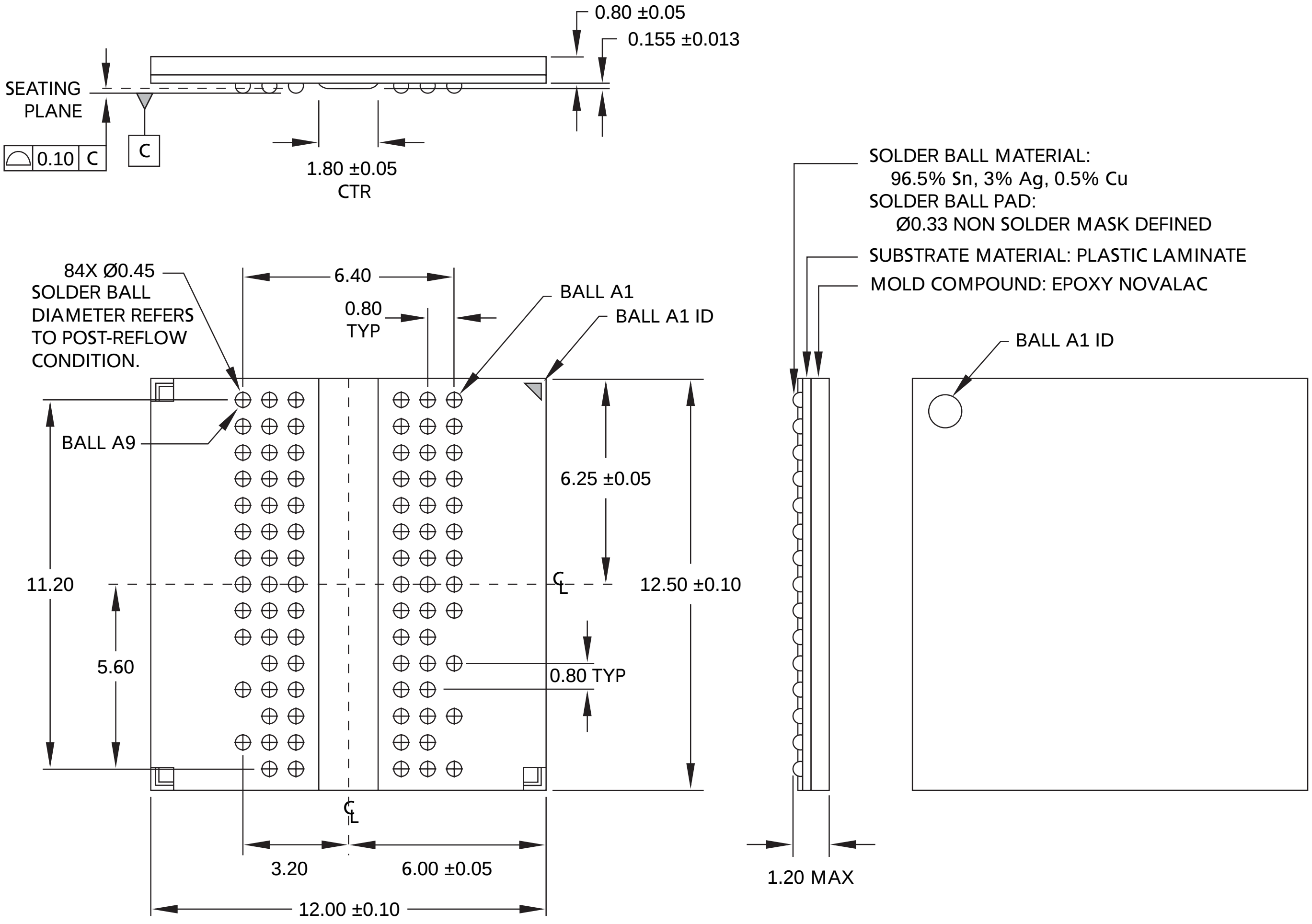
Notes: 1. Not all speeds and configurations are available. Contact Micron for current revision.

# FBGA Part Marking Decoder

Due to space limitations, FBGA-packaged components have an abbreviated part marking that is different from the part number. Micron's FBGA Part Marking Decoder is available at www.micron.com/decoder.

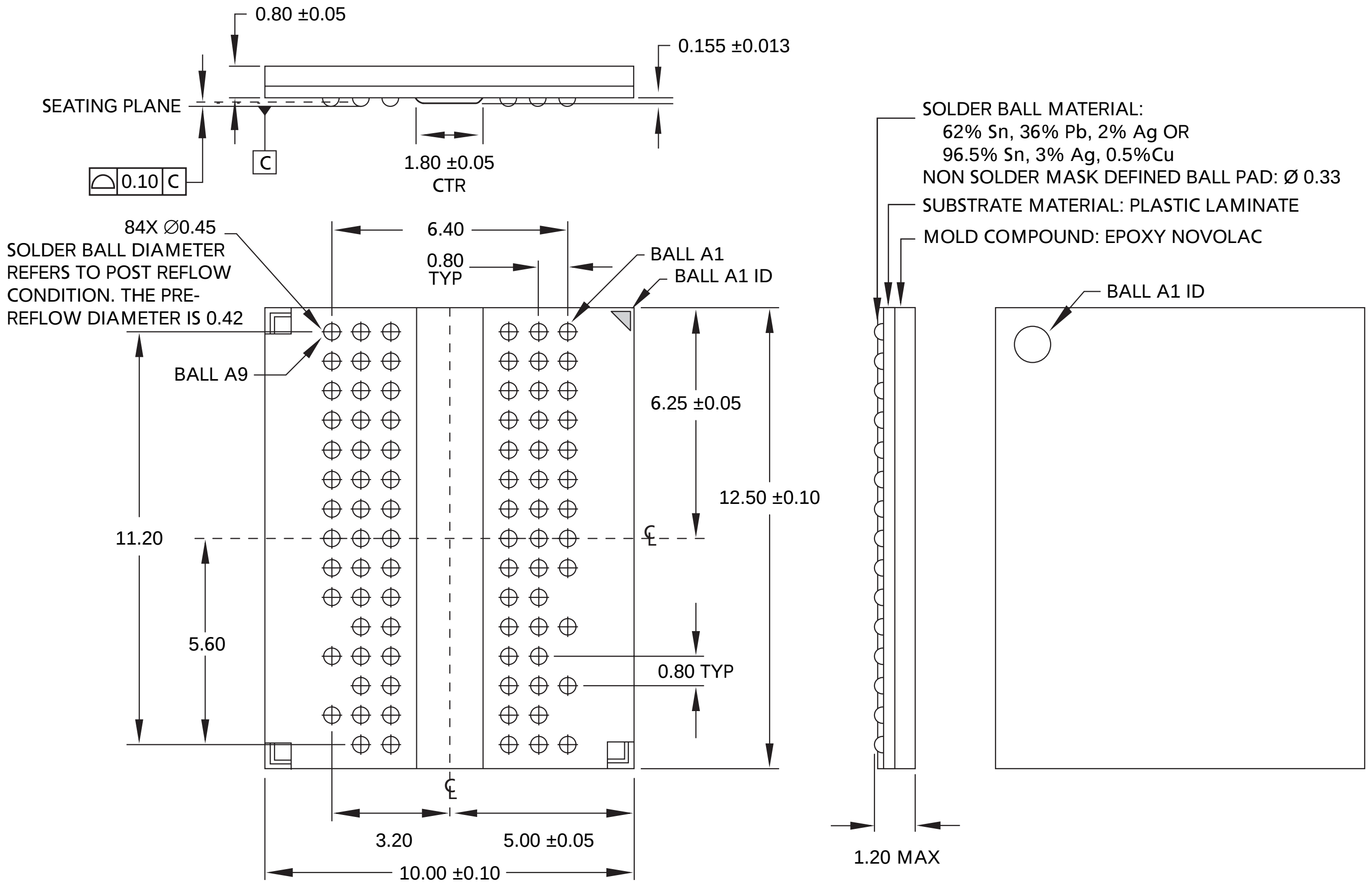
# Package Dimensions

**Figure 2: 84-Ball FBGA Package – 12mm x 12.5mm (x16, :B)**



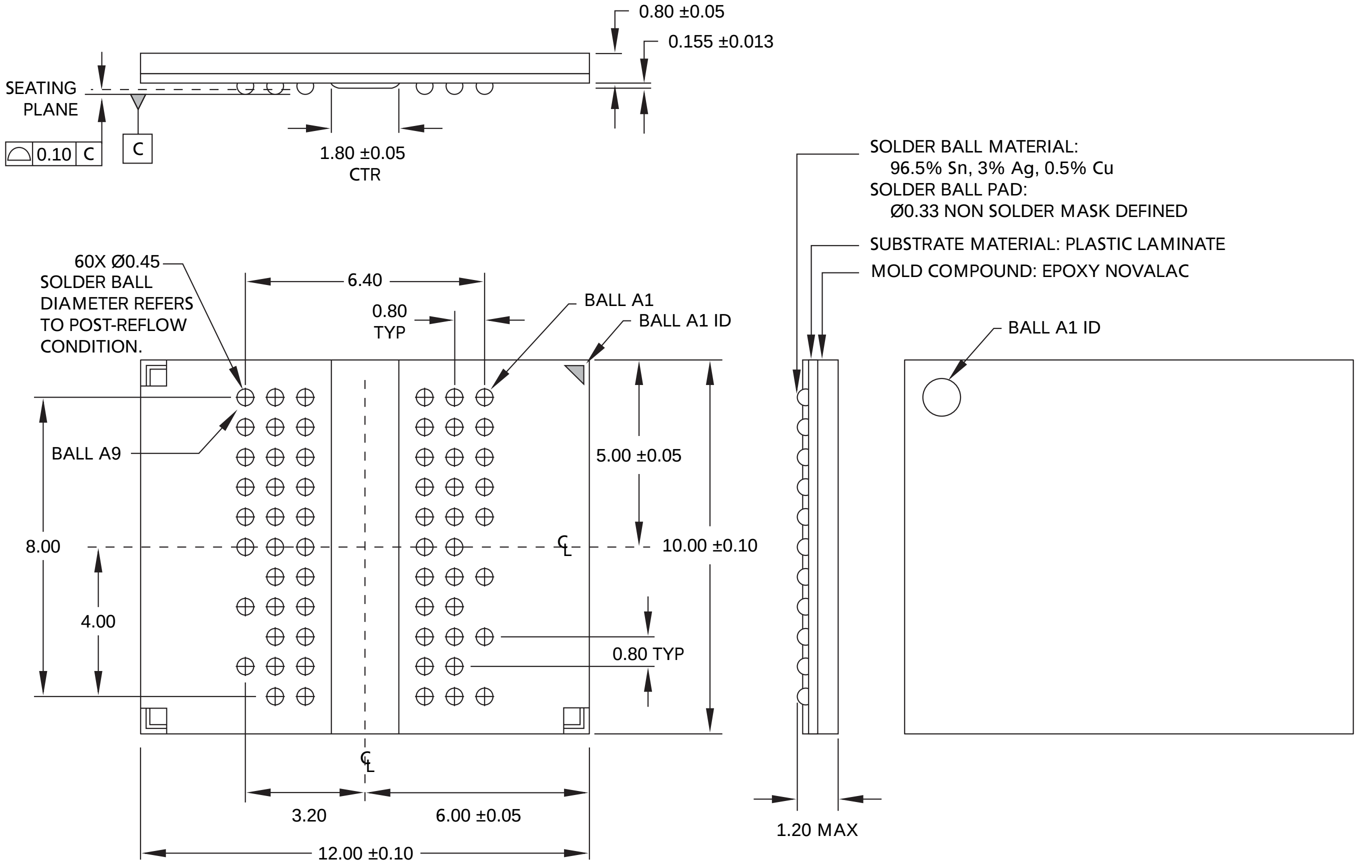
Note: All dimensions are in millimeters.

**Figure 3: 84-Ball FBGA Package – 10mm x 12.5mm (x16, :D)**



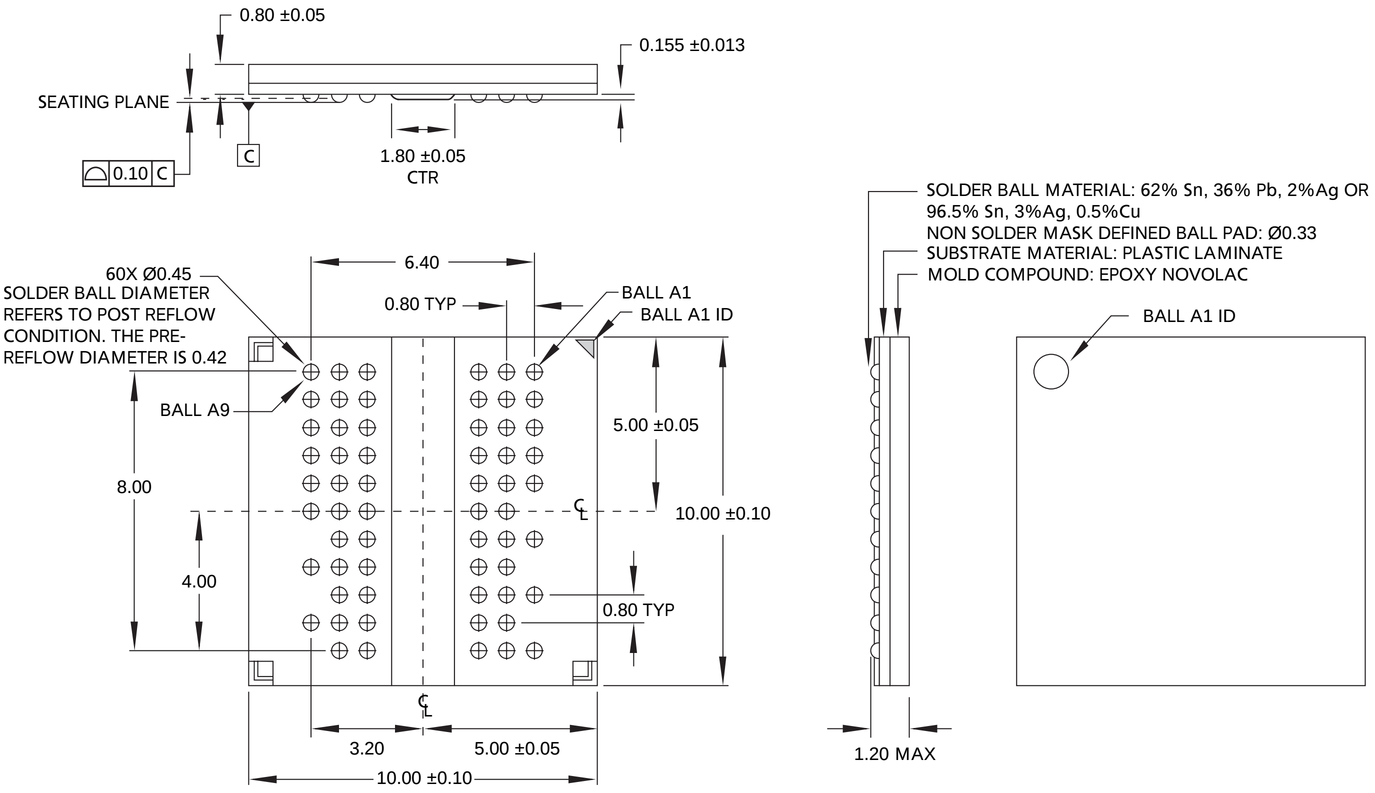
Note: All dimensions are in millimeters.

**Figure 4: 60-Ball FBGA Package – 12mm x 10mm (x4, x8; :B)**



Note: All dimensions are in millimeters.

### Figure 5: 60-Ball FBGA Package – 10mm x 10mm (x4, x8; :D)



Note: All dimensions are in millimeters.

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