

Altera Device Package Information

04R-00232-1.0

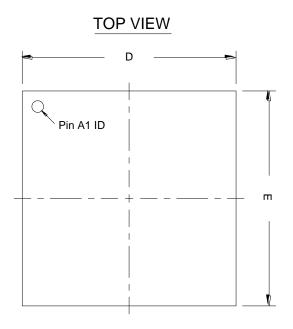
324-Pin FineLine Ball-Grid Array (FBGA) - THIN - Wire Bond - A:1.55

- All dimensions and tolerances conform to ASME Y14.5M 1994.
- Controlling dimension is in millimeters.
- Pin 1 may be indicated by an ID dot, or a special feature, in its proximity on package surface.

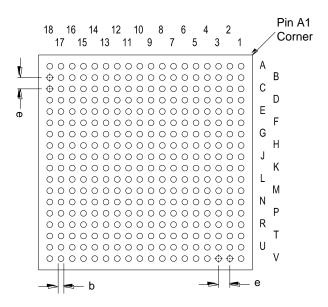
| Package Information | | |
|----------------------------|---|--|
| Description | Specification | |
| Ordering Code Reference | F | |
| Package Acronym | FBGA | |
| Substrate Material | ВТ | |
| Solder ball composition | Regular: 63Sn:37Pb (Typ.) Pb-free: Sn:3Ag:0.5Cu (Typ.) | |
| JEDEC Outline Reference | MO-192 Variation: DAG-1 | |
| Lead Coplanarity | 0.005 inch (0.12 mm) | |
| Weight | 1.2 g (Typ.) | |
| Moisture Sensitivity Level | Printed on moisture barrier bag | |

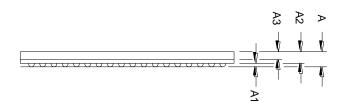
| Package Outline Dimension Table | | | | |
|---------------------------------|-------------|------|------|--|
| Symbol | Millimeters | | | |
| Symbol | Min. | Nom. | Max. | |
| Α | 1.25 | 1.40 | 1.55 | |
| A1 | 0.30 | 0.40 | 0.50 | |
| A2 | 0.75 | 1.00 | 1.25 | |
| А3 | 0.65 | 0.70 | 0.75 | |
| D | 19.00 BSC | | | |
| E | 19.00 BSC | | | |
| b | 0.40 | 0.50 | 0.60 | |
| е | 1.00 BSC | | | |

Package Outline



BOTTOM VIEW





Document Revision History

Table 1 shows the revision history for this document.

Table 1. Document Revision History

| Date | Version | Changes |
|-----------|---------|-----------------|
| June 2011 | 1.0 | Initial release |



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