



04R-00281-2.0

780-Pin FineLine Ball-Grid Array (FBGA) - Flip Chip - Lidless - A:2.60

- All dimensions and tolerances conform to ASME Y14.5M 1994.
- Controlling dimension is in millimeters.
- Pin A1 may be indicated by an ID dot, or a special feature, in its proximity on package surface.

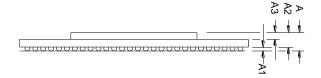
| Package Information | | | |
|----------------------------|---|--|--|
| Description | Specification | | |
| Ordering Code Reference | F | | |
| Package Acronym | FBGA | | |
| Substrate Material | BT | | |
| Solder ball composition | Regular: 63Sn:37Pb (Typ.) Pb-free: Sn:3Ag:0.5Cu (Typ.) | | |
| JEDEC Outline Reference | MS-034 Variation: AAM-1 | | |
| Lead Coplanarity | 0.008 inch (0.20 mm) | | |
| Weight | 3.8 g (Typ.) | | |
| Moisture Sensitivity Level | Printed on moisture barrier bag | | |

| Symphol | Millimeters | | | |
|---------|---|----------|------|--|
| Symbol | Min. | Nom. | Max. | |
| А | 2.20 | 2.40 | 2.60 | |
| A1 | 0.40 | 0.50 | 0.60 | |
| A2 | 1.60 | 1.90 | 2.20 | |
| A3 | 0.75 | 0.85 | 0.95 | |
| D | 29.00 BSC Device Specific Dimension (see table below) 29.00 BSC | | | |
| D1 | | | | |
| E | | | | |
| E1 | Device Specific Dimension (see table below) | | | |
| b | 0.50 | 0.60 | 0.70 | |
| е | | 1.00 BSC | | |

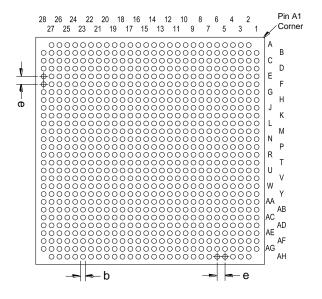
| Device Specific Dimension Table | | | | | | |
|---------------------------------|--------|--------|-----------|-------------|-------|--|
| Device | Millim | neters | Device | Millimeters | | |
| Device | D1 | E1 | Device | D1 | E1 | |
| EP2AGX95 | 13.40 | 13.10 | EP2AGX125 | 13.40 | 13.10 | |
| EP2AGX190 | 17.20 | 16.60 | EP2AGX260 | 17.20 | 16.60 | |

Package Outline

TOP VIEW



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 |
| November 2011 2.0 Add Device | | Add Device Specific Dimension Table at page 1. |



101 Innovation Drive San Jose, CA 95134 www.altera.com © 2011 Altera Corporation. All rights reserved. ALTERA, ARRIA, CYCLONE, HARDCOPY, MAX, MEGACORE, NIOS, QUARTUS and STRATIX are Reg. U.S. Pat. & Tm. Off. and/or trademarks of Altera Corporation in the U.S. and other countries. All other trademarks and service marks are the property of their respective holders as described at www.altera.com/common/legal.html. Altera warrants performance of its semiconductor products to current specifications in accordance with Altera's standard warranty, but reserves the right to make changes to any products and services at any time without notice. Altera assumes no responsibility or liability arising out of the application or use of any information, product, or service described herein except as expressly agreed to in writing by Altera. Altera customers are advised to obtain the latest version of device specifications before relying on any published information and before placing orders for products or services.