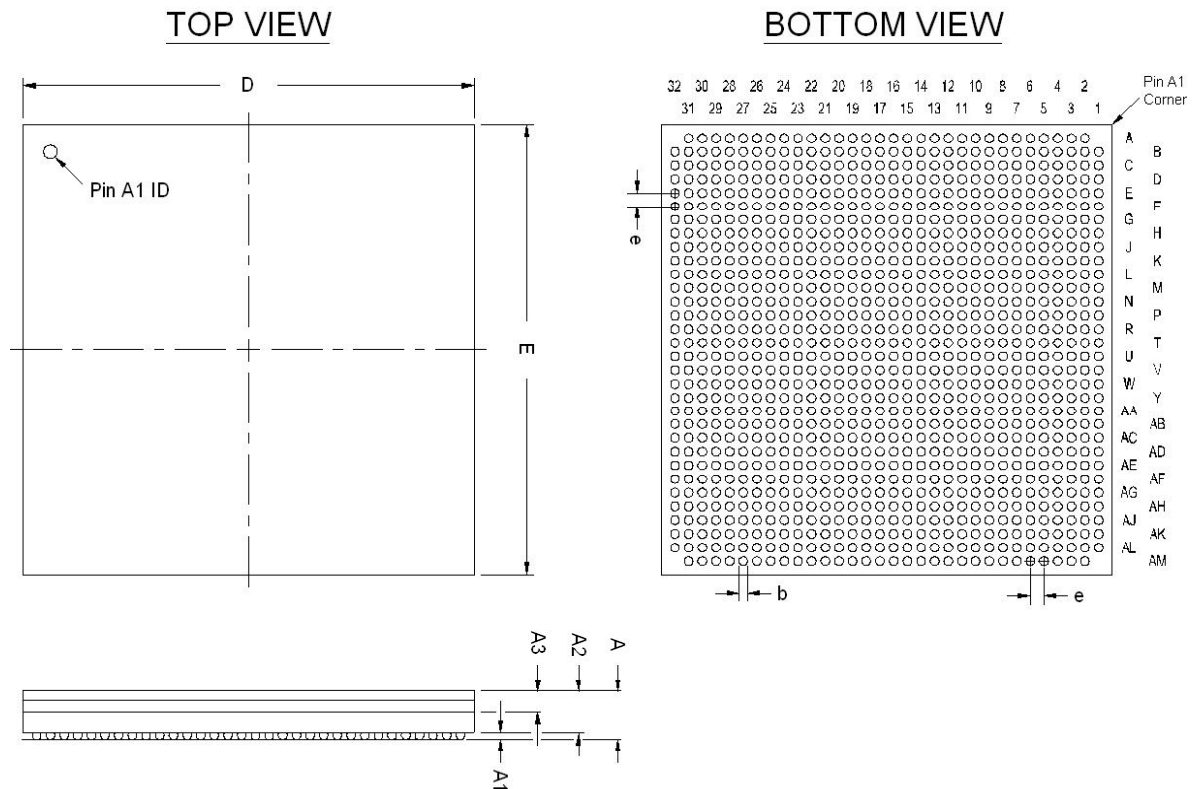


## 1020-Pin FineLine Ball-Grid Array (FBGA), Option 1—Flip Chip

- 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.)<br>Pb-free: Sn:3Ag:0.5Cu (Typ.) |
| JEDEC Outline Reference    | MS-034 Variation: AAP-1                                   |
| Lead Coplanarity           | 0.008 inches (0.20 mm)                                    |
| Weight                     | 13.8 g (Typ.)   |
| Moisture Sensitivity Level | Printed on moisture barrier bag                           |

| Package Outline Dimension Table |             |      |      |
|---------------------------------|-------------|------|------|
| Symbol                          | Millimeters |      |      |
|                                 | Min.        | Nom. | Max. |
| A                               | —           | —    | 3.50 |
| A1                              | 0.30        | —    | —    |
| A2                              | 0.25        | —    | 3.00 |
| A3                              | —           | —    | 2.50 |
| D                               | 33.00 BSC   |      |      |
| E                               | 33.00 BSC   |      |      |
| b                               | —           | 0.60 | 0.70 |
| e                               | 1.00 BSC    |      |      |



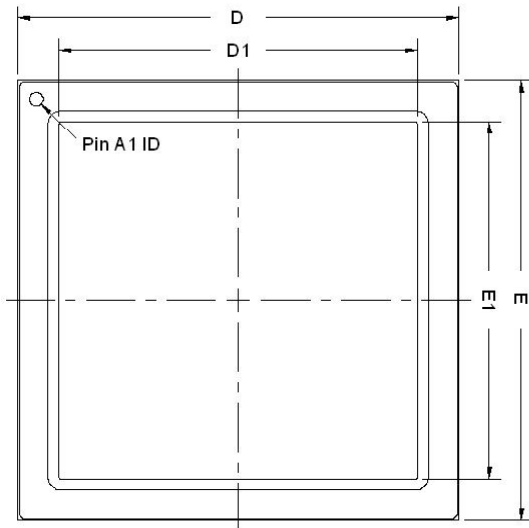
## 1020-Pin FineLine Ball-Grid Array (FBGA), Option 2—Flip Chip

- 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.)<br>Pb-free: Sn:3Ag:0.5Cu (Typ.) |
| JEDEC Outline Reference    | MS-034 Variation: AAP-1                                   |
| Lead Coplanarity           | 0.008 inches (0.20 mm)                                    |
| Weight                     | 10.8 g (Typ.)   |
| Moisture Sensitivity Level | Printed on moisture barrier bag                           |

| Package Outline Dimension Table |             |      |      |
|---------------------------------|-------------|------|------|
| Symbol                          | Millimeters |      |      |
|                                 | Min.        | Nom. | Max. |
| A                               | —           | —    | 3.50 |
| A1                              | 0.30        |      |      |
| A2                              | 0.25        | —    | 3.00 |
| A3                              | —           | —    | 2.50 |
| D                               | 33.00 BSC   |      |      |
| D1                              | 26.00 BSC   |      |      |
| E                               | 33.00 BSC   |      |      |
| E1                              | 26.00 BSC   |      |      |
| b                               |             | 0.60 | 0.70 |
| e                               | 1.00 BSC    |      |      |

TOP VIEW



BOTTOM VIEW

