

Introduction

This chapter provides package information for Altera® Cyclone® III devices, and contains the following sections:

- “Thermal Resistance”
- “Package Outlines”

Table 15–1 shows Cyclone III device package options. All E144 packages have an exposed pad at the bottom of the package. This exposed pad represents the ground pad that must be connected to the ground plane on your PCB. This exposed pad is used for electrical connectivity and not for thermal purposes.

Table 15–1. Cyclone III Device Package Options (Note 1) (Part 1 of 2)

| Device | Package | Pins |
|--------|--|------|
| EP3C5 | Plastic Enhanced Quad Flat Pack (EQFP) – Wire Bond | 144 |
| | FineLine Ball-Grid Array (FBGA) – Option 2 – Wire Bond | 256 |
| | Ultra FineLine Ball-Grid Array (UBGA) – Wire Bond | 256 |
| | Micro FineLine Ball-Grid Array (MBGA) – Wire Bond | 164 |
| EP3C10 | Plastic Enhanced Quad Flat Pack (EQFP) – Wire Bond | 144 |
| | FineLine Ball-Grid Array (FBGA) – Option 2 – Wire Bond | 256 |
| | Ultra FineLine Ball-Grid Array (UBGA) – Wire Bond | 256 |
| | Micro FineLine Ball-Grid Array (MBGA) – Wire Bond | 164 |
| EP3C16 | Plastic Enhanced Quad Flat Pack (EQFP) – Wire Bond | 144 |
| | Plastic Quad Flat Pack (PQFP) – Wire Bond | 240 |
| | FineLine Ball-Grid Array (FBGA) – Option 2 – Wire Bond | 256 |
| | Ultra FineLine Ball-Grid Array (UBGA) – Wire Bond | 256 |
| | FineLine Ball-Grid Array (FBGA) – Option 3 – Wire Bond | 484 |
| | Ultra FineLine Ball-Grid Array (UBGA) – Wire Bond | 484 |
| | Micro FineLine Ball-Grid Array (MBGA) – Wire Bond | 164 |
| EP3C25 | Plastic Enhanced Quad Flat Pack (EQFP) – Wire Bond | 144 |
| | Plastic Quad Flat Pack (PQFP) – Wire Bond | 240 |
| | FineLine Ball-Grid Array (FBGA) – Option 2 – Wire Bond | 256 |
| | Ultra FineLine Ball-Grid Array (UBGA) – Wire Bond | 256 |
| | FineLine Ball-Grid Array (FBGA) – Wire Bond | 324 |
| EP3C40 | Plastic Quad Flat Pack (PQFP) – Wire Bond | 240 |
| | FineLine Ball-Grid Array (FBGA) – Wire Bond | 324 |
| | FineLine Ball-Grid Array (FBGA) – Option 3 – Wire Bond | 484 |
| | Ultra FineLine Ball-Grid Array (UBGA) – Wire Bond | 484 |
| | FineLine Ball-Grid Array (FBGA) – Option 2 – Wire Bond | 780 |

Table 15-1. Cyclone III Device Package Options (Note 1) (Part 2 of 2)

| Device | Package | Pins |
|---------|--|------|
| EP3C55 | FineLine Ball-Grid Array (FBGA) – Option 3 – Wire Bond | 484 |
| | Ultra FineLine Ball-Grid Array (UBGA) – Wire Bond | 484 |
| | FineLine Ball-Grid Array (FBGA) – Option 2 – Wire Bond | 780 |
| EP3C80 | FineLine Ball-Grid Array (FBGA) – Option 3 – Wire Bond | 484 |
| | Ultra FineLine Ball-Grid Array (UBGA) - Wire Bond | 484 |
| | FineLine Ball-Grid Array (FBGA) – Option 2 – Wire Bond | 780 |
| EP3C120 | FineLine Ball-Grid Array (FBGA) – Option 3 – Wire Bond | 484 |
| | FineLine Ball-Grid Array (FBGA) – Option 2 – Wire Bond | 780 |

Note to Table 15-1:

- (1) The package type entries with 'Option #' refer to instances where multiple package options exist for a given package type and pin count. The Option number identifies the specific type used by the corresponding device density.

Thermal Resistance



For more information about the thermal resistance specifications for Cyclone III devices, refer to the *Thermal Resistance* section in *Altera Device Package Information Data Sheet*.

Package Outlines



For more information about Cyclone III device package outlines, refer to the *Package Outlines* section in *Altera Device Package Information Data Sheet*.

Referenced Documents

This chapter references the following documents:

- [Altera Device Package Information Data Sheet](#)

Document Revision History

Table 15-2 shows the revision history for this chapter.

Table 15-2. Document Revision History

| Date and Document Version | Changes Made | Summary of Changes |
|----------------------------------|--|---------------------------|
| October 2008 v1.3 | <ul style="list-style-type: none">■ Updated chapter to new template■ Updated the “Thermal Resistance” and “Package Outlines” sections | — |
| May 2008 v1.2 | Updated information about EP3C5, EP3C10, and EP3C16 devices in the “ Introduction ” section and Table 15-1 . | — |
| July 2007 v1.1 | Added chapter TOC and “ Referenced Documents ” section. | — |
| March 2007 v1.0 | Initial release. | — |



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