15. Package Information for Cyclone III Devices

CIII51015-1.2

Introduction

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

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
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

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

Thermal resistance specifications for Cyclone III devices can be found in the *Cyclone Series Device Thermal Resistance Data Sheet*.

Package Outlines

Cyclone III device package outlines can be found in the *Altera Device Package Information Data Sheet*.

Referenced Documents

This chapter references the following documents:

- *Altera Device Package Information Data Sheet*
- *Cyclone Series Device Thermal Resistance 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**
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	—