

PROCESS CHANGE NOTIFICATION

PCN0901

SUBSTRATE CHANGE FOR SELECTED FBGA PACKAGES

Change Description

This is an update to PCN0901; please see the revision history table for information specific to this update.

Altera is implementing a substrate change on selected product lines assembled in the Fine-Line Ball Grid Array (FBGA) package. This change is a transition from a four-layer to a two-layer design. The total thickness of the affected packages will remain the same.

Recommended Action

No action is required as a result of this change.

Reason for Change

The products affected are older products using earlier substrate designs. These are being migrated to current substrate routing technologies. This change improves the availability of supply and the overall product life.

Products Affected

Table 1 lists the product lines affected by this change. The products will transition to the two-layer substrate design as existing inventories are consumed. Appendix 1 lists the affected ordering part numbers.

Table 1: Affected Product Lines

Product Family	Package Type	Pin Count	Product Line	Sample Availability	Product Transition
Cyclone® FPGA	FBGA	256	EP1C6	Now	May 2009
			EP1C12	Now	May 2009
		324	EP1C4	Now	May 2009
			EP1C12	Now	May 2009
		400	EP1C4	Now	May 2009
			EP1C20	Now	May 2009

For device samples please visit <http://www.samplecomponents.com/scripts/SampleCenter.dll?Altera>

Product Traceability and Transition Dates

This change will be implemented starting May 2009. Customers may receive products with this change beginning with a date code marking of 0919 or later on the top of the package. See Figure 1. The 0919 date code marking indicates the earliest date that the new material may be used for any of the affected devices. However, initial samples may have an earlier date code marking.

Figure 1. Date Code Marking

Altera Date Code Marking Format

A XβZαα**0919**T

Qualification Data

Qualification data is summarized in Table 2.

Table 2. Summary of Qualification Data

Representative Package	Qualification Test	Read Out	Results
F256	PCL 3 + Temp Cycle "B" (-55°C to 125°C)	1000 cycle	0 /75
	High Temp Bake @ 150° C	1000 hrs	0 /25
	PCL 3 + Unbiased HAST (130°C/85%RH)	96 hrs	0 /75
	PCL 3 + HAST (130°C/85%RH)	96 hrs	0 /25
	Lifetest	1000 hrs	0 / 50

Characterization data is available on request by contacting Altera Customer Quality Engineering.

Contact

For more information, please contact Altera Customer Quality Engineering at customer-quality@altera.com.

In accordance with JESD46-C, this change is deemed acceptable to the customer if no acknowledgement is received within 30 days from this notification.

Revision History

Date	Rev	Description
01/21/2009	1.0.0	Initial Release
03/10/2009	1.1.0	Removed FLEX [®] EPF10K30E and ACEX [®] EP1K30 devices. Change not applicable.

Appendix 1. Affected Ordering Part Numbers

Cyclone® FPGA

EP1C4F324C6	EP1C6F256C6	EP1C12F256C6	EP1C20F400C6
EP1C4F324C6N	EP1C6F256C6N	EP1C12F256C6AA	EP1C20F400C6AB
EP1C4F324C7	EP1C6F256C7	EP1C12F256C6N	EP1C20F400C6N
EP1C4F324C7N	EP1C6F256C7ES	EP1C12F256C7	EP1C20F400C7
EP1C4F324C8	EP1C6F256C7N	EP1C12F256C7N	EP1C20F400C7N
EP1C4F324C8N	EP1C6F256C7NAB	EP1C12F256C8	EP1C20F400C8
EP1C4F324I7	EP1C6F256C8	EP1C12F256C8EC	EP1C20F400C8N
EP1C4F324I7N	EP1C6F256C8EC	EP1C12F256C8N	EP1C20F400C8NAC
	EP1C6F256C8ES	EP1C12F256I7	EP1C20F400I7
EP1C4F400C6	EP1C6F256C8N	EP1C12F256I7N	EP1C20F400I7N
EP1C4F400C6N	EP1C6F256I7		
EP1C4F400C7	EP1C6F256I7N	EP1C12F324C6	
EP1C4F400C7N		EP1C12F324C6AA	
EP1C4F400C8		EP1C12F324C6N	
EP1C4F400C8N		EP1C12F324C7	
EP1C4F400C8NAA		EP1C12F324C7N	
EP1C4F400C8NAB		EP1C12F324C8	
EP1C4F400I7		EP1C12F324C8N	
EP1C4F400I7N		EP1C12F324I7	
		EP1C12F324I7N	

Listed below are the ordering part numbers that have been removed in Revision 1.1.0

FLEX® devices

EPF10K30EFC256-1	EPF10K30EFC256-2	EPF10K30EFC256-2X	EPF10K30EFC256-3N
EPF10K30EFC256-1X	EPF10K30EFC256-2N	EPF10K30EFC256-3	EPF10K30EFI256-2

ACEX® devices

EP1K30FC256-1	EP1K30FC256-2N	EP1K30FC256-3N	EP1K30FI256-2N
EP1K30FC256-1N	EP1K30FC256-3	EP1K30FC256-3NAA	
EP1K30FC256-2	EP1K30FC256-3AA	EP1K30FI256-2	

Copyright © 2009 Altera Corporation. All rights reserved. Altera, The Programmable Solutions Company, the stylized Altera logo, specific device designations, and all other words and logos that are identified as trademarks and/ or service marks are, unless noted otherwise, the trademarks and service marks of Altera Corporation in the U.S. and other countries. All other product or service names are the property of their respective holders. Altera products are protected under numerous U.S. and foreign patents and pending applications, maskwork rights, and copyrights. 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 Corporation. 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.