

## **CUSTOMER ADVISORY ADV1005**

### **ADDITIONAL ASSEMBLY SITE FOR THE ARRIA® II GX FBGA PACKAGE**

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#### **Change Description**

Altera will be introducing Amkor, Korea (ATK) as an additional assembly source for the Arria® II GX FBGA packages. The Arria II GX family is currently manufactured out of Amkor, Taiwan (AHT).

#### **Recommended Action**

No action is recommended as a result of this change. The current package-dimension specifications and the bill of materials will remain the same.

This change does not affect the form, fit, or function as defined in the Altera® Packaging Data Sheet.

#### **Reason for Change**


This change is being implemented to improve manufacturing efficiency and to better support long-term demand for the affected products. This also supports Altera's supply-chain risk-mitigation strategy by establishing the capability to produce equivalent product from multiple qualified locations. ATK is a fully qualified manufacturer for Altera products. Amkor Korea has demonstrated manufacturing excellence, good assembly performance, and the ability to accommodate Altera's high-volume capacity requirements.

#### **Products Affected**

The product lines affected by this change are listed in Table 1. A list of the current ordering part numbers are listed in Appendix 1.

Subsequent ordering part numbers generated after this notification will be supported at either assembly location.

**Table 1: Affected Product Lines**

Product Family	Product Line	Pin Count	Package Type
	EP2AGX45	358	UBGA
		572	FBGA
		780	
	EP2AGX65	358	MBGA
		358	UBGA
		572	FBGA
	780		
	EP2AGX95	572	FBGA
		780	
		1152	
	EP2AGX125	572	FBGA
		780	
		1152	
	EP2AGX190	780	FBGA
		1152	
EP2AGX260	780	FBGA	
	1152		

**Product Traceability and Transition Dates**

This change will be implemented beginning October 2010. Customers may receive products with this change beginning with date-code marking of 1037 or later (See Figure 1). The country of origin can be identified by the topside marking (See Table 2).

**Figure 1: Date-code Marking**

**Altera Date-code Marking Format**  
**A XβZαα1037T**

**Table 2: Country of Origin Marking**


Assembly Location	Topside Mark Country of Origin
ATK	Korea
AHT	Taiwan

*Note: For smaller devices, the date-code marking can be used to identify the addition of ATK.*

## Qualification Data

The reliability results below are used as data substitution to support the ATK package qualification (See Table 3).

**Table 3: Summary of Qualification Data**

Product Family	Product Line	Representative Packages	Qualification Test	Readout	Results
	EP2AGX65	M1019	High Temp Bake 150°C	1000 hrs	0/ 150
			PCL 3 + Unbiased HAST 130°C / 85% RH	96 hrs	0/ 243
			PCL 3 + Temp Cycle "B" (-55°C to 125°C)	500 cyc	0/ 230
		U358	PCL 3 + Unbiased HAST 130°C / 85% RH	96 hrs	0/ 29
			PCL 3 + Temp Cycle "B" (-55°C to 125°C)	1000 cyc	0 /29
			PCL 3 + Temp Humidity Bias (85°C/85%RH)	1000 hrs	0 /110
Package Validation	Lot 1	F1517	PCL 3 + Temp Humidity Bias (85°C/85%RH)	1000 hrs	0/ 100
Package Validation	Lot 1	F484	PCL 3 + Temp Cycle "B" (-55°C to 125°C)	1000 cyc	0/ 19
	Lot 2		PCL 3 + Temp Cycle "B" (-55°C to 125°C)	1000 cyc	0/ 13
	Lot 3		PCL 3 + Temp Cycle "B" (-55°C to 125°C)	1000 cyc	0/ 12
	Lot 1	F780	PCL 3 + Temp Cycle "B" (-55°C to 125°C)	1000 cyc	0/ 16
	Lot 2		PCL 3 + Temp Cycle "B" (-55°C to 125°C)	1000 cyc	0/ 16
	Lot 3		PCL 3 + Temp Cycle "B" (-55°C to 125°C)	1000 cyc	0/ 11

*Note: Pre Conditioning Level 3 preformed @ 260°C*

## Contact

For more information, please contact Altera Technical Support by submitting a Service Request at Altera's [mySupport](#) website.

## Customer Notifications Subscription

Customers that have subscribed to Altera's customer notification mailing list will receive updates automatically via email.

If you would like to receive customer notifications by e-mail, please subscribe to our customer notification mailing list at <https://www.altera.com/subscriptions/email/signup/eml-index.jsp>

## Revision History

Date	Rev	Description
10/06/2010	1.0.0	Initial Release

## Appendix 1: Affected Ordering Part Numbers



EP2AGX45CU17C4	EP2AGX65CU17C4	EP2AGX95DF25C4	EP2AGX125DF25C4
EP2AGX45CU17C4N	EP2AGX65CU17C4N	EP2AGX95DF25C4N	EP2AGX125DF25C4N
EP2AGX45CU17C5	EP2AGX65CU17C5	EP2AGX95DF25C5	EP2AGX125DF25C5
EP2AGX45CU17C5N	EP2AGX65CU17C5N	EP2AGX95DF25C5N	EP2AGX125DF25C5N
EP2AGX45CU17C6	EP2AGX65CU17C6	EP2AGX95DF25C6	EP2AGX125DF25C6
EP2AGX45CU17C6N	EP2AGX65CU17C6N	EP2AGX95DF25C6N	EP2AGX125DF25C6N
EP2AGX45CU17I5	EP2AGX65CU17I5	EP2AGX95DF25I5	EP2AGX125DF25I5
EP2AGX45CU17I5N	EP2AGX65CU17I5N	EP2AGX95DF25I5N	EP2AGX125DF25I5N
EP2AGX45DF25C4	EP2AGX65DF25C4	EP2AGX95EF29C4	EP2AGX125EF29C4
EP2AGX45DF25C4N	EP2AGX65DF25C4N	EP2AGX95EF29C4N	EP2AGX125EF29C4N
EP2AGX45DF25C5	EP2AGX65DF25C5	EP2AGX95EF29C5	EP2AGX125EF29C5
EP2AGX45DF25C5N	EP2AGX65DF25C5N	EP2AGX95EF29C5N	EP2AGX125EF29C5N
EP2AGX45DF25C6	EP2AGX65DF25C6	EP2AGX95EF29C6	EP2AGX125EF29C6
EP2AGX45DF25C6N *	EP2AGX65DF25C6N	EP2AGX95EF29C6N	EP2AGX125EF29C6N
EP2AGX45DF25I3N	EP2AGX65DF25I3N	EP2AGX95EF29I3N	EP2AGX125EF29I3
EP2AGX45DF25I5	EP2AGX65DF25I5	EP2AGX95EF29I5	EP2AGX125EF29I3N *
EP2AGX45DF25I5N	EP2AGX65DF25I5N	EP2AGX95EF29I5N	EP2AGX125EF29I5
EP2AGX45DF29C4	EP2AGX65DF29C4	EP2AGX95EF35C4	EP2AGX125EF29I5N
EP2AGX45DF29C4N	EP2AGX65DF29C4N	EP2AGX95EF35C4N	EP2AGX125EF35C4
EP2AGX45DF29C5	EP2AGX65DF29C5	EP2AGX95EF35C5	EP2AGX125EF35C4N
EP2AGX45DF29C5N	EP2AGX65DF29C5N	EP2AGX95EF35C5N	EP2AGX125EF35C5
EP2AGX45DF29C6	EP2AGX65DF29C6	EP2AGX95EF35C6N	EP2AGX125EF35C5N
EP2AGX45DF29C6N	EP2AGX65DF29C6N	EP2AGX95EF35I3N	EP2AGX125EF35C6
EP2AGX45DF29I3N	EP2AGX65DF29I3N *	EP2AGX95EF35I5	EP2AGX125EF35C6N
EP2AGX45DF29I5	EP2AGX65DF29I5	EP2AGX95EF35I5N	EP2AGX125EF35I3
EP2AGX45DF29I5N	EP2AGX65DF29I5N *		EP2AGX125EF35I3N
	EP2AGX65DM17I6N *		EP2AGX125EF35I5
			EP2AGX125EF35I5N *

## Appendix 1: Affected Ordering Part Numbers (continued)



EP2AGX190EF29C4	EP2AGX190FF35C4	EP2AGX260EF29C4	EP2AGX260FF35C4
EP2AGX190EF29C4N	EP2AGX190FF35C4N *	EP2AGX260EF29C4N	EP2AGX260FF35C4N
EP2AGX190EF29C5	EP2AGX190FF35C5	EP2AGX260EF29C5	EP2AGX260FF35C5
EP2AGX190EF29C5N	EP2AGX190FF35C5N	EP2AGX260EF29C5N	EP2AGX260FF35C5N
EP2AGX190EF29C6	EP2AGX190FF35C6	EP2AGX260EF29C6	EP2AGX260FF35C6
EP2AGX190EF29C6N	EP2AGX190FF35C6N	EP2AGX260EF29C6N	EP2AGX260FF35C6N
EP2AGX190EF29I3N *	EP2AGX190FF35I3N *	EP2AGX260EF29I3N	EP2AGX260FF35I3N *
EP2AGX190EF29I5	EP2AGX190FF35I5	EP2AGX260EF29I5	EP2AGX260FF35I5
EP2AGX190EF29I5N	EP2AGX190FF35I5N	EP2AGX260EF29I5N	EP2AGX260FF35I5N

*Note: \* Also include part numbers which contain a suffix.*

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