

PROCESS CHANGE NOTIFICATION

PCN1205

ADDITIONAL ASSEMBLY SOURCE (ASE) AND TRANSITION TO CENTER PIN GATE MOLD FOR FBGA PACKAGES

Change Description

This is an update to PCN1205; please see the revision history table for information specific to this update.

Altera[®] announced Advanced Semiconductor Engineering (ASE) as an additional assembly source for the Arria[®] II (GX and GZ), Cyclone[®] III, Cyclone IV (E), Stratix[®] II, Stratix II GX, and Stratix IV GX devices. In addition, Altera announced the use of center pin gate mold for selected Fineline Ball Grid Array (FBGA) packages from both Amkor and ASE. Altera also announced the use of Sumitomo mold compound for the Cyclone III and Cyclone IV devices.

Recommended Action

No action is recommended as a result of this change. Altera's product qualification methodology is a rigorous process that is used to ensure products meet or exceed the Quality and Reliability requirements. Supporting reliability data are included in this notification.

This change does not affect the fit or function as defined in the product data sheets and is backwards compatible with existing devices. There is a slight increase to the mold compound coverage for the FBGA F484 and F780 packages. However, the overall package outline dimensions remain the same; refer to Figure 1.

Reason for Change

Altera is implementing this change to strengthen supply-chain risk-mitigation by establishing the capability to produce equivalent product from multiple qualified suppliers. Adding second source suppliers provides supply chain continuity and protection against unforeseen events. Amkor and ASE are fully qualified manufacturers for Altera products.

Products Affected

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

Table 1: Affected Product Lines

Product Family	Product Line	Package Type	Sample Order Deadline	Estimated Sample Availability	Estimated Earliest Shipment Date
	EP2AGX45	F780	June 2012	Aug 2012	Dec 2012
	EP2AGX65	F780	June 2012	Aug 2012	Dec 2012
	EP2AGX95	F780	June 2012	Aug 2012	Dec 2012
		F1152	June 2012	Aug 2012	Dec 2012
	EP2AGX125	F780	June 2012	Aug 2012	Dec 2012
		F1152	June 2012	Aug 2012	Dec 2012
	EP2AGX190	F780	June 2012	Aug 2012	Dec 2012
		F1152	June 2012	Aug 2012	Dec 2012
	EP2AGX260	F780	June 2012	Aug 2012	Dec 2012
		F1152	June 2012	Aug 2012	Dec 2012
	EP2AGZ225	F1152	June 2012	Aug 2012	Dec 2012
		F1517	June 2012	Aug 2012	Dec 2012

Table 1: Affected Product Lines (continued)

Product Family	Product Line	Package Type	Sample Order Deadline	Estimated Sample Availability	Estimated Earliest Shipment Date
Cyclone III ⁽¹⁾	EP3C5	F256	June 2012	Aug 2012	Dec 2012
	EP3C10	F256	June 2012	Aug 2012	Dec 2012
	EP3C16	F484	June 2012	Aug 2012	Dec 2012
	EP3C25	F484	June 2012	Aug 2012	Dec 2012
	EP3C40	F484	June 2012	Aug 2012	Dec 2012
		F780	June 2012	Aug 2012	Dec 2012
	EP3C55	F484	June 2012	Aug 2012	Dec 2012
		F780	June 2012	Aug 2012	Dec 2012
	EP3C80	F484 ⁽²⁾	June 2012	Sept 2012	Dec 2012
		F780	June 2012	Aug 2012	Dec 2012
Cyclone III LS ⁽¹⁾	EP3CLS70	F780 ^(2,3)	June 2012	Sept 2012	Dec 2012
	EP3CLS100		June 2012	Sept 2012	Dec 2012
	EP3CLS150		June 2012	Sept 2012	Dec 2012
	EP3CLS200		June 2012	Sept 2012	Dec 2012
Cyclone IV ⁽¹⁾	EP4CE6	F256	June 2012	Aug 2012	Dec 2012
	EP4CE10	F256	June 2012	Aug 2012	Dec 2012
	EP4CE15	F484	June 2012	Aug 2012	Dec 2012
	EP4CE30	F484	June 2012	Aug 2012	Dec 2012
		F780	June 2012	Aug 2012	Dec 2012
	EP4CE40	F484	June 2012	Aug 2012	Dec 2012
		F780	June 2012	Aug 2012	Dec 2012
	EP4CE55	F484	June 2012	Aug 2012	Dec 2012
		F780	June 2012	Aug 2012	Dec 2012
	EP4CE75	F484 ⁽²⁾	June 2012	Sept 2012	Dec 2012
		F780	June 2012	Aug 2012	Dec 2012
Cyclone IV GX ⁽⁴⁾	EP4CGX30	F484 ⁽²⁾	June 2012	Sept 2012	Dec 2012
		F484 ⁽²⁾	June 2012	Sept 2012	Dec 2012
	EP4CGX50	F672 ⁽²⁾	June 2012	Sept 2012	Dec 2012
		F672 ⁽²⁾	June 2012	Sept 2012	Dec 2012
	EP4CGX75	F484 ⁽²⁾	June 2012	Sept 2012	Dec 2012
		F672 ⁽²⁾	June 2012	Sept 2012	Dec 2012
	EP4CGX110	F484 ⁽²⁾	June 2012	Sept 2012	Dec 2012
		F672 ⁽²⁾	June 2012	Sept 2012	Dec 2012
	EP4CGX150	F896 ⁽²⁾	June 2012	Sept 2012	Dec 2012
		F896 ⁽²⁾	June 2012	Sept 2012	Dec 2012

Notes:

1. Cyclone III and Cyclone IV families assembled in the F484 and F780 package will transition to center pin gate mold and Sumitomo mold compound.
2. Samples for these product / package combinations will only be available from Amkor assembly site.
3. The Cyclone III LS devices will also transition from gold (Au) bond wire to copper (Cu) bond wire.
4. Cyclone IV GX devices currently use pin gate mold, but will transition to Sumitomo mold compound.

Table 1: Affected Product Lines (continued)

Product Family	Product Line	Package Type	Sample Order Deadline	Estimated Sample Availability	Estimated Earliest Shipment Date
	EP2S30	F484	June 2012	Aug 2012	Dec 2012
	EP2S30	F672	June 2012	Aug 2012	Dec 2012
	EP2SGX30	F780	June 2012	Aug 2012	Dec 2012
	EP2SGX55	F1152	June 2012	Aug 2012	Dec 2012
	EP2SGX60	F1152	June 2012	Aug 2012	Dec 2012
	EP2SGX85	F1508	June 2012	Aug 2012	Dec 2012
	EP2SGX90	F1152	June 2012	Aug 2012	Dec 2012
		F1508	June 2012	Aug 2012	Dec 2012
		F1517	June 2012	Aug 2012	Dec 2012
	EP2SGX125	F1508	June 2012	Aug 2012	Dec 2012
	EP2SGX130	F1508	June 2012	Aug 2012	Dec 2012
		F1517	June 2012	Aug 2012	Dec 2012

Product Family	Product Line	Package Type	Sample Order Deadline	Estimated Sample Availability	Estimated Earliest Shipment Date
	EP4SGX180	F1152	June 2012	Aug 2012	Dec 2012
		F1517	June 2012	Aug 2012	Dec 2012
	EP4SGX230	F1152	June 2012	Aug 2012	Dec 2012
		F1517	June 2012	Aug 2012	Dec 2012
	EP4SGX290	F1932	June 2012	Aug 2012	Dec 2012
	EP4SGX360	F1932	June 2012	Aug 2012	Dec 2012
	EP4SGX530	H1517	June 2012	Aug 2012	Dec 2012
		F1932	June 2012	Aug 2012	Dec 2012

*Note: Earliest shipment is 90 days from sample availability
Please visit Altera's sample request page for availability.*

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

Note: Customers are encouraged to place sample orders by May 05, 2012. The last call for customer sample requests is June 20, 2012.

There is a slight variation to the package “form” as the mold compound extends to the edge of the substrate; refer to Figure 1A. The F484 and F780 FBGA packages will transition to center pin gate mold. The center pin gate mold will be implemented in both Amkor and ASE assembly sites.

Figure 1A. Comparative images of the difference in mold compound coverage



Also, the top surface of select packages will carry additional dimples (0.1mm maximum depth) due to differences in the mold chase design. See representative image in Figure 1B. Note, there is no impact anticipated or changes required to customers’ pick and place equipment or processes.

Figure 1B. Representative image of additional dimples on package top surface



Product Traceability and Transition Dates

The earliest shipment of affected products is scheduled to occur in December 2012. Changed material can be distinguished using the date code (1249 and later) and/or the suffix “E” at the end of the date code marking; refer to Figure 2. Note that the 1249 date code marking indicates the earliest date production material could ship from the assembly sites. Initial qualification samples may have an earlier date code marking.

The ASE assembly location can be identified by the country of origin shown on the topside marking, refer to Table 2.

Figure 2: Date Code Marking

Altera Date Code Marking Format

A XβZαα1249E

Table 2: Assembly Site Traceability

Assembly	Date Code Example	Country of Origin (Topside mark)
AMKOR	A XβZαα1249E	Korea
ASE	A XβZαα1249E	Malaysia
		Taiwan

Qualification Data

ASE and Amkor assembly sites are already fully qualified manufacturing sources for Altera products. Quality and reliability data has been taken to ensure that the products meet or exceed Altera's specifications.

Table 3: Summary of Qualification Data (Flip Chip devices)

Product Line	Package	Qualification Test	Readout	Results
EP2AGX260	F780	Life Test @ 125°C	1000 hrs	0/ 24
		High Temp Bake @ 150°C	1000 hrs	0/ 30
		Unbiased HAST (130°C / 85%RH)	96 hrs	0/ 30
		Temperature Cycle "B" (-55°C to 125°C)	1000 cyc	0/ 30
EP4SGX230	F1517	Life Test @ 125°C	1000 hrs	0/ 30
		High Temp Bake @ 150°C	1000 hrs	0/ 30
		Unbiased HAST (130°C / 85%RH)	96 hrs	0/ 30
		Temperature Cycle "B" (-55°C to 125°C)	1000 hrs	0/ 30
EP4SGX530	H1517	Life Test @ 125°C	1000 hrs	0/ 23
		High Temp Bake @ 150°C	1000 hrs	0/ 30
		Unbiased HAST (130°C / 85%RH)	96 hrs	0/ 30
		Temperature Cycle "B" (-55°C to 125°C)	1000 cyc	0/ 30
EP2S130	F1508	Temp Humidity Bias (85°C /85%RH)	1000 hrs	0/ 23
EP2S90	F1020	Temp Humidity Bias (85°C /85%RH)	1000 hrs	0/ 25

Table 4: Summary of Qualification Data (Wire Bond devices)

Product Line	Package	Qualification Test	Readout	Results
EP4CGX150	F896	High Temp Bake @ 150°C	1000 hrs	0/ 25
		Unbiased HAST (130°C / 85%RH)	96 hrs	0/ 30
		Temp Humidity Bias (85°C /85%RH)	1000 hrs	0/ 30
		Temperature Cycle “B” (-55°C to 125°C)	1000 cyc	0/ 37
EP4CGX150	F896	High Temp Bake @ 150°C	1000 hrs	0/ 45
		Temp Humidity Bias (85°C /85%RH)	1000 hrs	0/ 60
		Unbiased HAST (130°C / 85%RH)	96 hrs	0/ 80
		Temperature Cycle “B” (-55°C to 125°C)	1000 cyc	0/ 80
EP4CGX150	F896	Temp Humidity Bias (85°C /85%RH)	1000 hrs	0/ 25
EP4CGX150	F896	High Temp Bake @ 150°C	1000 hrs	0/ 80
		Temperature Cycle “B” (-55°C to 125°C)	1000 cyc	0/ 80
EP2C70	F896	High Temp Bake @ 150°C	1000 hrs	0/ 25
		Unbiased HAST (130°C / 85%RH)	96 hrs	0/ 30
		Temperature Cycle “B” (-55°C to 125°C)	1000 cyc	0/ 25
EP2C70	F896	High Temp Bake @ 150°C	1000 hrs	0/ 45
		Unbiased HAST (130°C / 85%RH)	96 hrs	0/ 80
		Temperature Cycle “B” (-55°C to 125°C)	1000 cyc	0/ 77
EP2C70	F672	High Temp Bake @ 150°C	1000 hrs	0/ 45
		Temp Humidity Bias (85°C /85%RH)	1000 hrs	0/ 79
		Unbiased HAST (130°C / 85%RH)	96 hrs	0/ 80
		Temperature Cycle “B” (-55°C to 125°C)	1000 cyc	0/ 77
EP3C25	F256	High Temp Bake @ 150°C	1000 hrs	0/ 25
		Temp Humidity Bias (85°C /85%RH)	1000 hrs	0/ 25
		Unbiased HAST (130°C / 85%RH)	96 hrs	0/ 25
		Temperature Cycle “B” (-55°C to 125°C)	1000 cyc	0/ 25
EP2C8	F256	Life Test @ 125°C	1000 hrs	0/ 79
		High Temp Bake @ 150°C	1000 hrs	0/ 30
		Unbiased HAST (130°C / 85%RH)	96 hrs	0/ 80
		Temperature Cycle “B” (-55°C to 125°C)	1000 cyc	0/ 80

EP2C8	F256	Life Test @ 125°C	1000 hrs	0/ 80
		High Temp Bake @ 150°C	1000 hrs	0/ 30
		Unbiased HAST (130°C / 85%RH)	96 hrs	0/ 80
		Temperature Cycle “B” (-55°C to 125°C)	1000 cyc	0/ 79

Contact

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

Revision History

Date	Rev	Description
04/05/2012	1.0.0	Initial Release
06/07/2012	1.1.0	Updated sample order deadline, estimated sample availability and earliest shipment dates and product qualification data.
08/31/2012	1.2.0	Updated product qualification data and estimated sample dates for the Cyclone IV GX.
01/03/2013	1.3.0	Updated the traceability identifier in the “Product Traceability and Transition Dates” section and the earliest shipment dates in the “Affected Product Lines” section. Added reference to the 0.1mm dimples in the “Affected Product Lines” section.

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Appendix 1: Affected Ordering Part Numbers

			
EP2AGX45DF29C4	EP2AGX95EF35C4	EP2AGX190EF29C4	EP2AGX260EF29C4
EP2AGX45DF29C4N	EP2AGX95EF35C4N	EP2AGX190EF29C4N	EP2AGX260EF29C4N
EP2AGX45DF29C5	EP2AGX95EF35C5	EP2AGX190EF29C5	EP2AGX260EF29C5
EP2AGX45DF29C5N	EP2AGX95EF35C5N	EP2AGX190EF29C5N	EP2AGX260EF29C5N
EP2AGX45DF29C6	EP2AGX95EF35C6	EP2AGX190EF29C6	EP2AGX260EF29C6
EP2AGX45DF29C6N	EP2AGX95EF35C6N	EP2AGX190EF29C6N	EP2AGX260EF29C6N*
EP2AGX45DF29I3N	EP2AGX95EF35I3N	EP2AGX190EF29I3N*	EP2AGX260EF29I3N
EP2AGX45DF29I5	EP2AGX95EF35I5	EP2AGX190EF29I5	EP2AGX260EF29I5
EP2AGX45DF29I5N	EP2AGX95EF35I5N*	EP2AGX190EF29I5N	EP2AGX260EF29I5N
EP2AGX65DF29C4	EP2AGX125EF29C4	EP2AGX190FF35C4	EP2AGX260FF35I3N*
EP2AGX65DF29C4N	EP2AGX125EF29C4N	EP2AGX190FF35C4N*	EP2AGX260FF35C4
EP2AGX65DF29C5	EP2AGX125EF29C5	EP2AGX190FF35C5	EP2AGX260FF35C4N
EP2AGX65DF29C5N	EP2AGX125EF29C5N	EP2AGX190FF35C5N	EP2AGX260FF35C5
EP2AGX65DF29C6	EP2AGX125EF29C6	EP2AGX190FF35C6	EP2AGX260FF35C5N
EP2AGX65DF29C6N*	EP2AGX125EF29C6N	EP2AGX190FF35C6N	EP2AGX260FF35C6
EP2AGX65DF29I3	EP2AGX125EF29I3N*	EP2AGX190FF35I3N*	EP2AGX260FF35C6N*
EP2AGX65DF29I3N	EP2AGX125EF29I5	EP2AGX190FF35I5	EP2AGX260FF35I3N
EP2AGX65DF29I5	EP2AGX125EF29I5N*	EP2AGX190FF35I5N*	EP2AGX260FF35I5
EP2AGX65DF29I5N*			EP2AGX260FF35I5N
EP2AGX95EF29C4	EP2AGX125EF35C4	EP2AGXEF29*	
EP2AGX95EF29C4N	EP2AGX125EF35C4N	EP2AGXEF29I3N*	
EP2AGX95EF29C5	EP2AGX125EF35C5	EP2AGXF35*	
EP2AGX95EF29C5N	EP2AGX125EF35C5N*	EP2AGXF35N*	
EP2AGX95EF29C6	EP2AGX125EF35C6		
EP2AGX95EF29C6N	EP2AGX125EF35C6N		
EP2AGX95EF29I3N	EP2AGX125EF35I3N		
EP2AGX95EF29I5	EP2AGX125EF35I5		
EP2AGX95EF29I5N	EP2AGX125EF35I5N*		
			
EP2AGZ225FF35C3N	EP2AGZ225HF40C3N		
EP2AGZ225FF35C4N	EP2AGZ225HF40C4N		
EP2AGZ225FF35I3N	EP2AGZ225HF40I3		
EP2AGZ225FF35I4	EP2AGZ225HF40I3N		
EP2AGZ225FF35I4N	EP2AGZ225HF40I4		
	EP2AGZ225HF40I4N		

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

Appendix 1: Affected Ordering Part Numbers (continued)

Cyclone III

EP3C5F256C6	EP3C40F484A7N	EP3C55F484C6	EP3C80F780C6
EP3C5F256C6N	EP3C40F484C6	EP3C55F484C6N*	EP3C80F780C6N
EP3C5F256C7	EP3C40F484C6N	EP3C55F484C7	EP3C80F780C7
EP3C5F256C7N	EP3C40F484C7	EP3C55F484C7N	EP3C80F780C7N*
EP3C5F256C8	EP3C40F484C7N	EP3C55F484C8	EP3C80F780C8*
EP3C5F256C8N	EP3C40F484C8	EP3C55F484C8N*	EP3C80F780C8N*
EP3C5F256I7	EP3C40F484C8N	EP3C55F484I7	EP3C80F780I7
EP3C5F256I7N*	EP3C40F484I7	EP3C55F484I7N*	EP3C80F780I7N*
	EP3C40F484I7N*		
EP3C10F256C6		EP3C55F780C6	EP3C120F484C7
EP3C10F256C6N	EP3C40F780C6	EP3C55F780C6N	EP3C120F484C7N
EP3C10F256C7	EP3C40F780C6N	EP3C55F780C7	EP3C120F484C8
EP3C10F256C7N	EP3C40F780C7	EP3C55F780C7N	EP3C120F484C8N*
EP3C10F256C8	EP3C40F780C7N	EP3C55F780C8	EP3C120F484I7
EP3C10F256C8N	EP3C40F780C8*	EP3C55F780C8N	EP3C120F484I7N*
EP3C10F256I7	EP3C40F780C8N	EP3C55F780I7*	
EP3C10F256I7N	EP3C40F780I7	EP3C55F780I7N*	EP3C120F780C7*
	EP3C40F780I7N		EP3C120F780C7N*
EP3C16F484A7N		EP3C80F484C6	EP3C120F780C8*
EP3C16F484C6		EP3C80F484C6N*	EP3C120F780C8N*
EP3C16F484C6N		EP3C80F484C7	EP3C120F780I7*
EP3C16F484C7		EP3C80F484C7N	EP3C120F780I7N*
EP3C16F484C7N		EP3C80F484C8	
EP3C16F484C8		EP3C80F484C8N*	
EP3C16F484C8N*		EP3C80F484I7	
EP3C16F484I7		EP3C80F484I7N*	
EP3C16F484I7N			
EP3C25EF484I7N*			
EP3C25EF484C8N			

Cyclone III LS

EP3CLS70F780C7	EP3CLS150F780C7	EP3CLS100F780C7	EP3CLS200F780C7
EP3CLS70F780C7N	EP3CLS150F780C7N	EP3CLS100F780C7N	EP3CLS200F780C7N
EP3CLS70F780C8	EP3CLS150F780C8	EP3CLS100F780C8	EP3CLS200F780C8*
EP3CLS70F780C8N	EP3CLS150F780C8N	EP3CLS100F780C8N	EP3CLS200F780C8N
EP3CLS70F780I7	EP3CLS150F780I7	EP3CLS100F780I7	EP3CLS200F780I7*
EP3CLS70F780I7N	EP3CLS150F780I7N	EP3CLS100F780I7N	EP3CLS200F780I7N

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

Appendix 1: Affected Ordering Part Numbers (continued)



EP4CE6F17A7N	EP4CE30F23A7N	EP4CE40F29C7N	EP4CE75F23C9L
EP4CE6F17C6	EP4CE30F23C6	EP4CE40F29C8	EP4CE75F23C9LN
EP4CE6F17C6N	EP4CE30F23C6N	EP4CE40F29C8L	EP4CE75F23I7
EP4CE6F17C7	EP4CE30F23C7	EP4CE40F29C8LN	EP4CE75F23I7N
EP4CE6F17C7N	EP4CE30F23C7N	EP4CE40F29C8N*	EP4CE75F23I8L
EP4CE6F17C8	EP4CE30F23C8	EP4CE40F29C9L	EP4CE75F23I8LN
EP4CE6F17C8L	EP4CE30F23C8L	EP4CE40F29C9LN	EP4CE75F484C7
EP4CE6F17C8LN	EP4CE30F23C8LN	EP4CE40F29I7	
EP4CE6F17C8N	EP4CE30F23C8N	EP4CE40F29I7N	EP4CE75F29C6
EP4CE6F17C9L	EP4CE30F23C9L	EP4CE40F29I8L	EP4CE75F29C6N
EP4CE6F17C9LN	EP4CE30F23C9LN	EP4CE40F29I8LN	EP4CE75F29C7
EP4CE6F17I7	EP4CE30F23I7		EP4CE75F29C7N
EP4CE6F17I7N	EP4CE30F23I7N	EP4CE55F23C6	EP4CE75F29C8
EP4CE6F17I8L	EP4CE30F23I8L	EP4CE55F23C6N	EP4CE75F29C8L
EP4CE6F17I8LN	EP4CE30F23I8LN	EP4CE55F23C7	EP4CE75F29C8LN
		EP4CE55F23C7N	EP4CE75F29C8N
EP4CE10F17A7N	EP4CE30F29C6	EP4CE55F23C8	EP4CE75F29C9L
EP4CE10F17C6	EP4CE30F29C6N	EP4CE55F23C8L	EP4CE75F29C9LN
EP4CE10F17C6N	EP4CE30F29C7	EP4CE55F23C8LN	EP4CE75F29I7
EP4CE10F17C7	EP4CE30F29C7N	EP4CE55F23C8N*	EP4CE75F29I7N
EP4CE10F17C7N	EP4CE30F29C8	EP4CE55F23C9L	EP4CE75F29I8L
EP4CE10F17C8	EP4CE30F29C8L	EP4CE55F23C9LN	EP4CE75F29I8LN
EP4CE10F17C8L	EP4CE30F29C8LN	EP4CE55F23I7	
EP4CE10F17C8LN	EP4CE30F29C8N	EP4CE55F23I7N	EP4CE115F23C7
EP4CE10F17C8N	EP4CE30F29C9L	EP4CE55F23I8L	EP4CE115F23C7N
EP4CE10F17C9L	EP4CE30F29C9LN	EP4CE55F23I8LN	EP4CE115F23C8
EP4CE10F17C9LN	EP4CE30F29I7		EP4CE115F23C8N
EP4CE10F17I7	EP4CE30F29I7N	EP4CE55F29C6	EP4CE115F23C8L
EP4CE10F17I7N	EP4CE30F29I8L	EP4CE55F29C6N	EP4CE115F23C8LN
EP4CE10F17I8L	EP4CE30F29I8LN	EP4CE55F29C7	EP4CE115F23C9L
EP4CE10F17I8LN		EP4CE55F29C7N	EP4CE115F23C9LN
	EP4CE40F23A7N	EP4CE55F29C8	EP4CE115F23I7*
EP4CE15F23A7N	EP4CE40F23C6	EP4CE55F29C8L	EP4CE115F23I8L
EP4CE15F23C6	EP4CE40F23C6N	EP4CE55F29C8LN	EP4CE115F23I7N
EP4CE15F23C6N	EP4CE40F23C7	EP4CE55F29C8N	EP4CE115F23I8LN
EP4CE15F23C7	EP4CE40F23C7N	EP4CE55F29C9L	
EP4CE15F23C7N	EP4CE40F23C8	EP4CE55F29C9LN	
EP4CE15F23C8	EP4CE40F23C8L	EP4CE55F29I7	EP4CE115F29C7
EP4CE15F23C8L	EP4CE40F23C8LN	EP4CE55F29I7N	EP4CE115F29C7N*
EP4CE15F23C8LN	EP4CE40F23C8N	EP4CE55F29I8L	EP4CE115F29C8
EP4CE15F23C8N	EP4CE40F23C9L	EP4CE55F29I8LN	EP4CE115F29C8L
EP4CE15F23C9L	EP4CE40F23C9LN		EP4CE115F29C8LN
EP4CE15F23C9LN	EP4CE40F23I7	EP4CE75F23C6	EP4CE115F29C8N
EP4CE15F23I7	EP4CE40F23I7N*	EP4CE75F23C6N	EP4CE115F29C9L
EP4CE15F23I7N	EP4CE40F23I8L	EP4CE75F23C7	EP4CE115F29C9LN
EP4CE15F23I8L	EP4CE40F23I8LN	EP4CE75F23C7N	EP4CE115F29I7
EP4CE15F23I8LN		EP4CE75F23C8	EP4CE115F29I7N
	EP4CE40F29C6	EP4CE75F23C8N	EP4CE115F29I8L
	EP4CE40F29C6N*	EP4CE75F23C8L	EP4CE115F29I8LN
	EP4CE40F29C7	EP4CE75F23C8LN	EP4CE75F29I7N*

Appendix 1: Affected Ordering Part Numbers (continued)

Cyclone IV GX			
EP4CGX30CF23C6	EP4CGX75CF23C6	EP4CGX110DF27C7	EP4CGX150DF27C7
EP4CGX30CF23C6N	EP4CGX75CF23C6N	EP4CGX110DF27C7N	EP4CGX150DF27C7N
EP4CGX30CF23C7	EP4CGX75CF23C7	EP4CGX110DF27C8	EP4CGX150DF27C8
EP4CGX30CF23C7N	EP4CGX75CF23C7N	EP4CGX110DF27C8N	EP4CGX150DF27C8N
EP4CGX30CF23C8	EP4CGX75CF23C8	EP4CGX110DF27I7	EP4CGX150DF27I7
EP4CGX30CF23C8N	EP4CGX75CF23C8N	EP4CGX110DF27I7N	EP4CGX150DF27I7N*
EP4CGX30CF23I7	EP4CGX75CF23I7		
EP4CGX30CF23I7N	EP4CGX75CF23I7N	EP4CGX110DF31C7	
		EP4CGX110DF31C7N	EP4CGX150DF31C7
EP4CGX50CF23C6	EP4CGX75DF27C6	EP4CGX110DF31C8	EP4CGX150DF31C7N
EP4CGX50CF23C6N	EP4CGX75DF27C6N	EP4CGX110DF31C8N	EP4CGX150DF31C8
EP4CGX50CF23C7	EP4CGX75DF27C7	EP4CGX110DF31I7	EP4CGX150DF31C8N
EP4CGX50CF23C7N	EP4CGX75DF27C7N	EP4CGX110DF31I7N	EP4CGX150DF31I7
EP4CGX50CF23C8	EP4CGX75DF27C8		EP4CGX150DF31I7N
EP4CGX50CF23C8N	EP4CGX75DF27C8N	EP4CGX150CF23C7	EP4CGXDF31I7N*
EP4CGX50CF23I7	EP4CGX75DF27I7	EP4CGX150CF23C7N	
EP4CGX50CF23I7N	EP4CGX75DF27I7N	EP4CGX150CF23C8	
		EP4CGX150CF23C8N	
EP4CGX50DF27C6	EP4CGX110CF23C7	EP4CGX150CF23I7	
EP4CGX50DF27C6N	EP4CGX110CF23C7N	EP4CGX150CF23I7N	
EP4CGX50DF27C7	EP4CGX110CF23C8		
EP4CGX50DF27C7N	EP4CGX110CF23C8N		
EP4CGX50DF27C8	EP4CGX110CF23I7		
EP4CGX50DF27C8N	EP4CGX110CF23I7N		
EP4CGX50DF27I7			
EP4CGX50DF27I7N			
EP4CGXDF27I7N*			

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

EP2S30F484C3	EP2S30F484I4*	EP2S30F672*	EP2S30F672C5*
EP2S30F484C3N	EP2S30F484I4N*	EP2S30F672C3*	EP2S30F672C5N*
EP2S30F484C4*		EP2S30F672C3N	EP2S30F672I4
EP2S30F484C4N		EP2S30F672C4*	EP2S30F672I4N
EP2S30F484C5*		EP2S30F672C4N*	EP2S30F672I5*
EP2S30F484C5N			

EP2SGX30CF780C3	EP2SGX60EF1152C3	EP2SGX90EF35C3N*	EP2SGX125GF1508C3
EP2SGX30CF780C3N*	EP2SGX60EF1152C3N	EP2SGX90EF35C4N*	EP2SGX125GF1508C3N
EP2SGX30CF780C4	EP2SGX60EF1152C4	EP2SGX90EF35C5N*	EP2SGX125GF1508C4
EP2SGX30CF780C4N	EP2SGX60EF1152C4N		EP2SGX125GF1508C4N
EP2SGX30CF780C5	EP2SGX60EF1152C5	EP2SGX90FF1508C3	EP2SGX125GF1508I4
EP2SGX30CF780C5N*	EP2SGX60EF1152C5N	EP2SGX90FF1508C3N	
	EP2SGX60EF1152I4	EP2SGX90FF1508C4	EP2SGX130GF1508C3
EP2SGX30DF780C3	EP2SGX60EF1152I4N	EP2SGX90FF1508C4N	EP2SGX130GF1508C3N
EP2SGX30DF780C3N*	EP2SGXF1152*	EP2SGX90FF1508C5	EP2SGX130GF1508C4
EP2SGX30DF780C4		EP2SGX90FF1508C5N	EP2SGX130GF1508C4N
EP2SGX30DF780C4N	EP2SGX85FF1508C3	EP2SGX90FF1508I4	EP2SGX130GF1508C5
EP2SGX30DF780C5	EP2SGX85FF1508C3N	EP2SGX90FF1508I4N	EP2SGX130GF1508C5N
EP2SGX30DF780C5N	EP2SGX85FF1508C4		EP2SGX130GF1508I4
EP2SGX30DF780I4	EP2SGX85FF1508C4N	EP2SGX90FF40C3N*	EP2SGX130GF1508I4N
EP2SGX30DF780I4N	EP2SGX85FF1508I4	EP2SGX90FF40C4N*	EP2SGX130GF40C3*
	EP2SGX85FF1508I4N	EP2SGX90FF40C5N*	EP2SGX130GF40C3N*
EP2SGX55EF1152C3			EP2SGX130GF40C4N*
EP2SGX55EF1152C3N	EP2SGX90EF1152C3		EP2SGX130GF40C5N*
EP2SGX55EF1152C4	EP2SGX90EF1152C3N		EP2SGX130GF40I4*
EP2SGX55EF1152C4N	EP2SGX90EF1152C4		EP2SGX130GF40I4N*
EP2SGX55EF1152I4	EP2SGX90EF1152C4N		
EP2SGX55EF1152I4N	EP2SGX90EF1152C5		
	EP2SGX90EF1152C5N		
	EP2SGX90EF1152I4*		
	EP2SGX90EF1152I4N		
	EP2SGXF1152*		

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

Appendix 1: Affected Ordering Part Numbers (continued)

			
EP4SGX180FF35C2X	EP4SGX230FF35C2X	EP4SGX230KF40C2	EP4SGX290NF45C2
EP4SGX180FF35C2XN	EP4SGX230FF35C2XN*	EP4SGX230KF40C2N*	EP4SGX290NF45C2N
EP4SGX180FF35C3	EP4SGX230FF35C3	EP4SGX230KF40C3	EP4SGX290NF45C3
EP4SGX180FF35C3N	EP4SGX230FF35C3N	EP4SGX230KF40C3N*	EP4SGX290NF45C3N
EP4SGX180FF35C4	EP4SGX230FF35C4	EP4SGX230KF40C4	EP4SGX290NF45C4
EP4SGX180FF35C4N	EP4SGX230FF35C4N*	EP4SGX230KF40C4N*	EP4SGX290NF45C4N
EP4SGX180FF35I3	EP4SGX230FF35I3	EP4SGX230KF40I3	EP4SGX290NF45I3
EP4SGX180FF35I3N	EP4SGX230FF35I3N	EP4SGX230KF40I3N	EP4SGX290NF45I3N
EP4SGX180FF35I4	EP4SGX230FF35I4	EP4SGX230KF40I4	EP4SGX290NF45I4
EP4SGX180FF35I4N	EP4SGX230FF35I4N	EP4SGX230KF40I4N	EP4SGX290NF45I4N
	EP4SGXF35N*	EP4SGXKF40C2N*	
EP4SGX180HF35C2	EP4SGXFF35I3N*		EP4SGX360NF45C2
EP4SGX180HF35C2N*		EP4SGX530KH40C2	EP4SGX360NF45C2N
EP4SGX180HF35C3	EP4SGX230HF35C2	EP4SGX530KH40C2N	EP4SGX360NF45C3
EP4SGX180HF35C3N	EP4SGX230HF35C2N	EP4SGX530KH40C3*	EP4SGX360NF45C3N
EP4SGX180HF35C4	EP4SGX230HF35C3	EP4SGX530KH40C3N*	EP4SGX360NF45C4
EP4SGX180HF35C4N	EP4SGX230HF35C3N	EP4SGX530KH40C4	EP4SGX360NF45C4N
EP4SGX180HF35I3	EP4SGX230HF35C4	EP4SGX530KH40C4N	EP4SGX360NF45I3
EP4SGX180HF35I3N	EP4SGX230HF35C4N	EP4SGX530KH40I3*	EP4SGX360NF45I3N
EP4SGX180HF35I4	EP4SGX230HF35I3	EP4SGX530KH40I3N	EP4SGX360NF45I4
EP4SGX180HF35I4N	EP4SGX230HF35I3N	EP4SGX530KH40I4	EP4SGX360NF45I4N
	EP4SGX230HF35I4	EP4SGX530KH40I4N	
EP4SGX180KF40C2	EP4SGX230HF35I4N		EP4SGX530NF45C2
EP4SGX180KF40C2N	EP4SGXHF35I3*	EP4SGXKH40I3*	EP4SGX530NF45C2N
EP4SGX180KF40C3		EP4SGXKH40I3N*	EP4SGX530NF45C3
EP4SGX180KF40C3N		EP4SH40C2N*	EP4SGX530NF45C3N
EP4SGX180KF40C4		EP4SH40C2N*	EP4SGX530NF45C4
EP4SGX180KF40C4N*		EP4SGF45I3*	EP4SGX530NF45C4N
EP4SGX180KF40I3			EP4SGX530NF45I3
EP4SGX180KF40I3N			EP4SGX530NF45I3N*
EP4SGX180KF40I4			EP4SGXF45I3*
EP4SGX180KF40I4N			EP4SGXNF45I3N*

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