

PROCESS CHANGE NOTIFICATION

PCN1002

Additional Assembly Source and Power Quad Flat Pack (RQFP) 208 and 240 Package Conversion

Change Description

Altera is introducing Amkor, Philippines (ATP) as an additional assembly source for the RQFP 208 and 240 packages. ATP will become the primary source and is an existing qualified assembly site for Altera devices. In addition, the Power Quad Flat Pack (RQFP) package will transition from the PowerQuad[®] 2 (PQ2) to the PowerQuad[®] 4 (PQ4) package.

Recommended Action

Altera recommends that customers review their device thermal performance to determine if action is required for their application. Thermal resistance (θ_{ja}) for the PQ4 package design is approximately 1.5°C to 2.0°C / watt higher than the existing design. The package top side appearance will be different as the heat slug will change from nickel (Ni) plated Cu to Anodized Aluminum (Al).

Reason for Change

Altera is implementing this package change to better support long-term demand for the affected products. The PQ2 package design is being discontinued and conversion to the PQ4 package is essential for continued support. Amkor is an existing, fully qualified assembly manufacturer for Altera products.

The RQFP PQ4 package is fully qualified and meets Altera's quality and reliability requirements. Supporting reliability data are included in this notification.

Products Affected

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

Table 1: Affected Product Lines

Product Family	Product Line	Pin Count	Package Type	Estimated Sample Availability	Earliest ⁽¹⁾ Shipment
FLEX [®] 10K Series	EPF10K20	208	RQFP	July	Oct 2010
		240		July	Oct 2010
	EPF10K30	208		July	Oct 2010
		240		July	Oct 2010
	EPF10K40	208		July	Oct 2010
		240		July	Oct 2010
	EPF10K50	240		June	Oct 2010
	EPF10K50V	240		--	Oct 2010
	EPF10K70	240		June	Oct 2010
	EPF10K100A	240		July	Oct 2010
EPF10K200S	240	July	Oct 2010		
MAX [®] Series	EPM7256E	208	RQFP	--	Oct 2010
	EPM7256S	208		June	Oct 2010
	EPM9560	240		--	Oct 2010
	EPM9560A	208		July	Oct 2010
		240		July	Oct 2010

Note: (1) 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>

Product Traceability

The changes will be implemented beginning August 2010. The product will transition to the new material as the current inventory is consumed. Customers may receive products with this change beginning with a date-code marking of 1031 or later on the top of the package. See Figure 1. The 1031 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 and Traceability

Altera Date Code Marking Format

A XβZαα**1031**T

Qualification Data

Qualification data is summarized in Table 2.

Table 2. Summary of Product Qualification Data

Product Line	Representative Package	Assembly Site	Qualification Test	Read Out	Results
EPF10K70	RQFP 240	ATP	PCL3 + Autoclave 121°C / 100% RH	96 hrs	0/50
			PCL3 + HAST 130°C / 85% RH	96 hrs	0/49
			Temperature Cycle "B" (-55°C to 125°C)	1000 cyc	0/50
			Life Test @ 125°C	1000 hrs	0/25
			High Temp Bake @ 150°C	1000 hrs	0/25
EPF10K50	RQFP 240	ATP	PCL3 + Autoclave 121°C / 100% RH	96 hrs	0/25
			PCL3 + HAST 130°C / 85% RH	96 hrs	0/25
			Temperature Cycle "B" (-55°C to 125°C)	1000 cyc	0/25
			Life Test @ 125°C	1000 hrs	0/45
			High Temp Bake 150°C	1000 hrs	0/48
EPM7256S	RQFP 208	ATP	PCL3 + Autoclave 121°C / 100% RH	96 hrs	0/25
			PCL3 + HAST 130°C / 85% RH	96 hrs	0/23
			Temperature Cycle "B" (-55°C to 125°C)	1000 cyc	0/25
			High Temp Bake @ 150°C	1000 hrs	0/25

Contact

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

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>

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
06/30/2010	1.0.0	Initial Release

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Appendix 1. Affected Ordering Part Numbers

FLEX® 10K Device

EPF10K20RC208-3	EPF10K100ARC240-1	EPF10K30RC240-3	EPF10K50VRC240-3N
EPF10K20RC208-3N	EPF10K100ARC240-1N	EPF10K30RC240-3N	EPF10K50VRC240-4
EPF10K20RC208-4	EPF10K100ARC240-2	EPF10K30RC240-4	EPF10K50VRC240-4N
EPF10K20RC208-4N	EPF10K100ARC240-2N	EPF10K30RC240-4N	EPF10K50VRI240-3
EPF10K20RI208-4	EPF10K100ARC240-3	EPF10K30RI240-4	EPF10K50VRI240-3N
EPF10K20RI208-4N	EPF10K100ARC240-3N	EPF10K30RI240-4N	EPF10K50VRI240-4
	EPF10K100ARI240-3		EPF10K50VRI240-4N
	EPF10K100ARI240-3N	EPF10K40RC240-3	
EPF10K30RC208-3		EPF10K40RC240-4	EPF10K70RC240-2
EPF10K30RC208-3N		EPF10K40RC240-4N	EPF10K70RC240-2N
EPF10K30RC208-4	EPF10K200SRC240-1		EPF10K70RC240-3
EPF10K30RC208-4N	EPF10K200SRC240-1N		EPF10K70RC240-3N
EPF10K30RI208-4	EPF10K200SRC240-1X	EPF10K50RC240-3	EPF10K70RC240-4
EPF10K30RI208-4N	EPF10K200SRC240-2	EPF10K50RC240-3N	EPF10K70RC240-4N
	EPF10K200SRC240-2X	EPF10K50RC240-4	EPF10K70RC240-3GZ
	EPF10K200SRC240-3	EPF10K50RC240-4N	
EPF10K40RC208-3	EPF10K200SRC240-3B	EPF10K50RI240-4	
EPF10K40RC208-4	EPF10K200SRC240-3N	EPF10K50RI240-4N	
	EPF10K20RC240-3	EPF10K50VRC240-1	
	EPF10K20RC240-3N	EPF10K50VRC240-1N	
	EPF10K20RC240-4	EPF10K50VRC240-2	
	EPF10K20RC240-4N	EPF10K50VRC240-2N	
	EPF10K20RI240-4	EPF10K50VRC240-3	
	EPF10K20RI240-4N	EPF10K50VRC240-3AA	

MAX[®] Series

EPM7256ERC208-12	EPM7256SRC208-10	EPM9560ARC208-10	EPM9560RC240-15
EPM7256ERC208-12P	EPM7256SRC208-10N	EPM9560ARC208-10N	EPM9560RC240-15YY
EPM7256ERC208-12PY	EPM7256SRC208-15	EPM9560ARI208-10	EPM9560RC240-20
EPM7256ERC208-12YY	EPM7256SRC208-15N	EPM9560RC208-15	EPM9560RI240-20
EPM7256ERC208-15	EPM7256SRC208-7	EPM9560RI208-20	
EPM7256ERC208-20	EPM7256SRC208-7N		
EPM7256ERC208-20YY	EPM7256SRI208-10	EPM9560ARC240-10	
EPM7256ERI208-20	EPM7256SRI208-10N	EPM9560ARC240-10N	
		EPM9560ARI240-10	