Revision: 2.0.0

PCN Issue Date: 07/29/2016

PROCESS CHANGE NOTIFICATION
PCN1510

Final Notification

Bill of Materials (BOM) Change for MicroBGA Cyclone® V Products

Change Description:

Altera® announces a change to the Bill of Materials (BOM) for selected products under:

Package: Micro BGA (MBGA) 301/383 pins
Product Family: Cyclone® V

Table 1: Changes to the Package BOM

Material / Process	Change From	Change To
RDL dielectric	PBO (Polybenzoxazole)	PI (Polyimide)
Mold Compound	Nitto	Sumitomo
Substrate Supplier	NTK	Kyocera
Substrate Surface Finish (Bump Pad and BGA Pad)	ENEPIG (Electroless Nickel/Electroless Palladium/Immersion Gold)	OSP (Organic Solderability Preservatives)

- The new material set is comprised of established materials used in the industry, and already being used on other products by the assembly site.
- There are no changes to the rest of the materials: Build-up, Core, Solder mask, Solder ball materials remain the same.

Recommended Action:

Customers are requested to:

1. Acknowledge receipt of this notification.
2. Review the change, and provide feedback or approval of this change at the earliest convenience.

Please refer to “Product Transition Dates” for key milestones.

Upon implementation, Altera may still continue to ship pre-change material until inventory is depleted.

Product Transition Dates:

Table 2

Milestone	***Date***
Last date to acknowledge receipt of this notification[1]	August 29, 2016
Estimated earliest shipment date of changed products (change implementation) [2]	October 28, 2016

Note 1: JESD46D stipulates that a change is deemed acceptable if no response or acknowledgement is received within 30 days from the date of the notification.

Note 2: Effective the first ship date listed in Table 2, Altera will begin the shipment of changed products.

Altera reserves the right to continue the shipment of pre-change product after the change implementation date, and customers will receive shipments of either pre-change or post-change product.

Reason for Change:

Supplier NTK announced the discontinuation of their Flip Chip Organic substrate business and to concentrate on ceramic solution. Altera is qualifying a substrate from a new supplier, Kyocera.

In conjunction with the substrate change, the other materials are also being modified as part of continuous process improvement and process simplification. This allows utilization of the standard material set that is already being used by the assembly site for other products.

Impact and Benefit of Change:

This change enables product longevity and supply continuity by transitioning to a new set of direct materials.

The change does not affect the form, fit, and function of the product. The change has successfully completed qualification to ensure:

- The product meets the existing electrical specification, device performance, functionality, and thermal characteristics.
- The product meets the package outline drawing (POD) dimensions.
- Product quality and reliability requirements are met or exceeded.

Products Affected:

Selected devices in the package and product family:
Package: MBGA 301/383 pins
Product Family: Cyclone® V

See Appendix 1 for the list of affected Ordering Part Numbers (OPN).

Means to Identify Changed Product:

It is important to note that pre-change and post-change products are considered as interchangeable parts / alternates. Altera may continue the shipment of pre-change products until inventory is depleted, and customers may receive shipments of either pre-change or post-change products.

Qualification Data:

Table 3

Test	Conditions	# of Lots	SS/lot	Results (Fail / Total SS)
Bake @ 1000 hrs *with Preconditioning	150℃	3	77u/lot	0/231
Temperature Cycle - condition B @ 1000 cycles *with Preconditioning	-55℃/ 125℃	3	45u/lot	0/135
uHAST 96hrs *with Preconditioning	85%RH, 130℃	3	45u/lot	0/135
THB @1000hrs *with Preconditioning	85%RH, 85℃ at VCC	3	45u/lot	0/135
HTOL @1000hrs	125℃ Tj at VCC+20%	3	45u/lot	0/135

*Preconditioning @ MSL 3 (30°C/60%RH for 192 hrs) with 3xreflow @260C
Vehicle Device: 5CGXC5 in M301 package

Contact:

For more information, please contact the Altera Sales or Customer Quality Engineering (CQE) in your region, or submit Service Request at Altera's mySupport website.

Customer Notifications Subscription:

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

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

Altera references JESD46 guidelines for PCN. In accordance with JESD46D, the change is deemed acceptable to the customer if no acknowledgement is received within 30 days from the notification date.

Revision History:

Date	Rev	Description
07/29/2016	2.0.0	Release of Final PCN

Appendix 1: Affected Ordering Part Numbers

Affected Ordering Part Numbers		
5CEFA2M13C6N	5CGTFD5C5M13C7N	5CGXFC4F6M11I7
5CEFA2M13C7N	5CGTFD5C5M13I7N	5CGXFC4F6M11I7N
5CEFA2M13C8N	5CGTFD5F5M11C7N	5CGXFC4F7M11C8N
5CEFA2M13I7N	5CGTFD5F5M11C7NFA	5CGXFC5C6M13C6N
5CEFA4M13C6N	5CGTFD5F5M11I7N	5CGXFC5C6M13C7N
5CEFA4M13C7N	5CGTFD5F5M11I7NFA	5CGXFC5C6M13I7N
5CEFA4M13C8N	5CGXFC4C6M13C6N	5CGXFC5C7M13C8N
5CEFA4M13C8NAA	5CGXFC4C6M13C7N	5CGXFC5F6M11C6N
5CEFA4M13I7N	5CGXFC4C6M13I7N	5CGXFC5F6M11C7N
5CEFA5M13C6N	5CGXFC4C7M13C8N	5CGXFC5F6M11I7N
5CEFA5M13C7N	5CGXFC4F6M11C6N	5CGXFC5F6M11I7NFA
5CEFA5M13C8N	5CGXFC4F6M11C7N	5CGXFC5F6M11I7NSC
5CEFA5M13I7N	5CGXFC4F6M11C7NFA	5CGXFC5F7M11C8N

Back to Products Affected section