



## **PROCESS CHANGE NOTIFICATION PCN0412 Rev01**

### **FINELINE BGA SUBSTRATE SECOND SOURCE (KINSUS)**

#### **Change Description:**

Altera is adding the Kinsus substrate as an additional source for the FineLine BGA (FBGA) packages. The surface finish of the Kinsus substrate is electrolytic nickel-gold, whereas the existing Kyocera substrate is electroless nickel immersion gold. Kinsus is a fully qualified Altera substrate supplier with the demonstrated ability to consistently meet Altera's quality and volume requirements.

This change does not affect the form, fit, or function of the devices.

#### **Reason For Change:**

The addition of this substrate will enable Altera to better support the increase in demand for these products.

#### **Products Affected:**

The products affected are listed in Table 1.

Table 1. Affected Products

<b>Product Family</b>	<b>Packages</b>
HardCopy APEX	FineLine BGAs
HardCopy Stratix	FineLine BGAs
HardCopy II	FineLine BGAs
Mercury	FineLine BGAs
APEX 20KE	FineLine BGAs
Stratix	FineLine BGAs
Stratix GX	FineLine BGAs

Additional products may also use the Kinsus substrate in the future.

**Qualification Data:**

The qualification data for the Kinsus substrate is shown in the Appendix 1.

**Product Traceability and Transition Dates:**

As this change will not obsolete the use of existing Kyocera substrates, it is possible that there may be shipments that include both Kyocera and Kinsus substrates.

The Stratix EP1S60 and EP1S80 devices were rolled out using the Kinsus substrates in the FineLine BGA packages starting with a datecode of 0437.

The additional products will be phased in starting with the datecode of 0619.

The 7<sup>th</sup> and 8<sup>th</sup> character (YY) indicates the year and the 9<sup>th</sup> and 10<sup>th</sup> character (WW) on the top side marking indicates the work week.

Topside Date Code
A X β Z αα YYWWT

**Contact:**

For more information on this change, please contact your local Altera sales representative or Altera Customer Quality Engineering at [customer-quality@altera.com](mailto:customer-quality@altera.com).

**Table 2: Revision History**

Date	Rev	Description
07/9/2004	0	Initial Release
5/31/2006	1	Update to include qualification data and affected product table and their transition dates.

## Appendix 1 – Qualification Data

Representative Package	Qualification Test	Read Out	Results
FBGA 1020	<b><u>Temperature Humidity Bias</u></b> PCL 3 and 85° C/85% RH	1000 hrs	0/25
	<b><u>Temperature Cycle</u></b> PCL 3 and Temperature Cycle Condition B	1000 cycles	0/204
	<b><u>Board Level Temperature Cycle</u></b> 0 to 100C, per IPC 9701	4000 cycles	0/32
	<b><u>High Temperature Bake</u></b> 150° C Bake (unbiased)	1000 hrs	0/29
	<b><u>Lifetest</u></b> 125° C, 1.7V/3.6V bias	1000 hrs	0/25
FBGA 1508	<b><u>Temperature Humidity Bias</u></b> PCL 3 and 85° C/85% RH	1000 hrs	0/29
	<b><u>Temperature Cycle</u></b> PCL 3 and Temperature Cycle Condition B	1000 cycles	0/44