August 1, 2011

Revision History

ACN#	Issue Date	Description
03A-11	April 1, 2011	Initial release.
03B-11	April 5, 2011	Supersedes ACN#03A-11. Mold Compound currently used at Amkor Korea / Philippines has been corrected to "Korea Chemical KTMC5700TQ" in Table B (Proposed Alternate Materials Qualification).
03C-11	May 2, 2011	ACN#03C-11, PCN#06B-11 and #07B-11 supersede ACN#03B-11. Table A, Table B and Table C have been updated.
03D-11	August 1, 2011	Withdrawal of all previous versions of this PCN

Subject: **Withdrawal of PCN# 03C-11**

Dear Lattice Customers:

Lattice is withdrawing this Notification effective immediately. The original intent of this Notice was to establish alternate Bills of Materials to expand our manufacturing capacity in light of the material shortages that were feared as a result of the Japan earthquake of March 2011.

Material shortages have been resolved and steps have been taken to assure supply going forward. As a result, Lattice is no longer planning to go forward with the Alternate Qualified Material Sets identified in this Notice.

Sincerely,
Lattice Semiconductor PCN Administration

May 2, 2011

Revision History

ACN#	Issue Date	Description
03A-11	April 1, 2011	Initial release.
03B-11	April 5, 2011	Supersedes ACN#03A-11. Mold Compound currently used at Amkor Korea / Philippines has been corrected to "Korea Chemical KTMC5700TQ" in Table B (Proposed Alternate Materials Qualification).
03C-11	May 2, 2011	ACN#03C-11, PCN#06B-11 and #07B-11 supersede ACN#03B-11. Table A, Table B and Table C have been updated.

Subject: **ACN# 03C-11 Advanced Change Notification of Intent to Qualify Alternate Material Sets for Select Lattice Package Families**

Dear Lattice Customers:

Lattice is providing this Advanced Change Notification (ACN) of our intent to qualify alternative Bills of Materials (BOMs) for select package families. Lattice is taking this action to guard against possible supply interruptions in package material sets due to the recent devastating earthquake in Japan. While current indications are the supply chain is already recovering, these actions will ensure unexpected delays in supply do not impact our ability to meet forecasted customer demand.

Lattice has sufficient package inventory and materials to support product requirements through September 2011. Our Assembly, Final Test, and Logistics locations are all outside of Japan, and suffered no direct impact from the earthquake. Lattice is communicating daily with all our suppliers to ensure we have the latest information, and can quickly react to any issues that may arise.

WITHDRAWN

CHANGE DESCRIPTION

There are currently six materials used in semiconductor packaging that Lattice is monitoring through our supply base. Potential supply shortages have been speculated by our suppliers, and by industry reports. Lattice is working closely to monitor the supply issues, and has determined plans to mitigate risk where supply status remains unclear.

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Lattice has four primary Assembly Subcontractors for device packaging. Table A shows the status at each supplier for the six identified packaging materials. A further description of each of the affected materials is given below the table.

Table A – Packaging Materials with Reported Supply Constraints

Packaging Materials	Package Family	ASE Malaysia	Amkor Korea / Philippines	UTAC Singapore	Unisem Indonesia
Mold Compound	BGA TQFP	Alternate BOM Alternate BOM	No Issues No Issues	Alternate BOM Alternate BOM	No Issues No Issues
BGA Laminate Core	BGA	No Issues	No Issues	No Issues	No Issues
Die Attach Epoxy	BGA TQFP	No Issues Alternate BOM	No Issues No Issues	No Issues No Issues	No Issues No Issues
Copper Foil	BGA	No Issues	No Issues	No Issues	No Issues
Package Leadframes	TQFP	No Issues	No Issues	No Issues	No Issues
Solder Mask Epoxy	BGA	No Issues	No Issues	No Issues	No Issues

- Mold Compound – used to encapsulate the silicon device during packaging. Typically these are thermo-set epoxy resin materials. Lattice currently uses material sourced from Hitachi in Japan. While Hitachi has reported their intent to restart production soon, Lattice will qualify alternate mold compounds to ensure continued supply of our products.
- BGA Laminate Core – the glass fiber and epoxy resin core of laminate substrates used in BGA packages. Lattice currently uses materials sourced from Mitsubishi in Japan. Alternate suppliers are already qualified to ensure continued product supply.
- Die Attach Epoxy – used to attach the silicon die to the package substrate. There are no current supply issues for the material used by Lattice. However, as part of the BOM change for Mold Compound on the TQFP/PQFP Package Families at ASE Malaysia, Lattice will switch to a Die Attach Epoxy that is better suited for use with the alternate mold compound.
- Copper Foil – used as the conduction layer in BGA laminate substrates. Currently there are no supply interruptions for the thickness and composition used by Lattice suppliers.
- Package Leadframes – used for the die support and external leads on TQFP packages. Currently there are no supply interruptions for leadframes used by Lattice suppliers.
- Solder Mask Epoxy – used for surface protection on BGA laminate substrates. Currently there are no supply interruptions for the material used by Lattice suppliers.

PLANNED ALTERNATE BOM QUALIFICATIONS

The alternate materials Lattice plans to implement are all currently qualified and used in volume manufacturing. The materials are qualified and in use at our assembly partners. In some cases, Lattice is already using the planned materials in some of our current product offerings. There are no new or untested materials planned.

The proposed global changes to the existing BOMs are shown in Table B. In all cases, Lattice will be qualifying alternate materials. The original materials will not be discontinued. Future product offerings will use either of the qualified BOMs for optimized manufacturing. There may be other select changes to specific package BOMs based on supply interruptions. These additional changes will be reported as required by JEDEC 46C.

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Table B – Proposed Alternate Materials Qualification

Assembly Vendor	Package Family	Mold Compound		BGA Laminate Core	
		Current Material	Alternate Material	Current Material	Alternate Material
ASE Malaysia	BGA	Hitachi 9750HF	Kyocera KEG2250	Mitsubishi	Hitachi
	TQFP	Hitachi CEL9510	Sumitomo G631SH*		
UTAC Singapore	BGA	Hitachi 9750HF	Nitto G100BC	Mitsubishi	Doosan and/or Hitachi
	TQFP	Hitachi CEL9510	Nitto G100BC		

Notes: ASE Malaysia qualification of Sumitomo G631SH series will include a change of Die Attach Epoxy to use Yizbond 8143 material. This mold compound / die attach epoxy is already a qualified set at ASE. Currently the Hitachi CEL9510 mold compound is matched with Ablebond 3230 die attach epoxy.

AFFECTED DEVICES

Lattice will publish specific Product Change Notifications (PCNs) listing affected Ordering Part Numbers (OPNs) as plans for qualification are finalized. Our current target for issuing detailed PCNs is May 2, 2011. These notifications will include all existing support Qualification and Characterization information at the time they are published. Detailed release schedules will be contained in the specific PCN documents.

Table C shows an overview of Lattice Device Families and the associated assembly vendor for each package type. Proposed changes are shown at the bottom of the table by package family type.

Table C – Device Family and Assembly Locations

Assembly Vendor Decoder: ASE Malaysia = 1, UTAC Singapore = 2

Product Family	TQFP	PQFP	Saw singulated			Overmolded
			ucBGA csBGA	caBGA	ftBGA	fpBGA/BGA
ispLSI 1000/C/E/EA	1	1				
ispLSI 2000A/E/VE	1	1				1
ispLSI 5000VA/VE	1	1				1
ispMACH 4A3/5	1	1				1
Mach 5/LV	1	1				
ispMACH 5000VG						1
ispXPLD 5000MX		1				1
ispXPGA						1
ispMACH 4000	1,2		1		1,2	
ispMACH4000ZE	1		1			
LatticeEC/ECP	1	1				1
LatticeECP2/M	1,2	1				1
LatticeECP3					1	1
LatticeSC/M						1
LatticeXP	1,2	1,2				1
LatticeXP2	1,2	1	1,2		1,2	1
MachXO	1,2		1,2	1	1,2	
MachXO2	1,2		1			
ispGDX	1	1				1
ispGDX2						1
ORCA 2 Series		1				1
ORCA 3 Series		1				1
ORCA 4 Series						
ORCA 4 Series FPSC						1
ispPAC-CLK	1					
ispPAC-POWR	1					
BOM Change	Mold Compound Alternate BOM		Mold Compound Alternate BOM BGA Laminate Core Alternate BOM			

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CONVERSION TIMING

Lattice is providing this advance notice of our intent to qualify the alternate materials to allow customers to plan for conversion. Lattice will be providing Qualification and Characterization data when the formal PCNs are issued. This data will be a compilation of available data from Lattice and our Assembly Partners. Due to the risk of supply interruption caused by the Japan earthquake, some conversions may occur with less than the standard notification period. Lattice will provide specific details in the PCN if this situation occurs.

RESPONSE

Lattice does not require a specific response to this ACN. This notice is intended to provide an advanced look at our planning and mitigation strategies. Information in this ACN may change at any time, and is not a commitment to make manufacturing changes to Lattice devices. Lattice will continue to monitor the entire supply chain, and update this notice if there are important changes in material status.

Lattice PCNs are available on the Lattice website. Please sign up to receive e-mail PCN alerts by registering here. If you already have a Lattice web account and wish to receive PCN alerts, you can do so by logging into your account and making edits to your subscription options.

CONTACT

If you have any questions or require additional information, please contact pcn@latticesemi.com.

Sincerely,
Lattice Semiconductor PCN Administration

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