August 1, 2011

Revision History

PCN#	Issue Date	Description
06A-11	May 2, 2011	Initial release.
06B-11	May 2, 2011	Exhibit B “Affected Device List” has been updated to include the M5-320/160 and M5-384/160 products.
06C-11	August 1, 2011	Withdrawal of all previous versions of this PCN

Subject: Withdrawal of PCN# 06B-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

PCN#06B-11, #07B-11 and ACN#03C-11 also issued on May 2, 2011 will supersede ACN#03B-11, issued on April 5, 2011.

May 2, 2011

Revision History

PCN#	Issue Date	Description
06A-11	May 2, 2011	Initial release.
06B-11	May 2, 2011	Exhibit B "Affected Device List" has been updated to include the M5-320/160 and M5-384/160 products.

Subject: PCN# 06B-11, Notification of Intent to Utilize an Alternate Qualified Material Set for Select Thin Quad Flat Pack and Plastic Quad Flat Pack Packages

Dear Lattice Customers:

Lattice is providing this Notification of our intent to utilize an alternate qualified material set for select devices in Thin Quad Flat Pack (TQFP) and Plastic Quad Flat Pack (PQFP) packages.

In an effort to diversify our source of supply, and reduce risk of supply interruption, Lattice will now maintain alternate qualified Bills of Material (BOMs) for select TQFP and PQFP packages. Alternate BOMs will be qualified at ASE Malaysia* and at UTAC Singapore*. Both ASE Malaysia and UTAC Singapore utilize industry standard raw materials, assembly and test processes. These material sets meet all external package dimensions and package footprints remain the same and are published on the Lattice web site (www.latticesemi.com).

Lattice is taking this action in response to the major Japan earthquake of March 11, 2011. This urgent response to the risk of supply interruption creates a need for immediate qualification of these alternate BOMs. Lattice will provide a limited set of package samples using the alternate BOMs for select die / package combinations to assist customer conversions. Sample availability plans are shown in Exhibit A.

*Note: At this time, no changes are planned to TQFP/PQFP BOMs used at Amkor Philippines, Amkor Korea, ASE Taiwan, or Unisem Indonesia.

AFFECTED DEVICES AND APPLICABLE CHANGES

The affected devices and applicable changes are summarized in Exhibit B. This PCN also affects any custom devices (i.e. factory programmed, customer specific Pb-free packages, special test, tape & reel, etc.), which are derived from any of the devices listed.

ALTERNATE QUALIFIED MATERIAL SET

The complete material set used for each package type is described in Exhibit C.

DEVICE MARKING AND IDENTIFICATION

Lattice does not plan to change the device marking or identification for the alternate materials. Our assembly subcontractors will use the existing and alternate BOMs as required to meet production demand. The current topside Date Code Mark provides complete traceability to the assembly vendor and BOM used for all products.

Due to the critical nature of this situation, Lattice is not able to accommodate specific BOM requests. The existing and alternate BOMs will be qualified and available for use interchangeably.

QUALIFICATION AND CHARACTERIZATION DATA

Reliability testing for the qualification of these ASE Malaysia and UTAC Singapore manufactured TQFP and PQFP packages is in progress. The Qualification Plan and Timing are shown in Exhibit D. An updated PCN will be posted to the Lattice web site when qualification milestones are completed.

Product Performance Characterization of the qualification vehicle devices for these ASE Malaysia and UTAC Singapore manufactured TQFP and PQFP packages is in progress. The characterization plan is shown in Exhibit E. Characterization data will be reported with the qualification milestone updates.

DATA SHEET SPECIFICATIONS

This PCN has no impact on any data sheet specifications.

CONVERSION TIMING

Use of the Alternate BOMs will begin no sooner than October 3, 2011 (Note: this schedule may change in the event of further supply chain interruption). Any significant changes to the Qualification and Characterization schedule, or changes in material availability, will be reported in an updated PCN. Lattice recommends expedited approval of this PCN to ensure continued supply of product.

CONVERSION TIMING – Summary

- **ACN Issue Date: April 5, 2011**
- **PCN Issue Date: May 2, 2011**
- **Early Qualification and Characterization Date: Late June, 2011**
- **Final Qualification and Characterization Date: Late July, 2011**
- **PCN Expiration Date: October 3, 2011**

RESPONSE

In accordance with JESD46-C, this change is deemed accepted by the customer if no acknowledgement is received within 30 days from this Notice.

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

EXHIBIT "A" – PCN Evaluation Sample Availability[1]

Product	Package Type	Package Designator	Vendor	Die Attach	Mold Compound
LCMXO256C	Pb-Free 100-TQFP	TN100	UTAC Singapore	Yes	Yes
LCMXO1200C	Pb-Free 100-TQFP	TN100	ASE Malaysia	Yes	Yes
LFXP2-8E	Pb-Free 144-TQFP	TN144	UTAC Singapore	No	Yes
LFE2-12E	Pb-Free 144-TQFP	TN144	ASE Malaysia	Yes	Yes
LC4032ZC	Pb-Free 48-TQFP	TN48	ASE Malaysia	Yes	Yes
LC4032V	Pb-Free 48-TQFP	TN48	ASE Malaysia	Yes	Yes
LC4032V	Pb-Free 44-TQFP	TN44	ASE Malaysia	Yes	Yes
LC4064V	Pb-Free-100-TQFP	TN100	ASE Malaysia	Yes	Yes
LC4064V	Pb-Free 48-TQFP	TN48	ASE Malaysia	Yes	Yes
LC4128V	Pb-Free-100-TQFP	TN100	ASE Malaysia	Yes	Yes
M4A3-128	Pb-Free-100-TQFP	VN	ASE Malaysia	Yes	Yes

1. Sample availability targeted for end of July

EXHIBIT "B" – PCN Device Listing and Applicable Changes

Product Family	Product Line	Package Type	Package Code			ASE Malaysia	UTAC Singapore
			Pb	Pb-Free	Halogen-Free		
ispLSI® 1000	ispLSI 1016[1]	44-TQFP	T44			✓	
	ispLSI 1032[1]	100-TQFP	T			✓	
	ispLSI 1048[1]	120-PQFP	Q			✓	
	ispLSI 1048C[1]	128-PQFP	Q			✓	
ispLSI 1000E	ispLSI 1016E	44-TQFP	T44	TN44		✓	
	ispLSI 1032E	100-TQFP	T	TN		✓	
	ispLSI 1048E	128-TQFP	T	TN		✓	
		128-PQFP	Q	QN		✓	
ispLSI 1000EA	ispLSI 1016EA	44-TQFP	T44			✓	
	ispLSI 1024EA	100-TQFP	T100			✓	
	ispLSI 1032EA	100-TQFP	T100			✓	
	ispLSI 1048EA	128-TQFP	T128			✓	
		128-PQFP	Q128			✓	
ispLSI 2000A	ispLSI 2032A	44-TQFP	T44	TN44		✓	
		48-TQFP	T48	TN48		✓	
	ispLSI 2064A	100-TQFP	T100	TN100		✓	
	ispLSI 2096A	128-TQFP	T128	TN128		✓	
		128-PQFP	Q128	QN128		✓	
	ispLSI 2128A	176-TQFP	T176	TN176		✓	
		160-PQFP	Q160	QN160		✓	
ispLSI 2000E	ispLSI 2032E	44-TQFP	T44			✓	
		48-TQFP	T48			✓	
	ispLSI 2064E	100-TQFP	T100			✓	
	ispLSI 2096E	128-TQFP	T128			✓	
		128-PQFP	Q128			✓	
	ispLSI 2128E	176-TQFP	T176			✓	
ispLSI 2000VE	ispLSI 2032VE	44-TQFP	T44	TN44		✓	
		48-TQFP	T48	TN48		✓	
	ispLSI 2064VE	100-TQFP	T100	TN100		✓	
		44-TQFP	T44	TN44		✓	
	ispLSI 2096VE	128-TQFP	T128	TN128		✓	
	ispLSI 2128VE	100-TQFP	T100	TN100		✓	
		176-TQFP	T176	TN176		✓	
		160-PQFP	Q160			✓	
	ispLSI 2192VE	128-TQFP	T128	TN128		✓	

Note: This PCN affects all speed and temperature grades for the device families listed above. Please refer to the device family data sheets on the Lattice web site at http://www.latticesemi.com for the complete list of OPNs. This PCN also affects any custom devices (i.e. factory programmed, customer specific Pb-free packages, special test, tape and reel, non-standard speed grade, etc.), which are derived from any of the devices listed above.

1. Devices have been discontinued via PCN#13A-10. Last Time Buy orders may be sourced with alternate material sets.

EXHIBIT "B" – PCN Device Listing and Applicable Changes (Cont'd)

Product Family	Product Line	Package Type	Package Code			ASE Malaysia	UTAC Singapore
			Pb	Pb-Free	Halogen-Free		
ispLSI 5000VA	ispLSI 5256VA	208-PQFP	Q208			✓	
	ispLSI 5384VA	208-PQFP	Q208			✓	
	ispLSI 5512VA	208-PQFP	Q208			✓	
ispLSI 5000VE	ispLSI 5128VE	128-TQFP	T128			✓	
	ispLSI 5256VE	100-TQFP	T100			✓	
	ispLSI 5256VE	128-TQFP	T128			✓	
ispXPLD®	LC5512MV	208-PQFP	Q208	QN208		✓	
LatticeEC™	LFEC1E	100-TQFP	T100	TN100		✓	
		144-TQFP	T144	TN144		✓	
		208-PQFP	Q208	QN208		✓	
	LFEC3E	100-TQFP	T100	TN100		✓	
		144-TQFP	T144	TN144		✓	
		208-PQFP	Q208	QN208		✓	
	LFEC6E	144-TQFP	T144	TN144		✓	
		208-PQFP	Q208	QN208		✓	
	LFEC10E	208-PQFP	Q208	QN208		✓	
LatticeECP™	LFECP6E	144-TQFP	T144	TN144		✓	
		208-PQFP	Q208	QN208		✓	
	LFECP10E	208-PQFP	Q208	QN208		✓	
LatticeECP2™	LFE2-6E/SE	144-TQFP	T144	TN144		✓	✓
	LFE2-12E/SE	144-TQFP	T144	TN144		✓	✓
		208-PQFP	Q208	QN208		✓	
	LFE2-20E/SE	208-PQFP	Q208	QN208		✓	
ispGDX®	ispGDX160V	208-PQFP	Q208			✓	
	ispGDX80VA	100-TQFP	T100	TN100		✓	
	ispGDX160VA	208-PQFP	Q208			✓	
ispPAC®-CLK	ispPAC-CLK5304S	48-TQFP	T48	TN48		✓	
	ispPAC-CLK5308S	48-TQFP	T48	TN48		✓	
	ispPAC-CLK5312S	48-TQFP	T48	TN48		✓	
	ispPAC-CLK5316S	64-TQFP	T64	TN64		✓	
	ispPAC-CLK5320S	64-TQFP	T64	TN64		✓	
	ispPAC-CLK5510V	48-TQFP	T48	TN48		✓	
	ispPAC-CLK5520V	100-TQFP	T100	TN100		✓	
	ispPAC-CLK5610AV	48-TQFP	T48	TN48		✓	
	ispPAC-CLK5610V	48-TQFP	T48	TN48		✓	
	ispPAC-CLK5620AV	100-TQFP	T100	TN100		✓	
	ispPAC-CLK5620V	100-TQFP	T100	TN100		✓	

Note: This PCN affects all speed and temperature grades for the device families listed above. Please refer to the device family data sheets on the Lattice web site at http://www.latticesemi.com for the complete list of OPNs. This PCN also affects any custom devices (i.e. factory programmed, customer specific Pb-free packages, special test, tape and reel, non-standard speed grade, etc.), which are derived from any of the devices listed above.

EXHIBIT "B" – PCN Device Listing and Applicable Changes (Cont'd)

Product Family	Product Line	Package Type	Package Code			ASE Malaysia	UTAC Singapore
			Pb	Pb-Free	Halogen-Free		
ispPAC-POWR	ispPAC-POWR1014	48-TQFP	T48	TN48		✓	
	ispPAC-POWR1014A	48-TQFP	T48	TN48		✓	
	ispPAC-POWR1220AT8	100-TQFP	T100	TN100		✓	
	LA-ispPAC-POWR1014	48-TQFP		TN48		✓	
	LA-ispPAC-POWR1014A	48-TQFP		TN48		✓	
ispMACH® 4000	LC4032V/B/C	44-TQFP	T44	TN44		✓	
		48-TQFP	T48	TN48		✓	
	LC4064V/B/C	100-TQFP	T100	TN100		✓	✓
		44-TQFP	T44	TN44		✓	
		48-TQFP	T48	TN48		✓	
	LC4128V	144-TQFP	T144	TN144		✓	✓
	LC4128V/B/C	100-TQFP	T100	TN100		✓	✓
		128-TQFP	T128	TN128		✓	
	LC4256V	144-TQFP	T144	TN144		✓	✓
	LC4256V/B/C	100-TQFP	T100	TN100		✓	✓
		176-TQFP	T176	TN176		✓	
	LC4384V/B/C	176-TQFP	T176	TN176		✓	
	LC4512V/B/C	176-TQFP	T176	TN176		✓	
ispMACH 4000ZC	LC4032ZC	48-TQFP	T48	TN48		✓	
	LC4064ZC	100-TQFP	T100	TN100		✓	
		48-TQFP	T48	TN48		✓	
	LC4128ZC	100-TQFP	T100	TN100		✓	
	LC4256ZC	100-TQFP	T100	TN100		✓	
		176-TQFP	T176	TN176		✓	
ispMACH 4000ZE	LC4032ZE	48-TQFP		TN48		✓	
	LC4064ZE	100-TQFP		TN100		✓	
		48-TQFP		TN48		✓	
	LC4128ZE	100-TQFP		TN100		✓	
		144-TQFP		TN144		✓	
	LC4256ZE	100-TQFP		TN100		✓	
		144-TQFP		TN144		✓	

Note: This PCN affects all speed and temperature grades for the device families listed above. Please refer to the device family data sheets on the Lattice web site at http://www.latticesemi.com for the complete list of OPNs. This PCN also affects any custom devices (i.e. factory programmed, customer specific Pb-free packages, special test, tape and reel, non-standard speed grade, etc.), which are derived from any of the devices listed above.

EXHIBIT "B" – PCN Device Listing and Applicable Changes (Cont'd)

Product Family	Product Line	Package Type	Package Code			ASE Malaysia	UTAC Singapore
			Pb	Pb-Free	Halogen-Free		
ispMACH 4A3	M4A3-32/32	44-TQFP	V	VN		✓	
		48-TQFP	V48	VN48		✓	
	M4A3-64/32	44-TQFP	V	VN		✓	
		48-TQFP	V48	VN48		✓	
	M4A3-64/64	100-TQFP	V	VN		✓	
	M4A3-96/48	100-TQFP	V			✓	
	M4A3-128/64	100-TQFP	V	VN		✓	
		100-PQFP	Y			✓	
	M4A3-192/96	144-TQFP	V	VN		✓	
	M4A3-256/128	208-PQFP	Y	YN		✓	
	M4A3-256/160	208-PQFP	Y	YN		✓	
	M4A3-384/160	208-PQFP	Y			✓	
	M4A3-512/160	208-PQFP	Y			✓	
ispMACH 4A5	M4A5-32/32	44-TQFP	V	VN		✓	
		48-TQFP	V48	VN48		✓	
	M4A5-64/32	44-TQFP	V	VN		✓	
		48-TQFP	V48	VN48		✓	
	M4A5-96/48	100-TQFP	V	VN		✓	
	M4A5-128/64	100-TQFP	V	VN		✓	
		100-PQFP	Y	YN		✓	
	M4A5-192/96	144-TQFP	V	VN		✓	
	M4A5-256/128	208-PQFP	Y	YN		✓	
MachXO™	LCMXO256C/E	100-TQFP	T100	TN100		✓	✓
	LCMXO640C/E	100-TQFP	T100	TN100		✓	✓
		144-TQFP	T144	TN144		✓	✓
	LCMXO1200C/E	100-TQFP	T100	TN100		✓	✓
		144-TQFP	T144	TN144		✓	✓
	LCMXO2280C/E	100-TQFP	T100	TN100		✓	✓
		144-TQFP	T144	TN144		✓	✓
MachXO2™	LCMXO2-1200HC/ZE	100-TQFP			TG100	✓	✓
		144-TQFP			TG144	✓	✓
LatticeXP™	LFXP3C/E	100-TQFP	T100	TN100		✓	✓
		144-TQFP	T144	TN144		✓	✓
		208-PQFP	Q208	QN208		✓	✓
	LFXP6C/E	144-TQFP	T144	TN144		✓	✓
		208-PQFP	Q208	QN208		✓	✓

Note: This PCN affects all speed and temperature grades for the device families listed above. Please refer to the device family data sheets on the Lattice web site at http://www.latticesemi.com for the complete list of OPNs. This PCN also affects any custom devices (i.e. factory programmed, customer specific Pb-free packages, special test, tape and reel, non-standard speed grade, etc.), which are derived from any of the devices listed above.

EXHIBIT "B" – PCN Device Listing and Applicable Changes (Cont'd)

Product Family	Product Line	Package Type	Package Code			ASE Malaysia	UTAC Singapore
			Pb	Pb-Free	Halogen-Free		
LatticeXP2™	LFXP2-5E	144-TQFP		TN144		✓	✓
		208-PQFP		QN208		✓	
	LFXP2-8E	144-TQFP		TN144		✓	✓
		208-PQFP		QN208		✓	
	LFXP2-17E	208-PQFP		QN208		✓	
ORCA™ 2 Series	OR2T15A[2]	208-PQFP	S208			✓	
	OR2T26A[2]	208-PQFP	S208			✓	
ORCA 3 Series	OR3T30	208-PQFP	S208			✓	
	OR3T55	208-PQFP	S208			✓	
Mach® 5	M5-128/68	100-TQFP	V			✓	
		100-PQFP	Y			✓	
	M5-128/120	160-PQFP	Y			✓	
	M5-192/120	160-PQFP	Y			✓	
	M5-192/68	100-TQFP	V			✓	
	M5-256/120	160-PQFP	Y			✓	
	M5-256/160	208-PQFP	Y			✓	
	M5-256/68	100-TQFP	V			✓	
	M5-320/160	208-PQFP	Y			✓	
	M5-384/160	208-PQFP	Y			✓	
Mach 5LV	M5LV-128/104	144-TQFP	V			✓	
	M5LV-128/120	160-PQFP	Y			✓	
	M5LV-128/68	100-TQFP	V			✓	
	M5LV-128/74	100-TQFP	V			✓	
	M5LV-256/104	144-TQFP	V			✓	
	M5LV-256/120	160-PQFP	Y			✓	
	M5LV-256/160	208-PQFP	Y			✓	
	M5LV-256/68	100-PQFP	Y			✓	
	M5LV-256/74	100-TQFP	V			✓	
	M5LV-320/120	160-PQFP	Y			✓	
	M5LV-320/160	208-PQFP	Y			✓	
	M5LV-384/120	160-PQFP	Y			✓	
	M5LV-384/160	208-PQFP	Y			✓	
	M5LV-512/120	160-PQFP	Y			✓	
	M5LV-512/160	208-PQFP	Y			✓	

Note: This PCN affects all speed and temperature grades for the device families listed above. Please refer to the device family data sheets on the Lattice web site at http://www.latticesemi.com for the complete list of OPNs. This PCN also affects any custom devices (i.e. factory programmed, customer specific Pb-free packages, special test, tape and reel, non-standard speed grade, etc.), which are derived from any of the devices listed above.

2. Select speed grade devices have been discontinued per PCN#09I-10.

EXHIBIT "C" – Current and Future Qualified Assembly Sites and Material Sets

	Current				Alternate Qualified			
Package Type	Assembly Site	Material Set			Assembly Site	Material Set		
		Die Attach	Mold Compound	Wire		Die Attach	Mold Compound	Wire
TQFP	ASE Malaysia	Ablebond 3230	Hitachi CEL9510HF Series[1]	Au	ASE Malaysia	Yizbond 8143	Sumitomo G631SH	Au
		Ablebond 8361J	Hitachi CEL9220HF Series[2]					
	UTAC Singapore	Ablebond 3230	Hitachi CEL9510HF Series	Au	UTAC Singapore	Ablebond 3230	Sumitomo G631SH	Au
PQFP	ASE Malaysia	Ablebond 8361J	Sumitomo G700LY	Au	ASE Malaysia	Yizbond 8143	Sumitomo G631SH	Au
			Hitachi CEL9510HF Series[3]					

1. CEL9510HF used for the LatticeECP2/M and LatticeXP2 product families
2. CEL9220HF used for all other product families
3. CEL9510HF used exclusively for the LatticeXP2 product family.

Note: Above table summarizes the current qualified material set and alternate qualified material set at ASE Malaysia and UTAC Singapore. The highlighted cells in the "Alternate Qualified" section identify the changes associated with this PCN.

EXHIBIT "D" – Alternate Materials Qualification Plan

ASEM Alternate BOM Qualification	Now	Alternate	Peak Reflow Temp
TQFP/PQFP	CEL9510HF Series CEL9220HF Series	Sumitomo G631SH	260C

Reliability Stress at	Stress	# Lots	Units / Lot	Jedec Standard	Condition	Vcc (V)	Early Release Point	Early Release Target Date	Qual Complete	Qual Complete Target Date
ASEM	SMPC	3	135	J-STD-020D.1 & JESD-A113F	MSL3 30C/60% RH & 260C peak reflow temp	N/A	N/A	Late June	After 3x reflow	Late July
ASEM	TC	3	45	JESD22-A104C	Cond B (-55C/+125C)	N/A	200 Cycles		1000 Cycles	
ASEM	HTSL	3	45	JESD22-A103D	150C dry bake	N/A	168 Hrs		1000 Hours	
ASEM	UHAST	3	45	JESD22-A118	Cond A (130C/85%RH)	N/A	N/A		96 Hours	
Lattice Semi	BHAST	3	45	JESD22-A110B	Cond A (130C/85%RH)	1.2 / 3.3	N/A		96 Hours	

UTAC Alternate BOM Qualification	Now	Alternate	Peak Reflow Temp
TQFP/PQFP	CEL9510HF Series	Sumitomo G631SH	260C

Reliability Stress at	Stress	# Lots	Units / Lot	Jedec Standard	Condition	Vcc (V)	Early Release Point	Early Release Target Date	Qual Complete	Qual Complete Target Date
UTAC	SMPC	3	135	J-STD-020D.1 & JESD-A113F	MSL3a 60C/60% RH & 260C peak reflow temp	N/A	N/A	Late June	After 3x reflow	Late July
UTAC	TC	3	45	JESD22-A104C	Cond B (-55C/+125C)	N/A	200 Cycles		1000 Cycles	
UTAC	HTSL	3	45	JESD22-A103D	150C dry bake	N/A	168 Hrs		1000 Hours	
UTAC	UHAST	3	45	JESD22-A118	Cond A (130C/85%RH)	N/A	N/A		96 Hours	
Lattice Semi	BHAST	3	45	JESD22-A110B	LQ - Cond A (130C/85%RH)	1.2 / 3.3	N/A		96 Hours	

EXHIBIT "E" – Alternate Materials Characterization Plan

Subcon	Product	Pkg	Split	Mold Compound	# Lots	Units/ Lot	Temperature
UTAC	LFXP2-8E	144-TQFP	Current	CEL9510HF Series	1	300	90C
	LFXP2-8E	144-TQFP	Alternate	Sumitomo G631SH	3	300	90C

Subcon	Product	Pkg	Split	Mold Compound	# Lots	Units/ Lot	Temperature
ASEM	LFE2-12E	144-TQFP	Current	CEL9510HF Series	1	300	90C
	LFE2-12E	144-TQFP	Alternate	Sumitomo G631SH	3	300	90C