June 20, 2011

Subject: PCN# 08A-11, Notification of a Revision to the LatticeSC/SCM Family flexiPCS Data Sheet

Dear Lattice Customers:

Lattice is providing this Product Change Notification (PCN) regarding a revision to the LatticeSC™/LatticeSCM™ Family flexiPCS data sheet. The revised data sheet provides a clarification of the speed range over which the Pseudo-Random Bit Stream (PRBS) Generator and Checker test features are supported. The LatticeSC/SCM devices support the PRBS polynomial $X^7 + X^6 + 1$ over the full operating range of the PCS. The PRBS polynomial $X^{31} + X^{28} + 1$ is supported up to 2.7Gbps.

In addition, the revised data sheet also clarifies the Link State Machine support and Gigabit Ethernet Receive State Machine support as documented in Exhibit A.

These clarifications are documented in the latest data sheet (DS1005 Version 02.0 release in June, 2011) and are effective immediately.

AFFECTED DEVICES

This PCN affects all devices in the LatticeSC/SCM family (Ordering Part Number prefix LFSC3GA and LFSCM3GA, respectively). A complete list of Ordering Part Numbers (OPNs) is available in Exhibit B. This PCN also affects any custom devices (i.e. factory programmed, special test, etc), which are derived from any of the devices listed. All shipments of the LatticeSC/SCM products to customers prior to this PCN are also affected. The OPNs remain unchanged for all LatticeSC/SCM devices.

DATA SHEET SPECIFICATIONS

The revised LatticeSC/SCM Family flexiPCS data sheet (DS1005 Version 02.0 released in June, 2011) reflects these changes. The revised datasheet is available here.

SOFTWARE / PROGRAMMING SUPPORT

This change has no impact on the existing bit stream.

TIMING

This datasheet change is effective immediately.

RESPONSE

No response is required to this PCN.

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" – DATA SHEET CLARIFICATIONS (Highlighted below)

(1) Word Alignment (Page 5-16):

Link State Machine

The link synchronization state machine is an extension of the word align module. Link synchronization is achieved after the successful detection and alignment of the required number of consecutive aligned code words. The GbE State Machine is compliant to Figure 36-9 (Synchronization state machine) of IEEE 802.3-2002 with one exception. Figure 36-9 requires that four consecutive good code groups be received in order for the LSM to transition from one SYNC_ACQUIRED_{N} (where N=2,3,4) to SYNC_ACQUIRED_{N-1}. Instead, the actual LSM implementation requires five consecutive good code groups to make the transition.

(2) Gigabit Ethernet Receive State Machine (Page 5-21):

Gigabit Ethernet Receive State Machine

The Gigabit Ethernet receive state machine performs the 8-bit data decapsulation and formatting, including the Auto-Negotiation code word extraction if Auto-Negotiation is enabled. The Gigabit Ethernet receive state machine implements the PCS receive state diagrams in Figure 36- 7a and 36-7b of the 802.3-2002 1000BASE-X specification.

All requirements of Clause 35 and 36 are provided, with the exception of the following:

- Support for half-duplex signalling to MAC
- GMII_COL and GMII_CRS signals and associated logic are not implemented
- In GbE mode, the PCS does NOT conform to the definition of carrier_detect as described in Section 36.2.5.1.4 of IEEE 802.3-2002. Instead, the carrier_detect function is true when ANY bit difference exists between the latched code group and the expected /K28.5/ (based on current running disparity.

(3) Link State machine (Page 7-18):

Link State Machine

The link synchronization state machine is an extension of the word align module. Link synchronization is achieved after the successful detection and alignment of the required number of consecutive code words. The XAUI Link State Machine is compliant to Figure 48-7 (PCS synchronization state diagram) of IEEE 802.3ae-2002 with one exception. Figure 48-7 requires that four consecutive good code groups be received in order for the LSM to transition from one SYNC_ACQUIRED_{N} (where N=2,3,4) to SYNC_ACQUIRED_{N-1}. Instead, the actual LSM implementation requires five consecutive good code groups to make the transition.

EXHIBIT "B" – AFFECTED DEVICE LIST

Product Family	Device	Ordering Part Number	Package
LatticeSC	SC15	LFSC3GA15E-5F256C	256-fpBGA
		LFSC3GA15E-5F256I	
		LFSC3GA15E-6F256C	
		LFSC3GA15E-6F256I	
		LFSC3GA15E-7F256C	
		LFSC3GA15E-5FN256C	Pb-Free 256-fpBGA
		LFSC3GA15E-5FN256I	
		LFSC3GA15E-6FN256C	
		LFSC3GA15E-6FN256I	
		LFSC3GA15E-7FN256C	
		LFSC3GA15E-5F900C	900-fpBGA
		LFSC3GA15E-5F900I	
		LFSC3GA15E-6F900C	
		LFSC3GA15E-6F900I	
		LFSC3GA15E-7F900C	
		LFSC3GA15E-5FN900C	Pb-Free 900-fpBGA
		LFSC3GA15E-5FN900I	
		LFSC3GA15E-6FN900C	
		LFSC3GA15E-6FN900I	
		LFSC3GA15E-7FN900C	
	SC25	LFSC3GA25E-5F900C	900-fpBGA
		LFSC3GA25E-5F900I	
		LFSC3GA25E-6F900C	
		LFSC3GA25E-6F900I	
		LFSC3GA25E-7F900C	
		LFSC3GA25E-5FN900C	Pb-Free 900-fpBGA
		LFSC3GA25E-5FN900I	
		LFSC3GA25E-6FN900C	
		LFSC3GA25E-6FN900I	
		LFSC3GA25E-7FN900C	
		LFSC3GA25E-5FFA1020C	1020-fcBGA (Organic Rev 2)
		LFSC3GA25E-5FFA1020I	
		LFSC3GA25E-6FFA1020C	
		LFSC3GA25E-6FFA1020I	
		LFSC3GA25E-7FFA1020C	
		LFSC3GA25E-5FFAN1020C	Pb-Free 1020-fcBGA (Organic Rev 2)
		LFSC3GA25E-5FFAN1020I	
		LFSC3GA25E-6FFAN1020C	
		LFSC3GA25E-6FFAN1020I	
		LFSC3GA25E-7FFAN1020C	
	SC40	LFSC3GA40E-5FFA1020C	1020-fcBGA (Organic Rev 2)
		LFSC3GA40E-5FFA1020I	
		LFSC3GA40E-6FFA1020C	
		LFSC3GA40E-6FFA1020I	
		LFSC3GA40E-7FFA1020C	
		LFSC3GA40E-5FFAN1020C	Pb-Free 1020-fcBGA (Organic Rev 2)
		LFSC3GA40E-5FFAN1020I	
		LFSC3GA40E-6FFAN1020C	
		LFSC3GA40E-6FFAN1020I	
		LFSC3GA40E-7FFAN1020C	
		LFSC3GA40E-5FF1152C	1152-fcBGA (Organic)
		LFSC3GA40E-5FF1152I	
		LFSC3GA40E-6FF1152C	
		LFSC3GA40E-6FF1152I	
		LFSC3GA40E-7FF1152C	
		LFSC3GA40E-5FFN1152C	Pb-Free 1152-fcBGA (Organic)
		LFSC3GA40E-5FFN1152I	
		LFSC3GA40E-6FFN1152C	
		LFSC3GA40E-6FFN1152I	
		LFSC3GA40E-7FFN1152C	

Product Family	Device	Ordering Part Number	Package
LatticeSCM	SCM15	LFSCM3GA15EP1-5F256C	256-fpBGA
		LFSCM3GA15EP1-5F256I	
		LFSCM3GA15EP1-6F256C	
		LFSCM3GA15EP1-6F256I	
		LFSCM3GA15EP1-7F256C	
		LFSCM3GA15EP1-5FN256C	Pb-Free 256-fpBGA
		LFSCM3GA15EP1-5FN256I	
		LFSCM3GA15EP1-6FN256C	
		LFSCM3GA15EP1-6FN256I	
		LFSCM3GA15EP1-7FN256C	
		LFSCM3GA15EP1-5F900C	900-fpBGA
		LFSCM3GA15EP1-5F900I	
		LFSCM3GA15EP1-6F900C	
		LFSCM3GA15EP1-6F900I	
		LFSCM3GA15EP1-7F900C	
		LFSCM3GA15EP1-5FN900C	Pb-Free 900-fpBGA
		LFSCM3GA15EP1-5FN900I	
		LFSCM3GA15EP1-6FN900C	
		LFSCM3GA15EP1-6FN900I	
		LFSCM3GA15EP1-7FN900C	
	SCM25	LFSCM3GA25EP1-5F900C	900-fpBGA
		LFSCM3GA25EP1-5F900I	
		LFSCM3GA25EP1-6F900C	
		LFSCM3GA25EP1-6F900I	
		LFSCM3GA25EP1-7F900C	
		LFSCM3GA25EP1-5FN900C	Pb-Free 900-fpBGA
		LFSCM3GA25EP1-5FN900I	
		LFSCM3GA25EP1-6FN900C	
		LFSCM3GA25EP1-6FN900I	
		LFSCM3GA25EP1-7FN900C	
		LFSCM3GA25EP1-5FFA1020C	1020-fcBGA (Organic Rev 2)
		LFSCM3GA25EP1-5FFA1020I	
		LFSCM3GA25EP1-6FFA1020C	
		LFSCM3GA25EP1-6FFA1020I	
		LFSCM3GA25EP1-7FFA1020C	
		LFSCM3GA25EP1-5FFAN1020C	Pb-Free 1020-fcBGA (Organic Rev 2)
		LFSCM3GA25EP1-5FFAN1020I	
		LFSCM3GA25EP1-6FFAN1020C	
		LFSCM3GA25EP1-6FFAN1020I	
		LFSCM3GA25EP1-7FFAN1020C	
	SCM40	LFSCM3GA40EP1-5FFA1020C	1020-fcBGA (Organic Rev 2)
		LFSCM3GA40EP1-5FFA1020I	
		LFSCM3GA40EP1-6FFA1020C	
		LFSCM3GA40EP1-6FFA1020I	
		LFSCM3GA40EP1-7FFA1020C	
		LFSCM3GA40EP1-5FFAN1020C	Pb-Free 1020-fcBGA (Organic Rev 2)
		LFSCM3GA40EP1-5FFAN1020I	
		LFSCM3GA40EP1-6FFAN1020C	
		LFSCM3GA40EP1-6FFAN1020I	
		LFSCM3GA40EP1-7FFAN1020C	
		LFSCM3GA40EP1-5FF1152C	1152-fcBGA (Organic)
		LFSCM3GA40EP1-5FF1152I	
		LFSCM3GA40EP1-6FF1152C	
		LFSCM3GA40EP1-6FF1152I	
		LFSCM3GA40EP1-7FF1152C	
		LFSCM3GA40EP1-5FFN1152C	Pb-Free 1152-fcBGA (Organic)
		LFSCM3GA40EP1-5FFN1152I	
		LFSCM3GA40EP1-6FFN1152C	
		LFSCM3GA40EP1-6FFN1152I	
		LFSCM3GA40EP1-7FFN1152C	

Note: This PCN also affects any custom devices (i.e. factory programmed, special test, etc.), which are derived from any of the devices listed above.

EXHIBIT "B" – AFFECTED DEVICE LIST (Cont'd)

Product Family	Device	Ordering Part Number	Package
LatticeSC	SC80	LFSC3GA80E-5FF1152C	1152-fcBGA (Organic)
		LFSC3GA80E-5FF1152I	
		LFSC3GA80E-6FF1152C	
		LFSC3GA80E-6FF1152I	
		LFSC3GA80E-7FF1152C	
		LFSC3GA80E-5FFN1152C	Pb-Free 1152-fcBGA (Organic)
		LFSC3GA80E-5FFN1152I	
		LFSC3GA80E-6FFN1152C	
		LFSC3GA80E-6FFN1152I	
		LFSC3GA80E-7FFN1152C	
		LFSC3GA80E-5FF1704C	1704-fcBGA (Organic)
		LFSC3GA80E-5FF1704I	
		LFSC3GA80E-6FF1704C	
		LFSC3GA80E-6FF1704I	
		LFSC3GA80E-7FF1704C	
		LFSC3GA80E-5FFN1704C	Pb-Free 1704-fcBGA (Organic)
		LFSC3GA80E-5FFN1704I	
		LFSC3GA80E-6FFN1704C	
		LFSC3GA80E-6FFN1704I	
		LFSC3GA80E-7FFN1704C	
	SC115	LFSC3GA115E-5FF1152C	1152-fcBGA (Organic)
		LFSC3GA115E-5FF1152I	
		LFSC3GA115E-6FF1152C	
		LFSC3GA115E-6FF1152I	
		LFSC3GA115E-5FFN1152C	Pb-Free 1152-fcBGA (Organic)
		LFSC3GA115E-5FFN1152I	
		LFSC3GA115E-6FFN1152C	
		LFSC3GA115E-6FFN1152I	
		LFSC3GA115E-5FF1704C	1704-fcBGA (Organic)
		LFSC3GA115E-5FF1704I	
		LFSC3GA115E-6FF1704C	
		LFSC3GA115E-6FF1704I	
		LFSC3GA115E-5FFN1704C	Pb-Free 1704-fcBGA (Organic)
		LFSC3GA115E-5FFN1704I	
		LFSC3GA115E-6FFN1704C	
		LFSC3GA115E-6FFN1704I	

Product Family	Device	Ordering Part Number	Package
LatticeSCM	SCM80	LFSCM3GA80EP1-5FF1152C	1152-fcBGA (Organic)
		LFSCM3GA80EP1-5FF1152I	
		LFSCM3GA80EP1-6FF1152C	
		LFSCM3GA80EP1-6FF1152I	
		LFSCM3GA80EP1-7FF1152C	
		LFSCM3GA80EP1-5FFN1152C	Pb-Free 1152-fcBGA (Organic)
		LFSCM3GA80EP1-5FFN1152I	
		LFSCM3GA80EP1-6FFN1152C	
		LFSCM3GA80EP1-6FFN1152I	
		LFSCM3GA80EP1-7FFN1152C	
		LFSCM3GA80EP1-5FF1704C	1704-fcBGA (Organic)
		LFSCM3GA80EP1-5FF1704I	
		LFSCM3GA80EP1-6FF1704C	
		LFSCM3GA80EP1-6FF1704I	
		LFSCM3GA80EP1-7FF1704C	
		LFSCM3GA80EP1-5FFN1704C	Pb-Free 1704-fcBGA (Organic)
		LFSCM3GA80EP1-5FFN1704I	
		LFSCM3GA80EP1-6FFN1704C	
		LFSCM3GA80EP1-6FFN1704I	
		LFSCM3GA80EP1-7FFN1704C	
	SCM115	LFSCM3GA115EP1-5FF1152C	1152-fcBGA (Organic)
		LFSCM3GA115EP1-5FF1152I	
		LFSCM3GA115EP1-6FF1152C	
		LFSCM3GA115EP1-6FF1152I	
		LFSCM3GA115EP1-5FFN1152C	Pb-Free 1152-fcBGA (Organic)
		LFSCM3GA115EP1-5FFN1152I	
		LFSCM3GA115EP1-6FFN1152C	
		LFSCM3GA115EP1-6FFN1152I	
		LFSCM3GA115EP1-5FF1704C	1704-fcBGA (Organic)
		LFSCM3GA115EP1-5FF1704I	
		LFSCM3GA115EP1-6FF1704C	
		LFSCM3GA115EP1-6FF1704I	
		LFSCM3GA115EP1-5FFN1704C	Pb-Free 1704-fcBGA (Organic)
		LFSCM3GA115EP1-5FFN1704I	
		LFSCM3GA115EP1-6FFN1704C	
		LFSCM3GA115EP1-6FFN1704I	

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