



PXA270 Card Engine

Product Change Notification

Hardware Documentation

Logic PD // Products
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Revision History

REV	EDITOR	DESCRIPTION	APPROVAL	DATE
A	JCA	Initial Release	JCA	05/23/06
B	JCA	Released PCN“PCN 344 Hardware Change” on page 8; Added “Current Standard Model in Production” Section to Introduction	JCA	03/20/07
C	JCA	Released “PCN 349 CPLD Issue” on page 10	TED	06/15/07
D	JCA	Released “PCN 350 Hardware Change” on page 12	MAA	07/09/07
E	JCA	Released “PCN 389 Hardware Change” on page 14	JMC	08/14/08
F	JCA	Released “PCN 428 Hardware & Production Change” on page 16	JMC	01/12/10
G	JCA	Corrected LogicLoader version number in “PCN 428 Hardware & Production Change” on page 16	JCA	01/29/10
H	JCA	Released “PCN 455 Hardware Change” on page 19	JMC	10/01/10
I	JCA	Released “PCN 458 Hardware Change” on page 20; Minor textual edits to PCN 428 & PCN 455	KTL	11/16/10
J	JCA	Released “PCN 463 EOL Notice & Hardware Change” on page 21	JMC	01/11/10
K	NJK	Expanded “Processor Change” section in “PCN 428 Hardware & Production Change” on page 16	NJK	03/23/11
L	SO	Released “PCN 515 Hardware Change” on page 24	JMC	12/15/11

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1 PXA270 PCN Introduction

1.1 Purpose of Document

The purpose of this document is to provide a single repository for explaining design changes to a specific product family. The design changes captured herein include all changes since the product family was initially released to full production status.

The changes described in this document relate to the Logic PD PXA270 Card Engine product family.

In some sections, other product families are referenced. The reason for this is that the same change took place across multiple product families at the same time, and the related text is applicable to more than just the PXA270 Card Engine product family.

1.2 Pre-production Systems

Systems that are manufactured before the model is released to full production status use a numerical model number revision digit. After the model has a full production status, the model number revision digit is a letter. For example, any "beta" or "pre-production" builds of the PXA270 card engine would have a model number like "CENGPXA270-520-10-504HC-1", whereas production released model numbers would have a model number like "CENGPXA270-520-10-504HC-A."

Because some of these pre-production builds are sent to partners and targeted customers for evaluation, this section attempts to capture a history of those pre-production builds for reference. Any products listed in the table below are not meant for production use and are not actively supported by Logic PD.

Part Number	Description
N/A	N/A

1.3 Current Standard Model in Production

The table below lists the most current revisions of standard PXA270 Card Engines. It also specifies the PCN that details the changes prompting the model revision.

Model Number	PCN Detailing Revision
CENGPXA270-416-11-505EXR-A	PCN 463 EOL Notice & Hardware Change
CENGPXA270-416-11-505HXR-A	PCN 463 EOL Notice & Hardware Change
CENGPXA270-520-11-504HCR-A	PCN 463 EOL Notice & Hardware Change

2 History and Description of Part Numbering

Logic PD began production of board-level products in 2002. Since 2002, Logic PD has improved upon the way in which the different product-identifying part/model number fields are used. This section will attempt to explain the history so that the notation used within this document is clear.

2.1 Current Use of Identification Fields

The current implementation of identifying fields for a board-level product includes a product family number, a model number, a part number, and a part number revision.

Product Family Number: Alpha-numeric field that encompasses all variations of an architectural implementation of a design. This number is typically used in casual conversation regarding a system, and requires additional information to specify exactly which configuration/revision is being discussed. The following are examples of different product family numbers: LH7A400-10, LH7A404-10, LH7A404-11, SH7760-10, PXA270-10, etc.

Model Number: Alpha-numeric field that specifies a product configuration (e.g., memory densities, processor speed, memory types, temperature version, RoHS compliance, model revision). The model revision digits of the model number will be incremented based on any underlying form/fit/function change to the configuration. Products are ordered from Logic PD based on the model number of the product. Logic PD's *Model Number Decoder White Paper*, (downloadable from <http://support.logicpd.com/downloads/601/>) describes Model Numbers in detail. The following are examples of different model numbers: CENGLH7A400-10-403ECR-A, CENGPXA270-520-10-550HC-B, CENLH7A404-FOO01-0204R, etc.

Part Number: Numeric field that specifies a form/fit/function manufacturing-level implementation of a product. A part number (also sometimes referred to as an assembly number) will change when any part of its sub-assembly changes in such a way as to make it incompatible with the current production part number in the areas of form, fit, or function. This means that you could have many different part numbers for the same product family number. A part number change will always result in a model number revision change (and hence a model number change since the revision digit is part of the model number). The following are examples of different part numbers: 80000258, 1001412, 90000005, etc.

Part Number Revision: Alpha-numeric field that specifies the revision of the part/assembly number. This field is changed in response to some type of process or part substitution on the manufacturing line that does not result in a form/fit/function difference in the product. This field is viewed as inconsequential from a usage and design perspective.

2.2 Intermediate Use of Model Numbers as an Identification Field

Between the current implementation of identification fields, and the initial use of the fields, model numbers were used without a revision field. This was in effect from November 2004 through February 2006.

The addition of a model number revision as part of the model number that changes with every underlying form/fit/function change has two advantages:

1. It allows customers to order a standard product model number and always get the same form/fit/function product. For example, in the past, products with the same memory configuration but different CPLD code loads could be ordered with the same model number.
2. It provides a linkage of the product status to a point in time. When there is not a revision field on the model number, every reference to a change in that model number had to be done by referencing multiple manufacturing part/assembly numbers instead of being able to use a simple "RevA and later" type of terminology.

2.2.1 Legacy Use of Identification Fields

In the past, from early 2002 through October 2004, the delineation between the product model number and product part number was not provided—both manufacturing and usage/ordering identification was contained within the part number. Model numbers were not implemented—or, perhaps more accurately, the part number was the model number.

This combination of the model and part number was handled by extending the part number with additional fields. For example, the part number 80000126 was always shown on a product with additional digits like 80000126-0025 RevD02. In this annotation, the 80000126 defined the product family (LH7A400-10), the 0025 defined the configuration (64MB SDRAM, 16MB NOR flash, Ethernet, Audio, and Touch), and the RevD02 defined the revision of the form/fit/functionality status of the product. When the revision field would change from a D02 to a D03, it would indicate that something changed in the Bill of Materials (BOM), but the underlying schematic and Printed Circuit Board (PCB) remained the same – the most significant revision letter of the product was tied to the revision of the schematic/PCB artwork.

Part numbers having the pattern 8000XXXX and 9000XXXX were standard product and custom product assemblies, respectively, that adhered to this previous implementation of the part numbering system.

Although this initial implementation was able to fully specify the product, it tied the manufacturing identification to the design, configuration, and ordering identification. The newer identification field implementations have addressed this by defining the part number and the part number revision fields as manufacturing use only, and by creating a new and independent model number to specify design, configuration, and ordering identification.

3 PCN 314 Hardware Change

Published: February 2006

PCN Classification:

- A - Recall
 B - Customer Action Required
 C - Product Upgrade/ No Customer Action Required
 D - Change of Production Line

3.1 Products Affected

This hardware change PCN affects all Logic PD Card Engines using Revision B and earlier of the SmSC LAN91C111 10/100 Ethernet Controller. Model numbers and revisions shown below indicate the first revision of the model that will have the new version (Revision C) of the SmSC LAN91C111 Ethernet chip populated. All other part numbers, or revisions earlier than that shown, have Revision B of the chip.

Affected Model Numbers*	New Rev
CENGLH7A400-10-504HC	B
CENGLH7A400-10-503HC	B
CENGLH7A400-10-402HC	C
CENGLH7A400-10-402HI	B
CENGLH7A400-10-504HCR	A
CENGLH7A400-10-503HCR	A
CENGLH7A400-10-402HCR	A
CENGLH7A400-10-402HIR	A
CENGLH7A404-11-504HC	B
CENGLH7A404-11-503HC	B
CENGLH7A404-11-504HI	B
CENGLH7A404-11-504HCR	A
CENGLH7A404-11-503HCR	A
CENGLH7A404-11-504HIR	A
CENGPXA270-520-10-504HC	B
CENGPXA270-520-10-504HCR	A

*Note: Any model number stickers that do not have a revision digit are Revision A.

3.2 Description of Change

Recently SMSC discontinued their Revision B Ethernet chip, and are now providing Revision C chips only. The revision register, which contains the revision ID of the chip, has been altered to handle this increment. All product model versions shown above are being converted to use the new Revision C chip.

Some Ethernet drivers will use this register for validation checks, and can require a certain revision ID. For a more detailed description about the register change, a PCN is provided by SMSC, located here: http://www.smsc.com/media/Downloads/Application_Notes/91c111revcin.pdf.

The new versions of the LAN91C111 IC will have a “C” preceding the date code on the SMSC LAN91C111 10/100 Ethernet Chip. Further information on identifying the date code location can be found here: <http://www.smsc.com/index.php?tid=145&pid=44>.

3.3 Applications Affected

1. Any systems with Revision C or later of the SmSC LAN91C111 Ethernet chip, using LogicLoader™ versions preceding 2.0.5, will be affected. LogicLoader versions previous to version 2.0.5 used the SmSC’s revision register as part of the auto-detection feature for the Ethernet interface. If LogicLoader versions previous to 2.0.5 are used on a system with Revision C, or later, of the SmSC LAN91C111 IC, the Ethernet interface will not function.
2. Any custom LAN91C111 Ethernet software that requires the revision register to have the earlier revision ID. Standard LoCE (Logic PD Windows CE BSP) or Linux Ethernet drivers provided by Logic PD are unaffected.

3.4 Work Around

1. LogicLoader version 2.0.5 (and later) treats Revision C (or later) LAN91C111 Ethernet chips the same as it treats Revision B.
2. Modify any custom software to allow the same software functionality for Revision C (or later) LAN91C111 Ethernet chips as it allowed for Revision B.

3.5 Solution

1. Using LogicLoader 1.4.0, or later, use the “update” command to download and install LogicLoader 2.0.5 or later on any systems that have Revision C or later SmSC LAN91C111 Ethernet chips installed.
2. Update any custom software with software modified with the work around described above.

3.6 Contact

For further information or questions, please contact Logic PD using the [Ask a Question](#) technical support form on the Logic PD website.

4 PCN 327 Documentation Change

Published: May 2006

PCN Classification:

- A - Recall
- B - Customer Action Required
- C - Product Upgrade/ No Customer Action Required
- D - Change of Production Line

4.1 Products Affected

This documentation change PCN applies to three documents pertaining to the PXA270-10 Card Engine and its interface with the application baseboard Printed Circuit Board (PCB). Part numbers and revisions listed below indicate the first revision of the document that will have the updated signal information explained in this PCN. All document revisions earlier than those shown below do not include the updated information

Affected Document Titles	Affected Part Numbers	New Rev
PXA270-10 Hardware Specification	1001624	F
PXA270-10 Power Application Note 281	1004399	B
Zoom SDK Application Board Schematics*	80000116	J

*Please also review PCN 326 in the Zoom SDK Application Board Product Change Notification for more information. This document can be downloaded at: <http://support.logicpd.com/auth/>.

4.2 Description of Change

The power sequence and reset signal usage for the PXA270-10 Card Engine has been updated in the PXA270-10 Hardware Specification (Logic PD PN 1001624). There are two 3.3V power rails for the PXA270-10 Card Engine, 3.3V_IN and 3.3V_uP_BATT. 3.3V_IN must be controlled by the SYS_EN signal from the Card Engine. Note that any ICs or passive devices on the host bus or connected directly to a PXA270 processor signal can back-power the processor. Any device or passive that is in this category must use the SYS_EN signal controlled 3.3V_IN power plane.

There is one exception to this rule in that there are no devices or passive components connected to 3.3V_IN or to the Card Engine on the custom baseboard. 3.3V_IN is controlled by SYS_EN on the Card Engine for the onboard devices.

3.3V_uP_BATT should not be controlled by SYS_EN and must always be active when the system is powered. 3.3V_uP_BATT is connected to the VCC_BATT pin on the PXA270 processor. VCC_BATT powers the PXA270's internal Real Time Clock (RTC) and power management circuitry when in 'deep sleep' mode.

For correct operation, once the product is powered, 3.3V_uP_BATT should be powered and 3.3V_IN will turn on by the SYS_EN signal at the appropriate time by the PXA270 processor. In 'deep sleep' mode, the 3.3V_IN power rail will be disabled for power saving.

The MSTR_nRST signal should only be used as an input to the PXA270-10 Card Engine. Any component on the custom baseboard should use uP_nRESET_OUT, which is pin 50 on J1C from the Card Engine. This reset will correspond correctly to the SYS_EN signal powering on 3.3V_IN.

4.3 Applications Affected

Any design that includes devices (ICs, passive components) on the baseboard that have direct connection to the PXA270-10 Card Engine must properly control 3.3V_IN with SYS_EN and use uP_nRESET_OUT for the reset signal.

Example issue: The revision of the Zoom SDK baseboard that directly powers the Card Engine with 3.3V and does not control this with SYS_EN will not function properly with all CompactFlash memory cards. On that board, the CompactFlash interface is powered directly from 3.3V and also uses MSTR_nRST for reset. In this case, the CompactFlash card is powered before the PXA270 processor is running, thus the control signals are in unknown states. This will be changed in new revisions of the Zoom SDK baseboard.

4.4 Work Around

Customers will need to update their custom baseboard designs to reflect these documented usage updates.

4.5 Solution

Follow the updated PXA270-10 Hardware Specification and Power Application Note 281. These documents will describe the proper power supply and reset design; they can be downloaded at: <http://support.logicpd.com/auth/downloads/PXA270/>.

4.6 Contact

For further information or questions, please contact Logic PD using the [Ask a Question](#) technical support form on the Logic PD website.

5 PCN 344 Hardware Change

Published: March 2007

PCN Classification:

- A - Recall
 B - Customer Action Required
 C - Product Upgrade/ No Customer Action Required
 D - Change of Production Line

5.1 Products Affected

This hardware change PCN affects the standard PXA270-10 Card Engine Model Numbers listed below. The “New Rev” letter signifies the first revision of the standard models that incorporate the changes described in this PCN.

Affected Model Numbers	New Rev
CENGPXA270-416-10-550EIR	B
CENGPXA270-416-10-550HIR	B
CENGPXA270-520-10-504HCR	B
CENGPXA270-520-10-550HCR	B
SDK-PXA270-520-10-6432R	B

5.2 Description of Change

1. Change pull-up resistors R20 and R44 to 1k ohm.
2. Change resistor R14 to 40.2k ohm (only on the 416 MHz models).
3. Standard Starter Development Kit changed due to CENGPXA270-520-10-504HCR change.

5.3 Applications Affected

1. R20 and R44 change affects customers using the second CompactFlash/PCMCIA interface.
2. R14 is used as part of the SDK VCORE power supply feedback network and sets the VCORE voltage rail to a lower voltage on the SDK baseboard. This change only affects customer designs that use the R14 feedback resistor to set their baseboard VCORE voltage. Failure to change R14 will cause the processor to consume slightly more power.

5.4 Work Around

1. There is no known work around for the R20 and R44 change. Customers with existing products should change R20 and R44 to 1K ohm if the product requires use of the second CompactFlash/PCMCIA interface.
2. Customers using affected product model numbers can design fixed voltage regulating devices that do not use R14 in the feedback path. Another work around option involves placing a resistor in parallel with R14 on the baseboard so the parallel network provides the equivalent of 40.2k ohm.

5.5 Solution

Standard product models with the revisions indicated in the table above have resistors R20 and R44 changed to 1k ohm.

Standard product models with 416 MHz CPU also have R14 changed to 40.2k ohm.

5.6 Contact

For further information or questions, please contact Logic PD using the [Ask a Question](#) technical support form on the Logic PD website.

6 PCN 349 CPLD Issue

Published: June 2007

PCN Classification:

- A - Recall
- B - Customer Action Required
- C - Product Upgrade/ No Customer Action Required
- D - Change of Production Line

6.1 Products Affected

This PCN affects PXA270-10 Card Engines that received incorrect CPLD programming during production. The table below lists the model numbers affected by this issue. The “New Rev” letter signifies the first model number revisions that include the solutions described in this PCN.

Affected Model Numbers	New Rev
CENGPXA270-312-10-550ECR-A	B
CENGPXA270-416-10-550EIR-B	C
CENGPXA270-416-10-550HIR-B	C
CENGPXA270-520-10-504HCR-B	C
CENGPXA270-520-10-550HCR-B	C
CENGPXA270-520-10-602ECR-A	B

6.2 Description of Issue

These affected Card Engines were manufactured using an outdated file version of the CPLD software. As a result, the CPLD code programmed on these units is not the currently released version. The Card Engines will operate normally in many end-user applications; however, they will not have the most up-to-date version of the CPLD code and therefore cannot be guaranteed to operate error-free in all applications.

6.3 Applications Affected

This issue affects products using the processor PC Card interface and USB client/device peripheral.

1. With the outdated CPLD code, the processor will only be able to write to the PC Card interface. Any reads performed to the PC Card interface will cause bus contention between the onboard data bus buffers and the PC Card data lines. The updated CPLD code includes logic that is required for onboard buffer control while reading from the PC Card interface.
2. With the outdated CPLD code, connecting the USB client/device peripheral to a host PC before powering on the product, or loading the USB client driver, may cause sporadic connectivity. At power-on, the USB client link asserts as though it is ready to connect. However, the PXA270-10 is not ready and it ignores the USB bus until the USB client driver loads. Once the driver loads, the PXA270-10 will attempt to negotiate with the host PC, but connectivity may not be restored.

6.4 Work Around

1. There is no work around for the PC Card interface failure. If your application uses the PC Card interface, you must update your CPLD code (see Section 6.5).
2. To work around the USB issue, wait for the Windows CE or third party operating system to fully load the USB client drivers. Then connect to the USB client interface and the issue will not occur.

6.5 Solution

The CPLD can be updated by downloading the appropriate CPLD update file from Logic PD's website. An .upd file is available for each speed and flash-based configuration of the PXA270-10 Card Engine and is posted under the "Hardware Design Files" heading on the Downloads Page (http://support.logicpd.com/auth/downloads/PXA270/#hdwe_design). Once the CPLD file is downloaded, use the 'update' command in LogicLoader to send the file to the Card Engine. For more information, please see the Section "Understanding the 'update' Command" in the *LogicLoader User's Manual*, available for download from Logic PD's website (<http://support.logicpd.com/auth/>).

The affected product can also be returned to Logic PD for re-programming. Please follow the instructions in Section 6.7 below. A deviation sticker will be placed on all Card Engines that are returned to indicate that they have been re-programmed. The sticker will read: D00302.

Moving forward, each product model will be taken to the next revision level, as indicated in the Products Affected table above. These new product models will be programmed with the current version of the CPLD code.

6.6 Customer Notification

Distributors please forward this PCN to all customers who have purchased a PXA270-10 Card Engine with a model number listed in Section 6.1 above.

6.7 Return Instructions

For customers who wish to return the affected PXA270-10 Card Engine to Logic PD for re-programming, please contact Logic PD using the [Ask a Question](#) technical support form on the Logic PD website.

6.8 Contact

For further information or questions, please contact Logic PD using the [Ask a Question](#) technical support form on the Logic PD website.

7 PCN 350 Hardware Change

Published: June 2007

PCN Classification:

- A - Recall
- B - Customer Action Required
- C - Product Upgrade/ No Customer Action Required
- D - Change of Production Line

7.1 Products Affected

This hardware change PCN for the PXA270-10 Card Engine describes resistor changes made to the standard configurations listed below. The “New Rev” letter indicates the first model number revision that will have the changes described herein.

Affected Model Numbers	New Rev
CENGPXA270-312-10-550ECR	B
CENGPXA270-416-10-550EIR	C
CENGPXA270-416-10-550HIR	C
CENGPXA270-520-10-504HCR	C
CENGPXA270-520-10-550HCR	C
CENGPXA270-520-10-602ECR	B

7.2 Description of Change

A problem exists where the PXA270-10 Card Engine does not stay in sleep or deep sleep modes. Only a handful of signals can act as wake-up sources to bring the PXA270 out of deep sleep or sleep modes; one of those signals is GPIO0. The PXA270 Card Engine has a 33k ohm pull-up resistor on signal CPLD_nIRQ, which connects to GPIO0. CPLD_nIRQ is always enabled as an interrupt, because the Ethernet and touch interfaces use it as a multiplexed interrupt. The 33k ohm pull-up is not strong enough to keep the signal at a ‘high’ logic level, which causes the system to jump back into active run mode almost instantly after going into the lower power states of sleep or deep sleep. To prevent this from occurring, it is necessary to change the 33k ohm resistor (reference designator R89) to 1k ohm. The change to a 1k ohm resistor is strong enough to keep the signal at a ‘high’ logic level and allows the sleep and deep sleep modes to behave appropriately.

7.3 Applications Affected

This change should have no effect on applications. However, applications that can utilize sleep and deep sleep modes will now be able to use those lower power states properly.

7.4 Work Around

No work around is required for this change. Customers with existing affected products requiring sleep and deep sleep modes can remove the 33k ohm resistor and replace it with a 1k ohm resistor to achieve the same results of this change.

7.5 Solution

Beginning with the revisions listed in Section 7.1, the bill of materials (BOM) for standard configuration PXA270-10 Card Engines include the 1k ohm value for resistor R89.

7.6 Contact

For further information or questions, please contact Logic PD using the [Ask a Question](#) technical support form on the Logic PD website.

8 PCN 389 Hardware Change

Published: August 2008

PCN Classification:

- A - Recall
 B - Customer Action Required
 C - Product Upgrade/ No Customer Action Required
 D - Change of Production Line

8.1 Products Affected

This Hardware Change PCN describes a revision to the Samsung OneNAND flash component used on the PXA270 (NAND versions) Card Engine. The model numbers listed under the “New Model Number” heading in the table below will be the first models to use the new OneNAND flash in their assembly.

Affected Model Numbers	New Model Number
CENGPXA270-312-10-550ECR-B	CENGPXA270-312-10-550ECR-C
CENGPXA270-416-10-550EIR-C	CENGPXA270-416-10-550EIR-D
CENGPXA270-416-10-550HIR-C	CENGPXA270-416-10-550HIR-D
CENGPXA270-520-10-550HCR-C	CENGPXA270-520-10-550HCR-D

8.2 Description of Change

Samsung announced a new die revision (Rev B) to their OneNAND flash memory component, which is used in the PXA270 Card Engine assemblies list above. Samsung reduced the die size of this part from a 90nm process to a 63nm process. The release of die Rev B makes the previous die revision (Rev A) obsolete.

With this die shrink, Samsung changed the number of operation cycles (NOP) specification for the part. The NOP specification indicates the number of times a chunk (page or sector) can be written before requiring an erase. Previous OneNAND Rev A parts had a NOP spec of 2 cycles **per sector** (roughly equivalent to 8 cycles per page); the new OneNAND Rev B parts have a NOP spec of 4 cycles **per page**. This specification change results in allowing fewer writes to a block before an erasure is required.

8.3 Applications Affected

The NOP specification change affects how software handles the YAFFS file system on Card Engines built with the new Rev B OneNAND parts.

The current YAFFS implementation in LogicLoader (version 2.3.4 and earlier) and Windows CE (YAFFS NAND driver version 1.3.0) complies with the OneNAND Rev A NOP specification, but does not comply with the newer Rev B NOP specification. If the NOP specification is exceeded, the data bits written in the OneNAND part become unstable and the integrity of the data is lost.

This change to the new Rev B OneNAND does not impact PXA270 Card Engines in the field, it only impacts Card Engines built under the New Model Numbers listed in Section 8.1.

8.4 Work Around

Without updating software, the only work around is to not use YAFFS on PXA270 Card Engines with OneNAND Rev B parts.

8.5 Solution

The solution is to use updated versions of LogicLoader and the Windows CE BSP YAFFS driver. The following versions of software have been updated to comply with the NOP specification of the OneNAND Rev B device:

- LogicLoader 2.3.6 and newer
- Windows CE YAFFS driver lpd_yaffs_nand_pxa270_50_1_4_6 and newer

Updated software can be downloaded from Logic PD's website:

<http://support.logicpd.com/auth/downloads/PXA270/>.

The updated software releases are backwards-compatible with the older OneNAND Rev A device. Since the same updated software will work on Card Engines with both OneNAND die revisions, it is recommended that customers upgrade their software to use the new LogicLoader and Windows CE BSP YAFFS driver.

8.6 Contact

For further information or questions, please contact Logic PD using the [Ask a Question](#) technical support form on the Logic PD website.

9 PCN 428 Hardware & Production Change

Published: January 2010

Updated: March 2011

PCN Classification:

- A - Recall
- B - Customer Action Required
- C - Product Upgrade
- D - Change of Production Line

9.1 Products Affected

This hardware change PCN describes changes to the PXA270 Card Engine. The changes described herein will be manufactured into products with the “New Model Numbers” listed below.

Affected Model Numbers (Part Number)	New Model Numbers (Part Number)
CENGPXA270-520-10-504HCR-C (1007912)	CENGPXA270-520-10-504HCR-D (1014882)
CENGPXA270-520-10-602ECR-B (1007938)	CENGPXA270-520-10-602ECR-C (1014883)

9.1.1 Discontinued Model Numbers

The changes to NAND flash described within this PCN increase the density from 64 MB to 128 MB; because Logic PD's model numbers call out the specific flash density, the model numbers that specify 64 MB of flash have been discontinued and new model numbers that specify 128 MB of flash have been created.

Discontinued Model Numbers (Part Number)	New Model Numbers (Part Number)
CENGPXA270-312-10-550ECR-C (1010538)	CENGPXA270-312-10-560ECR-A (1014867)
CENGPXA270-416-10-550EIR-D (1010533)	CENGPXA270-416-10-560EIR-A (1014861)
CENGPXA270-416-10-550HIR-D (1010528)	CENGPXA270-416-10-560HIR-A (1014866)
CENGPXA270-520-10-550HCR-D (1010502)	CENGPXA270-520-10-560HCR-A (1014881)

9.2 Description of Change

9.2.1 Processor Change

IMPORTANT: This section was updated and expanded in March 2011.

The PXA270 processor silicon was changed to use the Marvell fabrication process and die. As part of this change, the processor—now referred to as PXA270M—is manufactured at TSMC facilities instead of at Intel fabrication plants.

During this migration to the PXA270M processor, some of the PXA270 errata were fixed. These fixes are indicated in the Marvell *PXA270M Processor Specification Update*, available here:

http://www.marvell.com/products/processors/applications/pxa_family/pxa_27x_spec_update.pdf.

Logic PD has evaluated these changes for the PXA270 Card Engine and Development Kit, and found no changes were required. However, custom baseboards designed to interface with the PXA270 Card Engine may be affected. Please download and read Marvell's Specification Update document to understand how these processor changes may impact your product.

The following paragraphs highlight the most common areas of the custom design that may be affected by the processor changes.

I/O Pin Drive Strength

The I/O buffers and pull-up and pull-down resistors may act differently between the PXA270 and PXA270M parts. The "Specification Clarifications" section S1 of the Marvell PXA270M Processor Specification Update document provides information on some of these changes. This section has important information about the LCD Buffer Strength Control register (LCDBSCNTR) and the SDRAM Buffer Strength Control register (BSCNTRx). Both of these registers may need to be modified by customers based on their baseboard implementation.

LCD Signal Drive Strength

In testing by Logic PD, the LCD signal drivers appear to be slightly weaker in the PXA270M processor compared to the PXA270 processor; however, the default value (0x5h) has been tested and verified to work on Logic PD PXA270 Development Kits. Custom baseboards may have different impedances of traces and/or series resistors that would affect these signal lines. Additionally, if these values were modified for EMI reduction, developers should verify those settings with the new PXA270M processor.

NOTE: LCD_HSYNC is used to synchronize the touch interface on PXA270-10 Card Engine configurations; therefore, touch interface issues may be a result of this signal strength change.

SDRAM Signals

Logic PD has tested the SDRAM signals at the default settings (0x5h) on both the PXA270 and PXA270M processors. Testing was completed on 4 units at the following temperature points: 40°C, 25°C, and 85°C. The RAM was exercised at each temperature point with no failures. If custom software modified the SDRAM Buffer Strength Control register, verify those software modifications with new PXA270M processor.

VCORE Voltage Sensitivity

Custom designs that lower VCORE to achieve low-power states should review Errata E59, VCORE: Voltage Sensitivity. This describes how the minimum VCORE voltage has been raised slightly.

Electrical, Mechanical, Thermal Specification

It is important to note that the PXA270 processor and PXA270M processor share the same Electrical, Mechanical, Thermal Specification (EMTS). The two versions of the processor are intended to perform the same if the proper design guidelines are followed. However, if the PXA270M is run outside of specification, there may be performance differences when compared to the PXA270 as a result of the new fabrication process.

Contact

If you have any questions about the changes resulting from the new PXA270M processor fabrication migration, please contact your Logic PD representative. If you do not have a specific individual to contact, please use our [Ask a Question](#) web form to contact our technical support team.

9.2.2 NAND Flash Change

Samsung announced it was discontinuing their 64 MB OneNAND flash offering. Logic PD updated the hardware and software to support the next generation 128 MB device. The flash memory increase also coincides with a Samsung die revision from Rev B to Rev C.

This NAND flash change requires SOM customers to migrate to LogicLoader version 2.3.10 and Windows CE YAFFS driver version 1.4.8 for the model numbers listed above. Custom software may also require updating to make it functional with the NAND density increase and die revision change.

NOTE: This NAND flash change, and associated software updates, does not apply to the two assemblies listed above without NAND flash: CENGPXA270-520-10-504HCR and CENGPXA270-520-10-602ECR.

9.3 Contact

For further information or questions, please contact Logic PD using the [Ask a Question](#) technical support form on the Logic PD website.

10 PCN 455 Hardware Change

Published: October 2010
Updated: November 2010

PCN Classification:

- A - Recall
- B - Customer Action Required
- C - Product Upgrade
- D - Change of Production Line

10.1 Products Affected

This hardware change PCN describes changes to the PXA270 Card Engine. The changes described herein will be manufactured into products with the “New Model Numbers” listed below.

Affected Model Numbers (Part Number)	New Model Numbers (Part Number)
CENGPXA270-520-10-504HCR-D (1014882)	CENGPXA270-520-10-504HCR-E (1016881)

10.2 Description of Change

10.2.1 NOR Flash Change

Numonyx is migrating the J3 product family from a 130nm process to a 65nm process. The NOR flash die revision changes from J3v.D to J3v.F.

Customers using Logic PD supplied software do not require any software changes.

10.3 Contact

For further information or questions, please contact Logic PD using the [Ask a Question](#) technical support form on the Logic PD website.

11 PCN 458 Hardware Change

Published: November 2010

PCN Classification:

- A - Recall
 B - Customer Action Required
 C - Product Upgrade
 D - Change of Production Line

11.1 Products Affected

This hardware change PCN describes changes to the PXA270 Card Engine. The changes described herein will be manufactured into products with the “New Model Numbers” listed below.

Affected Model Numbers (Part Number)	New Model Numbers (Part Number)
CENGPXA270-312-10-560ECR-A (1014867)	CENGPXA270-312-10-560ECR-B (1017076)
CENGPXA270-416-10-560EIR-A (1014861)	CENGPXA270-416-10-560EIR-B (1017047)
CENGPXA270-416-10-560HIR-A (1014866)	CENGPXA270-416-10-560HIR-B (1017082)
CENGPXA270-520-10-560HCR-A (1014881)	CENGPXA270-520-10-560HCR-B (1017086)

11.2 Description of Change

11.2.1 NAND Flash Change

Samsung's OneNAND flash component has undergone a die size shrink. This change transitions the Samsung OneNAND flash from Rev C to Rev D.

No software changes are necessary for this NAND flash change unless the specific device ID is called out in software. Customers using Logic PD supplied software do not require any software changes.

11.3 Contact

For further information or questions, please contact Logic PD using the [Ask a Question](#) technical support form on the Logic PD website.

12 PCN 463 EOL Notice & Hardware Change

Published: January 2011

PCN Classification:

- A - Recall
- B - Customer Action Required
- C - Product Upgrade
- D - Change of Production Line

12.1 Products Affected

Logic PD is announcing the required migration of PXA270-10 Card Engine configurations to the PXA270-11 Card Engine configurations. This PCN describes the differences between the PXA270-10 and PXA270-11 model numbers.

The tables below provide descriptions of the discontinued model numbers and the new model numbers. Please use these descriptions to determine which new model number most closely meets your application requirements.

12.1.1 Discontinued Model Numbers

Discontinued -10 Model Numbers & Rev (Part Number)	Description
CENGPXA270-312-10-560ECR-B (1017076)	PXA270, 312 MHz, 64 MB SDRAM, 128 MB NAND flash, audio, touch, 0°C to +70°C (C-Temp)
CENGPXA270-416-10-560EIR-B (1017047)	PXA270, 416 MHz, 64 MB SDRAM, 128 MB NAND flash, audio, touch, -40°C to +85°C (I-Temp)
CENGPXA270-416-10-560HIR-B (1017082)	PXA270, 416 MHz, 64 MB SDRAM, 128 MB NAND flash, Ethernet, audio, touch, -40°C to +85°C (I-Temp)
CENGPXA270-520-10-504HCR-E (1016881)	PXA270, 520 MHz, 64 MB SDRAM, 32 MB NOR flash, Ethernet, audio, touch, 0°C to +70°C (C-Temp)
CENGPXA270-520-10-560HCR-B (1017086)	PXA270, 520 MHz, 64 MB SDRAM, 128 MB NAND flash, Ethernet, audio, touch, 0°C to +70°C (C-Temp)
CENGPXA270-520-10-602ECR-C (1014883)	PXA270, 520 MHz, 128 MB SDRAM, 8 MB NOR flash, Ethernet, audio, touch, 0°C to +70°C (C-Temp)

12.1.2 New Model Numbers

New -11 Model Numbers & Rev (Part Number)	Description
CENGPXA270-416-11-505EXR-A (1017470)	PXA270, 416 MHz, 64 MB SDRAM, 64 MB NOR flash, audio, touch, -25°C to +85°C (X-Temp)
CENGPXA270-416-11-505HXR-A (1017463)	PXA270, 416 MHz, 64 MB SDRAM, 64 MB NOR flash, Ethernet, audio, touch, -25°C to +85°C (X-Temp)
CENGPXA270-520-11-504HCR-A (1016880)	PXA270, 520 MHz, 64 MB SDRAM, 32 MB NOR flash, Ethernet, audio, touch, 0°C to +70°C (C-Temp)

12.2 Description of Change

12.2.1 Audio CODEC, Touch Controller, ADC Inputs

The UCB1400 component that encompasses the audio CODEC, touch controller, and ADC inputs has been discontinued. The PXA270-11 Card Engine will use the Wolfson WM9715 as a replacement part. The WM9715 is a close match to the UCB1400, but there are a few differences. MIC_IN previously had a +20dB gain boost but now has a -20dB gain setting. ADCSYNC, connected to LCD_HSYNC, is no longer available. The WM9715 requires external resistors on the CODEC_OUTx lines for short circuit protection; R134 and R135 were added to support this. Resistor divider networks were added to the A/Dn pins to allow the same range of input voltages (0-7.5V) on these pins.

Logic PD software (LogicLoader and Windows CE) will be updated to support the new Wolfson component (see Section Software Updates for details).

12.2.2 Flash Memory

Due to frequent changes of the OneNAND flash die, the PXA270-11 Card Engine will not support OneNAND flash on standard configurations; all standard configurations will transition to NOR flash memory only. Standard configurations will provide 32 and 64 MB of NOR flash. Additionally, the NOR flash is changing from the Numonyx J3 Flash family to the Numonyx P33 Flash family.

The change from J3 to P33 will have minor impact on software. The main difference is a change to the component Device ID. Logic PD will update the NOR drivers to work with both the J3 and P33 families of devices (see Section Software Updates for details).

12.2.3 Wired LAN Power

R154 was added to the design to connect 3.3V_WRLAN to 3.3V at all times. Q1 and R55 were changed to no populate. Turning 3.3V_WRLAN power off to the LAN91C111 (U10) device was never supported, so this circuitry was removed.

12.2.4 PCC_SLOT_SELECT_A_nB Default Value

R155 was added as a pull-down resistor on PCC_SLOT_SELECT_A_nB; R122 was changed to no populate. R155 was added as an identifier for the PXA270-11 Card Engine; PXA270-11 Card Engines will have this signal pulled low, while PXA270-10 Card Engines have this signal pulled high. Software must take note of the difference in default value if PCC_SLOT_SELECT_A_nB is used to select PCC slots on custom baseboards. If PCC slots are not used there is no change required.

12.2.5 Temperature Range Restriction

Operation of the Wolfson WM9715 component is restricted to -25°C on the low end of the temperature range. Consequently, a full industrial temperature configuration is not possible. An extended temperature configuration with a range of -25°C to +85°C will be available.

12.2.6 Software Updates

Logic PD will release updated LogicLoader and Windows CE versions to support the new PXA270-11 Card Engine hardware.

- LogicLoader will be available early March 2011.
- Windows CE will be available late March 2011.

These software versions will be backwards compatible with the PXA270-10 Card Engine models.

IMPORTANT: Any custom software used with the PXA270-10 Card Engine should be reviewed to determine if any updates will be necessary to support the new PXA270-11 Card Engine hardware.

12.3 Contact

For further information or questions, please contact Logic PD using the [Ask a Question](#) technical support form on the Logic PD website.

13 PCN 515 Hardware Change

Published: December 2011

PCN Classification:

- A - Recall
- B - Customer Action Required
- C - Product Upgrade
- D - Change of Production Line

13.1 Products Affected

This hardware change PCN describes changes to the PXA270 Card Engine. The changes described herein will be manufactured into products with the “New Model Numbers” listed below.

Affected Model Numbers (Part Number)	New Model Numbers (Part Number)
CENGPXA270-416-11-505EXR-A (1017470)	CENGPXA270-416-11-505EXR-B (1021186)
CENGPXA270-416-11-505HXR-A (1017463)	CENGPXA270-416-11-505HXR-B (1021187)

13.2 Description of Change

13.2.1 NOR Flash Change

The Numonyx NOR flash component (mfg. p/n PC28F256P33BFA) previously used on the PXA270-11 Card Engine has been replaced with an updated Numonyx NOR flash component (mfg. p/n PC28F256P33BFE). The new device incorporates a silicon metal layer change in the memory IC to address issues with flexlock write timing.

No software modifications are required to adapt to this new memory component.

13.3 Contact

For further information or questions, please contact Logic PD using the [Ask a Question](#) technical support form on the Logic PD website.