OMAP35x Torpedo SOM
Product Change Notification
Hardware Documentation

Logic PD // Products
Published: August 2009
Last revised: November 2014

Revision History

REV	EDITOR	DESCRIPTION	APPROVAL	DATE
A	JCA	-Initial release	NJK	08/08/09
B	JCA, NJK	-Release PCN 415: Pre-Production Hardware Changes	NJK	12/16/09
C	JCA	-Release PCN 446: EOL Notice & Hardware Changes	KTL	07/01/10
D	JCA	-Added Part Numbers to the new model numbers in PCN 446: EOL Notice & Hardware Changes	JCA	08/09/10
E	JCA	-Release PCN 471: Hardware Changes	NJK	03/01/11
F	EN	-Release PCN 500: Software Changes	EN	10/24/11
G	SO	-Release PCN 549: Software Changes	JMC, EN	08/16/12
H	SO, NJK	-Section 1.2: Updated example of stickier on SOM to reflect correct format; -Release PCN 570: Hardware Changes; -Release PCN 571: Hardware Changes	JMC, KJH, RAH	04/17/13
I	BSB	-Release PCN 579: Hardware Changes	RAH, JMC, SO	07/03/13
J	JMC	-Section 1.3: Updated current standard models table -Release PCN 601: Hardware Changes	JMC, BSB	11/12/14

Table of Contents

1   OMAP35x SOM 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 changes described in this document relate to the OMAP35x Torpedo product family.

1.1.1   Relationship with Errata Document

This PCN document works in conjunction with the _OMAP35x Torpedo SOM Errata_[1] document to describe all known issues and changes to the OMAP35x Torpedo SOM. Whereas the errata document provides information about known issues that have not yet been resolved through new hardware, the PCN only describes changes that have occurred to the product between model revisions.

1.2   Determining What Build You Have

To determine whether your OMAP35x Torpedo SOM is affected by a PCN, locate the sticker on your System on Module (SOM) and compare the model number with the "Affected Models" table for each PCN. In some instances, a PCN may call out the "unique serial number" or "part number" to better identify the affected SOM. The figure below shows the location of each number on the sticker.
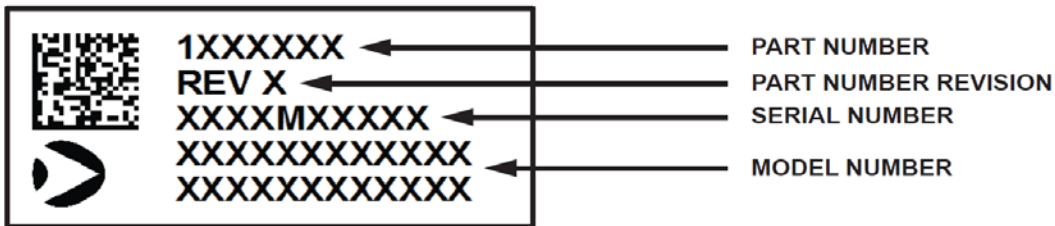
NOTE: Logic PD's _WP 293 Model Number Explanation and Decoder_[2] goes into detail about these numbers and their relationship to one another.

1.3   Current Standard Model in Production

The table below lists the most current revisions of standard OMAP35x Torpedo SOMs. It also specifies the PCN that details the changes prompting the model revision.

Model Number & Rev	PCN Detailing Revision
SOMOMAP3530-21-1780AGIR-F	PCN 601: Hardware Changes

---

[1] http://support.logicpd.com/downloads/1520/
[2] http://support.logicpd.com/downloads/601/

1.4   Early Development Modules

SOMs that are manufactured before the model is released to full production status are sometimes sent to partners and targeted customers for evaluation. This section attempts to capture a history of these pre-production builds for reference. Any products listed in the table below are not meant for production use and may not be actively supported by Logic PD.

Development Phase	Model Number & Rev (Part Number)
Alpha	SOMXOMAP3530-20-1670AGCR-1 (1012494)
Beta	SOMOMAP3530-20-1670AGCR-2 (1013021)

2   PCN 411: Alpha to Beta Hardware Changes

Published: June 2009

PCN Classification:

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

2.1   Products Affected

This PCN describes hardware changes that were made to the OMAP35x Torpedo SOM between the Alpha and Beta development phases.

Affected Model Number & Rev (Part Number)	New Model Number & Rev (Part Number)
SOMXOMAP3530-20-1670AGCR-1 (1012494)	SOMOMAP3530-20-1670AGCR-2 (1013021)

2.2   Description of Change

2.2.1   Processor Silicon Revision

The processor silicon revision was changed from ES2.1 to released 3.1. Version 3.1 fixes many Texas Instrument (TI) errata issues that mostly affect software; please refer to TI's _OMAP3530/25/15/03 Applications Processor Silicon Errata_[3] document for more information.

Using the released version of silicon also prompted a change to the model number; the "X" denoting pre-release was removed from the model number.

2.2.2   Support for Constant Voltage Mode

C173 was added to the design to support Constant Voltage (CV) mode. This mode of operation will allow customers to supply just 5V to the SOM to power it. However, it should be noted that this mode is not designed for high-transient power supply needs. The CV mode should only be used for relatively static modes of operation. Customers who wish to support this mode must provide about 80 uF of low ESR capacitance on the MAIN_BATTERY power rail.

2.2.3   Mirrored J5 Debug Connector

A footprint error made the J5 connector incompatible with debug headers. To correct this error, the J5 connector has been mirrored, swapping even and odd pins. No customer action is required.

2.2.4   5V Power Rail Copper Pour Increased

The 5V power rail copper pour was increased. This power rail would get hot when charging the battery; more copper was added to alleviate this issue. No customer action is required.

---

[3] http://www.ti.com/product/omap3530

2.3   Contact

For further information or questions, please contact Logic PD.[4]

---

[4] http://support.logicpd.com/support/askaquestion.php

3 PCN 415: Pre-Production Hardware Changes

Published: December 2009

PCN Classification:

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

3.1 Products Affected

This PCN describes hardware changes that were made to the OMAP35x Torpedo SOM between the Beta and Pilot development phases.

Affected Model Number & Rev (Part Number)	New Model Number & Rev (Part Number)
SOMXOMAP3530-20-1670AGCR-2 (1013021)	SOMOMAP3530-20-1670AGCR-A (1013994)

3.2 Description of Change

3.2.1 Changed Reference Voltage for VDDS_SIM

VDDS_SIM (U4.P25) is now connected to VIO_1V8 rather than VMMC1. VDDS_SIM provides the reference voltage for the MMC1_DAT4-MMC1_DAT7 pins of the processor. Since these signals are typically used as GPIOs, the reference voltage was change to 1.8V to match the rest of the GPIOs on the SOM.

Custom software needs to be aware of this change when setting the PBIAS settings for these pins. Please refer to Texas Instruments' (TI) *OMAP35x Applications Processor Technical Reference Manual*[5] for more information on programming the PBIAS registers.

3.2.2 Keyed Corners on PCB Outline

The board outline now includes two keyed corners with semi-circle cutouts. This will allow orientation of the SOM in final products to be determined by mechanical means if desired. Please refer to Rev C or later of the OMAP35x Torpedo SOM Mechanical Drawing, available in the *OMAP35x Torpedo SOM Hardware Specification*,[6] for detailed specifications.

3.3 Contact

For further information or questions, please contact Logic PD.

---

[5] http://www.ti.com/product/omap3530
[6] http://support.logicpd.com/downloads/1196/

4 PCN 446: EOL Notice & Hardware Changes

Published: July 2010
Updated: August 2010

PCN Classification:

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

4.1 Products Affected

This PCN describes hardware changes that were made to the OMAP35x Torpedo SOM. The changes described herein will be manufactured into products with the "Replacement Model Number & Rev" listed below.

Please be aware that these changes are significant enough from the previous model revisions that the model number version code has been incremented from -20 to -21. Therefore, the former -20 model numbers are being discontinued and the new -21 model numbers are being instituted, all beginning at revision A.

Discontinued Model Number & Rev (Part Number)	Replacement Model Number & Rev (Part Number)
SOMOMAP3503-20-1670AGCR-A (1014953)	SOMOMAP3503-21-1670AGCR-A (1016324)
SOMOMAP3530-20-1670AGCR-A (1013994)	SOMOMAP3530-21-1670AGCR-A (1016334)
SOMOMAP3530-20-1670AGIR-A (1014067)	SOMOMAP3530-21-1780AGIR-A (1016336)

4.2 Description of Change

4.2.1 NAND Flash (PoP Memory) Change

Micron has issued an End of Life (EOL) notice for their 128 MB SDRAM / 256 MB NAND flash Package on Package (PoP) memory component, suggesting a migration route to the higher density 256 MB SDRAM / 512 MB NAND flash part. Additionally, the NAND flash is going through a die shrink which requires software to change from a 1-bit error-correcting code (ECC) to a 4-bit or higher ECC. This change in ECC requirements affects all software (bootloaders and operating systems).

Logic PD's solution for the OMAP35x-21 Torpedo SOM is to move all commercial temperature model configurations to a Hynix PoP component with a 128 MB SDRAM / 256 MB NAND flash density.

All industrial temperature model configurations will migrate to the larger density 256 MB SDRAM / 512 MB NAND flash Micron component.

Logic PD software (LogicLoader, Windows CE BSP, and Linux BSP) will be updated to support new Hynix and Micron parts (see Section 4.2.2for details).

4.2.2   Software Updates

Logic PD will release updated LogicLoader, Windows Embedded CE 6.0 BSP, and Linux BSP versions to support the new OMAP35x-21 Torpedo SOM hardware.

- ■ LogicLoader version 2.4.13 will be available when the new hardware ships the first week of September 2010.

- ■ Windows Embedded CE 6.0 BSP version 2.1 will be available mid-September 2010 as a download from Logic PD's website.

- ■ Linux BSP version 2.1 will be available late September 2010 as a download from Logic PD's website.

These software versions will be backwards compatible with the OMAP35x-20 Torpedo SOM modules.

4.3   Contact

For further information or questions, please contact Logic PD.

5   PCN 471: Hardware Changes

Published: March 2011

PCN Classification:

☐ A - Recall

☐ B - Customer Action Required

☒ C - Product Upgrade

☐ D - Change of Production Line

5.1   Products Affected

This PCN describes hardware changes that were made to the OMAP35x Torpedo SOM. The changes described herein will be manufactured into products with the "New Model Number & Rev" listed below.

Affected Model Number & Rev (Part Number)	New Model Number & Rev (Part Number)
SOMOMAP3503-21-1670AGCR-A (1016324)	SOMOMAP3503-21-1670AGCR-B (1017710)
SOMOMAP3530-21-1670AGCR-A (1016334)	SOMOMAP3530-21-1670AGCR-B (1017702)
SOMOMAP3530-21-1780AGIR-A (1016336)	SOMOMAP3530-21-1780AGIR-B (1017704)

5.2   Description of Change

5.2.1   Resistor Change

Resistor R35 was changed from 470 ohm to 4.7K ohm. The original 470 ohm resistor caused too great of a pull-up on the I2C3_SCL and I2C3_SDA signals because of the dual bidirectional voltage-level translator (U16).

The I2C3 data lines should see improved performance from changing to the 4.7K ohm resistor. This change has no impact on software.

5.3   Contact

For further information or questions, please contact Logic PD.

6   PCN 500: Software Changes

Published: October 2011

PCN Classification:

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

6.1   Products Affected

This PCN describes software changes made to the OMAP35x Torpedo SOM. The changes described herein will be manufactured into products with the "New Model Number & Rev" listed below.

Affected Model Number & Rev (Part Number)	New Model Number & Rev (Part Number)
SOMOMAP3503-21-1670AGCR-B (1017710)	SOMOMAP3503-21-1670AGCR-C (1020842)
SOMOMAP3530-21-1670AGCR-B (1017702)	SOMOMAP3530-21-1670AGCR-C (1020843)
SOMOMAP3530-21-1780AGIR-B (1017704)	SOMOMAP3530-21-1780AGIR-C (1020796)

6.2   Description of Change

6.2.1   LogicLoader Change

The LogicLoader software included on the OMAP35x Torpedo SOMs has been upgraded to version 2.4.15. This new version of LogicLoader includes the updates noted below.

- NoLo now disables Smart Reflex prior to setting the core clocks as part of the boot process to prevent hang after reset.

- When LogicLoader gains control after an *exec* command, it now prints a warning that the *jump* command might be a better choice. This is based on the idea that *exec* should be used to launch an Operating System (OS) and never return, while *jump* should be used to launch an OS-less application and return.

- Invalid return codes were fixed for the following situations:

  □ when loading .bin files
  □ when unable to mount
  □ when partitions are not supported
  □ when a .bin file is corrupt

- *Info mem* was updated to report the correct end block of the */lboot* partition.

- LogicLoader now mounts the NAND */lboot* partition from blocks 1 to 17 (inclusive), instead of blocks 1 to 18.

- When executing the *info device /dev/PMIC* command, the missing ADC10 voltage is now displayed.

- LogicLoader no longer sets RTC_CTRL_AUTO_COMP and RTC_CTRL_MODE_12_14 bits.

- The I2C and PMIC driver reentrancy issue that caused TFTP to fail when copying to a YAFFS partition has been fixed.

- The issue associated with loading unaligned data from a YAFFS partition that caused LogicLoader to crash periodically has also been fixed.

LogicLoader version 2.4.15 will be backwards compatible with both the -20 and -21 models of the OMAP35x Torpedo SOM modules.

6.3   Contact

For further information or questions, please contact Logic PD.

7 PCN 549: Software Changes

Published: August 2012

PCN Classification:

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

7.1 Products Affected

This PCN describes software changes made to the OMAP35x Torpedo SOM. The changes described herein will be manufactured into products with the "New Model Number & Rev" listed below.

Affected Model Number & Rev (Part Number)	New Model Number & Rev (Part Number)
SOMOMAP3503-21-1670AGCR-C (1020842)	SOMOMAP3503-21-1670AGCR-D (1022591)
SOMOMAP3530-21-1670AGCR-C (1020843)	SOMOMAP3530-21-1670AGCR-D (1022592)
SOMOMAP3530-21-1780AGIR-C (1020796)	SOMOMAP3530-21-1780AGIR-D (1022593)

7.2 Description of Change

7.2.1 LogicLoader Change

The LogicLoader software included on the OMAP35x Torpedo SOM has been upgraded to version 2.4.16. This new version of LogicLoader includes the updates noted below.

■ Fixed corrupt writes to the *lboot* partition.

■ Implemented a work around to address the fact that the ID chip platform-specific bits were incorrectly programmed.

LogicLoader version 2.4.16 is backwards compatible with both the -20 and -21 models of the OMAP35x Torpedo SOMs.

7.3 Contact

For further information or questions, please contact Logic PD.

8 PCN 570: Hardware Changes

Published: April 2013

PCN Classification:

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

8.1 Products Affected

This PCN describes hardware changes made to the OMAP35x Torpedo SOM. The changes described herein will be manufactured into products with the "New Model Number & Rev" listed below.

Affected Model Number & Rev (Part Number)	New Model Number & Rev (Part Number)
SOMOMAP3530-21-1780AGIR-D (1022593)	SOMOMAP3530-21-1780AGIR-E (1023817)

8.2 Description of Change

8.2.1 NAND Flash (PoP Memory) Change

Micron issued an End of Life (EOL) notice for the Package-on-Package (PoP) memory component with manufacturer part number MT29C4G48MAZAPAKQ-5IT on the OMAP35x Torpedo SOM. A new Micron PoP memory component with manufacturer part number MT29C4G48MAZBAAKQ-5IT is a die shrink update of the previous component and will be used as a replacement.

Logic PD re-qualified the OMAP35x Torpedo SOM with the new component and found no software modifications are necessary. Bus timings for the new memory component are also identical to the previous version.

NOTE: Logic PD recommends purchasing sample units and testing them with your software and manufacturing flow to verify compatibility with your application.

8.2.2 FET Change

Fairchild issued an EOL notice for the FET with manufacturer part number FDJ1027P on the OMAP35x Torpedo SOM. A new Fairchild FET with manufacturer part number FDMA1027P will be used as a replacement. The FDMA1027P FET was not footprint compatible with the FDJ1027P FET, so the printed circuit board (PCB) was modified to support the new footprint.

Logic PD re-qualified the OMAP35x Torpedo SOM with the new FET and found no software modifications are needed.

8.2.3 PCB Change

The OMAP35x Torpedo SOM PCB was updated to accommodate the new FET. This was the only change to the PCB.

8.3   Contact

For further information or questions, please <u>contact Logic PD</u>.

9 PCN 571: Hardware Changes

Published: April 2013

PCN Classification:

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

9.1 Products Affected

This PCN describes hardware changes made to the OMAP35x Torpedo SOM. The changes described herein will be manufactured into products with the "New Model Number & Rev" listed below.

Affected Model Number & Rev (Part Number)	New Model Number & Rev (Part Number)
SOMOMAP3503-21-1670AGCR-D (1022591)	SOMOMAP3503-21-1670AGCR-E (1023904)
SOMOMAP3530-21-1670AGCR-D (1022592)	SOMOMAP3530-21-1670AGCR-E (1023916)

9.2 Description of Change

9.2.1 FET Change

Fairchild issued an EOL notice for the FET with manufacturer part number FDJ1027P on the OMAP35x Torpedo SOM. A new Fairchild FET with manufacturer part number FDMA1027P will be used as a replacement. The FDMA1027P FET was not footprint compatible with the FDJ1027P FET, so the printed circuit board (PCB) was modified to support the new footprint.

Logic PD re-qualified the OMAP35x Torpedo SOM with the new FET and found no software modifications are needed.

9.2.2 PCB Change

The OMAP35x Torpedo SOM PCB was updated to accommodate the new FET. This was the only change to the PCB.

9.3 Contact

For further information or questions, please contact Logic PD.

10 PCN 579: Hardware Changes

Published: July 2013

PCN Classification:

☐ A - Recall

☐ B - Customer Action Required

☒ C - Product Upgrade

☐ D - Change of Production Line

10.1 Products Affected

This PCN describes hardware changes made to the OMAP35x Torpedo SOM. The changes described herein may be manufactured into products beginning the 21st week of 2012 and later. New SOM model numbers or revisions will not accompany these changes.

10.2 Description of Change

10.2.1 Processor Silicon Change

Texas Instruments (TI) has released a new die revision silicon (revision 3.1.2) that addresses TI advisory 3.1.1.165 and updates the ARM Cortex-A8 Variant/Revision from r1p3 to r1p7. Please see the TI *OMAP3530/25/15/03 Applications Processor Silicon Errata*[7] for additional information.

Revision 3.1.2 silicon was determined to be functionally equivalent to revision 3.1 and thus submitted as an approved vendor list (AVL) update to Logic PD part number 1012636. The AVL update allowed revision 3.1.2 silicon to be a direct substitute for any modules currently using revision 3.1 silicon.

Revision 3.1.2 silicon was not expected to require any software modifications; however, it has been determined that the silicon upgrade does impact U-Boot. See Section 10.4 for additional information about the necessary software modifications.

10.3 Identifying Upgraded OMAP35x Torpedo SOMs

No change will be made to the orderable part number of the OMAP35x Torpedo SOMs receiving this silicon upgrade. However, it is possible for software to detect the silicon revision change by reading the CONTROL.CONTROL_IDCODE[31:28] register bits in the OMAP35x microprocessor. The physical address for CONTROL.CONTROL_IDCODE is 0x4830A204.

Silicon Type	Value
ES 3.1	0b0100 or 0x4
ES 3.1.2	0b0111 or 0x7

---

[7] http://www.ti.com/product/omap3530

The example below shows a read of the CONTROL.CONTROL_IDCODE register in LogicLoader on an OMAP35x Torpedo SOM using version 3.1 silicon.

```
losh> x /w 0x4830A204
0x4830a204  4b7ae02f                                    /.zK
```

10.3.1 Availability

As no part number change is associated with this silicon upgrade, confirming the availability of OMAP35x Torpedo SOMs containing revision 3.1.2 silicon is dependent upon the supply chain and distribution channels being fully cleared of processors with revision 3.1 silicon.

The AVL change occurred in the 22nd week of 2012. Any SOM manufactured before the 21st week of 2012 will not be affected. Any SOM manufactured after the 21st week of 2012 may be affected. OMAP35x Torpedo SOMs containing the new silicon began shipping during the third quarter of 2012. See "Section 2: Identifying Your Product" in *WP 293 Model Number Explanation & Decoder*[8] for additional information about how to determine when your SOM was manufactured.

10.4 Software Patch

Logic PD determined that the change to the silicon revision number impacts U-Boot. U-Boot attempts to read the silicon revision and does not have the ability to handle new silicon revision numbers. Logic PD has provided a patch to Timesys (*u-boot-2009.08-rc2-logic-30-cpu-revision.patch*) that updates the *u-boot-2009.08-rc2/cpu/arm_cortexa8/omap3/sys_info.c* source file to successfully detect 3.1.2 silicon revision numbers.

Customers affected by this PCN can request the patch by contacting Logic PD[9]; please reference ticket OMAP3LINUX-513 in your request.

10.5 Contact Information

For further information or questions, please contact Logic PD.

---

[8] http://support.logicpd.com/downloads/601/
[9] http://support.logicpd.com/support/askaquestion.php

11 PCN 601: Hardware Changes

Published: November 2014

PCN Classification:

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

11.1 Products Affected

This PCN describes hardware changes made to the OMAP35x Torpedo SOM. The changes described herein will be manufactured into products with the "New Model Number & Rev" listed below.

Affected Model Number & Rev (Part Number)	New Model Number & Rev (Part Number)
SOMOMAP3530-21-1780AGIR-E (1023817)	SOMOMAP3530-21-1780AGIR-F (1026581)

11.2 Description of Change

11.2.1 NAND/DDR (PoP Memory) Change

Micron issued an End of Life (EOL) notice for the Package-on-Package (PoP) memory component with manufacturer part number MT29C4G48MAZBAAKQ-5 IT on the OMAP35x Torpedo SOM. A new Micron PoP memory component with manufacturer part number MT29C4G48MAZBBAKB-48 IT is a die shrink update of the previous component and will be used as a replacement.

Logic PD re-qualified the OMAP35x Torpedo SOM with the new component and found no software modifications are necessary. Bus timings for the new memory component are compatible with the previous version.

NOTE: Logic PD recommends purchasing sample units and testing them with your software and manufacturing flow to verify compatibility with your application.

11.3 Contact

For further information or questions, please contact Logic PD[10].

---

[10] http://support.logicpd.com/support/askaquestion.php