

# MitySOM-335x System On Module (SOM)

## Revision History and Errata

## 1 Introduction

This document describes the revision history and any known design issues or exceptions to the form, fit or functional specifications for the MitySOM-335x family of System On Modules (SOMs) developed by Critical Link LLC.

Details regarding the modules may be accessed at <http://www.criticallink.com/product/mitysom-335x/>, and additional support information may be located at <http://support.criticallink.com/redmine/projects/armc8-platforms/wiki>.

This document is subject to change without notification. However, the most recent version of this document will be made available at the website [https://support.criticallink.com/redmine/projects/armc8-platforms/wiki/Module\\_Product\\_Change\\_Notifications](https://support.criticallink.com/redmine/projects/armc8-platforms/wiki/Module_Product_Change_Notifications). The website supports email notification (via the “watch option”) for changes to documents published.

## 2 Product Marking

The module model number and serial number may be visually read from a label affixed to the backside of the module. The same label also includes a Data Matrix code that includes the Printed Circuit Assembly (PCA) number, serial number, and model number. The Printed Circuit Board (PCB) revision is etched in copper, also visible on the back side of the module.

The model number begins with “3359” or “3354” or “3352”.

The serial number is of the format “S/NXXXXXX”, where XXXXXX is the serial number.

The PCB revision begins with a “90-“.

The PCA part number begins with “80-“ and is stored in the Data Matrix code. The PCA number can also be determined by the serial number, if necessary. Please contact Critical Link for details.

## 3 PCA Product History

The PCA product history for all MitySOM-335x modules is listed below. Details for Product Change Notifications (PCNs) may be downloaded from the link below.

[http://support.criticallink.com/redmine/projects/armc8-platforms/wiki/Module\\_Product\\_Change\\_Notifications](http://support.criticallink.com/redmine/projects/armc8-platforms/wiki/Module_Product_Change_Notifications)

Table 1 highlights the PCA product history for all MitySOM-335x modules.

**Table 1 Revision History**

<b>Model Number<sup>1</sup></b>	<b>PCA Number<sup>1</sup></b>	<b>Applicable Design Exceptions</b>	<b>PCNs</b>
3359-GX-227-RC-X 3359-GX-226-RC 3359-GX-226-RL	80-000444RC-2 RevA 80-000509RC-1 RevA 80-000509RL-1 RevA2, B	4.1 Excessive Battery Draw 4.2 VSS_OSC not isolated from PCB Ground 4.3 Notch tolerance 4.4 Potential Flux Residue between PWR_ON and ground. 4.5 DDR PLL Shift 4.8 Processor Power Down	
3359-GX-226-RC 3359-GX-226-RL	80-000509RC-1 RevC 80-000509RL-1 RevC	4.3 Notch tolerance 4.4 Potential Flux Residue between PWR_ON and ground. 4.5 DDR PLL Shift <sup>2</sup> 4.8 Processor Power Down	20121113000
3359-GX-226-RC <sup>3</sup> 3359-GX-226-RL <sup>3</sup> 3354-GX-X38-RC 3354-GX-X38-RC-R2 3354-GX-XX7-RC 3352-GX-X27-RC 3352-GX-X3A-RC 3352-HX-X38-RC 3354-HX-X38-RC 3352-HX-X28-RC 3352-HX-XX7-RC	80-000509RC-1 RevD 80-000509RL-1 RevD 80-000517RC-1 RevB 80-000573RC-1 RevA 80-000582RC-1 RevC 80-000583RC-1 RevC 80-000584RC-1 RevC 80-000596RC-1 RevC 80-000599RC-1 RevC 80-000600RC-1 RevC 80-000601RC-1 RevC Serial Numbers <= 136584	4.4 Potential Flux Residue between PWR_ON and ground. 4.5 DDR PLL Shift <sup>2</sup> 4.7 Sleep Mode Memory Corruption 4.8 Processor Power Down	20130514000

Model Number <sup>1</sup>	PCA Number <sup>1</sup>	Applicable Design Exceptions	PCNs
3359-GX-226-RC <sup>3</sup> 3359-GX-226-RL <sup>3</sup> 3354-GX-X38-RC 3354-GX-X38-RC-R2 3354-GX-XX7-RC 3352-GX-X27-RC 3352-GX-X3A-RC 3352-HX-X38-RC 3354-HX-X38-RC 3354-HX-X38-RC 3352-HX-X28-RC 3352-HX-XX7-RC 3352-HX-XX7-RI	80-000509RC-1 RevD 80-000509RL-1 RevD 80-000517RC-1 RevB 80-000573RC-1 RevA 80-000582RC-1 RevC 80-000583RC-1 RevC 80-000584RC-1 RevC 80-000596RC-1 RevC 80-000599RC-1 RevC 80-000599RI-1 RevC 80-000600RC-1 RevC 80-000601RC-1 RevC 80-000601RI-1 RevC Serial Numbers > 136584	4.5 DDR PLL Shift <sup>2</sup> 4.6 VPP Pull up 4.7 Sleep Mode Memory Corruption 4.8 Processor Power Down	20131209000
3352-HX-X38-RC 3354-HX-X38-RC 3354-HX-X38-RI 3352-HX-XX7-RC 3352-HX-XX7-RI	80-000596RC-2 80-000599RC-2 80-000599RI-2 80-000601RC-2 80-000601RI-2	4.7 Sleep Mode Memory Corruption 4.8 Processor Power Down	20140506000
3352-IX-X3A-RC 3352-HX-X27-RC 3352-HX-X27-RI 3352-HX-X38-RC 3352-HX-XX7-RC 3352-HX-XX7-RI 3354-HX-X38-RC 3354-HX-X38-RI 3354-HX-XX8-RC 3354-IX-X38-RC 3354-IX-X38-RI 3354-IX-X3A-RC 3354-IX-X3A-RI 3358-IX-X38-RI 3358-IX-X3A-RI	80-000660RC-3 80-000597RC-3 80-000597RI-3 80-000596RC-3 80-000601RC-3 80-000601RI-3 80-000599RC-3 80-000599RI-3 80-000906RC-3 80-000659RC-3 80-000659RI-3 80-000638RC-3 80-000638RI-3 80-000907RI-3 80-000927RI-3	4..8 Processor Power Down 4.9 Obsolete 2 Array Capacitor 8MB NOR Flash 4.10 Replace pairs of 0.010uF Capacitors with a single 0.022uF Capacitor 8MB NOR Flash	20160701000

Model Number <sup>1</sup>	PCA Number <sup>1</sup>	Applicable Design Exceptions	PCNs
3352-IX-X3A-RC 3352-HX-X27-RC 3352-HX-X27-RI 3352-HX-X38-RC 3352-HX-XX7-RC 3352-HX-XX7-RI 3354-HX-X38-RC 3354-HX-X38-RI 3354-HX-XX8-RC 3354-IX-X38-RC 3354-IX-X38-RI 3354-IX-X3A-RC 3354-IX-X3A-RI 3358-IX-X38-RI 3358-IX-X3A-RI	80-000660RC-4 80-000597RC-4 80-000597RI-4 80-000596RC-4 80-000601RC-4 80-000601RI-4 80-000599RC-4 80-000599RI-4 80-000906RC-4 80-000659RC-4 80-000659RI-4 80-000638RC-4 80-000638RI-4 80-000907RI-4 80-000927RI-4	4.9 Obsolete 2 Array Capacitor 8MB NOR Flash 4.10 Replace pairs of 0.010uF Capacitors with a single 0.022uF Capacitor 8MB NOR Flash	20170130000
3352-IX-X3A-RC 3352-HX-X27-RC 3352-HX-X27-RI 3352-HX-X38-RC 3352-HX-X38-RC* 3352-HX-X38-RL 3352-HX-X4A-RC 3352-HX-XX7-RC 3352-HX-XX7-RI 3354-HX-X38-RC 3354-HX-X38-RI 3354-HX-XX8-RC 3354-IX-X38-RC 3354-IX-X38-RI 3354-IX-X3A-RC 3354-IX-X3A-RI 3358-IX-X38-RI 3358-IX-X3A-RI	80-000660RC-6 80-000597RC-6 80-000597RI-6 80-000596RC-6 80-001041RC-6 80-001088RL-6 80-001019RC-6 80-000601RI-6 80-000601RI-6 80-000599RC-6 80-000599RI-6 80-000906RC-6 80-000659RC-6 80-000659RI-6 80-000638RC-6 80-000638RI-6 80-000907RI-6 80-000927RI-6	4.10 Replace pairs of 0.010uF Capacitors with a single 0.022uF Capacitor 8MB NOR Flash	20190222001

Model Number <sup>1</sup>	PCA Number <sup>1</sup>	Applicable Design Exceptions	PCNs
3352-IX-X3A-RC	80-000660RC-7	4.11 Potential Processor Brown out at High Speed/load 4.12 Substitute DDR3 PMIC	20190405000
3352-HX-X27-RC	80-000597RC-7		
3352-HX-X27-RI	80-000597RI-7		
3352-HX-X38-RC	80-000596RC-7		
3352-HX-X38-RC*	80-001041RC-7		
3352-HX-X38-RL	80-001088RL-7		
3352-HX-X4A-RC	80-001019RC-7		
3352-HX-XX7-RC	80-000601RC-7		
3352-HX-XX7-RI	80-000601RI-7		
3354-HX-X38-RC	80-000599RC-7		
3354-HX-X38-RI	80-000599RI-7		
3354-HX-XX8-RC	80-000906RC-7		
3354-IX-X38-RC	80-000659RC-7		
3354-IX-X38-RI	80-000659RI-7		
3354-IX-X3A-RC	80-000638RC-7		
3354-IX-X3A-RI	80-000638RI-7		
3358-IX-X38-RI	80-000907RI-7		
3358-IX-X3A-RI	80-000927RI-7		

Model Number <sup>1</sup>	PCA Number <sup>1</sup>	Applicable Design Exceptions	PCNs
3352-IX-X3A-RC	80-000660RC-9		20211116000
3352-HX-X27-RC	80-000597RC-9		
3352-HX-X27-RI	80-000597RI-9		
3352-HX-X38-RC	80-000596RC-9		
3352-HX-X38-RC*	80-001041RC-9		
3352-HX-X38-RL	80-001088RL-9		
3352-HX-X4A-RC	80-001019RC-9		
3352-HX-XX7-RC	80-000601RC-9		
3352-HX-XX7-RI	80-000601RI-9		
3354-HX-X38-RC	80-000599RC-9		
3354-HX-X38-RI	80-000599RI-9		
3354-HX-XX8-RC	80-000906RC-9		
3354-IX-X38-RC	80-000659RC-9		
3354-IX-X38-RI	80-000659RI-9		
3354-IX-X3A-RC	80-000638RC-9		
3354-IX-X3A-RI	80-000638RI-9		
3358-IX-X38-RI	80-000907RI-9		
3358-IX-X3A-RI	80-000927RI-9		
3354-IX-XXA-RC	80-001341RC-9		
3352-HX-X3A-RC	80-001471RC-9		
3352-HX-X3A-RC*	80-001472RC-9		

Notes:

- 1- Red indicates obsolete models.
- 2- No DDR PLL Shift error seen on these revisions.
- 3- No Sleep Mode Memory Corruption seen on these revisions.

- Custom software



## 4 Known Design Exceptions and Usage Notes

This section outlines the design exceptions to the baseline module specification for the MitySOM-335x family of SOMs.

### 4.1 Excessive Battery Draw

The current consumption of the VBACKUP (pin 34) battery backup power rail is in excess of 300 micro-Amps when the VIN is powered down after initial operation. The VBACKUP voltage input powers both the on-board TPS65910A PMIC RTC domain as well as the AM3359 RTC power domain. More than 95% of the total current is consumed by the AM3359 RTC power domain. Use of a button cell type battery for powering the CPU RTC is not feasible for SOMs exhibiting this issue.

PCN 20121113000 addresses this issue.

### 4.2 VSS\_OSC not isolated from PCB Ground

The VSS\_OSC pad on the AM3359 is currently connected to the PCB ground on the module. Texas Instruments recommends that this pad be isolated from the PCB ground plane.

PCN 20121113000 addresses this issue.

### 4.3 Notch Tolerance

The tolerance on the fabrication drawing for the notch location was insufficiently specified. That caused the potential for misalignment issues of the edge connector with the mating connector which resulting in lower production yield.

PCN 20130514000 addresses this issue.

### 4.4 Potential Flux Residue between PWR\_ON and ground

Under certain environmental conditions (time, high humidity, and constant voltage potential) residual solder flux can form a resistive connection between the PWR\_ON pin (card edge pin 32) and a nearby ground connection, resulting in the TPS65910 PMIC to shut down the processor after 8 seconds. If the PWR\_ON capability is not required in the design, a work-around exists to disable the PMIC shutdown feature related to the pin by setting the PMIC register 0x40 to value 0x31. In the u-Boot application, this may be accomplished with the following commands:

```
i2c dev 2; i2c reset; i2c mw 2d 40 0x31
```

PCN 20130912000 addresses this issue.

### 4.5 DDR3 PLL Shift

Per TI's website, there has been an issue raised with using a crystal oscillator design with respect to proper grounding to prevent PLL shift. The problem has



not been seen on MitySOM-335x modules since PCN 20121113000 was implemented but Critical Link will pro-actively update the design.

PCN 20140506000 addresses this issue.

#### **4.6 VPP Pull Up**

AM335x Processor VPP pin (M5) incorrectly tied to 1.1V pull up.

PCN 20140506000 addresses this issue.

#### **4.7 Sleep Mode Memory Corruption**

DDR Memory is being corrupted when the MitySOM-335x module's processor is placed in sleep mode.

PCN 20160701000 addresses this issue.

#### **4.8 Processor Power Down**

The processor is not staying completely powered down.

PCN 20170130000 addresses this issue

#### **4.9 Obsolete 2 Array Capacitor 8MB NOR Flash**

The TDK announced it is discontinuing production of the array capacitor.

PCN 20190222001 addresses this issue

#### **4.10 Replace pairs of 0.010uF Capacitors with a single 0.022uF Capacitor 8MB NOR Flash**

The 0.010uF capacitors pairs are replaced with single 0.022uf capacitors.

PCN 20190405000 addresses this issue

#### **4.11 Potential Processor Brownout at High Speed/Load**

The processor can potentially brownout at 1 GHz speed with high loading.

PCN 20210607000 addresses this issue

#### **4.12 Substitute DDR3 PMIC**

The availability /lead time of the DDR3 PMIC is an issue.

PCN 20211116000 addresses this issue

## 5 REVISION HISTORY

<b>Date</b>	<b>Version</b>	<b>Change Description</b>
20-NOV-2012	1.0	Initial release, Add PCN 20121113000 information.
14-MAY-2013	1.1	Add PCN 20130514000 information.
12-SEP-2013	1.2	Add PCN 20130912000 information.
06-MAY-2014	1.3	Add PCN 20140506000 information. Update links, replace MityARM with MitySOM.
15-FEB-2016	1.4	Add PCN 20160215000 information, section 4.7.
30-JAN-2017	1.5	Add PCN 20170130000 information, section 4.8
07-JUN-2021	1.6	Add PCN 20190222001, 20190405000, 20210607000 information, sections 4.9 through 4.11
16-NOV-2021	1.7	Add PCN 20211116000 information, section 4.12