MitySOM-AM62Ax 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-AM62A family of System On Modules (SOMs) developed by Critical Link LLC.

Details regarding the modules may be accessed at https://www.criticallink.com/product/mitysom-am62a/, and additional support information may be located at https://support.criticallink.com/redmine/projects/mitysom_am62x/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/mitysom_am62x/wiki/Errata_and_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 side of the module.

The model number begins with "62A74".

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-AM62A modules is listed below. Details for Product Change Notifications (PCNs) may be downloaded from the link below.

https://support.criticallink.com/redmine/projects/mitysom_am62x/wiki/Errata_and_Module_Product_Change_Notifications

Table 1 highlights the PCA product history for all MitySOM-AM62A modules.

Table 1 Revision History

Model Number[1]	PCA Number[1]	Applicable Design Exceptions	PCNs
62A74-TX-XXA-RI-X 62A74-TX-DAD-RI-X 62A74-TX-XXF-RI-X	80-001639RI-1 RevA 80-001640RI-1 RevA 80-001660RI-1 RevA	4.1 eMMC bus speed fallback 4.2 Preproduction Silicon Populated	
62A74-TX-XXA-RI-X 62A74-TX-DAD-RI-X 62A74-TX-XXF-RI-X 62A74-TX-X9D-RC 62A74-TX-XXD-RI 62A74-TX-XAE-RI	80-001639RI-2 RevA 80-001640RI-2 RevA 80-001660RI-2 RevA 80-001735RC-2 RevA 80-001734RI-2 RevA 80-001736RI-2 RevA	4.1 eMMC bus speed fallback 4.3 Processor speed should be limited to 1.250 GHz	
62A74-TX-X9D-RC 62A74-TX-XXD-RI 62A74-TX-XAE-RI	80-001735RC-3 RevA 80-001734RI-3 RevA 80-001736RI-3 RevA	4.1 eMMC bus speed fallback 4.3 Processor speed should be limited to 1.250 GHz	

Notes:

1- Red indicates obsolete models.

4 Known Design Exceptions and Usage Notes

This section outlines the design exceptions to the baseline module specification for the MitySOM-AM62A family of SOMs.

4.1 eMMC bus speed fallback

During stress testing of the eMMC on the revision -3 and below MitySOM-AM62Ax modules, it was discovered that there is a low occurrence of eMMC tuning failures during boot. To address this, we implemented a workaround in the kernel to drop the eMMC bus speed to 100Mhz when this occurs. At 100Mhz we saw no issues with passing tuning. We will be evaluating potential hardware updates that could resolve this issue in future revisions.

sdhci_am654: Handle tuning error messages
sdhci_am654: Reduce mmc frequency if tuning fails

4.2 Preproduction silicon populated

The processor silicon loaded on module variants identified with this issue is designated preproduction by Texas Instruments (TI) and is intended for early adoption / integration activity. TI has not identified any known issues/errata related to the preproduction versions of the device.

4.3 Processor Speed should be limited to 1.250 GHz and C7x DSP should be limited to 850Mhz

Revision -3 and all prior revisions of the MitySOM-AM62Ax utilize a power management integrated circuit (PMIC) option that initializes the core voltage to 0.75V. The maximum Operating Performance Point (OPP) for models using the "-T" speed grade option is 1250 MHz when using a core voltage of 0.75V (see Table 7-1. Device Speed Grades, of the AM62Ax datasheet). Critical Link had been providing a software patch that updated the PMIC voltage from 0.75V to 0.85V early in the boot process to enable the 1400 MHz OPP and 1000Mhz DSP OPP during runtime.

Texas Instruments (TI) has advised Critical Link that this use case is not supported; updating the core voltage while the AM62A software is loaded (uBoot, SPL, Kernel, etc.) is in violation of the datasheet.

Critical Link has pushed a commit to the mitysom-linux-6.1.y and mitysom-linux-6.6.y kernel branches. This will ensure the 1.4GHz OPP will only be used on devices were the PMIC has VDD_CORE set to 0.85V.

6.1 kernel commit
6.6 kernel commit

Please see the Critical Link support site for more information on disabling this patch.

Critical Link is currently investigating a solution to support enabling the 1.4GHz OPP.

5 REVISION HISTORY

Date	Change Description
08-AUG-2024	Add eMMC fallback errata.
10-OCT-2024	Add more detailed revision history. Add preproduction silicon note. Add Processor speed limitation.