PCN# 20151019000

USB Reliability Improvements for

MitySOM-5CSx

Date: October 19, 2015

To: Purchasing Agents

Dear Customer,

This is an initial announcement of a change to a product that is currently offered by Critical Link. The details of this change are on the following pages.

For questions regarding this notice, contact the Hardware Manager Bill Halpin (bill.halpin@critiallink.com).

Sincerely,

Critical Link, LLC

Phone: (315) 425-4045

Fax: (315) 425-4048

PCN Number: 20151019000

PCN Date: October 19th, 2015

Title: USB Reliability Improvements for MitySOM-5CSx

Contact: Bill Halpin

Phone: (315) 425-4045

Date Available: 10/19/2015

Overview

Changes to MitySOM-5CSx are identified in the following sections.

1 Reduced Switching Supply Ripple on the 1.8V Power Supply

1.1 Description of Change

A feed-forward capacitor was added to the 1.8V power supply feedback along with a slight change to the return current path on the top copper layer. In addition to these changes, the USB clock was reverted to the original configuration where a 26MHz clock is fed into the PHY and the PHY generates the ULPI 60MHz clock.

1.2 Reason for Change

A batch of first article MitySOM-5CSX modules exhibited a USB failure during stress testing. See the Errata[1] document for additional problem details. This was tracked to a bad bus transaction with the USB PHY on the module that was caused by clock jitter. The 1.8V switching power supply ripple overshoots 100mV for one cycle, on a load step change from the USB PHY. This spike can induce jitter on the oscillator clock and lead to a bad ULPI bus transaction. The feed-forward capacitor speeds up the response time of the regulator and avoids the voltage overshoot. The original clocking scheme added some clock filtering to avoid corrupting a bus transaction.

1.3 Anticipated Impact on Form, Fit, Function (positive / negative)

There is no impact to form or fit. The anticipated impact to function is only for modules that exhibit the USB issue. Due to process variation, some modules do not experience the overshoot ripple and will not corrupt USB bus transactions. All modules are expected to pass a USB stress test of formatting a flash drive while running iperf3 tests on the RGMII Ethernet interface through the Dev Board. Please contact Critical Linc, LLC if your MitySOM-5CSx design experiences this issue.

1.4 Anticipated Impact on Quality or Reliability (positive / negative)

This change is anticipated to improve reliability of the USB interface for some modules.

2 Products Affected

[1] **MitySOM-5CSx Revision History and Errata**: https://support.criticallink.com/redmine/projects/mityarm-5cs/wiki/Errata_and_Module_Product_Change_Notifications

Details regarding the full revision history can be located in the MitySOM-5CSx Revision History section on the Critical Link support site.
https://support.criticallink.com/redmine/projects/mityarm-5cs/wiki

Table 1: Products Affected

Model Number	Starting PCA	Replacement PCA
5CSE-L2-3Y8-RC	80-000705RC-2,3	80-000705RC-4
5CSE-S2-3Y8-RI	80-000729RI-2,3	80-000729RI-4
5CSE-H4-3YA-RC	80-000713RC-2,3	80-000713RC-4
5CSE-H4-3YA-RI	80-000713RI-2,3	80-000713RI-4
5CSX-H5-4YA-RC	80-000714RC-2,3	80-000714RC-4
5CSX-H5-4YA-RI	80-000714RI-2,3	80-000714RI-4
5CSX-H6-42A-RC	80-000642RC-2,3	80-000642RC-4
5CSX-H6-42A-RI	80-000642RI-2,3	80-000642RI-4
5CSX-H6-4YA-RC	80-000772RC-2,3	80-000772RC-4
5CSX-H6-4YA-RI	80-000772RI-2,3	80-000772RI-4
5CSE-H6-53B-RC	80-000646RC-2,3	80-000646RC-4

See MitySOM-5CSx Design Guide for migration options across the MitySOM-5CSx family.

3 Document Revision History

Date	Version	Change Description
10-19-2015	1.0	Initial Version