PCN# 20170817000

Continuous Improvement on:

MitySOM-5CSx
All 5CSE and 5CSX Modules

Date: August 17, 2017

To: Purchasing Agents & Design Engineers

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

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PCN Number: 20170817000

PCN Date: August 17, 2017

Title: Continuous Improvement

Contact: Bill Halpin

Phone: (315) 425-4045

Ship Date: 08/23/2017

Overview

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

1 Change RTC Crystal to Lower Capacitance Part

1.1 Description of Change

The original RTC design on the MitySOM-5CSx modules has a 32kHz tuning fork crystal. The module is updating this part to one with 6pF of parasitic capacitance instead of the original 12.5pF component.

1.2 Reason for Change

The original RTC design on the MitySOM-5CSx modules has a 32kHz tuning fork crystal with higher capacitance than the manufacturer recommends. The supported capacitance range is not specified in the RTC [AB1805-T3] datasheet. Recent communications with Abracon has indicated that the RTC will have more stable drift with the lower capacitance crystal.

Abracon has also noted a potential stall of the RTC crystal with the original crystal that included a 12.5pF parasitic capacitance. Critical Link has not identified a case of a stalled crystal, nor has there been reports of this failure mode from fielded MitySOM units.

To ensure product reliability and provide additional stability on the RTC's crystal clock source, the MitySOM will be updated to use a crystal with 6pF capacitance.

Testing the RTC with different crystals, there was an improvement to the initial clock drift. The uncalibrated clock drift on the RTC, running from the XTAL clock source, improved from around 24 seconds per day, or about 280 ppm, to about 12 seconds per day, or 140 ppm. Calibrating the AB1805-T3 RTC showed that the RTC maintained around +/-2ppm at a reasonably constant temperature with either crystal. The RTC drift performance across the temperature range is as expected with the known limitations of tuning fork crystal sources.

It is recommended the end applications program the crystal calibration settings in the AB1805-T3 if the uncalibrated RTC drift is of concern for the end application. Please reference the MitySoM-5CSX RTC Wiki page for further details, including the calculation and usage of calibration values.

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

Form and Fit are not impacted by this change.

The MitySOM-5CSx units with revisions of “dash 8” and lower will see higher RTC drift by about a factor of 2 when uncalibrated. The "dash 9" and newer modules will still have excessive RTC drift of around 12 seconds per day until calibration is programmed into the RTC. With any version of the MitySOM-5CSx modules, the RTC is expected to reliably run the crystal clock source.

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

There is no impact to Quality with this change. For Reliability, the module is expected to have the same reliable performance and there is no change to the life expectancy of the product. When considering reliability as a performance measure, the RTC drift will be centered around a new baseline; and for best time keeping performance, calibration is highly recommended.

2 Products Affected

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-8	80-000705RC-9
5CSE-S2-3Y8-RI	80-000729RI-8	80-000729RI-9
5CSE-H4-3YA-RC	80-000713RC-8	80-000713RC-9
5CSE-H4-3YA-RI	80-000713RI-8	80-000713RI-9
5CSX-H5-4YA-RC	80-000714RC-8	80-000714RC-9
5CSX-H5-4YA-RI	80-000714RI-8	80-000714RI-9
5CSX-H6-42A-RC	80-000642RC-8	80-000642RC-9
5CSX-H6-42A-RI	80-000642RI-8	80-000642RI-9
5CSX-H6-4YA-RC	80-000772RC-8	80-000772RC-9
5CSX-H6-4YA-RI	80-000772RI-8	80-000772RI-9
5CSX-H6-53B-RC	80-000646RC-8	80-000646RC-9

See MitySOM-5CSx Datasheet and Carrier Board Design Guide for migration options across the MitySOM-5CSx family.

3 Document Revision History

Date	Version	Change Description
17-August-2017	1.0	Initial Version