PCN# 20121113000

Correct Excessive VBACKUP Current Draw and Isolate VSS_OSC from PCB Ground on

MityARM-335X Family System on Modules

Date: November 13, 2012
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 Production Manager, Bill Halpin (bill.halpin@criticallink.com).

Sincerely,

Critical Link, LLC
Phone: (315) 425-4045
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PCN Number: 20121113000
PCN Date: November 13, 2012
Title: Correct Excessive VBACKUP Current Draw and Isolate VSS_OSC from PCB Ground
Contact: Bill Halpin
Phone: (315) 425-4045
Ship Date: 03/01/2013

Overview
Two isolated changes to the MityARM-3359 modules are identified in the following sections.

Change 1 - Correct Excessive VBACKUP Current Draw

Description of Change
The AM3359 VDDS_RTC 1.8 Volt power input, currently supplied by the TPS65910A Power Management Integrated Circuit (PMIC) VRTC output, will be instead fed by an independent 1.8 Volt Low Drop Out (LDO) regulator sourced from the main input supply voltage.

Figure 1 illustrates the PMIC / AM3359 logical connections before the change. The TPS65910A includes a 1.8 Volt output, VRTC, that is powered by either the VCC7 input (the main power input) or the VBACKUP input if VCC7 is not present.
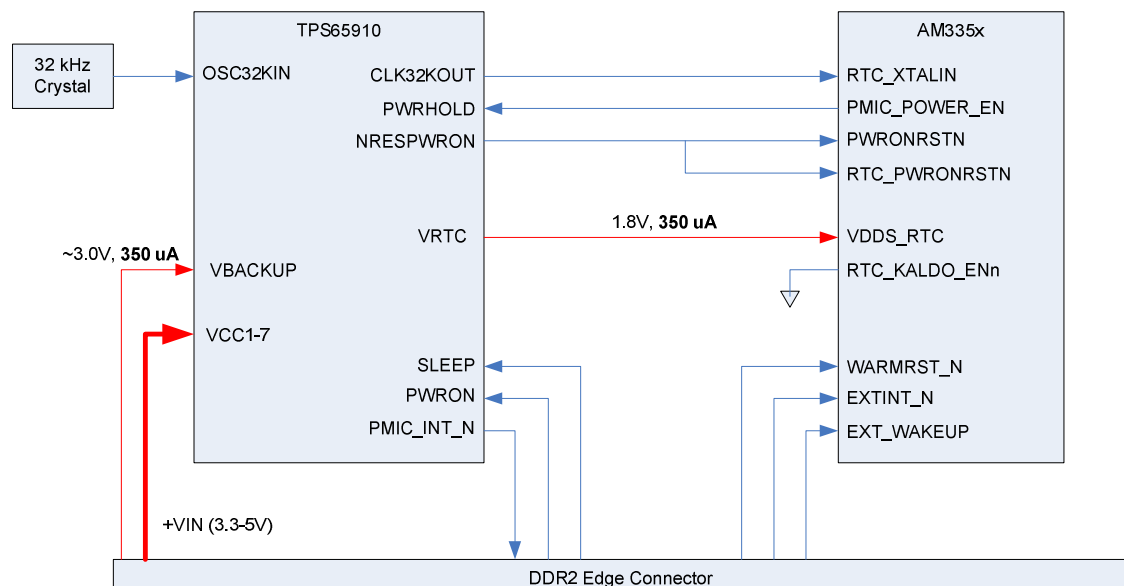

Figure 1 MityARM-335X PMIC / Processor Interconnect, prior to change

Figure 2 illustrates the PMIC / AM3359 logical connections with the change applied. Here, the AM3359 VDDS_RTC has been disconnected from the PMIC's

VRTC output. Instead a separate LDO regulator is used to supply the 1.8 Volts needed to power the VDDS_RTC input.
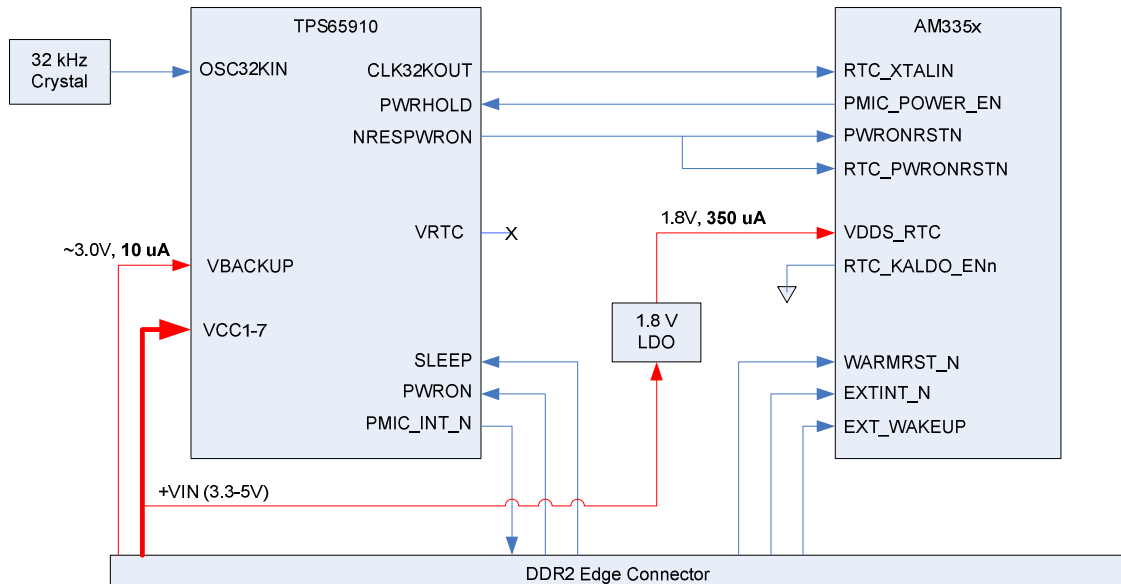

Figure 2 MityARM-335X PMIC / Processor Interconnector, with change applied

Reason for Change

The intent of the VBACKUP power input on the MityARM-335X family of SOMs is to provide the capability for the application developers to use the available on-board RTC features of the PMIC using an inexpensive coin-cell type battery while main power is not available. Without this change the current/power consumption on the VBACKUP input – 350 micro Amps - is simply too high to facilitate this feature. The change drops the input current to approximately 10 micro Amps by only powering the RTC on the PMIC. This current consumption level is reasonably low enough for typical low cost coin cell batteries.

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

With this change, the current consumption of the VBACKUP pin will be reduced from approximately 350 micro Amps to approximately 10 micro Amps.

Anticipated Impact on Quality or Reliability (positive / negative)

No impact on quality or reliability is expected with this change.

Change 2 – Isolate VSS_OSC from PCB Ground

Description of Change

The Kelvin ground reference (VSS_OSC) terminal on the AM3359 ZCZ package is currently connected to PCB ground. This terminal and the connections associated with it will be isolated from PCB ground.

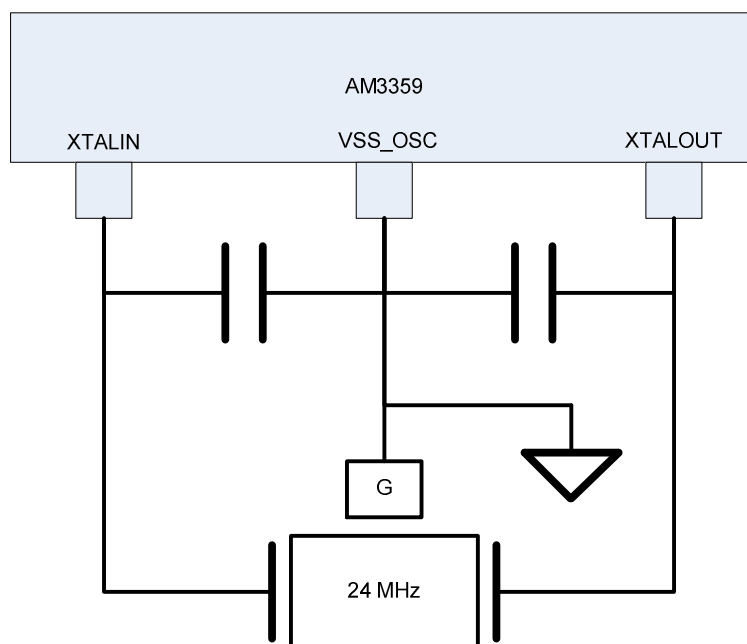Figure 3 illustrates the AM3359 24 MHz crystal connection, including the VSS_OSC pin on the MityARM-3359.

Figure 3 MityARM-335X Main Oscillator Connection

Figure 4 illustrates the same circuitry with the change applied. The only difference is that the VSS_OSC pin and its associated connections are disconnected from PCB ground.
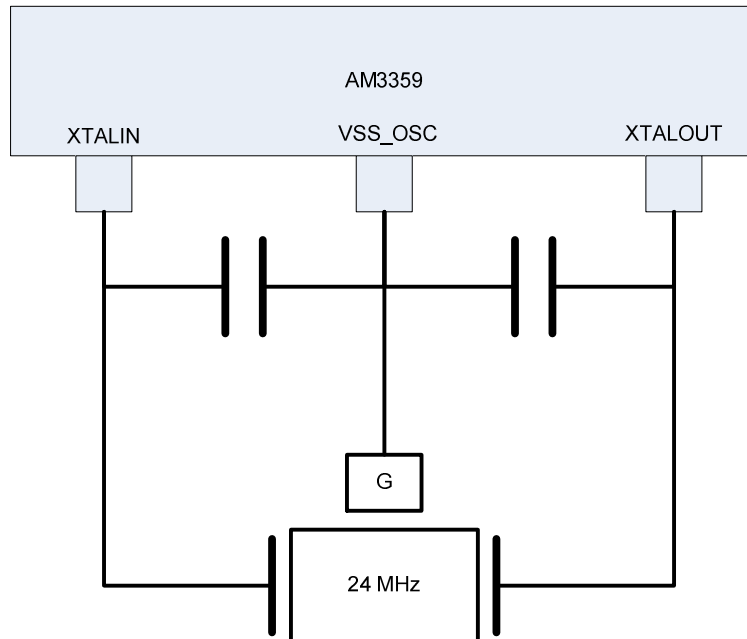
Figure 4 MityARM-335X Main Oscillator Connection, with change applied

Reason for Change

The processor manufacturer provides design guidance (section 4.2.2.1, Figure 4-8, Note A of the AM3359 Specification, Revised MAY 2012) that indicates that the VSS_OSC terminal should not be connected to PCB ground as it serves as a Kelvin ground reference for the external crystal components. This change is required to remain consistent with the guidelines of the processor manufacturer.

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

No impact on form, fit, or function is anticipated with this change.

Anticipated Impact on Quality or Reliability (positive / negative)

This change should improve the design margin on any clock jitter or AM3359 internal phase lock loop (PLL) stability performance. However, Critical Link has not observed or had any reports regarding problems with the AM3359 PLL and/or clock performance. Therefore it is not possible to quantify any improvement on the quality or reliability of the module.

Products Affected:

Details regarding the full printed circuit assembly (PCA) revision history can be located in the MityARM-335X Revision History section on the Critical Link support site.

Model Number	Current PCA	New PCA
3359-GX-226-RC	80-000509RC-1 RevA	80-000509RC-1 RevC
3359-GX-227-RC-X	80-000444RC-2 RevA	Not currently in production
3359-GX-226-RL	80-000509RL-1 RevA2, B	80-000509RL-1 RevC