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Applying Errata ID 4080 to MPC5604E Evaluation Board

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1 Introduction

The purpose of this engineering bulletin is to describe how to apply errata 4080 to MPC5604E Evaluation Board. This errata describe issue where device cannot come out of reset till V_{DD_LV} is less than a threshold value. This document is valid for evaluation boards where device with mask 0N10D is installed and board is not marked with a TDA4008 label.

2 Description

Errata 4080 is relevant for external supply regulation mode of the device. There is a requirement for input core supply voltage V_{DD_LV} to be 1.24V at the startup time otherwise the device might get stuck in reset.

Low voltage power supply is designed to produce 1.20V which does not meet requirement mentioned above. Low voltage power supply consist of MP2380 monolithic step-down switch mode converter where output voltage is controlled via external resistor divider. The schematic below shows implementation of MP2380 at MPC5604E evaluation board. The external resistor divider consist of resistors R6 and R5.

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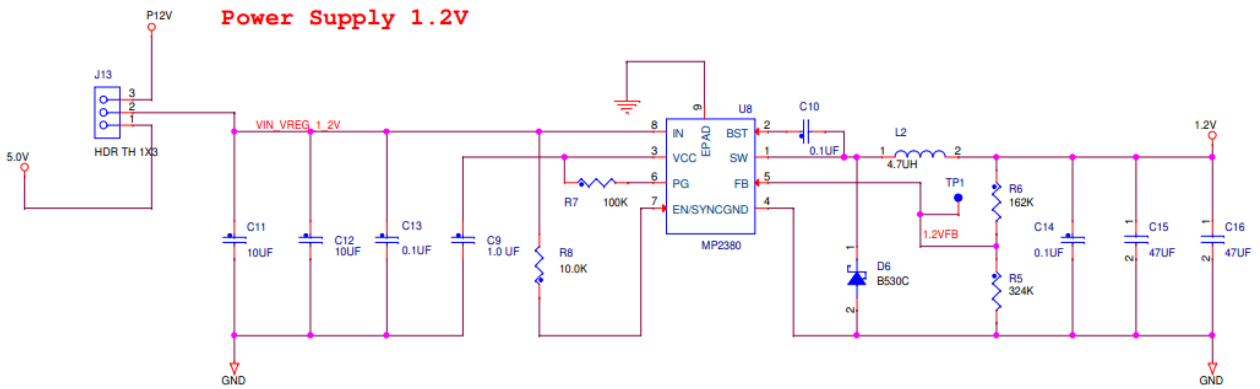

Figure 1. Input core supply voltage regulator implemented on MPC5604E EVB

The output voltage is expressed by the following equation:

$$R_5 = \frac{R_6}{\frac{V_{OUT}}{0.8V} - 1}$$

Originally V_{DD_LV} is 1.20V which correspond to the schematic and the following equation:

$$V_{DD_LV} = \left(\frac{162k\Omega}{324k\Omega} + 1\right) \cdot 0.8V = 1.2V$$

Based on Errata 4080 requirement we have to change value or R5 to achieve V_{DD_LV}=1.24V as given below:

$$V_{DD_LV} = \left(\frac{162k\Omega}{294k\Omega} + 1\right) \cdot 0.8V = 1.24V$$

Recommended solution for MPC5604E evaluation board is to change value of R5 resistor from original value 324kΩ to new value 294kΩ.

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