MC33910/11/12 filtering capacitor for VS1

1 Introduction

The MC33910/11/12 family is a Serial Peripheral Interface (SPI) controlled System Basis Chip (SBC), combining many frequently used functions in an MCU based system, plus a Local Interconnect Network (LIN) transceiver. The SMARTMOS devices are low dropout regulators with full protection and reporting features. The device provides full SPI readable diagnostics and a selectable timing watchdog for detecting errant operation. The LIN Protocol Specification 2.0 and 2.1 compliant LIN transceiver has waveshaping circuitry that can be disabled for higher data rates.

This application note explains how to use capacitor filter on the VS1 input pin.

Contents

2   Using capacitor filter

As you are working with the MC33910/11/12 devices, it is important that you understand the filtering mechanism for the product. The device may generate resets when spikes with falling slew rate in the range of -0.9 V/µs to -1.4 V/µs are applied on VS1 pin. Below -1.4 V/µs and above -0.9 V/µs, the device functionality is guaranteed.
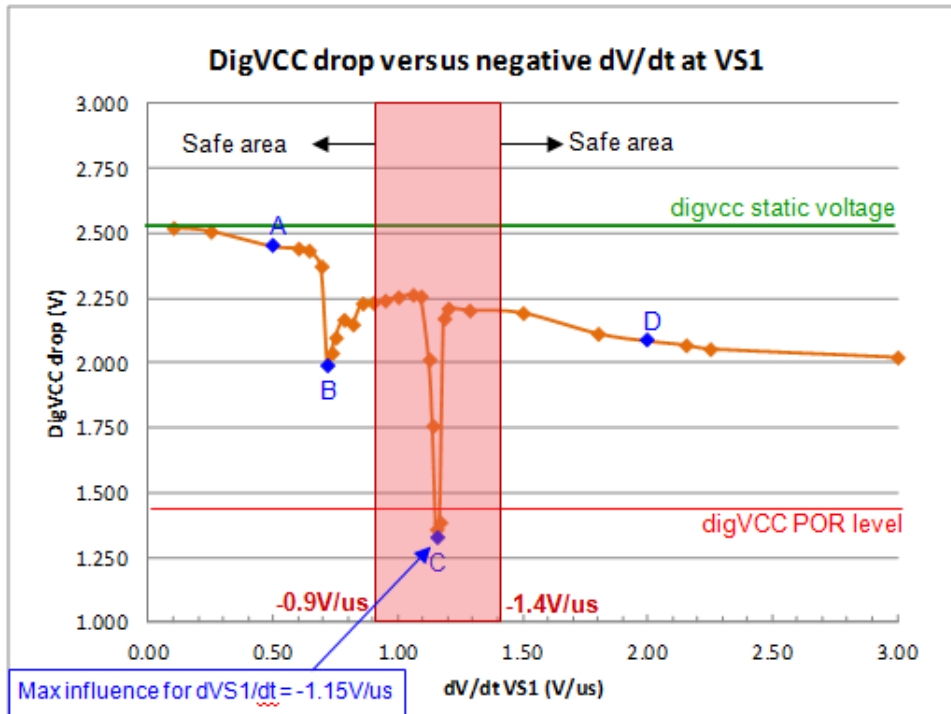
Figure 1. Falling slew rate on VS1 pin

3 Application solution

If such behavior appears in the application, the ESR adjustment of C1 capacitor should be considered to ensure you have protected your application from the RESET condition. RESET condition is typically not found below -1.4 V/µs or above -0.9 V/µs.
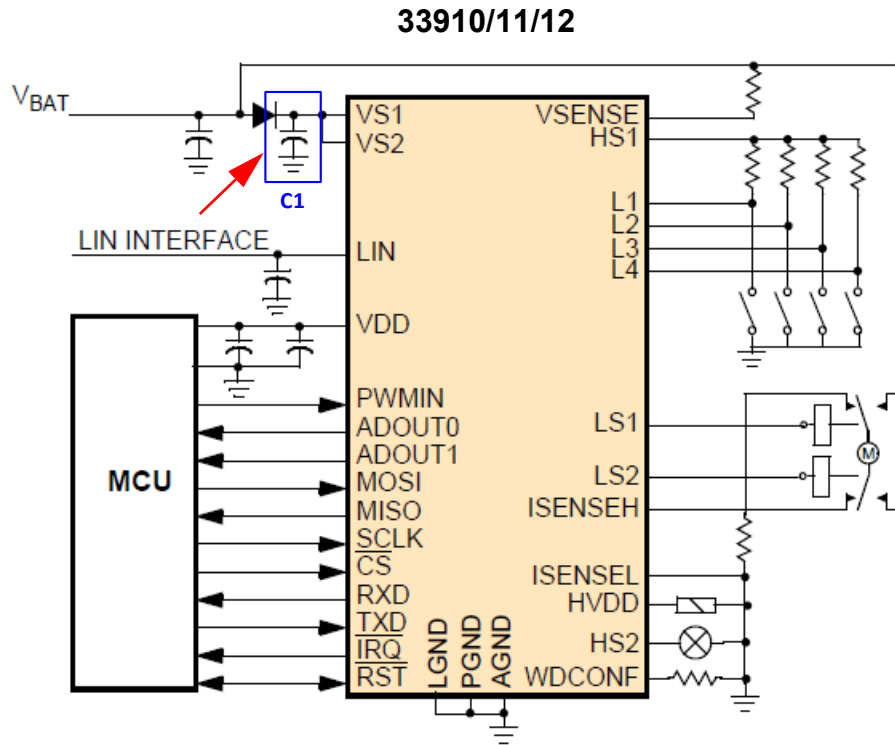
33910/11/12

Figure 2. Filtering capacitor on VS1 pin

4   References

Support Pages	URL
MC33910 Product Summary Page	http://www.nxp.com/webapp/sps/site/prod_summary.jsp?code=MC33910
MC33911 Product Summary Page	http://www.nxp.com/webapp/sps/site/prod_summary.jsp?code=MC33911
MC33912 Product Summary Page	http://www.nxp.com/webapp/sps/site/prod_summary.jsp?code=MC33912
Analog Home Page	http://www.nxp.com/analog

5   Revision history

Revision	Date	Description of Changes
1.0	1/2015	• Initial release • AN5063 replaces MC33910ER, MC33911ER, and MC33912ER
	7/2016	• Updated to NXP document form and style

Document Number: AN5063
Rev. 1.0
7/2016