NS9360 SPI Boot Hardware
Workaround Application Note

Contents

NS9360 SPI Boot Hardware Workaround

This application note describes a hardware workaround for a defect in the NS9360 that can prevent proper startup when you boot from an SPI EEPROM device.
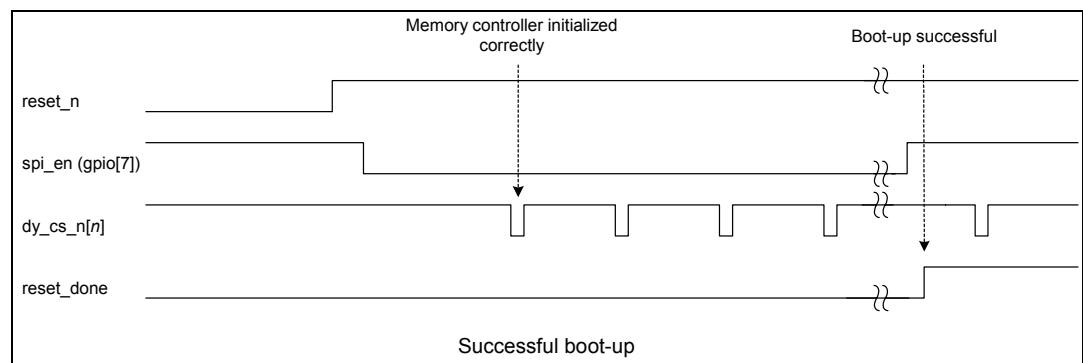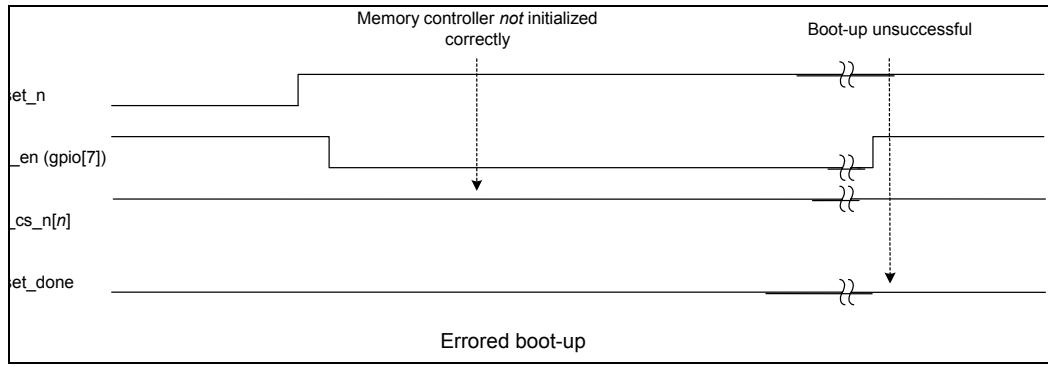
Overview

A hardware defect in the NS9360 can intermittently prevent proper startup when booting from a SPI EEPROM device. The source of the problem is the SPI Boot module in the NS9360, which can sometimes cause a system bus error when initializing the memory controller.
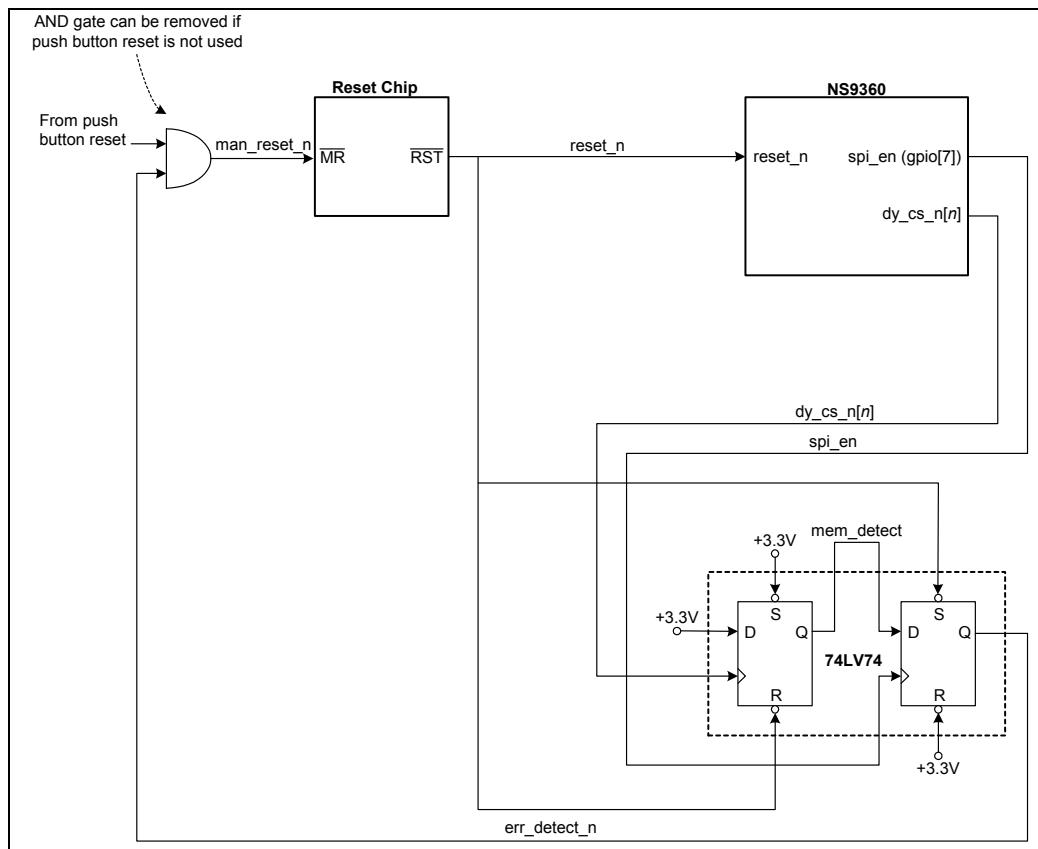
Hardware workaround

A board hardware workaround can detect and recover from the error. When the error occurs, the NS9360 memory controller is not initialized and remains idle. The workaround detects the absence of activity on the SDRAM interface when the SPI EEPROM device is deselected. When detected, the NS9360 can be reset again, at which time it is guaranteed that the SPI Boot module correctly will initialize the memory controller. The board hardware workaround requires one or two components, depending on the board reset circuit configuration.

The next two timing diagrams show a successful boot-up and an errored boot-up sequence:

Memory controller initialized correctly

Boot-up successful

reset_n

spi_en (gpio[7])

dy_cs_n[*n*]

reset_done

Successful boot-up

Errored boot-up

This figure shows the board workaround circuit to detect the unsuccessful boot-up. NetSilicon recommends that you use a spare dynamic memory chip select in the workaround circuit.

Recovery process

This timing diagram shows the recovery process:

Errored boot-up recovery