

## User Information Note

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### Overview

This User Information Note describes a behavior exhibited in several National Semiconductor products.

The System Management Bus (SMBus) is a two wire interface designed for the communication between various system component chips. There is an issue with the implementation of the SMBus for affected products, listed below, which requires certain design steps be taken to assure proper operation.

### Products affected:

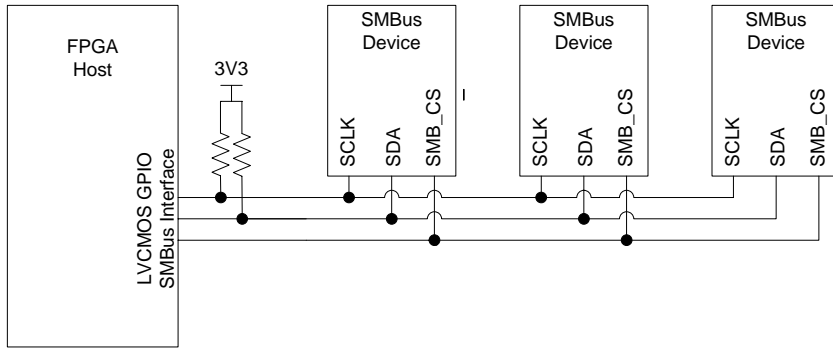
LMH0340, LMH0341, LMH0040, LMH0041, LMH0050, LMH0051, LMH0070, LMH0071, DS16EV5110, DS64EV400, DS32EV400, DS34RT5110, DS25CP104.

### Description

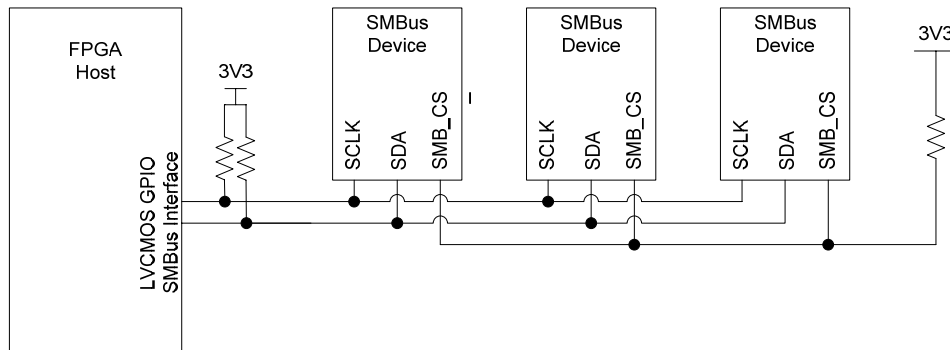
It is possible for SMBus data to match the address of a non-addressed device causing unintended consequences. For example, a device receiving data that matches its address may mistakenly be placed into addressed mode and may either make unwanted register changes, or attempt to take control of the SMBus, resulting in the inability to communicate with the intended device.

### Workaround:

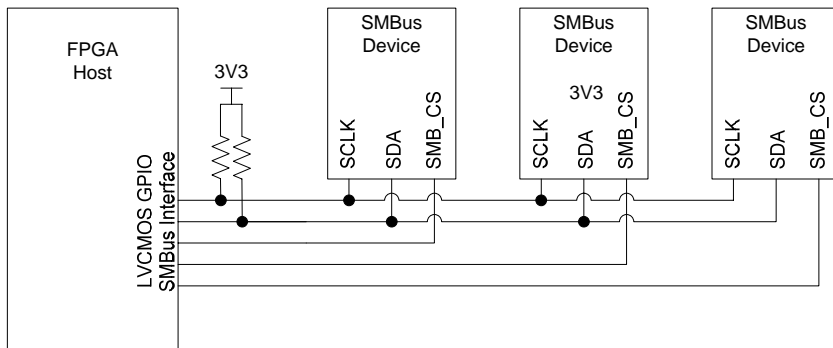
The products exhibiting this issue all have a separate SMB\_CS pin, which allows a hardware enable/disable of the Bus. If this pin is driven such that it is active when, and only when the subject device is being addressed, then the issue will not manifest itself. Alternately, this issue will not be seen if the SMBus is used as a control between the host and only one device. Configurations which are susceptible to this issue are shown in figures 1 and 2, in each of these configurations, all SMBus devices can be active at the same time. In figure 3, the host FPGA has individual CS lines to each SMBus device, and as such can control which device has access to the bus, and in fig 4, each SMBus device has a dedicated bus.



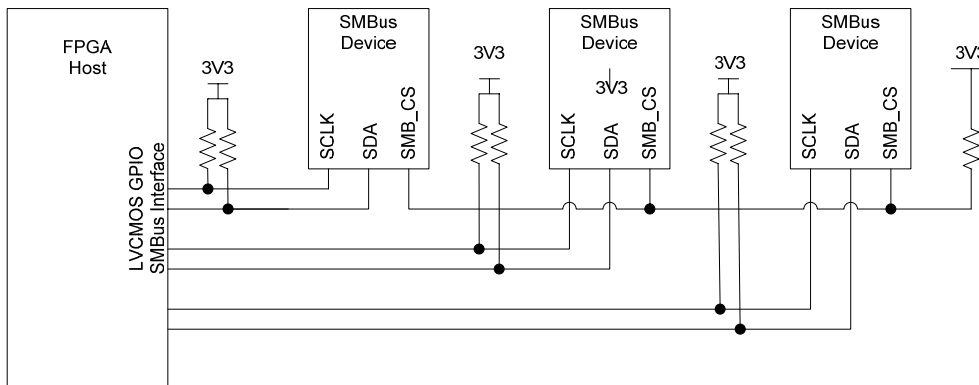
**Figure 1 Configuration with potential Contention**



**Figure 2 Configuration with potential contention**



**Figure 3 Configuration with individual CS control - avoiding contention**



**Figure 4 Configuration with individual busses - avoiding contention**