



AN10485

SDA pin connection in SPI mode

Rev. 01 — 2 June 2006

Application note

Document information

Info	Content
Keywords	SC16IS740, SC16IS750, SC16IS760, SC16IS752, SC16IS762, PCA9502, I2C UART, SPI UART, SPI I/O expander
Abstract	This application note discusses that a potentially low-impedance path might exist between V_{DD} and V_{SS} (ground) when the SDA pin is connected directly to V_{DD} in SPI (Serial Peripheral Interface) mode.

Revision history

Rev	Date	Description
01	20060602	application note; initial version

Contact information

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1. Introduction

In the current data sheets (*SC16IS740/750/760 Rev. 02*; *SC16IS752/SC16IS762 Rev. 02*; *PCA9502 Rev. 1.06 [uncontrolled copy]*) it is recommended that the SDA pin must be connected to V_{DD} when the device is configured for SPI operation (see the description of pin SDA in the “Pin description” table).

When the SPI configuration is selected, the SDA pin is not used and the state of the output driver is not controlled (the driver is not disabled), which may force logic 0 (drive LOW) on the SDA line. This will potentially cause a low-impedance path between V_{DD} and V_{SS} (ground) through an open-drain transistor.

The issue described above affects the following devices: SC16IS740, SC16IS750, SC16IS760, SC16IS752, SC16IS762, PCA9502.

2. Impact to customer

If the SDA pin is connected directly to V_{DD} , then a potentially low-impedance path may exist between V_{DD} and V_{SS} (ground) when the output driver is enabled. This will result in a larger than expected current consumption from the power supply. Although the device might still be working if the SDA pin is connected to V_{DD} , the long-term effect to the device is unknown.

3. Workaround

In SPI mode, the SDA pin should be connected to V_{SS} (ground) to disable the open-drain output driver.

4. Conclusion

The SDA pin is not used in SPI mode. It is recommended that the SDA pin be connected to V_{SS} (ground) to avoid a floating input.

5. Abbreviations

Table 1. Abbreviations

Acronym	Description
I/O	Input/Output
I ² C-bus	Inter-Integrated Circuit bus
SPI	Serial Peripheral Interface
UART	Universal Asynchronous Receiver/Transmitter

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Date of release: 2 June 2006

Document identifier: AN10485_1