

SCP1000 Series ASIC update

1 Introduction

Both pressure sensors, SCP1000-D01 and SCP1000-D11, use the same signal conditioning ASIC (Application Specific Integrated Circuit). The difference between these two product types is the serial communication interface (SPI / TWI).

The current SCP1000 series ASIC version (version B) will be replaced with a new ASIC version (version C) from December 2006.

This document describes the differences between the two ASIC versions. There are no obligatory design changes due to the SCP1000 ASIC version update from version B to C. The ASIC version C can be used in all applications where the B version ASIC has been used without any changes. The version C provides some improved features which help the system designing for new applications.

2 Differences between ASIC versions B and C

The differences between the old and new ASIC versions are presented in Table 1 below.

Table 1. Differences between SCP1000 ASIC versions B and C.

Features	SCP1000 series with B version ASIC (old)	SCP1000 series with C version ASIC (new)	Required actions
Low noise configuration during start up sequence	<u>Required</u>	<u>Not obligatory</u> . The low noise configuration has no effect on the functionality or performance of the SCP1000 with C version ASIC.	None. The low noise configuration can be removed from start up sequence in order to optimise the code length.
SCP1000-D01 MISO pin in OPEN DRAIN configuration	<u>Required</u> , when multiple slaves are connected to same SPI bus. External pull up resistor between MISO and VDD required.	<u>Not obligatory</u> . The MISO pin tri-states in both ACTIVE and OPEN DRAIN modes when CSB is high. The OPEN DRAIN configuration can be still used.	None. If the MISO pin OPEN DRAIN configuration is not used, the external pull up resistor can be removed.
SCP1000-D01 Current consumption in Power Down mode	In MISO pin OPEN DRAIN configuration the current consumption in Power down mode is determined by the external pull up resistor size that is connected from MISO to VDD.	The current consumption in Power down mode is ~0.2µA in all SCP1000-D01 MISO pin configurations.	None. The current consumption in Power down mode is ~0.2µA with the new C version ASIC (MISO pin is tri-stating in C version ASIC when communication is not active).
SCP1000-D11 Current consumption in Power Down mode	The current consumption in Power down mode is determined by the pull up resistor size that is connected from SDA to VDD.	The current consumption in Power down mode is ~0.2µA, because the SDA pin tri states.	None. The current consumption in Power down mode is ~0.2µA with the new C version ASIC (SDA pin is tri stating in C version ASIC when communication is not active).
Marking on top of component SCP1000-D01	P01	D01	None. Marking on top of SCP1000-D01 indicates the ASIC version.
Marking on top of component SCP1000-D11	P03	D11	None. Marking on top of SCP1000-D01 indicates the ASIC version.
REVID (addr 0x00) register content	Hex '01' Bin '0000 0001'	Hex '03' Bin '0000 0011'	None. REVID register content indicates the ASIC version.
Product type	SCP1000-D01 SCP1000-D11	SCP1000-D01 SCP1000-D11	None. SCP1000 product types remain the same.

Even though the ASIC version change does not effect on current software or hardware solutions in SCP1000 applications, there are two special cases:

CASE 1:

The REVID register content of the SCP1000 changes as the ASIC version changes. In case the application software uses the REVID register content, it must be taken care that the register content change from 0x01 to 0x03 does not cause any problems.

CASE 2:

MISO and DRDY pins are tri stating in C version ASIC. This may cause problems in applications were the MCU tri stating MISO or DRDY line is not tolerated by the MCU. In case the MCU does not tolerate the tri stating MISO and DRDY pins, a large pull up/down resistor solves this problem.