

The CPC5902G/5903G Evaluation Board can be used to isolate an I²C bus, and to evaluate the performance obtainable when communicating between the user's I²C devices. The 8-pin DIP socket can be populated with either a CPC5902G (for both SCL and SDA bidirectional) or with a CPC5903G (for SDA bidirectional, SCL sideA to sideB only).

At the left side of the board are four 0.1 inch centered posts that carry VDDA, GNDA, SCLA and SDAA. See the drawing above for signal, component, and jumper locations. Best performance will result if the VDDA and GNDA posts are connected to the same VDD and GND as the sideA I²C bus master. The SCLA post should be connected to the I²C serial clock line SCL at the bus master on sideA. In addition, the SDAA post should be connected to the I²C serial data line at the bus master. On the right side of the board there are four posts which carry VDDDB, GNDB, SCLB and SDAB when connected to the sideB I²C devices.

At the top left of the board are duplicate posts, which are electrically shorted to the VDDA and GNDA posts on the left side of the board. These two posts enable convenient operation in standalone mode, when a full I²C bus may not be available at sideA. Similarly, at the top right of the board, there are duplicates of the VDDDB and GNDB posts. The CPC5902G and CPC5903G will each operate correctly for 2.7V < VDDA < 5.5V and 2.7V < VDDDB < 5.5V.

While it is possible to attach a second lab power supply to VDDA, which is not identical to the supply at the bus master on sideA, and to operate the board with a live I²C interface, this is not the recommended mode of operation. The same is true for connecting a second, non-identical lab power supply to VDDDB. The V_{IL} and V_{IH} voltages at the bus isolator are derived from the VDDA and VDDDB voltages. Thus, the switching thresholds will differ, and noise rejection of the bus will be worse if the voltage at VDDA is not identical to the voltage at the VDD connected to the devices as well as any pull-up resistors on the rest of the sideA bus segment. Similarly, VDDDB should be the same voltage used at the devices and any pull-ups on the sideB bus. If either of VDDA or VDDDB is not the

PRELIMINARY

same as that used at devices on their buses, the performance of the actual system at power up will not be observable. VDDA does not need to be the same value as VDDB, but, as mentioned above, should be the same voltage as used on the rest of the sideA bus segment.

The posts at JP1 on the SCLA line can be used with a 0.1-inch header jumper to add 500Ω (nominal) of pull-up resistance to the SCLA line. Similarly JP3 adds 500Ω of pull-up resistance to the SDAA line. These jumpers are generally not used if there are already minimum value pull-up resistors elsewhere on the bus. For operation at 3.3V at VDDA and a bus driver delivering 0.4V active low, the I_{OL} current will be $2.9V/500\Omega = 5.8mA$. This is close to the minimum guaranteed value of 6mA for I²C fast mode. For operation at 5V, this resistance should be increased: $5.0-0.4=4.6V$ and $4.6V/6mA = 766\Omega$. The 500Ω has been implemented by using $R1=R2=1k\Omega$ in parallel. A quick way to evaluate a 5V system would be to use a soldering iron to remove either R1 or R2 to increase the resistance to $1k\Omega$; however, slightly faster operation would result from using a pull-up resistor of perhaps 820Ω .

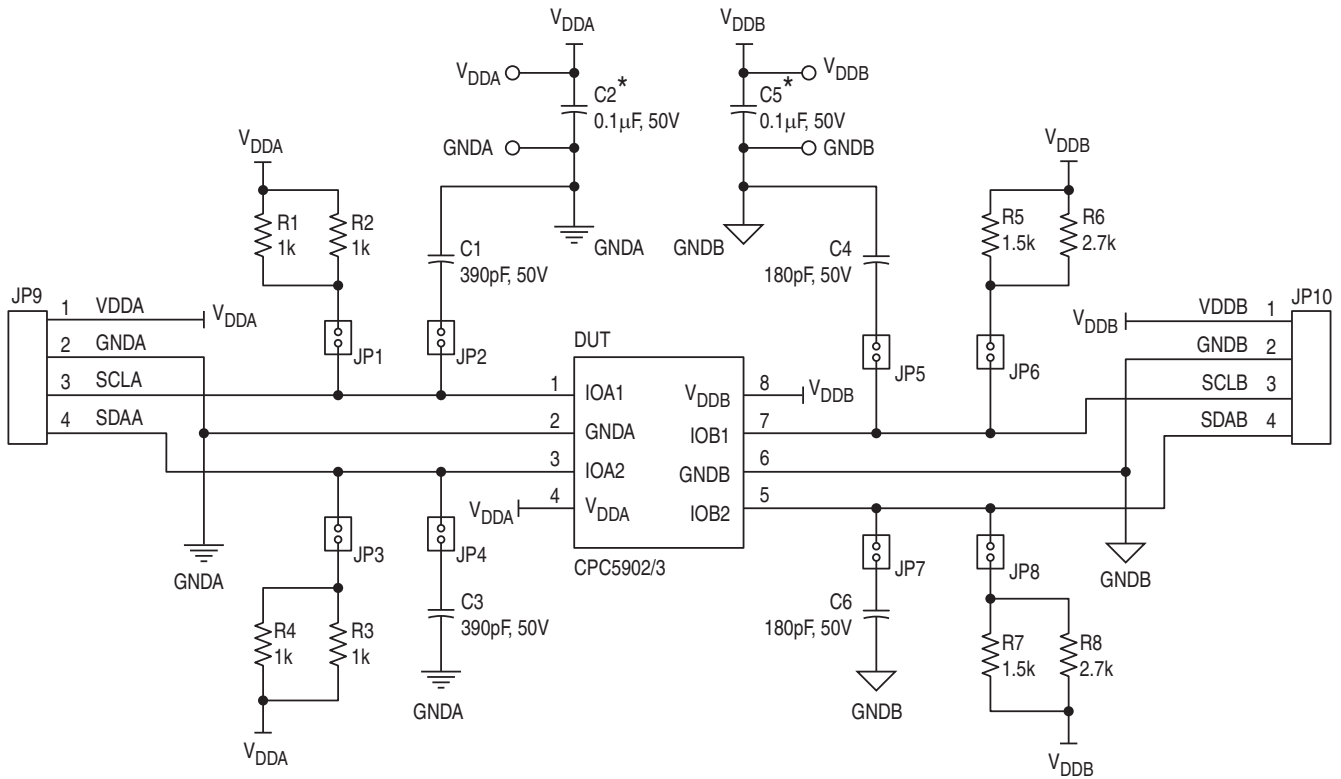
In systems with significant cable length, it is often preferred to split the pull-up resistance by paralleling a physical resistor at both ends of the non-isolated bus segment. To evaluate the performance of a bisected pull-up, a soldering iron can be used to remove either R1 or R2, and a $1k\Omega$ resistor (for a 3.3V system) can be added, if necessary, near the bus master on the sideA bus segment.

The 2 posts at JP2 and JP4 can be jumpered to add 390pF of capacitive load to the SCLA and SDAA lines. These jumpers can be used to load the I²C lines to I²C fast mode's worst case: 400pF in standalone mode. The jumpers can also be used to add capacitance to the sideA bus segment if it is extremely lightly loaded, but loading beyond 400pF total does not guarantee operation at 400kHz by the I²C fast mode specification.

On the right side, the posts at JP5 and JP7 can be used to add 964Ω pull-ups to the SCLB and SDAB lines. For $V_{DDB} = 3.3V$ and $V_{OL} = 0.23V_{DDB} = 0.76V$, this would yield $3.3 - 0.76 = 2.54V$ across 964Ω , or 2.635mA of output current sunk by the sideB drivers. Other devices on the sideB bus might drive to $V_{OL} =$

0.4V and sink 3.01mA. The CPC5902G/5903G drivers at sideB are only rated for 3mA when used at VDDB less than 4.5V. The sideB drivers are rated for 6mA operation at up to 5.5V. At 5.5V, they will drive to $0.23*5.5=1.265V$ and will pull 4.4mA if the pull-up is unchanged. At 5.5V, the pull-up resistor would need to be larger than 705Ω to limit I_{OL} to less than 6mA.

1. Evaluation Board Schematic



*Note: C2 and C5 are located on the bottom side of the board

For additional information please visit www.ixysic.com

IXYS Integrated Circuits Division makes no representations or warranties with respect to the accuracy or completeness of the contents of this publication and reserves the right to make changes to specifications and product descriptions at any time without notice. Neither circuit patent licenses nor indemnity are expressed or implied. Except as set forth in IXYS Integrated Circuits Division's Standard Terms and Conditions of Sale, IXYS Integrated Circuits Division assumes no liability whatsoever, and disclaims any express or implied warranty, relating to its products including, but not limited to, the implied warranty of merchantability, fitness for a particular purpose, or infringement of any intellectual property right.

The products described in this document are not designed, intended, authorized or warranted for use as components in systems intended for surgical implant into the body, or in other applications intended to support or sustain life, or where malfunction of IXYS Integrated Circuits Division's product may result in direct physical harm, injury, or death to a person or severe property or environmental damage. IXYS Integrated Circuits Division reserves the right to discontinue or make changes to its products at any time without notice.

Specification: UG-CPC590x_EvalBd-R00A
Copyright © 2015, IXYS Integrated Circuits Division
All rights reserved. Printed in USA.
1/26/2015

Компания «Океан Электроники» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Поставка оригинальных импортных электронных компонентов напрямую с производств Америки, Европы и Азии, а так же с крупнейших складов мира;
- Широкая линейка поставок активных и пассивных импортных электронных компонентов (более 30 млн. наименований);
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Помощь Конструкторского Отдела и консультации квалифицированных инженеров;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Поставка электронных компонентов под контролем ВП;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- При необходимости вся продукция военного и аэрокосмического назначения проходит испытания и сертификацию в лаборатории (по согласованию с заказчиком);
- Поставка специализированных компонентов военного и аэрокосмического уровня качества (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Actel, Aeroflex, Peregrine, VPT, Syfer, Eurofarad, Texas Instruments, MS Kennedy, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Компания «Океан Электроники» является официальным дистрибьютором и эксклюзивным представителем в России одного из крупнейших производителей разъемов военного и аэрокосмического назначения «**JONHON**», а так же официальным дистрибьютором и эксклюзивным представителем в России производителя высокотехнологичных и надежных решений для передачи СВЧ сигналов «**FORSTAR**».



JONHON

«**JONHON**» (основан в 1970 г.)

Разъемы специального, военного и аэрокосмического назначения:

(Применяются в военной, авиационной, аэрокосмической, морской, железнодорожной, горно- и нефтедобывающей отраслях промышленности)

«**FORSTAR**» (основан в 1998 г.)

ВЧ соединители, коаксиальные кабели, кабельные сборки и микроволновые компоненты:

(Применяются в телекоммуникациях гражданского и специального назначения, в средствах связи, РЛС, а так же военной, авиационной и аэрокосмической отраслях промышленности).



Телефон: 8 (812) 309-75-97 (многоканальный)

Факс: 8 (812) 320-03-32

Электронная почта: ocean@oceanchips.ru

Web: <http://oceanchips.ru/>

Адрес: 198099, г. Санкт-Петербург, ул. Калинина, д. 2, корп. 4, лит. А