



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



## Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China



---

## CP2102 EVALUATION KIT USER'S GUIDE

---

### 1. Kit Contents

The CP2102 Evaluation Kit contains the following items:

- CP2102 Evaluation Board
- RS232 Serial Cable
- USB Cable
- DVD
- Quick Start Guide

### 2. Relevant Documentation

Application notes can be found on the Interface Application Notes page for all fixed-function devices: [www.silabs.com/interface-appnotes](http://www.silabs.com/interface-appnotes).

- **AN721: CP210x/CP211x Device Customization Guide** — Customize the VID, PID, serial number, and other parameters stored in the CP2102 EPROM.
- **AN197: Serial Communications Guide for CP210x** — Programming guide for using the Virtual COM Port (VCP) drivers.
- **AN169: USBXpress Programmer's Guide** — Programming guide for using the USBXpress drivers.
- **AN220: C8051F32x and CP210x USB Driver Customization** — VCP or USBXpress driver customization tool.
- **AN571: CP210x Virtual COM Port Interface** — USB interface details for CP210x devices.

### 3. Software Setup

The Software Development Kit (SDK) for the CP2102 kit is included on the kit DVD. The latest version of this installer can also be downloaded from the [www.silabs.com/interface-software](http://www.silabs.com/interface-software) website. This package includes:

- **Device Customization Utility (AN721)**
- **Documentation** — data sheet, application notes, user's guide, quick start guide, etc.
- **CP210x Virtual COM Port (VCP) Drivers**
- **Software** — Driver Customization Utility (AN220) and programming examples

The Windows installer should launch automatically after inserting the DVD. For Mac and Linux, browse to the appropriate directory on the DVD to install the software package. Follow the instructions to install the SDK and drivers to the system.

#### 3.1. USBXpress Driver Development Kit

The Silicon Laboratories USBXpress® Development Kit provides a complete host software solution for interfacing to CP210x devices. No USB protocol or host device driver expertise is required. Instead, a simple, high-level Application Program Interface (API) for the host software is used to provide complete USB connectivity. The USBXpress Development Kit includes Windows device drivers, Windows device driver installer, host interface function library (host API) provided in the form of a Windows Dynamic Link Library (DLL). See Application Note AN169, "USBXpress Programmer's Guide" for detailed information on using the USBXpress drivers.

The USBXpress drivers are available here: [www.silabs.com/usbxpress](http://www.silabs.com/usbxpress).

Click the USBXpress Development Kit link in the Download for Windows 2000/XP/Server 2003/Vista/Win7 section to download the USBXpress drivers. Run the installer and follow the steps to install the software to the desired location. The default installation directory is `C:\SiLabs\MCU\USBXpress_SDK`.

Further installation instructions for the WinCE drivers can be found in the *ReadMe.txt* file contained inside the driver package.

## 4. CP2102 Hardware Interface

The evaluation board is connected to a PC as shown in Figure 1.

1. Connect one end of the USB cable to a USB Port on the PC.
2. Connect the other end of the USB cable to the USB connector on the CP2102 evaluation board.
3. Connect one end of the RS232 serial cable to the DB-9 connector on the CP2102 evaluation board.
4. Connect the other end of the RS232 serial cable to the target serial device.

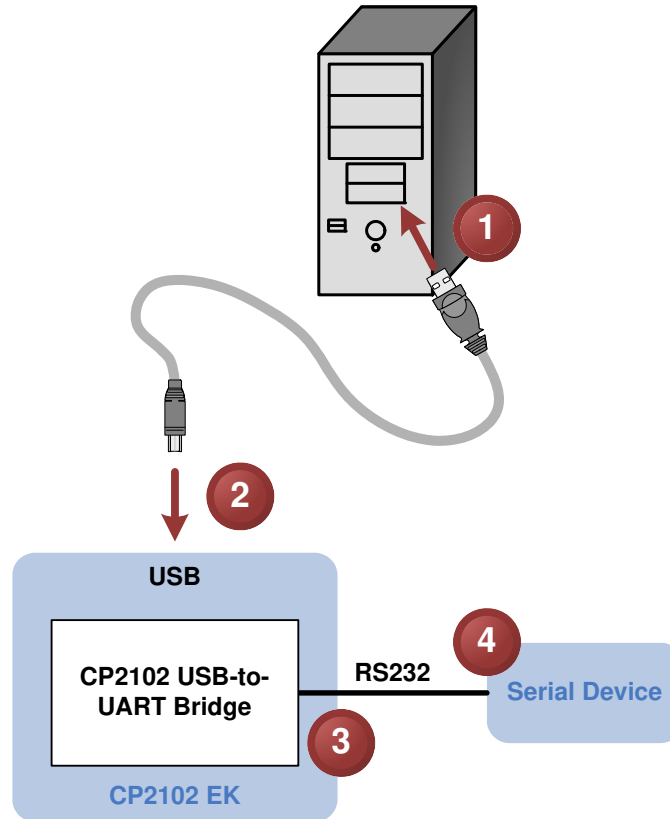


Figure 1. Hardware Setup



## 5. CP2102 Software Interface

If the Virtual COM Port drivers are used, the CP2102 will appear as a COM port in the Device Manager, as shown in Figure 2. The CP2102 will always use the lowest available COM port for operation. For instance, if COM ports 1 and 2 are in use by other peripherals and applications, the CP2102 will use COM 3.

The CP2102 functions identically to a COM port from the reference point of both the host application and the serial device, and it can support serial device control requests defined in the Microsoft Win32<sup>®</sup> Communications API. Examples for how to communicate with the device as a serial COM port are included in AN197 on the [www.silabs.com/interface-appnotes](http://www.silabs.com/interface-appnotes) page or in the SDK.

If the USBXpress drivers are used, the CP2102 will appear as a USB USBXpress device as shown in Figure 2. Examples for how to communicate with the device using the USBXpress interface are included in AN169 on the [www.silabs.com/interface-appnotes](http://www.silabs.com/interface-appnotes) page.

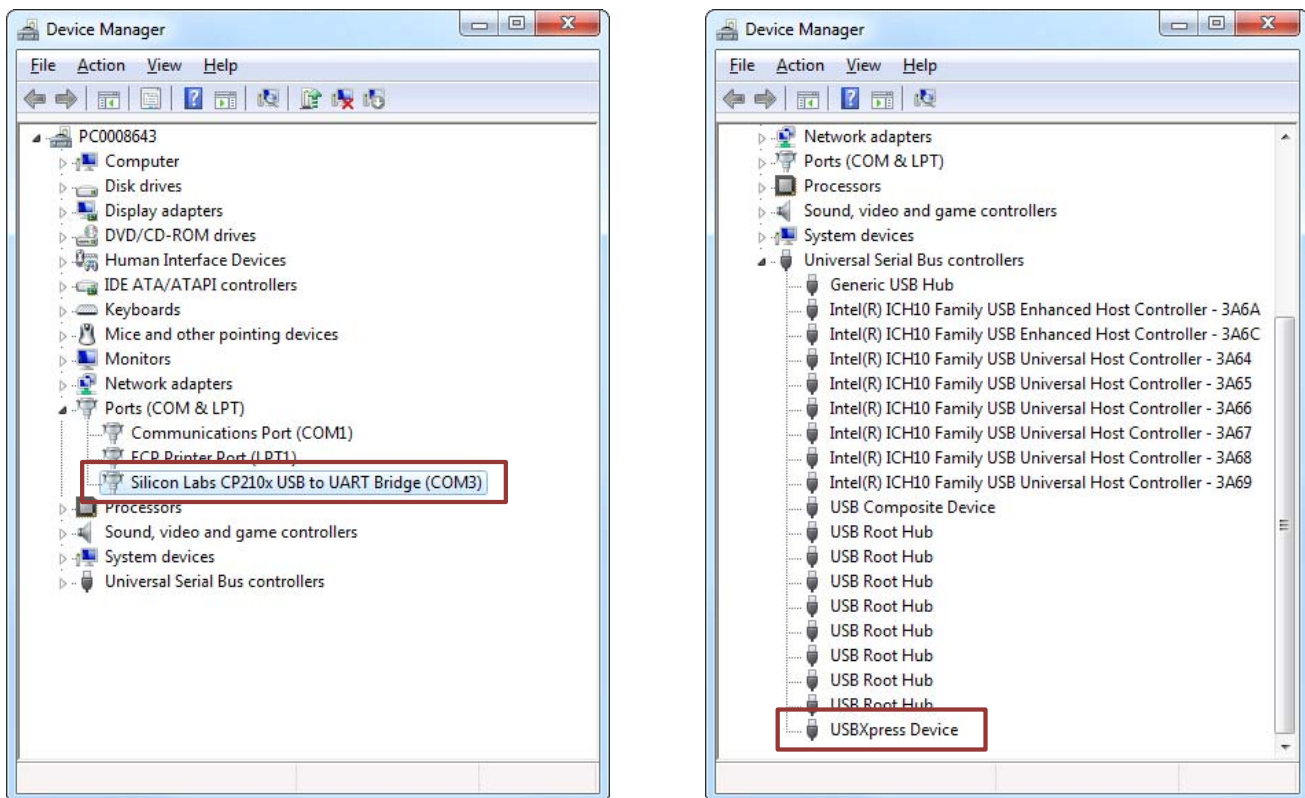


Figure 2. CP2102 in Device Manager

# CP2102-EK

## 6. Target Board

The CP2102 Evaluation Kit includes an evaluation board with a CP2102 device pre-installed for evaluation and preliminary software development. Numerous input/output (I/O) connections are provided to facilitate prototyping using the evaluation board. Refer to Figure 3 for the locations of the various I/O connectors.

- J1 DB9 connector for RS232 interface
- J2 UART signal access connector
- J3 USB connector for USB interface
- J4 Not used
- D1 SUSPEND indicator LED

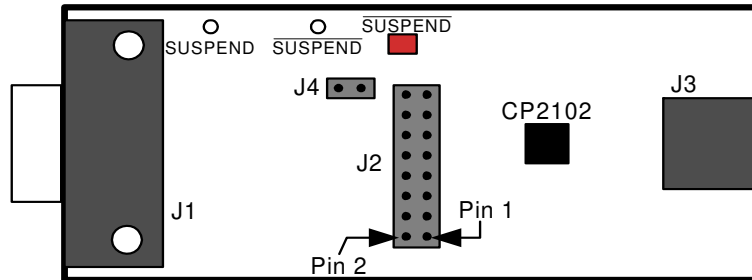


Figure 3. CP2102 Evaluation Board

### 6.1. Universal Serial Bus (USB) Interface (J3)

A Universal Serial Bus (USB) connector (J3) is provided to facilitate connections to the USB interface on the CP2102. See Table 1 for the USB pin definitions.

Table 1. USB Connector Pin Descriptions

Pin #	Description
1	VBUS
2	D-
3	D+
4	GND (Ground)

## 6.2. UART Signals (J1, J2)

A RS232 transceiver circuit and DB-9 connector (J1) are provided on the evaluation board to connect the CP2102 virtual serial port to external serial devices. See Table 2 for the RS232 J1 pin descriptions. The J2 connector is provided to facilitate direct access to the CP2102's UART signals. Shorting blocks on J2 are required to connect the UART signals to J1. See Table 3 for J2 pin descriptions.

**Table 2. RS232 Pin Descriptions**

Pin	Signal	CP2102 Direction	Description
1	DCD	Input	Data Carrier Detect
2	RXD	Input	Receive Data
3	TXD	Output	Transmit Data
4	DTR	Output	Data Terminal Ready
5	GND		Ground
6	DSR	Input	Data Set Ready
7	RTS	Output	Request to Send
8	CTS	Input	Clear to Send
9	RI	Input	Ring Indicator

**Table 3. J2 Pin Descriptions**

Pins	Signal	CP2102 Direction	Description
1-2	TXD	Output	Transmit Data
3-4	RXD	Input	Receive Data
5-6	DTR	Output	Data Terminal Ready
7-8	RI	Input	Ring Indicator
8-10	DCD		Data Carrier Detect
11-12	DSR	Input	Data Set Ready
13-14	CTS	Input	Clear to Send
15-16	RTS	Output	Request to Send

## 7. Schematic

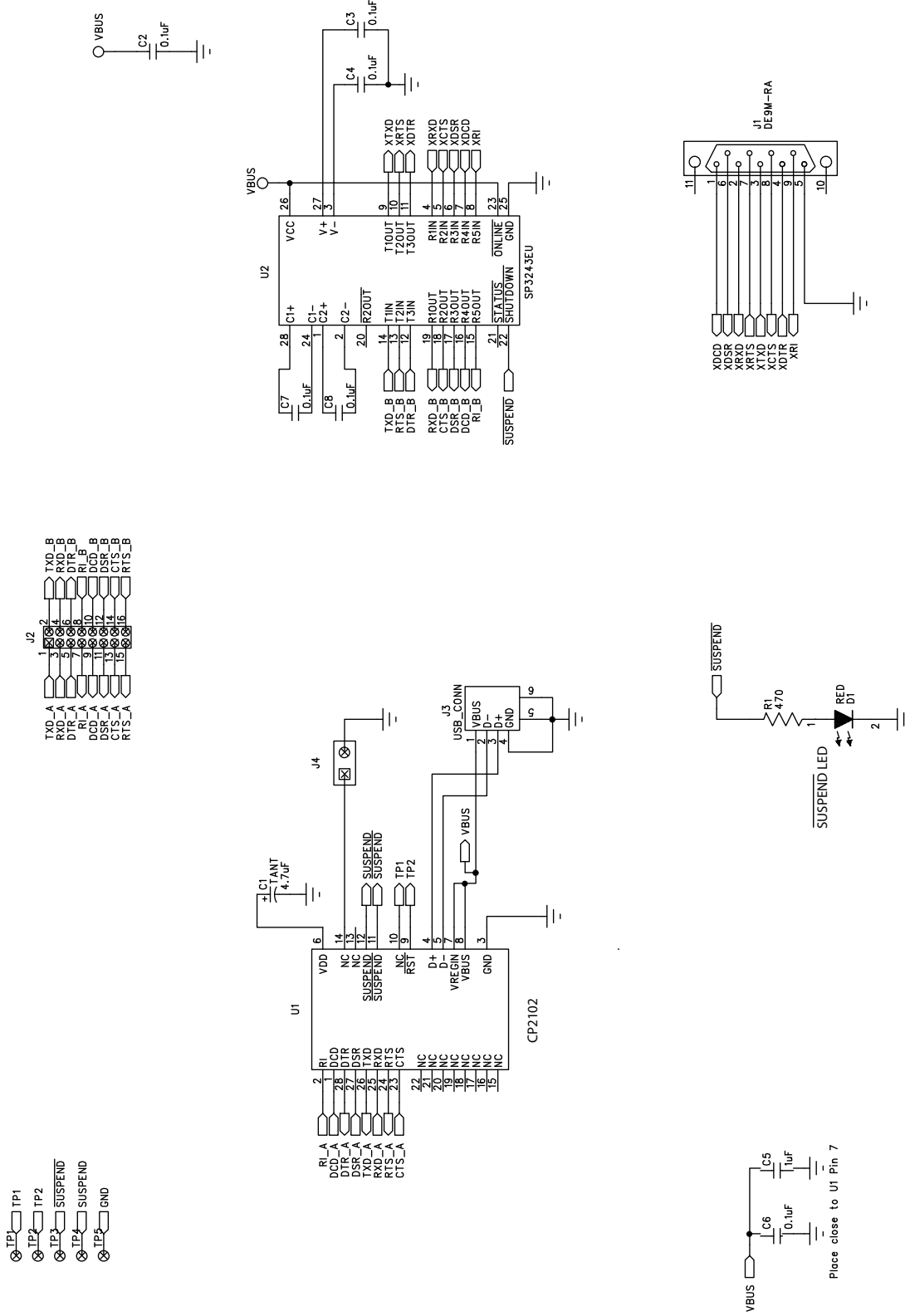


Figure 4. CP2102 Evaluation Board Schematic

## DOCUMENT CHANGE LIST

### Revision 0.1 to Revision 0.2

- Updated Figure 3 on page 4:
  - Pin 1 and Pin 2 labels have been corrected

### Revision 0.2 to Revision 0.3

- Updated CD-ROM contents in Section “1. Kit Contents” to correspond with versions 4.0 and later of the CP210x Drivers and Product Information CD-ROM.
- Updated Section “3. Software Setup” to include installation instructions for software included on versions 4.0 and later of the CP210x Drivers and Product Information CD-ROM.
- Added installation instructions for USBXpress Driver Development Kit in Section “3. Software Setup”.
- Added screenshots in Section “5. CP2102 Software Interface”, for the Device Manager window after correct installation of driver software.

### Revision 0.3 to Revision 0.4

- Updated “3. Software Setup” on page 1.

### Revision 0.4 to Revision 0.5

- Updated “1. Kit Contents” to change CD-ROM to DVD.
- Added “2. Relevant Documentation”.
- Updated “3. Software Setup” to point to the drivers on the website.
- Updated Figure 1 and Figure 2.



Silicon Labs

# Simplicity Studio™ 4



## Simplicity Studio

One-click access to MCU and wireless tools, documentation, software, source code libraries & more. Available for Windows, Mac and Linux!



IoT Portfolio

[www.silabs.com/loT](http://www.silabs.com/loT)



SW/HW

[www.silabs.com/simplicity](http://www.silabs.com/simplicity)



Quality

[www.silabs.com/quality](http://www.silabs.com/quality)



Support and Community

[community.silabs.com](http://community.silabs.com)

### Disclaimer

Silicon Labs intends to provide customers with the latest, accurate, and in-depth documentation of all peripherals and modules available for system and software implementers using or intending to use the Silicon Labs products. Characterization data, available modules and peripherals, memory sizes and memory addresses refer to each specific device, and "Typical" parameters provided can and do vary in different applications. Application examples described herein are for illustrative purposes only. Silicon Labs reserves the right to make changes without further notice and limitation to product information, specifications, and descriptions herein, and does not give warranties as to the accuracy or completeness of the included information. Silicon Labs shall have no liability for the consequences of use of the information supplied herein. This document does not imply or express copyright licenses granted hereunder to design or fabricate any integrated circuits. The products are not designed or authorized to be used within any Life Support System without the specific written consent of Silicon Labs. A "Life Support System" is any product or system intended to support or sustain life and/or health, which, if it fails, can be reasonably expected to result in significant personal injury or death. Silicon Labs products are not designed or authorized for military applications. Silicon Labs products shall under no circumstances be used in weapons of mass destruction including (but not limited to) nuclear, biological or chemical weapons, or missiles capable of delivering such weapons.

### Trademark Information

Silicon Laboratories Inc.®, Silicon Laboratories®, Silicon Labs®, SiLabs® and the Silicon Labs logo®, Bluegiga®, Bluegiga Logo®, Clockbuilder®, CMEMS®, DSPLL®, EFM®, EFM32®, EFR®, Ember®, Energy Micro, Energy Micro logo and combinations thereof, "the world's most energy friendly microcontrollers", Ember®, EZLink®, EZRadio®, EZRadioPRO®, Gecko®, ISOModem®, Precision32®, ProSLIC®, Simplicity Studio®, SiPHY®, Telegesis, the Telegesis Logo®, USBXpress® and others are trademarks or registered trademarks of Silicon Labs. ARM, CORTEX, Cortex-M3 and THUMB are trademarks or registered trademarks of ARM Holdings. Keil is a registered trademark of ARM Limited. All other products or brand names mentioned herein are trademarks of their respective holders.



**SILICON LABS**

Silicon Laboratories Inc.  
400 West Cesar Chavez  
Austin, TX 78701  
USA

<http://www.silabs.com>