SILICON LABORATORIES

CP2103-EK

CP2103 EVALUATION KIT USER'S GUIDE

1. Kit Contents

The CP2103 Evaluation Kit contains the following items:

- CP2103 Evaluation Board
- CP210x Virtual COM Port Drivers CD-ROM
- RS232 Serial Cable
- USB Cable
- CP2103 Evaluation Kit User's Guide (this document)

2. Installing Drivers

The CD-ROM included with the CP2103EK Evaluation Kit contains the Virtual COM Port Drivers for the CP210x family of devices. The following files are included on the CD-ROM:

- Driver unpack utility (CP210x_Drivers.exe)
- Version information document (Readme.txt)
- Documentation Directory
  - CP2103 data sheet
  - CP2103 Evaluation Kit User's Guide
  - CP210x Device Customization Guide (AN144)
  - Serial Communications Guide for the CP210x (AN197)
  - CP210x Baud Rate Support (AN205)
  - USB Driver Customization (AN220)
  - Port Configuration and GPIO for CP210x (AN223)
  - Software Directory
    - CP210x Device Customization Software (AN144SW)
    - CP210x Serial Communications Examples (AN197SW)
    - CP210x Baud Rate Support Software (AN205SW)
    - USB Driver Customization Software (AN220SW)
    - CP210x Port Configuration and GPIO Examples (AN223SW)

2.1. Extract all Virtual COM Port Drivers

Initial software setup requires running **CP210x_Drivers.exe** to extract all of the device drivers (Windows and Macintosh). After following the prompts, the utility will copy the driver files to a specified directory or the default directory, "C:\SiLabs\MCU\CP210x". Each set of drivers will be extracted to an appropriately named directory, for example WIN and MACX.

2.2. Virtual COM Port Driver Installation using the PreInstaller with Windows 98 SE/2000/XP

The CP2103EK Evaluation Kit includes a PreInstaller that can be used with Windows 98 SE/2000/XP. The VCOM driver files included in this installation have not been certified by Microsoft and warnings will appear when using Windows XP. Follow these steps to install the VCOM drivers with the PreInstaller:

1. Browse to the WIN_PREINSTALL directory created in Section 2.1.
2. Run PreInstaller.exe. This program will copy the driver files to the PC's "Program Files" directory and then will register the driver files so the board will be recognized when it is connected.
3. Connect the USB cable between the host computer and the CP2103 Evaluation Board.
4. Windows will open a "Found New Hardware Wizard" window.
5. Press "Next" after selecting the (Recommended) option.
6. Windows Logo testing warnings may appear. Press the "Continue Anyway" button.
7. Press "Finish" to finish installing the "CP210x USB Composite Device".
8. Windows will open a second "Found New Hardware Wizard" window.
9. Press "Next" after selecting the (Recommended) option.
10. Windows Logo testing warnings may appear. Press the "Continue Anyway" button.
11. Press "Finish" to finish installing the "CP210x USB Bridge Controller".

2.3. Virtual COM Port Driver Installation Macintosh

To install the Macintosh OS-X virtual COM port driver, extract the **cardinal-osx-V1_00e-release.zip** file located in the MACX directory created in Section 2.1. Next, run the extracted file **SLAB_USBtoUART Installer**. To uninstall the driver, run the extracted file **SLAB_USBtoUART Uninstaller**.

Macintosh OS-9 virtual COM port drivers are currently available by request only. To obtain a copy of these drivers contact a Silicon Laboratories MCU Tools Support representative at www.silabs.com.

2.4. Virtual COM Port Driver Installation Linux 2.40

The Linux virtual COM port driver included with the CP2103EK evaluation kit support Linux versions 2.40 and later. To install the driver, extract the **cardinal-redhat9-V0_81b.tar.gz** file located in the LINUX directory created in Section 2.1. Next, run the extracted file **load_mcci_usb**. To uninstall the driver, run the extracted file **unload_mcci_usb**.

3. CP2103 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 CP2103 evaluation board.
3. Connect one end of the RS232 serial cable to the DB-9 connector on the CP2103 evaluation board.
4. Connect the other end of the RS232 serial cable to the target serial device.

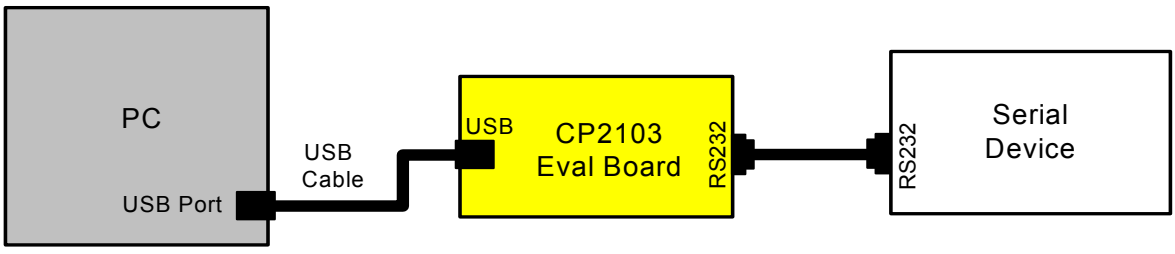

Figure 1. Hardware Setup

4. CP2103 Software Interface

Once connected to a USB port as described in section 3.0, the CP2103 will appear as a COM port in the Device Manager. The CP2103 will always use the lowest available COM port for operation. For instance, if COM ports 1 through 3 are in use by other peripherals and applications, the CP2103 will use COM 4.

The CP2103 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® Communications API.

5. Target Board

The CP2103 Evaluation Kit includes an evaluation board with a CP2103 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 2 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, J7	Power Connector
J5, J6	GPIO Access Connector
D0–D3	Green GPIO LEDs
D4	Red SUSPEND indicator LED

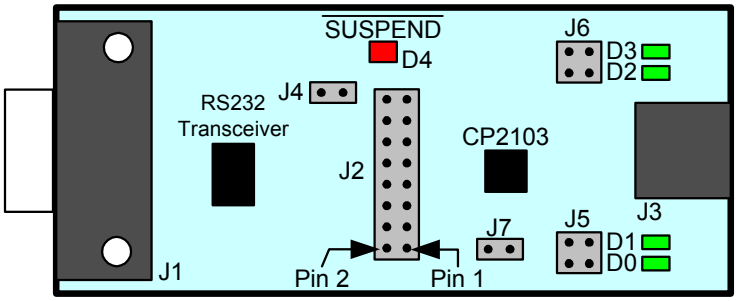

Figure 2. CP2103 Evaluation Board

5.1. LED Headers (J5, J6)

Connectors J5 and J6 are provided to allow access to the GPIO pins on the CP2103. Place shorting blocks on J5 and J6 to connect the GPIO pins to the four green LEDs D0 - D3. These LEDs can be used to indicate active communications through the CP2103. Table 1 shows the LED corresponding to each header position.

Table 1. J5 and J6 LED Locations

LED	Pins
D0	J5[3:4]
D1	J5[1:2]
D2	J6[3:4]
D3	J6[1:2]

5.2. Universal Serial Bus (USB) Interface (J3)

A Universal Serial Bus (USB) connector (J3) is provided to facilitate connections to the USB interface on the CP2103. See Table 2 for the USB pin definitions.

Table 2. USB Connector Pin Descriptions

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

5.3. UART Signals (J1, J2)

A RS232 transceiver circuit and DB-9 connector (J1) are provided on the evaluation board to connect the CP2103 virtual serial port to external serial devices. See Table 3 for the RS232 J1 pin descriptions. The J2 connector is provided to facilitate direct access to the CP2103's UART signals. Shorting blocks on J2 are required to connect the UART signals to J1. See Table 4 for J2 pin descriptions.

Table 3. RS232 Pin Descriptions

Pin	Signal	CP2103 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 4. J2 Pin Descriptions

Pins	Signal	CP2103 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	Input	Data Carrier Detect
11-12	DSR	Input	Data Set Ready
13-14	CTS	Input	Clear to Send
15-16	RTS	Output	Request to Send

5.4. Power Connectors (J4, J7)

Two headers, J4 and J7, are included on the evaluation board to provide several power options. The following describes the function of each connector:

- J4 - Connects the CP2103 VDD (pin 6) to the main 3 volt net that powers the other components (4 green LEDs and RS-232 Sipex Part) on the board.
- J7 - Connects CP2103 VIO input (pin 5) to the main 3 volt net. Remove the shorting block to power VIO from an external source.

6. Schematic

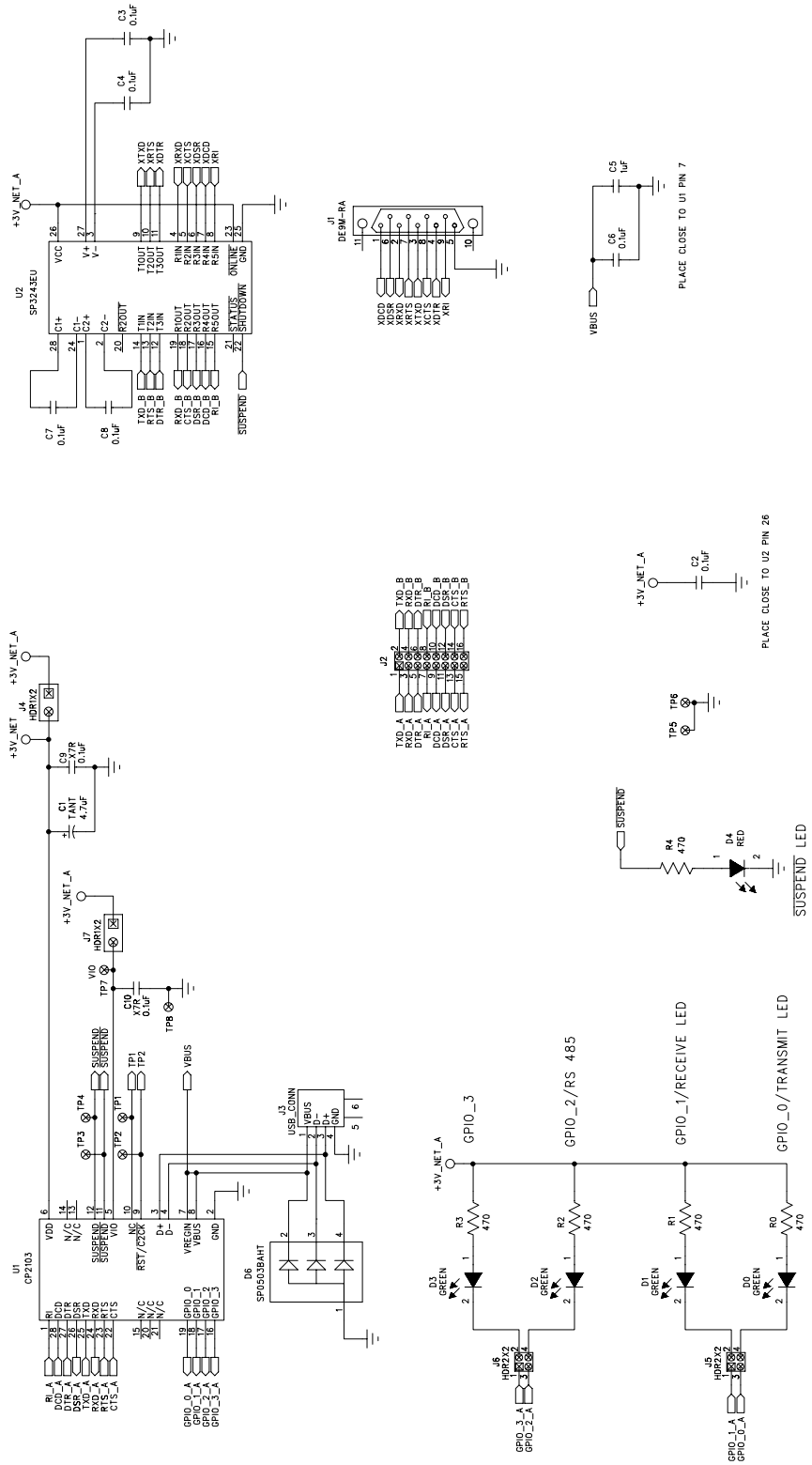

Figure 3. CP2103 Evaluation Board Schematic

NOTES:

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