USB to Quad Serial Ports Evaluation Board Description

version：1C

http://wch.cn

1. Overview

This evaluation board is used to demonstrate the functions related to USB to 4 serial chip CH344, includes USB high-speed interface chip CH344Q and USB full-speed interface chip CH344L.This evaluation supports TTL and RS232 level, can be used to test CH344 serial port and GPIO function, CH344Q provides 16 GPIOs and CH344L provides 12 GPIOs. It also provides send/receive indicators to indicate the status of the serial communication, TTL UART evaluation board of CH344 supports 3.3V serial communication.

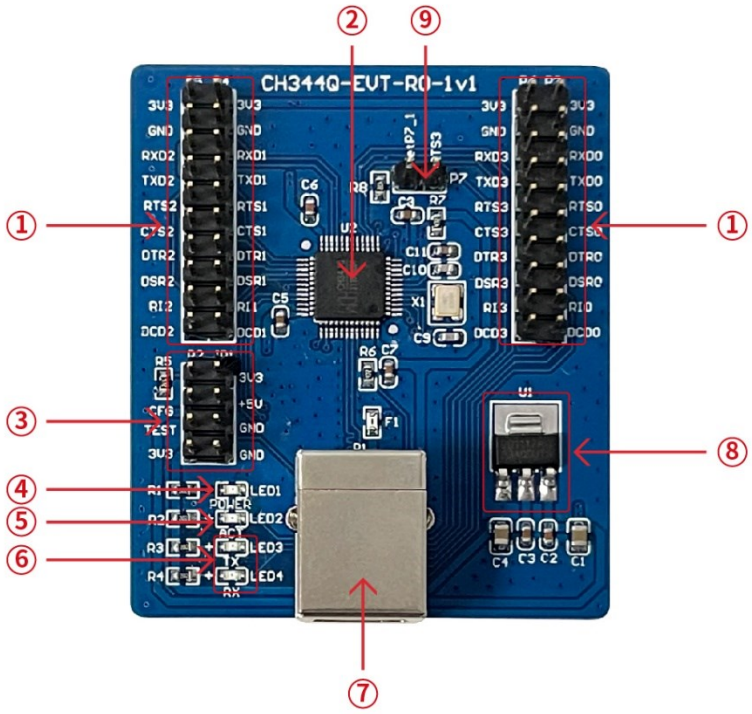
CH344 has a built-in EEPROM, the parameters of the chip can be configured through the dedicated configuration software CH34xSerCfg.exe, such as VID, PID, vendor information and product information string.

2. Evaluation board hardware

2.1. CH344Q to 4-channel TTL UART

Refer to CH344SCH.PDF document for evaluation board design.

The picture of the evaluation board is shown below:



Function description of each unit:

① : TTL UART 0/1/2/3, let out by connector

② : Master controller chip CH344Q

③ : JP1 provides 5V and 3.3V power output, JP1-CFG is used to configure whether to enable hardware flow control, configuration instructions are as follows.

CFG Pin voltage	Mode
0	Enable hardware flow control
NC/ 1	Disable hardware flow control

Note: JP1-3V3 is the output of the on-board 3.3V voltage conversion chip

④ : LED1-VCC power indicator led, indicates whether power is connected or not

⑤ : LED2-ACT pin indicator led, indicates USB configuration completion status

⑥ : LED3/LED4 UART send/receive indicator led, any serial port with data communication will indicate

⑦ : P1-USB interface, connects to USB host via USB cable

⑧ : U1-3.3V voltage conversion chip, convert VBUS of USB interface to 3.3V for the master chip power supply, it can also be designed to use an external 3.3V power supply directly to power CH344Q and UART peripherals

GPIO pins correspondence

MODEM Mode	GPIO Mode
CTS0	GPIO0
RTS0	GPIO1
CTS1	GPIO2
RTS1	GPIO3
CTS2	GPIO4
RTS2	GPIO5
CTS3	GPIO6
RTS3	GPIO7
TNOW0	GPIO8
TNOW1	GPIO9
TNOW2	GPIO10
TNOW3	GPIO11
DCD0	GPIO12

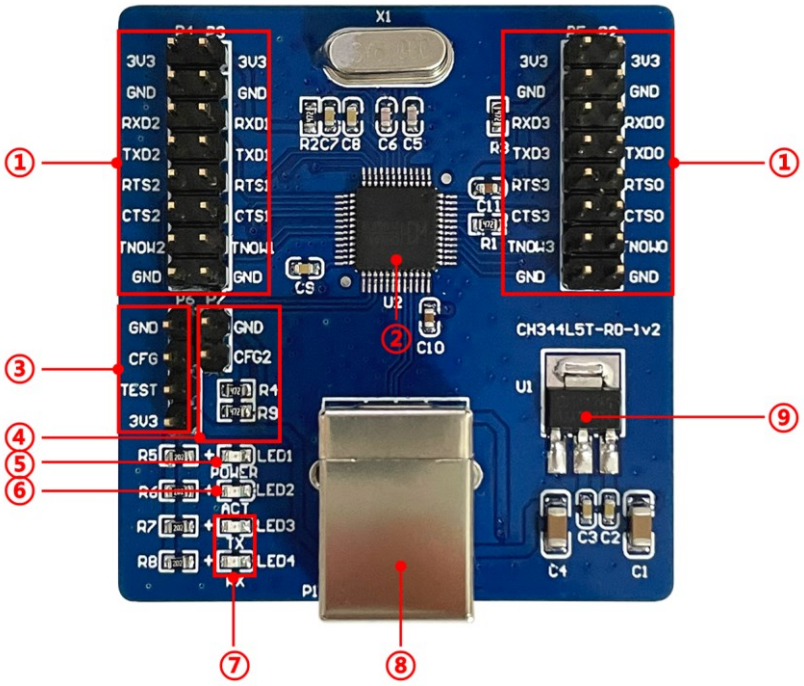
RI0	GPIO13
DSR0	GPIO14
DCD1	GPIO15

⑨ : P7 used for pin function interface, connects to USB host via USB cable

2.2. CH344L to 4-channel TTL UART

Refer to CH344SCH.pdf document for evaluation board design.

The picture of the evaluation board is shown below:



Function description of each unit:

① : TTL serial port 0/1/2/3, let out by connector

② : Master controller chip CH344L

③ : P6- provides 3.3V voltage output, P6-CFG is used to enable hardware flow control or not, description is as follow:

CFG pin voltage	Mode
0	Enable hardware flow control
NC/ 1	Disable hardware flow control

Note: P6-3V3 is the output of the on-board 3.3V voltage conversion chip

④ : P7 is used for pin function conversion, configuration instructions are as follows.

CFG2 pin voltage	Mode
0	During power-up, P7-CFG2 is shorted to P7-GN, all DTRx/ TNOWx pins are configured to DTR function.
NC/1	During power-up, CFG2 is high level or dangling, all DTRx/ TNOWx pins are configured to TNOW function.

⑤ : LED1-VCC power indicator led, indicates the power is connected or not

⑥ : LED2-ACT pin indicator led, indicates the configuration completion status of USB

⑦ : LED3/ LED4-serial send/receive indicator led, any serial port with data communication will indicate

⑧ : P1-USB interface, connects to USB host via USB cable

⑨ : U1-3.3V voltage conversion chip, converting VBUS of USB interface to 3.3V for the master chip power supply, it can also be designed to use an external 3.3V power supply directly to CH344L and serial port peripherals

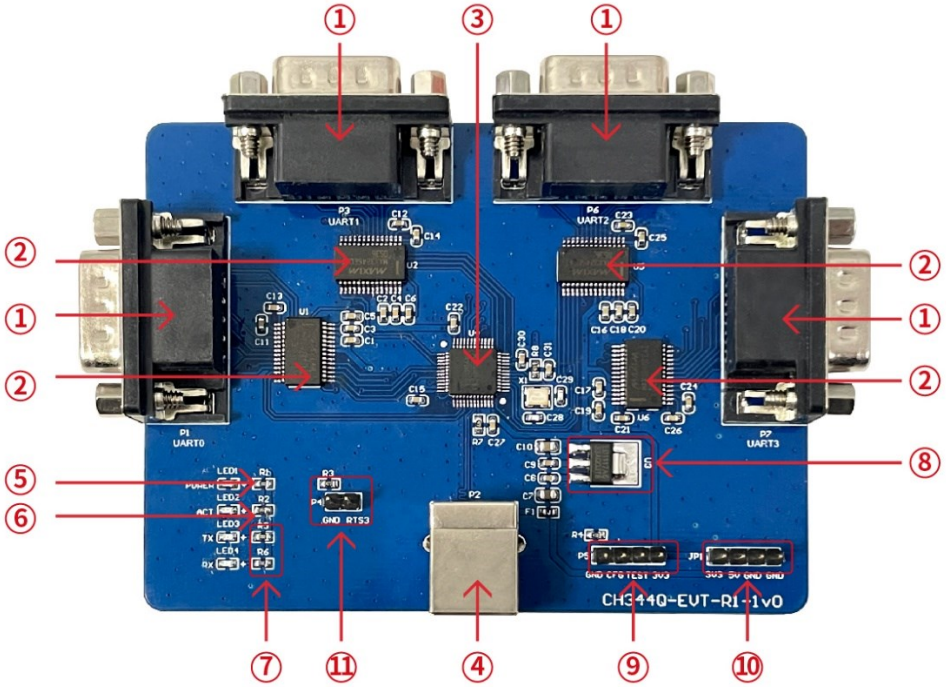
GPIO pins correspondence:

MODEM Mode	GPIOMode
CTS0	GPIO0
RTS0	GPIO1
CTS1	GPIO2
RTS1	GPIO3
CTS2	GPIO4
RTS2	GPIO5
CTS3	GPIO6
RTS3	GPIO7
TNOW0	GPIO8
TNOW1	GPIO9
TNOW2	GPIO10
TNOW3	GPIO11

2.3. CH344Q to 4-channel RS232 UART

Refer to CH344SCH-RS232.pdf document for evaluation board design.

The picture of the evaluation board is shown below:



Function description of each unit:

① : RS232 UART 0/1/2/3, let out by DB9 interface.

② : RS232 level conversion chip

③ : U4- master controller chip CH344Q

④ : P2-USB interface, connects to USB host via USB cable

⑤ : LED1-VIO power indicator led, indicates whether VIO is connected to power

⑥ : LED2-ACT pin indicator led, indicates USB configuration completion status

⑦ : LED3/LED4- UART send/receive indicator led, any UART with data communication will indicate

⑧ : U3-3.3V voltage conversion chip, converting VBUS of USB interface to 3.3V for the master chip power supply, it can also be designed to use an external 3.3V power supply directly to CH344Q and serial port peripherals

⑨ : P5- provides 5V and 3.3V power output, P5-CFG is used to configure the hardware flow control, configuration is as follow:

CFG pin voltage	Mode
0	Enable hardware flow control
NC/1	Disable hardware flow control

Note: JP1-3V3 is the output of the on-board 3.3V voltage conversion chip

⑩ : JP1- provides 5V and 3.3V power output

⑪ : P7 is used to switch the pin functions, configuration is as follow:

RTS3 pin voltage	Mode
0	PIN14 switch to DCD3 pin function, PIN15 switch to RI3 pin function, PIN16 switch to DSR3 pin function
NC/1	PIN14 switch to ACT/CFG pin function, PIN15 switch to TX_S pin function, PIN16 switch to RX_S pin function