司南导航 | QinNav 钦天导航

PRODUCT SPECIFICATION

产品规范

适用于 For

QD302 数传模块
QD302 DataLink Module

REVISION HISTORY / 修订历史

Revision/版本	Modification/更改	Date/日期
1.0	New Release / 新发	2023/1/13

DIRETORY / 目录

Figures

Tables

1. INTRODUCTION / 简介

QD302 is a high performance wireless datalink module that specially designed for GNSS differential data transmission by QinNav Technology Ltd. The advanced technology of using advanced CSS digital modulation and demodulation technology, integrating receiving and transmitting functions make it suitable for RTK real time data transmission. It has the advantage of stable output power, high receiving sensitivity, low error rate and strong anti-interference ability. Besides, its characteristics of small size, low power consumption, better electromagnetic compatibility, pin type interface, and modular design are in favor of system integration.

QD302 数传模块是上海钦天导航技术有限公司专为 GNSS 差分数据传输设计的高性能数传模块，采用先进的 CSS 数字调制解调技术，集接收和发射功能于一体，适用于 RTK 实时数据传输；并具有输出功率稳定、接收灵敏度高、低误码率、抗干扰能力强等优点，确保恶劣环境下能正常工作。它体积小、功耗低、电磁兼容性好、贴片式接口设计、模块化设计，便于各种系统集成。

1.1. Product Characteristics / 产品特性

Table 1. Product Characteristics / 产品特性

Characteristics特性	QD302
Channel Spacing **信道间隔**	125 KHz / 250 KHz / 500 KHz
Work Pattern **工作模式**	Half duplex 半双工
Working Frequency **工作频率**	EU：863-870MHz US：902-928MHz
Certification **认证**	CE / FCC
Modulation System **调制方式**	CSS
Air Baud Rate **空中波特率**	500/11000/12500/15500/18000 bps/自定义

Protocol Type **协议类型**	LoRa	
Serial Port Baud Rate **串口波特率**	4800/9600/19200/38400/115200 bps	
Electrical Characteristics **电气特性**	**Power supply range** **供电范围**	+3.3 V~+3.6 V DC
	Receive Current **接收电流**	＜0.1 A
	Emission Current **发射电流**	＜0.2 A
	Transmit Power **发射功率**	EU：14 dBm±1 dB US：17 dBm±1 dB
Physical Characteristics **物理特性**	**Communication Interface** **通讯接口**	2x16 Pin Pin Pitch 1.27 mm (引脚间距1.27 mm)
	Antenna Interface **天线接口**	IPEX-K（IPEX母头）
	Size（With Connectors) **尺寸(含接头)**	22x17x3 mm
	Weight **重量**	5 g
Environmental Characteristics **环境特性**	**Working Temperature** **工作温度**	-40 ℃~+85 ℃
	Storage Temperature **存储温度**	-45 ℃~+85 ℃

2. QD302 Product Size / QD302 尺寸

In this section, three-side views and the dimension of QD302 is provided for customers' further hardware design and installation.

本节提供了 QD302 的三视图和对应的物理尺寸，便于用户进一步的系统硬件设计和安装。

Figure 1. QD302 Product Photo / QD302 实物图

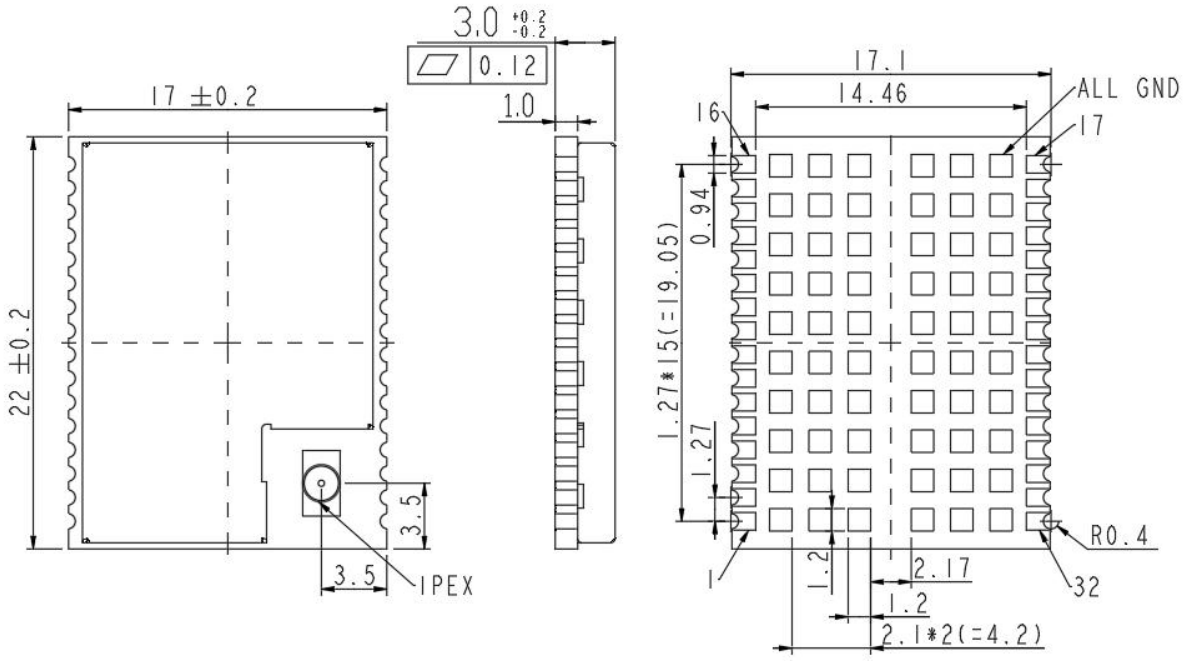

Figure 2. QD302 Dimension View / QD302 三视图

3. PIN Arrangement and Definition / 针脚标识和定义

QD302 has 32-Pin, the pin pitch is 1.27mm.

QD302 有 32 针脚，针脚间距是 1.27mm。

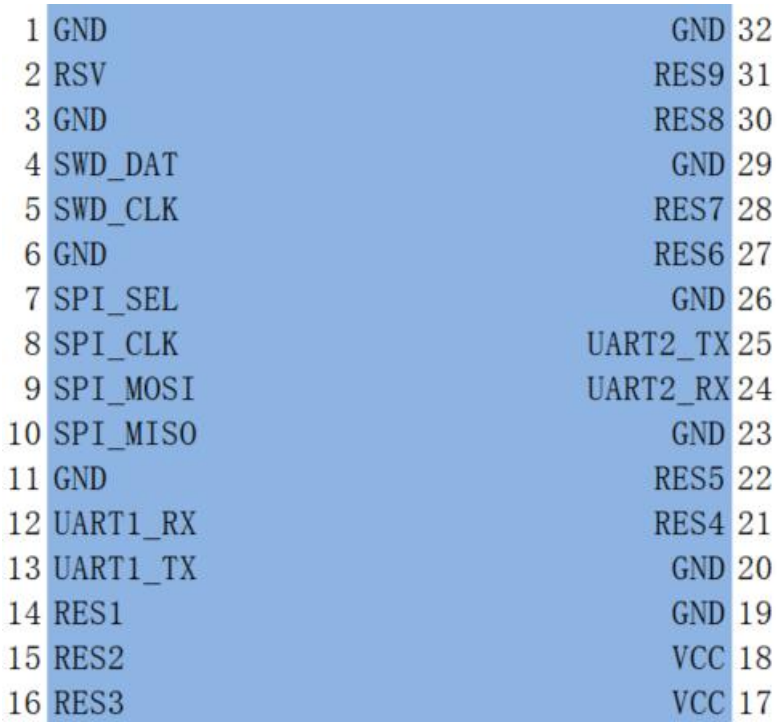

Figure 3. QD302 Includes 32-Pin Pad / QD302 包括32连接焊盘

Table 2. Pin Definition of QD302 32-Pin Pad / QD302 32针脚焊盘的针脚定义

PIN	SIGNAL	TYPE	DESCRIPTION	
1	GND	GND	Ground Reference	系统接地
2	RSV	/	Reserve	保留管脚
3	GND	GND	Ground Reference	系统接地
4	SWD_DAT	I/O	SWD Data	SWD数据
5	SWD_CLK	O	SWD_CLK	SWD时钟信号
6	GND	GND	Ground Reference	系统接地
7	SPI_SEL	O	SPI_SEL	SPI总线片选信号
8	SPI_CLK	O	SPI_CLK	SPI总线时钟信号
9	SPI_MOSI	O	SPI_MOSI	SPI主输出从输入信号
10	SPI_MISO	I	SPI_MISO	SPI主输入从输出信号
11	GND	GND	Ground Reference	系统接地
12	UART1_RX	I	UART1_RX	串口1输入
13	UART1_TX	O	UART1_TX	串口1输出
14~	RES	I/O	General-purpose input/output	通用输入输出

PIN	SIGNAL	TYPE	DESCRIPTION	
16				
17~18	VCC	PWR	POWER	系统电源
19~20	GND	GND	Ground Reference	系统接地
21~22	RES	IO	General-purpose input/output	通用输入输出
23	GND	GND	Ground Reference	系统接地
24	UART2_RX	I	UART2_RX	串口2输入
25	UART2_TX	O	UART2_TX	串口2输出
26	GND	GND	Ground Reference	系统接地
27~28	RES	I/O	General-purpose input/output	通用输入输出
29	GND	GND	Ground Reference	系统接地
30~31	RES	I/O	General-purpose input/output	通用输入输出
32	GND	GND	Ground Reference	系统接地

Note: QD302 only has COM1 and COM2 serial ports, but only COM1 supports firmware upgrade.

注：QD302 只有 COM1 和 COM2 的两个串口，但是仅 COM1 支持固件升级。

3.1. Remarks / 说明

1. Electronic characteristic / 电气特性

UART1_TX / RX, UART2TX / RX are LVCMOS 3.3V electrical standard.

UART1_TX/RX, UART2TX/RX 为 LVCMOS 3.3V 电气标准。

Table 3. LVCMOS 3.3V Electrical Standard / LVCMOS 3.3V电气标准

Symbols 符号	Description 描述	Min 最小	Max 最大
VIH	Input high voltage 输入高电压	2V	3.6V
V_{IL}	Input low voltage 输入低电压	-0.3V	0.8V
V_{OH}	High-level output voltage	2.9V	--

	高电平输出电压		
V_{OL}	Low-level output voltage 低电平输出电压	--	0.4V
I_{OH}	Sourcing current 拉电流	8mA	
I_{OL}	Sinking current 灌电流	8mA	

2. Absolute maximum rating is -0.3 V~3.6 V of following signals:

所能承受电压的最大值范围是-0.3V~3.6V 的信号如下：

UART1_TX / RX , UART2_TX / RX .

3. USB

Currently，QD302 has no function of full USB devices.

QD302 目前暂时不支持全速 USB。

4. VCC

Main power supply, voltage range is 3.3VDC~3.6V DC. Voltage ripple and spike requirement: <100mV

主供电电源（输入），电压范围：3.3V~3.6V（直流）。电压纹波和尖峰脉冲需求：<100mV。

5. Thermal / 散热

QD302 need use heat dissipation for fever.

QD302 需要设计良好的散热设计来保障模块的正常运行。

4. Application Connection Example / 应用链接示例

In this section, an application connection example of QD302 datalink board is presented via specific schematic diagrams. The instruction of these diagrams, you could easily build the communication circuits between QD302 and other terminals such as PC, GPRS or Bluetooth module, and some other devices with an UART.

本部分以具体电路的形式提供一个 QD302 数传模块应用连接示例。参照下面的图示，您可以很方便建立 QD302 数传模块和其他终端（如 PC，GPRS 模块，蓝牙模块或其他带有 UART 的设备）之间的通讯电路。

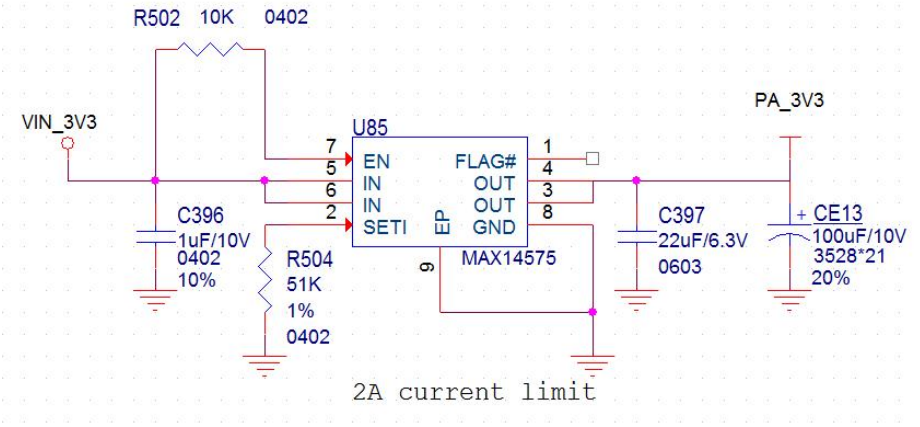

Figure 4. QD302 Limiting Current / QD302限流设计示意

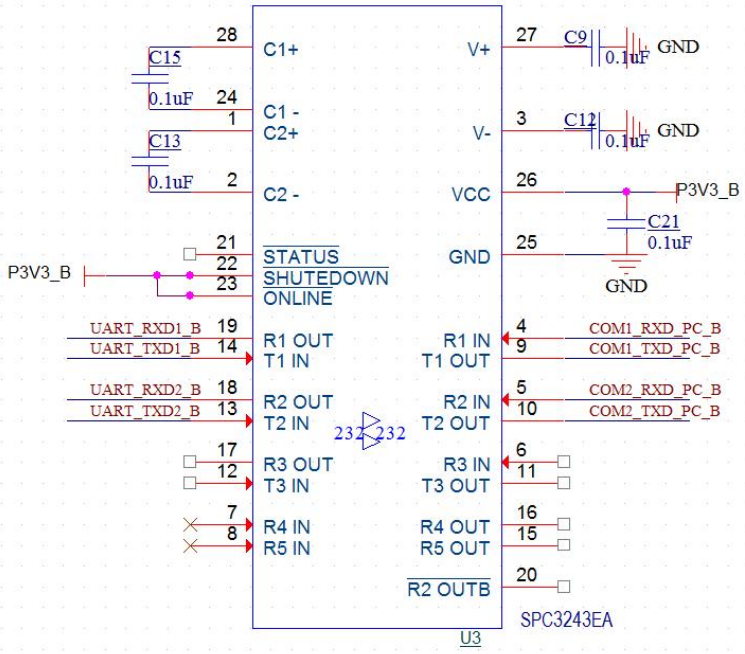

Figure 5. Connections between COM and other Devices with an UART / QD302 COM与其他使用UART接口的设备之间的连接原理图

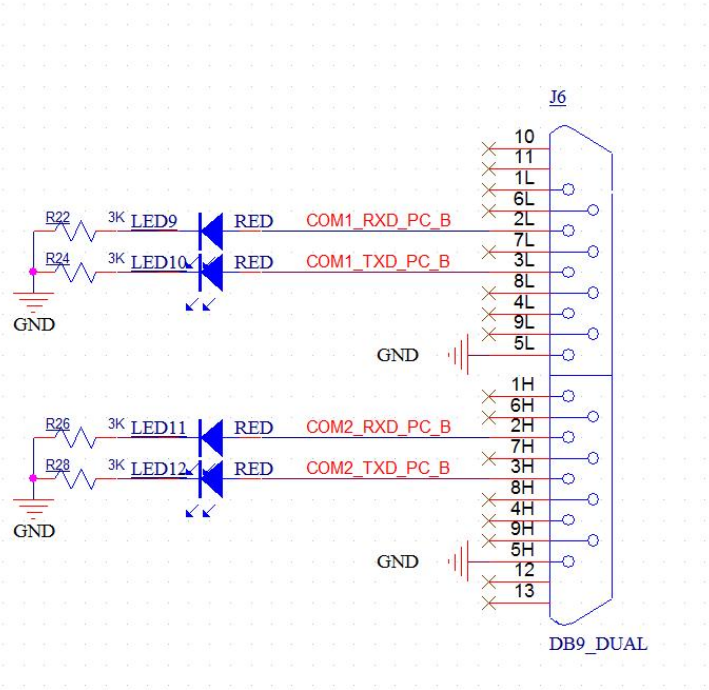

Figure 6. Connection of QD302 COM Connector to PC / QD302 COM与电脑连接原理图