RHF76-052

RHF76-052 硬件设计手册

V0.1

文档信息

Info	Content
关键字	*Ai-Thinker, RHF76-052, UART, Modem, Upgrade, Hardware, Reference design*
概括	本文档是对 RHF76-052 UART 调制解调器硬件的描述。

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1 介绍

RHF76-052 是深圳市安信可科技有限公司 LoRaWAN™串调制解调器，支持 LoRaWAN 通信。 这个调制解调器内置 LoRaWAN 协议栈。 客户可以使用主机 MCU 通过简单的 AT 命令来控制此调制解调器。 使用先进和简单的命令可快速开发产品。

本文档旨在帮助客户使用 RHF76-052 串口调制解调器快速设置其硬件平台。 RHF76-052 使用串口去引导固件升级。

RHF76-052 — 串口输入 AT 指令, 串口升级

2 管脚定义

Table 2-1 2 管脚定义

编号	名字	类型	描述和应用
1	VCC	-	为模块提供电压
2	GND	-	地
3	PA8	I/O	GPIO_PA8[2]
4	PA9	I/O	GPIO_PA9; 模组的 UART1_TX 用来固件升级
5	PA10	I/O	GPIO_PA10; 模组的 UART1_RX 用来固件升级
6	NSS	I/O	GPIO_PB12
7	SCK	I/O	GPIO_PB13
8	MISO	I/O	GPIO_PB14
9	MOSI	I/O	GPIO_PB15
10	USART1_CTS	I/O	USART1_CTS[1] from MCU; GPIO_PA11;
11	USART1_RTS	I/O	USART1_RTS[1] from MCU; GPIO_PA12;
12	SWDIO	I/O	SWIM 的 SWDIO 用来程序下载
13	SWCLK	I/O	SWIM 的 SWCLK 用来程序下载
14	PA15	I/O	Boot_EN (GPIO_PA15),连接到切换开关以进入用于固件升级的 DFU 模式。
15	PB3	I/O	GPIO_PB3
16	PB4	I/O	状态 LED（GPIO_PB4）触发，连接到外部 LED 显示 LoRaWAN 处理状态
17	NC	-	连接到地线
18	NC	-	连接到地线
19	NC	-	连接到地线

编号	名字	类型	描述和应用
20	PA3/ADC3	I/O	GPIO_PA3
21	PB5	I/O	状态 LED（GPIO_PB5）触发，连接外部 LED，保留
22	USART1_TX	I/O	模组的 USART1_TX，连接到外部 MCU 的 RXD
23	USART1_RX	I/O	模组的 USART1_RX，连接到主机 MCU 的 TXD
24	I2C_SCL	I/O	GPIO_PB8
25	I2C_SDA	I/O	GPIO_PB9
26	PC13/Wkup2	I/O	GPIO_PC13
27	NRST	I	触发模组复位
28	PA0/AD0	I/O	GPIO_PA0
29	GND	-	地
30	RFIO_HF	-	高频带 RF 输入/输出，即 868MHz / 915MHz
31	GND	-	地
32	RFIO_LF	-	低频带 RF 输入/输出，即 434MHz / 470MHz
33	GND	-	地

注意: (1) 未来的固件版本支持可选的握手线。

(2) 当前的版本外部 MCU 不能通过串口控制模块 GPIO 管脚。
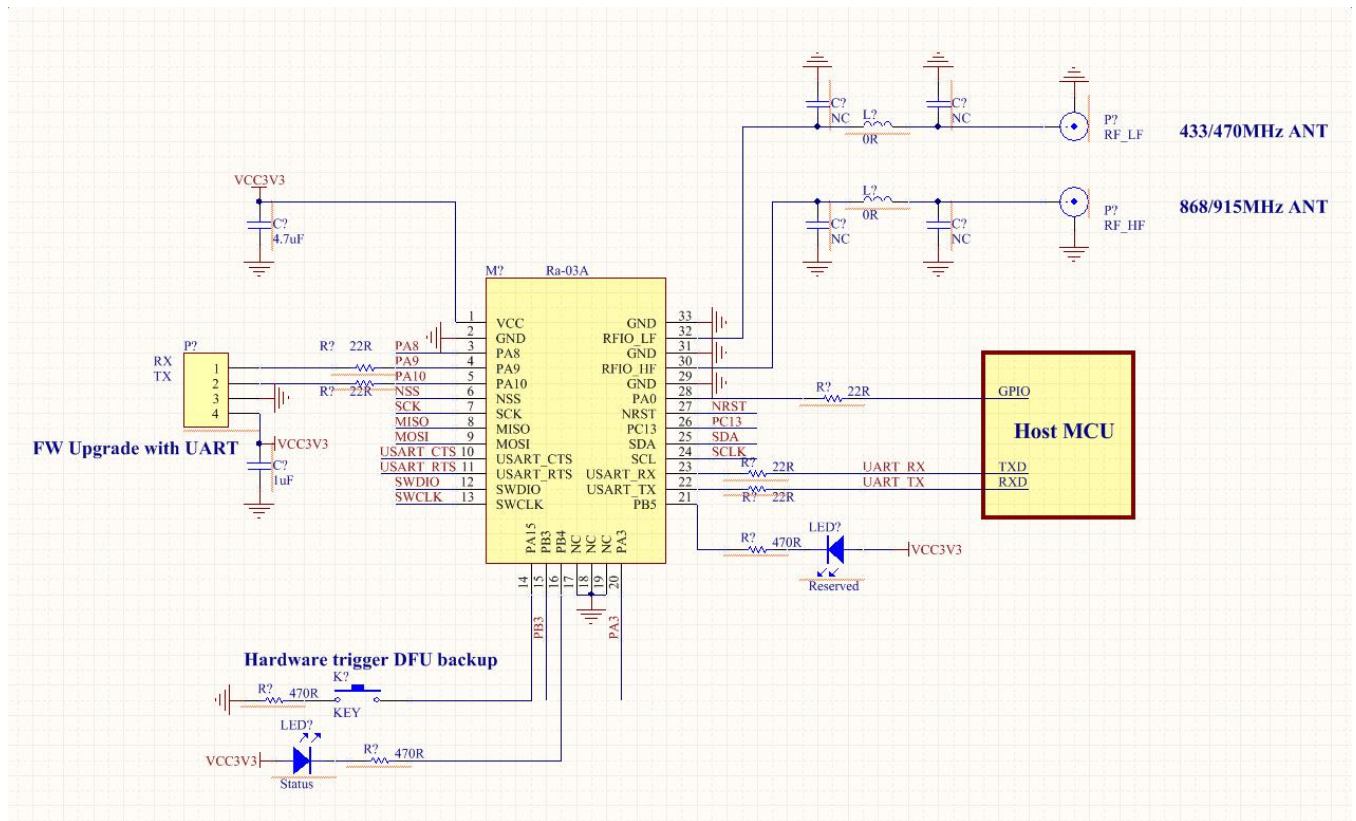
3 硬件设计参考

Figure 1 RHF76-052 硬件设计参考

7 硬件设计描述:

1) VCC 电压范围: +1.8V to +3.6V

2) 模组的 Pin22 和 Pin 23 将被用作串口端口，请连接到外部 MCU。 Pin22 应连接到外部 MCU 的 RXD，Pin23 连接到外部 MCU 的 TXD。

3) 对于 RHF76-052：调制解调器的 Pin4 和 Pin5 将用作基于串口连接的固件升级端口。 Pin4 应连接到主机的 RXD，Pin5 连接到主机的 TXD。

4) Pin14（GPIO_PA15）将用于进入 DFU 模式升级固件。 请将其连接到拨动开关，以通过硬件方式实现 DFU 使能功能。

    注意: 客户还可以使用带 AT 命令的 SW 方式访问 DFU 模式。

5) Pin16 将用于显示 LoRaWAN 处理状态。 如果需要，请将此引脚连接到 LED。当在 LoRaWAN 模式下发送或接收信息时，此 LED 将闪烁。

6) Pin21 将被用于 LED 连接。

7) Pin16 将用于显示 LoRaWAN 处理状态。 如果需要，请将此引脚连接到 LED。当在 LoRaWAN 模式下发送或接收信息时，此 LED 将闪烁。

8) RHF76-052 UART 调制解调器支持低频（434MHz / 470MHz）和高频（868MHz / 915MHz）。 当使用阻抗不匹配的内部天线时，强烈建议用于天线匹配的 π 型匹配网络。

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