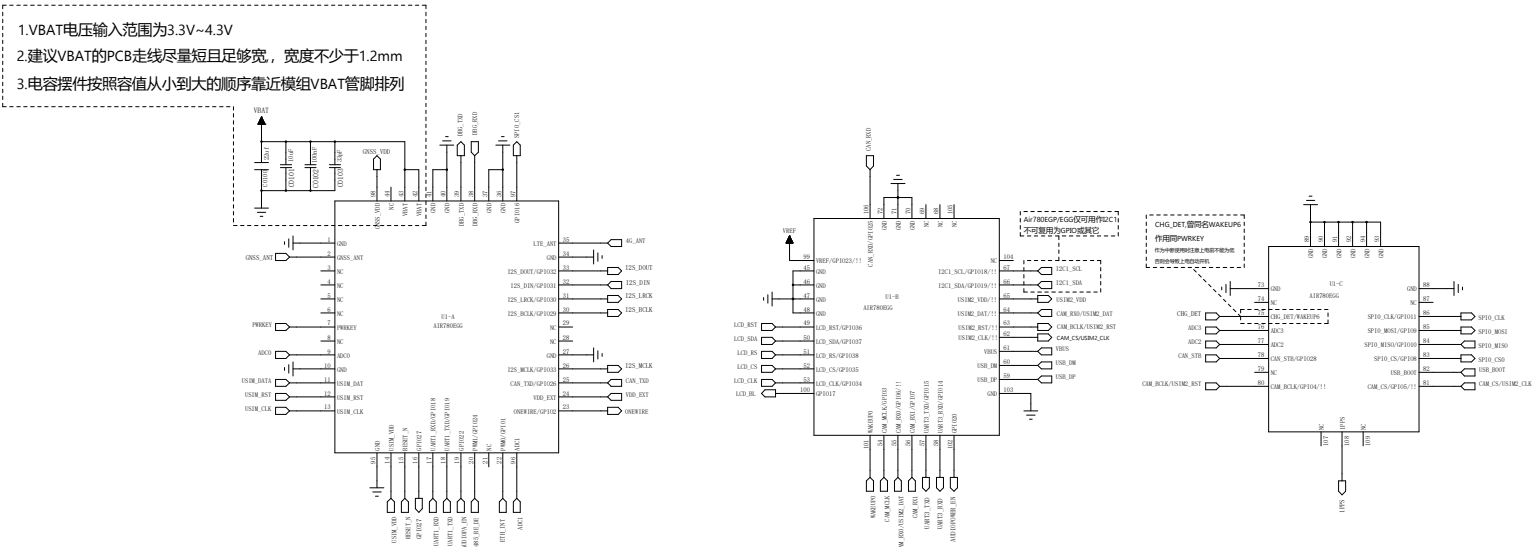


REVISION RECORD			
LV	REV NO.	APP/REVISED	DATE

Air780EGG参考设计



REVISION RECORD			
LTR	ECO NO:	APPROVED:	DATE:

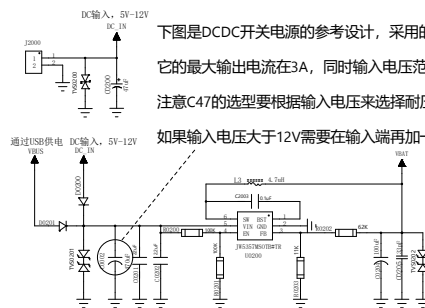
DC-DC 方案

下图是DCDC开关电源的参考设计，采用的是杰华特公司的JW5357开关电源芯片。

它的最大输出电流在3A，同时输入电压范围4.5V~18V

注意C47的选型要根据输入电压来选择耐压值。

如果输入电压大于12V需要在输入端再加一颗470uF的电解电容

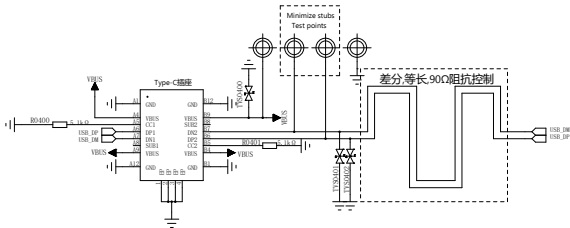


$$V_{OUT} = 0.6 * (1 + R_{0202}/R_{0203}) = 4V$$

		COMPANY:		合宙LuatOS	
		TITLE:		Air780EGG开发板	
ISSUES:	ZhuoFangjun	DATE:	2025-5-8		
ORIGIN:	laolu	DATE:	2025-5-8		
QUALITY CONTROL:	laolu	DATE:	2025-5-8		
RELEASED:	laolu	DATE:	2025-5-8		
		SCALE: G		SHEET: 2 of 17	
		CODE:		SIZE:	DRAWING NO:
		laolu		A1	2025-11-11
				REV: 4	

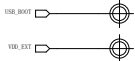
REVISION RECORD			
LV	REV NO.	APPROVED:	DATE

USB

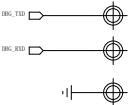


- 1.USB走线需要严格按照差分线控制，做到平行和等长；
- 2.USB走线的阻抗需要控制到差分90欧姆；
- 3.需要尽可能的减少USB走线的stubs，减少信号反射；USB信号的测试点最好直接放在走线上以减少stub
- 4.在靠近USB连接器或者测试点的地方添加TVS保护管，由于USB的速率较高，需保证选用的TVS保护管的寄生电容小于1pF
- 5.VBUS作为USB插入检测，必须连接USB电源或者外接电源，否则USB无法被检测到，VBUS的检测电压要大于3.3V

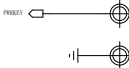
测试点



USB_BOOT 在开机过程中拉高可以进入USB下载模式
建议预留测试点



DGB_UART，也常备称为UART0，用作底层日志的抓取
波特率921600bps，不可更改
不可作为通用UART使用



开机键测试点，设计批量升级夹具时会用到



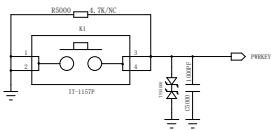
VBAT供电测试点，设计批量升级夹具时会用到

DESIGN:		DATE:		COMPANY:			
ZhuPingJun		2025-5-8		合宙LuatOS			
CHECKED:		DATE:		TITLE:			
laolu		2025-5-8		Air780EGG开发板			
QUALITY CONTROL:		DATE:		COD:	SIZE:	DRAWING NO:	REV:
laolu		2025-5-8		laolu	A1	2025-11-11	4
RELEASED:		DATE:		SCALE: G			
laolu		2025-5-8		SHEET: 4 of 17			

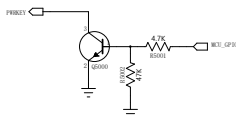
REVISION RECORD			
LV	REV NO.	APPROVED:	DATE

开机PWRKEY/复位RESET/下载BOOT/WAKEUP

按键开机

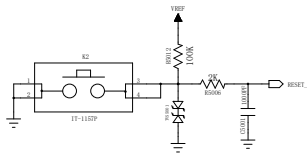


单片机控制开机

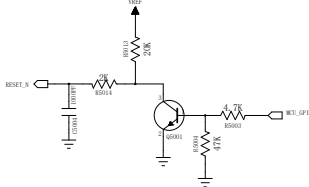


- 1.把PWRKEY管脚拉低0.5s后开机，开机成功后PWRKEY管脚可以释放。
- 2.按键附近需放置一个TVS管用作ESD防护。
- 3.PWRKEY 的电压域是VBAT，如果用单片机控制开机的话需要加一个三极管。
- 4.可以通过一颗不超过10KΩ的电阻直接将PWRKEY拉低，实现上电自动开机。

RESET_N 复位

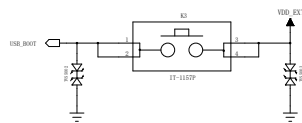


单片机控制重启



- 1.拉低 RESET_N 引脚 0.5S 可使模块复位。
- 2.RESET_N信号对干扰比较敏感，因此建议在模块接口板上的走线应尽可能的短，且需包地处理。
- 3.RESET_N 的电压域是模组芯片内部LDO_1.8V,实测电压在1.3V以上都为正常,如果用单片机控制重启的话需要加一个三极管。

USB下载使能

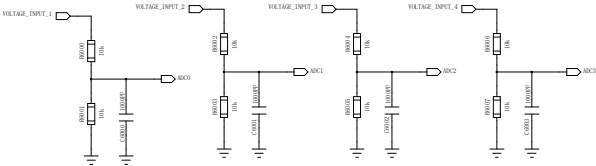


同时按下开机键和BOOT键,然后再上电,即可通过USB下载软件;

DESIGN:		DATE:		COMPANY:			
ZhuPingJun		2025-5-8		合宙LuatOS			
CHECKED:		DATE:		TITLE:			
laolu		2025-5-8		Air780EGG开发板			
QUALITY CONTROL:		DATE:		CORE:	SIZE:	DRAWING NO.:	REV.:
laolu		2025-5-8		laolu	A1	2025-11-11	4
RELEASED:		DATE:		SCALE: G			
laolu		2025-5-8		SHEET: 5 of 17			

REVISION RECORD			
LV	REV NO.	APPROVED:	DATE

ADC参考电路

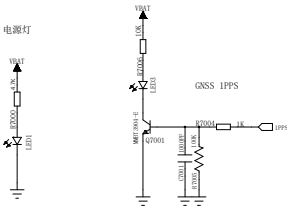


- 1.四路对外ADC,分辨率12bit;
- 2.分压电阻请选用1%精密电阻。阻值要高(10K级以上)，减少耗流及避免灌电。
- 3.模块的VBAT管脚内部也连接到了ADC，可以读取VBAT管脚的电压。
- 4.更多介绍 <https://docs.openluat.com/air780epm/product/air780exxpins/>

				COMPANY: 合宙LuatOS			
				TITLE: Air780EGG开发板			
DESIGN: ZhuPingJun	DATE: 2025-5-8						
CHECKED: laolu	DATE: 2025-5-8	CORE: laolu	SIZE: A1	DRAWING NO: 2025-11-11		REV: 4	
QUALITY CONTROL: laolu	DATE: 2025-5-8						
RELEASED: laolu	DATE: 2025-5-8	SCALE: G			SHEET: 6 of 17		

REVISION RECORD			
REV	REV NO.	APPROVED:	DATE

LED状态灯

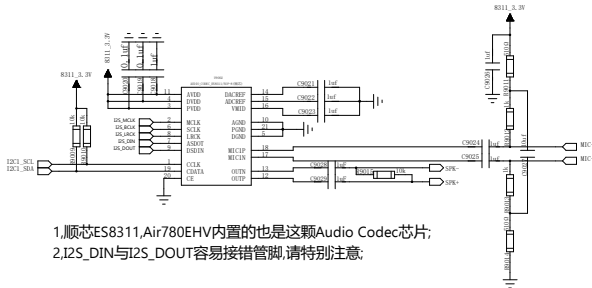


两种典型状态灯, 大家根据实际需要增加或减少.
低功耗工作模式下, LED的功耗往往是被忽略的耗电大户, 请特别注意!

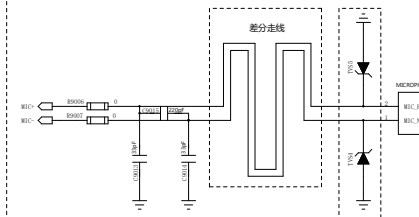
DRAWN: ZhuPingJun		DATED: 2025-5-8		COMPANY: 合宙LuatOS			
CHECKED: laolu		DATED: 2025-5-8		TITLE: Air780EGG开发板			
QUALITY CONTROL: laolu		DATED: 2025-5-8		CODE: laolu	SIZE: A1	DRAWING NO: 2025-11-11	REV: 4
RELEASED: laolu		DATED: 2025-5-8		SCALE: G			SHEET: 7 of 17

		COMPANY: 合宙LuatOS			
		TITLE: Air780EGG开发板			
DESIGN:	ZhaPingjun	DATE:	2025-5-8		
DESIGNED:	laolu	DATE:	2025-5-8		
QUALITY CONTROL:	laolu	DATE:	2025-5-8		
RELEASED:	laolu	DATE:	2025-5-8		
		CODE:	SIZE:	DRAWING NO:	REV:
		laolu	A1	2025-11-11	4
		SCALE: G			SHEET: 8 of 17

音频输出(喇叭)参考电路



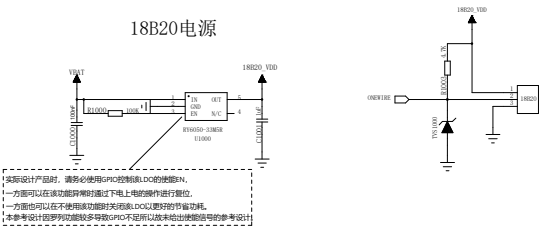
- ## 驻极体麦克风



1. Air780EHV已内置Micbias，外部不再需要偏置电压；
2. Mic+/Mic- 需严格差分走线；
3. 建议保留外围电路器件，以滤除射频干扰和增强ESD防护性能

REVISION RECORD			
LV	REV NO.	APPROVED:	DATE:

ONEWIRE



更多信息 <https://docs.openluat.com/air780epm/product/air780expins/>

		COMPANY:		合宙Luat0S			
		TITLE:		Air780EGG开发板			
DESIGN:	ZhuPingJun	DATE:	2025-5-8				
DRAWN:	laolu	DATE:	2025-5-8	CODE:	SIZE:	DRAWING NO:	REV:
QUALITY CONTROL:	laolu	DATE:	2025-5-8				
RELEASED:	laolu	DATE:	2025-5-8				
				laolu			
				SCALE: G		SHEET: 9 of 17	

REVISION RECORD			
REV	REV NO.	APPROVED:	DATE:

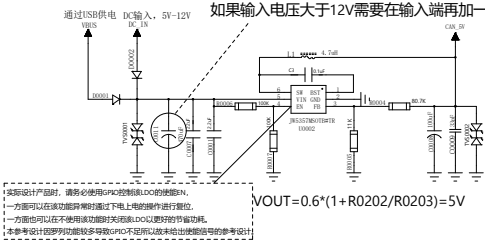
CAN 收发器 5V 电源

下图降压DCDC方案，与系统供电一样使用的是杰华特JW5357

CAN收发器供电电压范围4.5V-5.5V，典型值5V

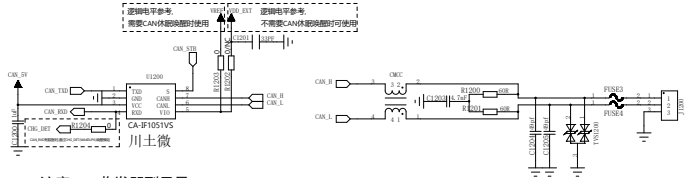
注意C47的选型要根据输入电压来选择耐压值

如果输入电压大于12V需要在输入端再加一颗470uf的电解电容



DC_IN或VBUS输入范围在4.5V-5.5V之间时，也可以使用DC_IN或VBUS为CAN收发器供电

CAN接口



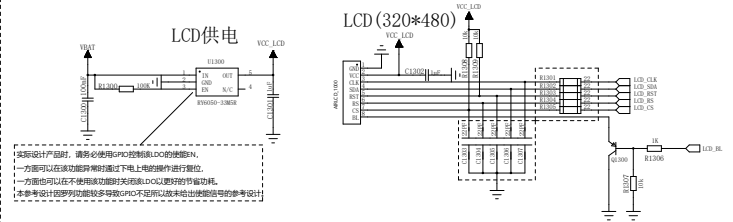
注意CAN收发器型号是CA-IF1051VS
不是CA-IF1051S,切勿弄混

1,CMCC,共模扼流圈,推荐型号共模扼流线圈ACT45B-101-2P;
2,TVSS1200,推荐型号PESD1CAN;

DRAWN: ZhuPingJun		DATE: 2025-5-8		COMPANY: 合宙LuatOS			
CHECKED: laolu		DATE: 2025-5-8		TITLE: Air780EGG开发板			
QUALITY CONTROL: laolu		DATE: 2025-5-8		CORE: laolu	SIZE: A1	DRAWING NO.: 2025-11-11	REV: 4
RELEASED: laolu		DATE: 2025-5-8		SCALE: G		SHEET: 1 of 17	

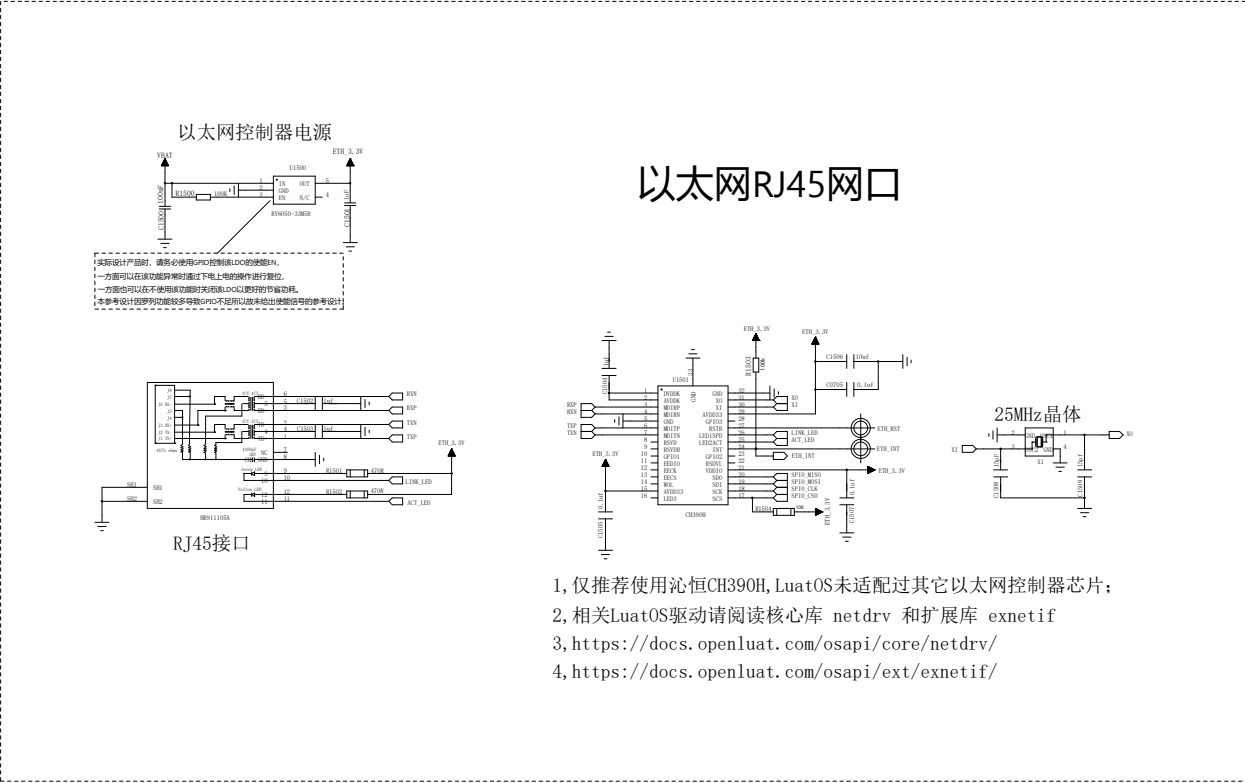
REVISION RECORD			
LV	REV NO.	APPROVED:	DATE

LCD



		COMPANY:		合宙LuatOS			
		TITLE:		Air780EGG开发板			
DESIGN:	ZhuPingJun	DATE:	2025-5-8				
CHECKED:	laolu	DATE:	2025-5-8	CODE:	SIZE:	DRAWING NO:	REV:
QUALITY CONTROL:	laolu	DATE:	2025-5-8	laolu	A1	2025-11-11	4
RELEASED:	laolu	DATE:	2025-5-8	SCALE: G		SHEET: 12 17	

REVISION RECORD			
LINE	REV. NO.	APP/REVISED:	DATE:

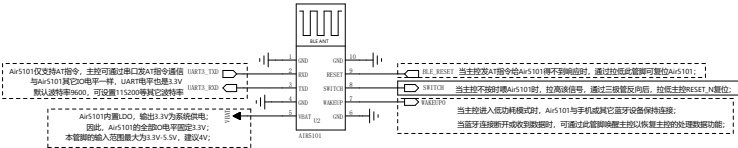


- 1, 仅推荐使用沁恒CH390H, LuatOS未适配过其它以太网控制器芯片;
- 2, 相关LuatOS驱动请阅读核心库 netdrv 和扩展库 exnetif
- 3, <https://docs.openluat.com/osapi/core/netdrv/>
- 4, <https://docs.openluat.com/osapi/ext/exnetif/>

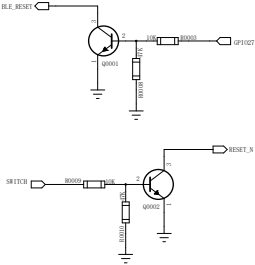
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				TITLE: Air780EGG开发板							
DRAWN: ZhuPingJun		DATE: 2025-5-8									
CHECKED: laolu		DATE: 2025-5-8		CODE: laolu		SIZE: A1		DRAWING NO: 2025-11-11		REV: 4	
QUALITY CONTROL: laolu		DATE: 2025-5-8									
RELEASED: laolu		DATE: 2025-5-8		SCALE: G				SHEET: 14# 17			

REVISION RECORD			
LV	REV NO.	APPROVED:	DATE

BLE 5.2模组Air5101



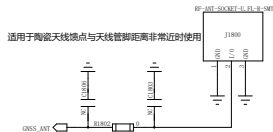
更多资料
<https://docs.openluat.com/air5101/product/shouce/>



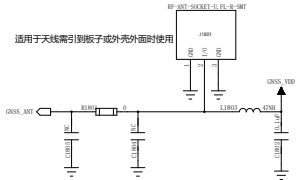
COMPANY: 合宙LuatOS			
TITLE: Air780EGG开发板			
DESIGN: ZhuPingJun	DATE: 2025-5-8	CODE: laolu	
CHECKED: laolu	DATE: 2025-5-8	SIZE: A1	
QUALITY CONTROL: laolu	DATE: 2025-5-8	DRAWING NO: 2025-11-11	
RELEASED: laolu	DATE: 2025-5-8	REV: 4	

REVISION RECORD			
REV	REV NO.	APP/REVISED	DATE

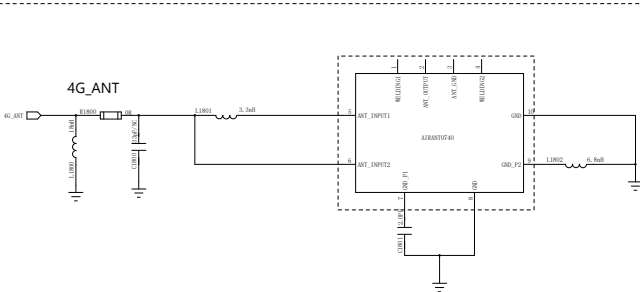
GNSS无源天线



GNSS有源天线



4G天线



- 1,本参考设计使用的是合宙贴片式PCB天线,AirANT4073,尺寸40*7*3mm;
- 2,合宙还有多款尺寸不同、封装各异的贴片式PCB天线可供选择;
- 3,匹配电路已调试好,PCB封装(含匹配电路)已做成标准封装,欢迎咨询;

COMPANY: 合宙LuatOS			
TITLE: Air780EGG开发板			
DESIGN: ZhuPingJun	DATE: 2025-5-8	DRAWING NO: 2025-11-11	
CHECKED: laolu	DATE: 2025-5-8	REV: 4	
QUALITY CONTROL: laolu	DATE: 2025-5-8	SCALE: G	
RELEASED: laolu	DATE: 2025-5-8	SHEET: 17 17	