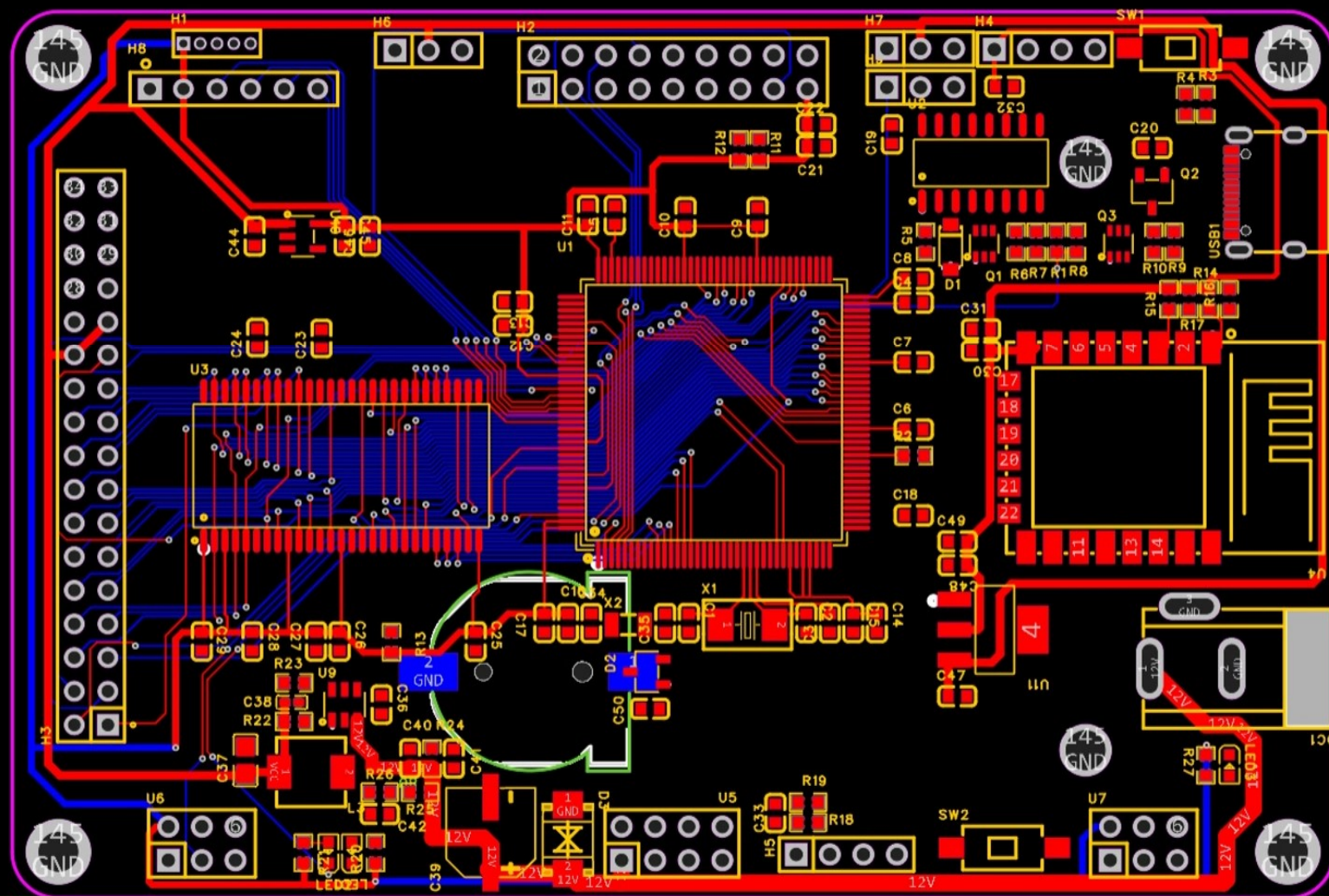
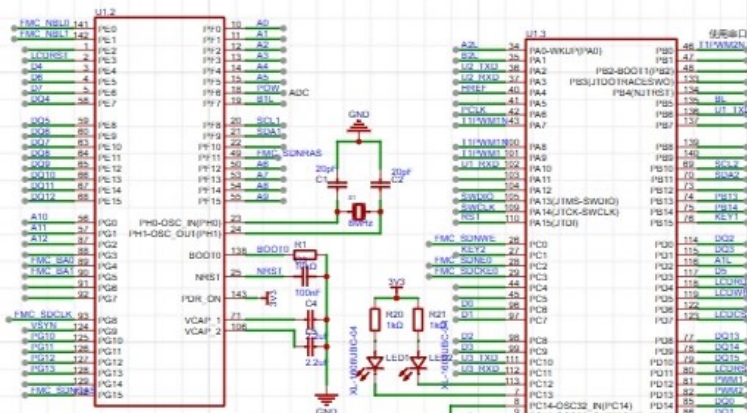
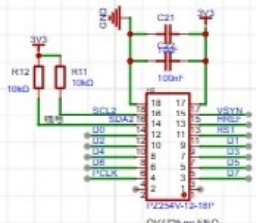






单片机下载程序至少有两种方式：SWD或串口（USART1）
SWD方式：不仅可以下载程序，还可以调试代码
串口方式：不仅可以下载程序，还可以完成单片机与PC的串行通信



不使用单片机内部存储空间扩展方式

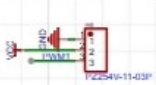


使用单片机内部存储空间扩展方式

数据总线、地址总线、控制总线



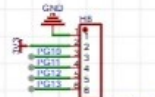
蓝牙



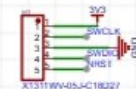
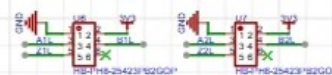
舵机



角度传感器MPU6050



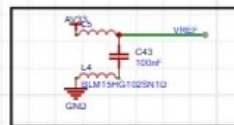
WIF/ESP8266



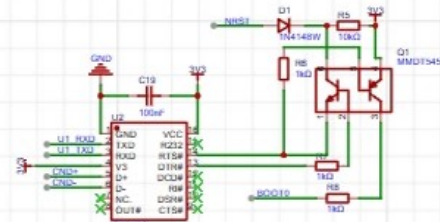
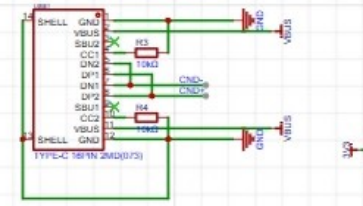
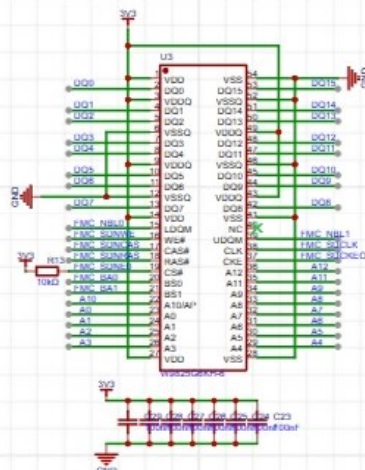
SWD方式
TTL (2.5-5.5V; 1; 0-0.8; 0) / (2.5-3.3; 1)
USB (5V/GND/D+/D-)



功能：当电板不上电时，VBUS通过VCC，否则VBUS不接入系统



当AD精度要求高的时候，VDDA和VREF+需要单独供电，且使用0.1uF滤波电容



如果仅仅是向单片机通信，CH340左边电路即可实现通信的目的
但是要实现程序下载功能，还得配合右边控制电路



PS13：输出1为正常工作，输出0（低电平脉冲）保持100ms，使WIFI复位
PS14：输出1为正常工作，输出0（低电平脉冲）保持到固定程序下载完成，实现固件下载控制

