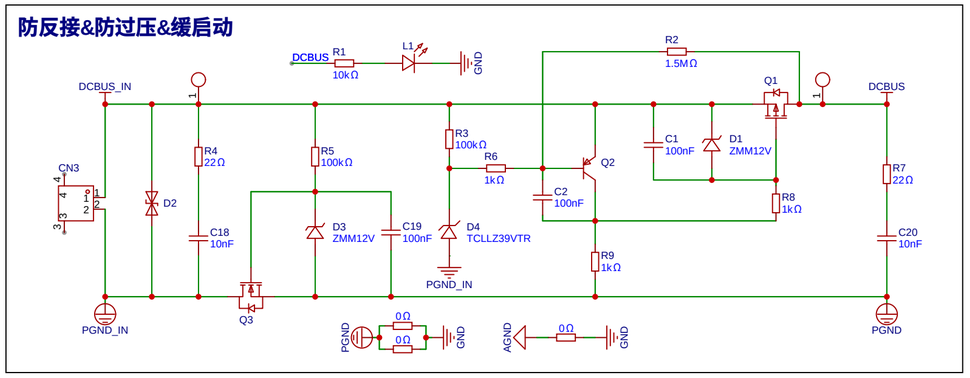
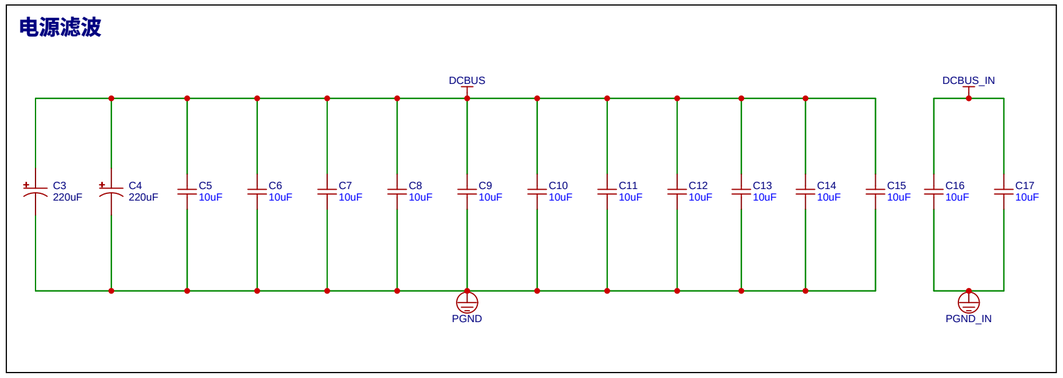
防反接&防过压&缓启动



电源滤波



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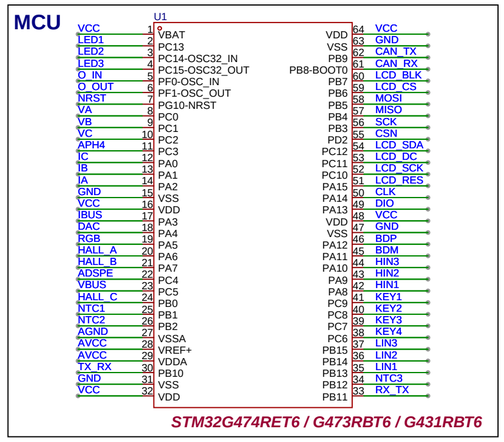
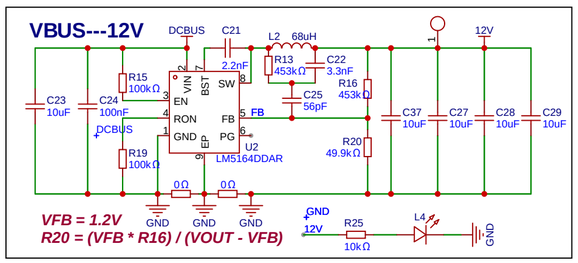


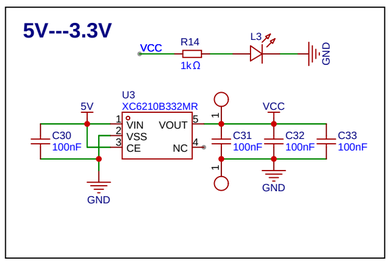
STM32G474RET6 / G473RBT6 / G431RBT6

VBUS---12V



VFB = 1.2V
R20 = (VFB * R16) / (VOUT - VFB)

5V---3.3V



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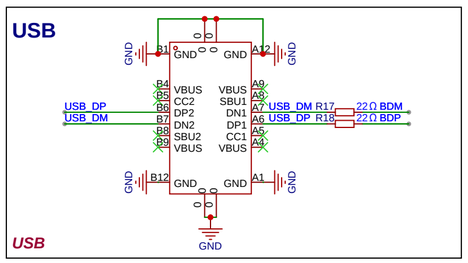
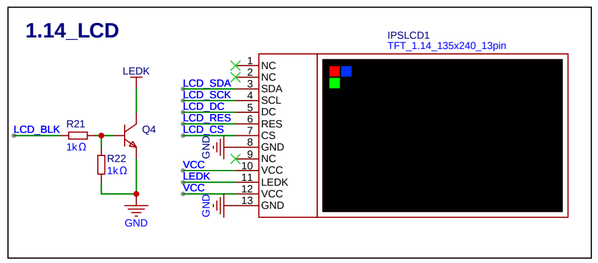
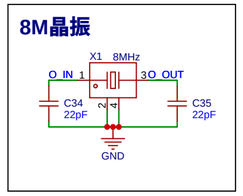


USB

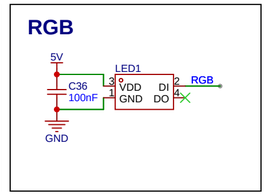
1.14_LCD



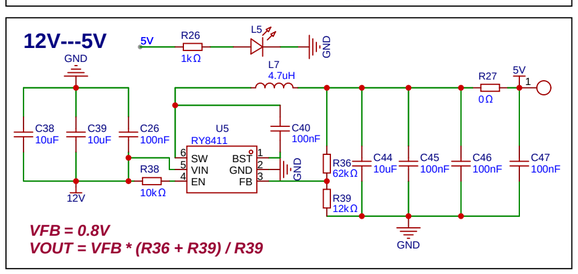
8M晶振



RGB

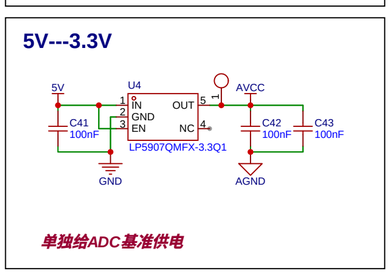


12V---5V



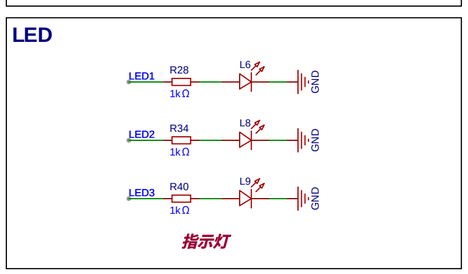
VFB = 0.8V
VOUT = VFB * (R36 + R39) / R39

5V---3.3V



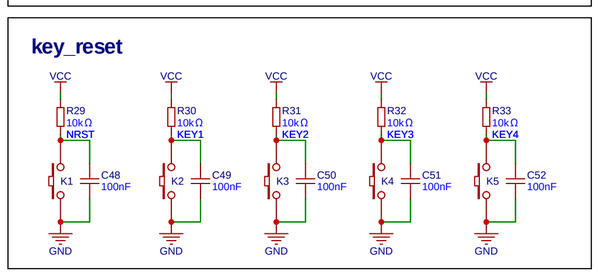
单独给ADC基准供电

LED

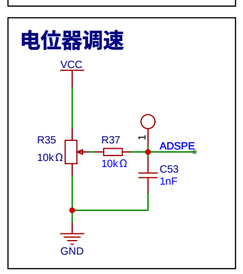


指示灯

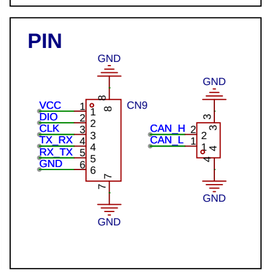
key_reset



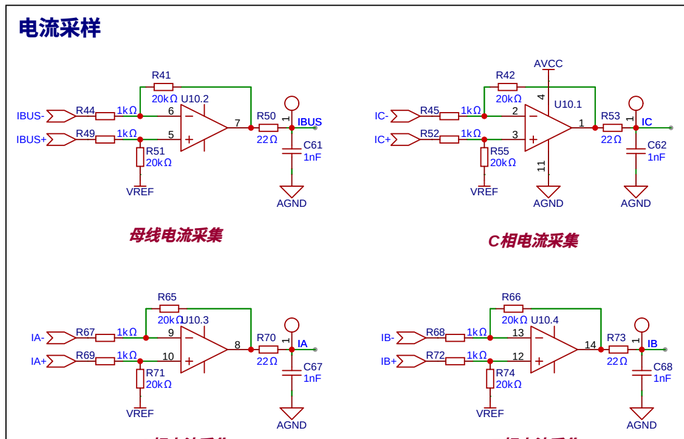
电位器调速



PIN



电流采样



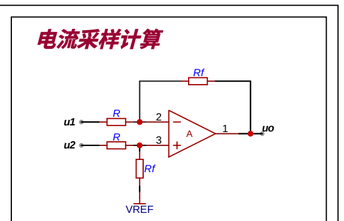
母线电流采集

C相电流采集

A相电流采集

B相电流采集

电流采样计算



运放增益:k = Rf / R

偏置电压:VREF = 1.65V = 2048

采样电阻:Rm = 1mΩ

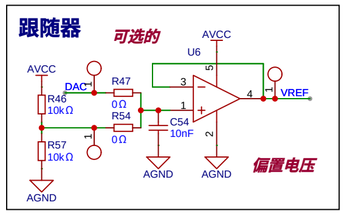
运放输出:uo = k * (u2 - u1)

u2 - u1 = I * Rm

uo = (adc_val - 2048) * 3.3V/4096

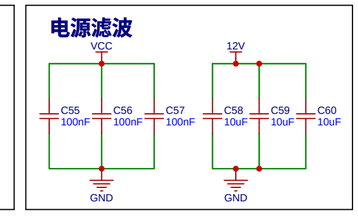
采集电流:I = uo / (Rm * k)

跟随器

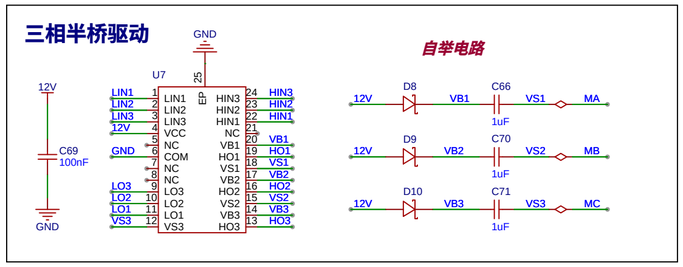


偏置电压

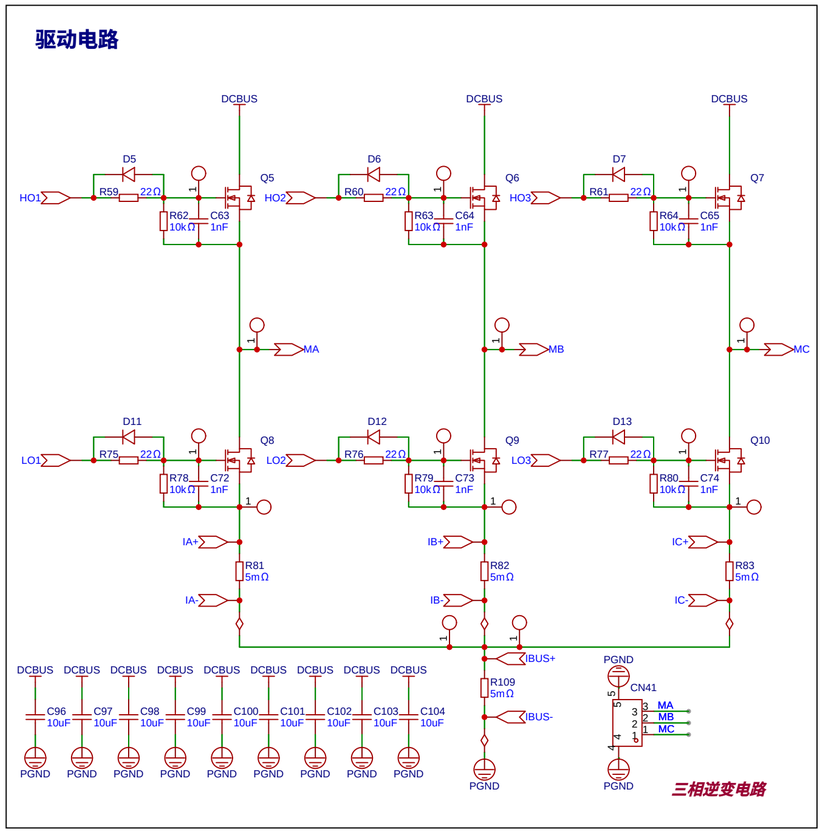
电源滤波



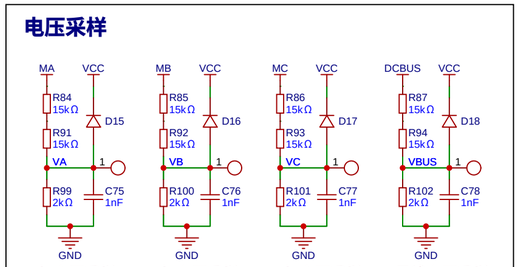
三相半桥驱动



驱动电路

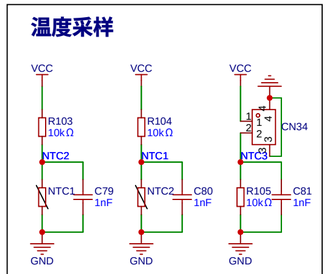


电压采样

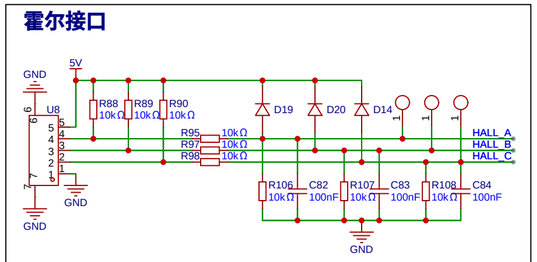


A相电压采样　B相电压采样　C相电压采样　母线电压采样

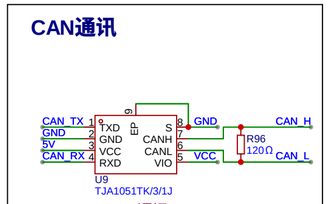
温度采样



霍尔接口



CAN通讯



CAN通讯

电压采样计算

采样点最高电压为: 3.3V + 二极管管压降

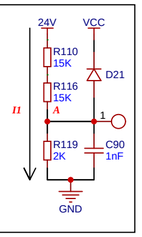
采样点电压应接近3.3V的一半,分辨率高，易采样

I1电流: 24V/(15k+15k+2k) = 0.75mA

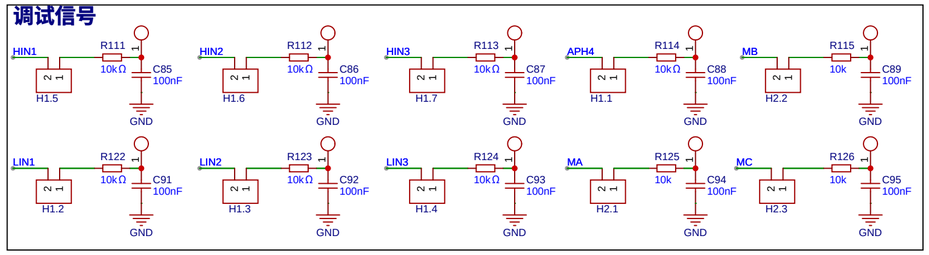
A点电压: I1 * 2k = 1.5V

缩小电压系数: k = (15k+15k+2k) / 2k

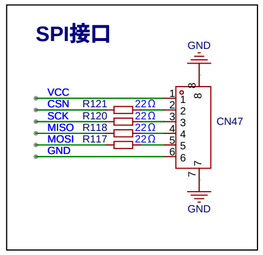
VA = adc_val * (3.3V/4096) * k



调试信号



SPI接口



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Page	P1	Create Date	2024-01-29
Drawed		Part Number	
Reviewed		基于STM32G4的FOC电机驱动学习板	
		VER / SIZE	PAGE 1 OF 1
嘉立创EDA		嘉立创EDA	