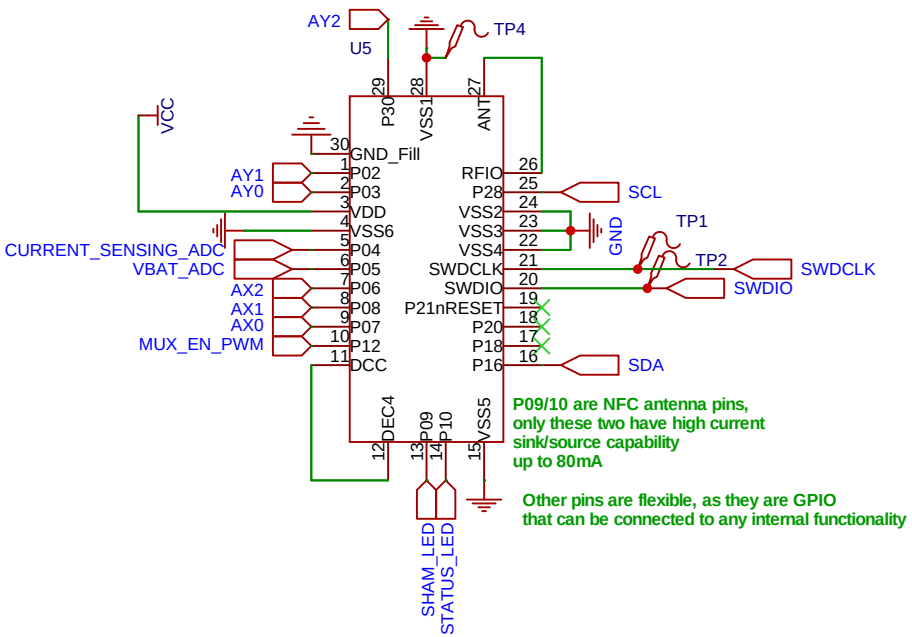
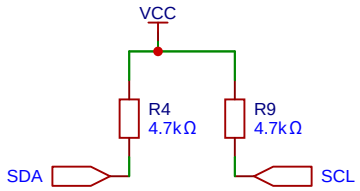
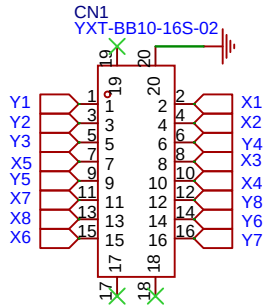
BLE Chip



I2C Pull-up



B2B Connector to uLED matrix

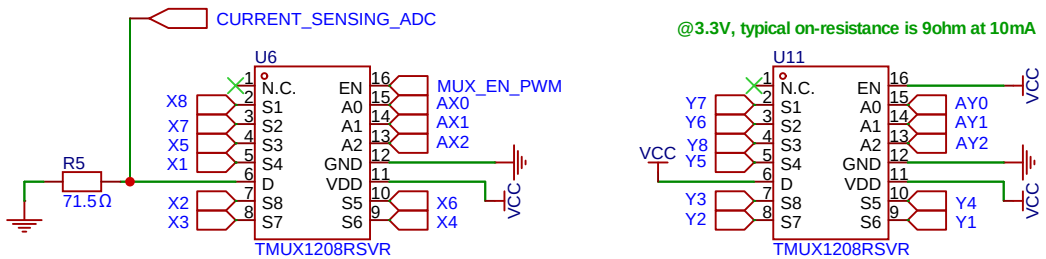


Switch array to control 64 uLEDs

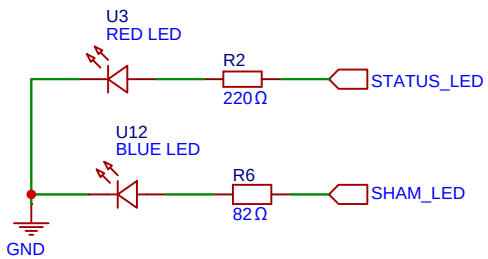
3.3V power, then 80ohm total current limiting
resistence to achieve 5mA on uLED
71ohm external + 9ohm internal from TMUX = 80ohm

This current source yields 5-6mA effective current through the LED

@3.3V, typical on-resistance is 9ohm at 10mA

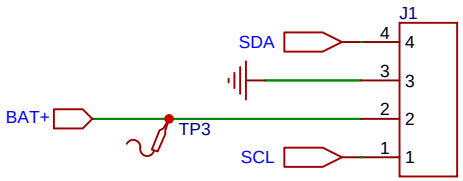


Status and Sham LED

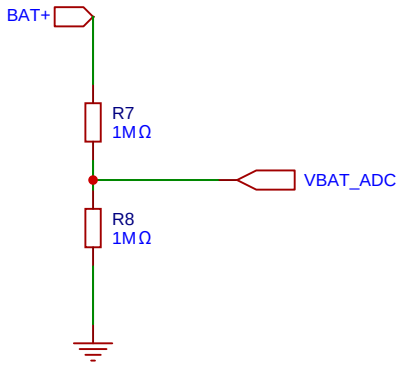


原理图	OptoGrid_Main_V0.05	更新日期	2025-09-04
		创建日期	2025-07-05
图页	MCU	物料编码	
绘制	Fukui (Daniel) Yang	OptoGrid_V0.05	
审阅			
		版本	尺寸	页 1 共 2
嘉立创EDA		V1.0	A4	嘉立创EDA

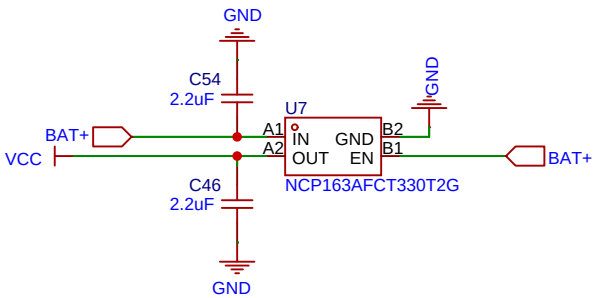
Spring-loaded connector to receive unregulated power from BatteryPCB
Battery range: 3.5~4.2V
Battery capacity: 25mAh



Battery voltage sensing



LDO voltage regulator



@4.2V input, LDO efficiency ~= 3.3/4.2 = 78.6%

If using Buck DC-DC regulator, the efficiency could be increased to 90~95%, but even the smallest DC-DC chip occupies 2mm x 2mm of space (compared to the 0.6mm x 0.6mm LDO chip). And DC-DC would need additional components as well (inductor/capacitor). DC-DC cannot fit on this PCBA, while providing just 11%~16% increase in efficiency.

原理图	OptoGrid_Main_V0.05	更新日期	2025-09-04
		创建日期	2025-07-05
图页	Power	物料编码	
绘制	Fukui (Daniel) Yang	OptoGrid_V0.05	
审阅			
		版本	尺寸	页 2 共 2
嘉立创EDA		V1.0	A4	嘉立创EDA