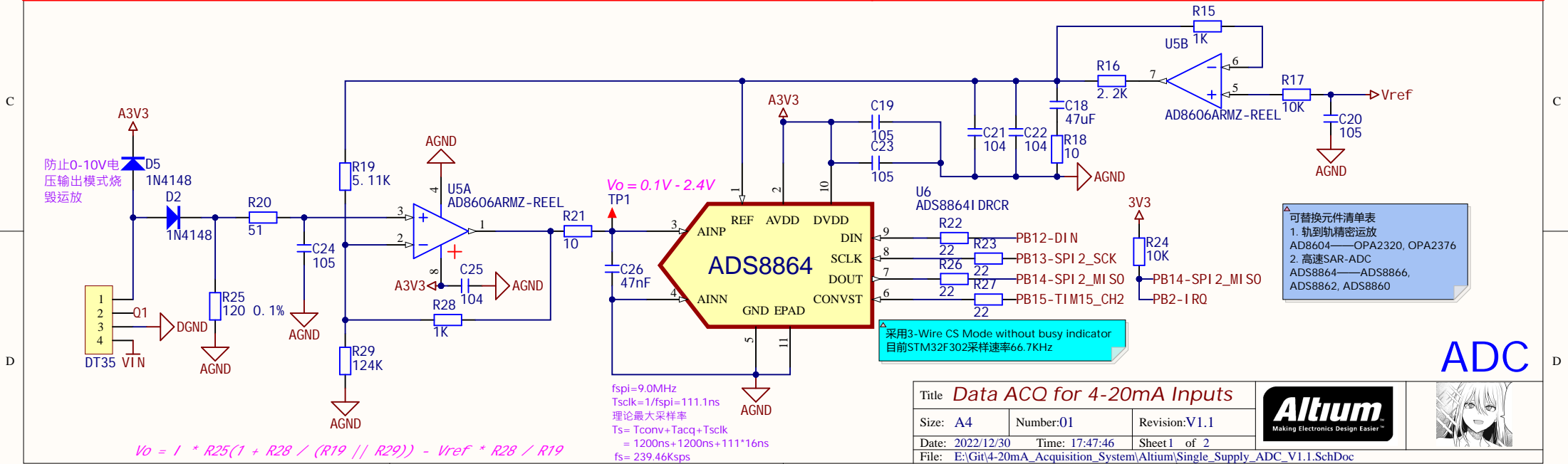


STM32F302C8T6

Power Supply





ADC

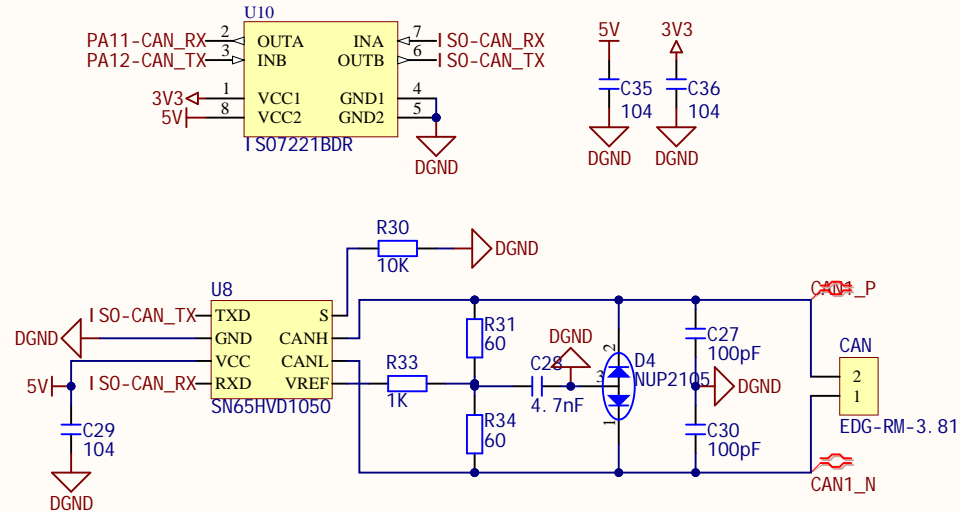
$$V_o = 1 * R25(1 + R28 / (R19 || R29)) - Vref * R28 / R19$$

fspi=9.0MHz  
Tclk=1/fspi=111.1ns  
理论最大采样率  
Ts = Tconv+Tacc+Tclk  
= 1200ns+1200ns+111\*16ns  
fs = 239.46Ksps

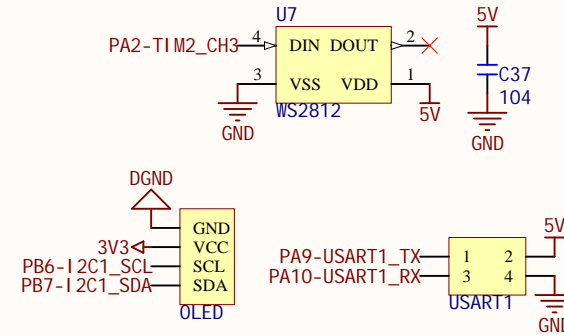
采用3-Wire CS Mode without busy indicator  
目前STM32F302采样速率66.7KHz

- 可替换元件清单表
1. 轨到轨精密运放  
AD8604——OPA2320, OPA2376
  2. 高速SAR-ADC  
ADS8864——ADS8866, ADS8862, ADS8860

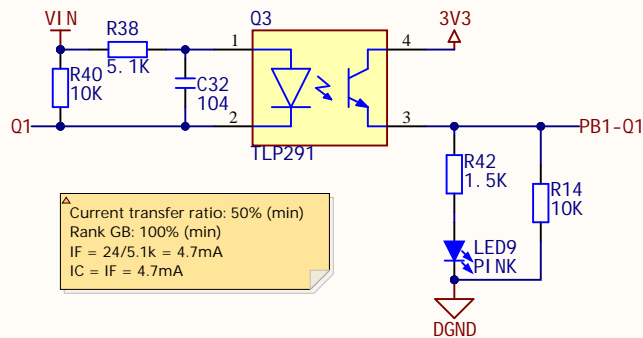
Title <i>Data ACQ for 4-20mA Inputs</i>				
Size: <i>A4</i>	Number: <i>01</i>	Revision: <i>V1.1</i>		
Date: <i>2022/12/30</i>	Time: <i>17:47:46</i>	Sheet <i>1</i> of <i>2</i>		
File: <i>E:\Git\4-20mA_Acquisition_System\Altium\Single_Supply_ADC_V1.1.SchDoc</i>				



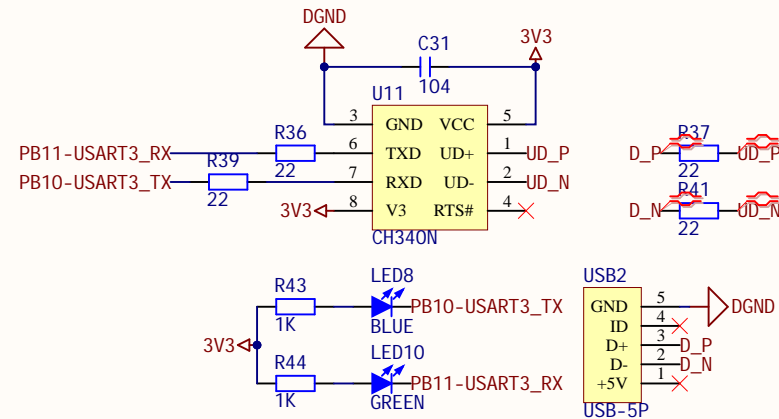
## CAN



## Peripherals



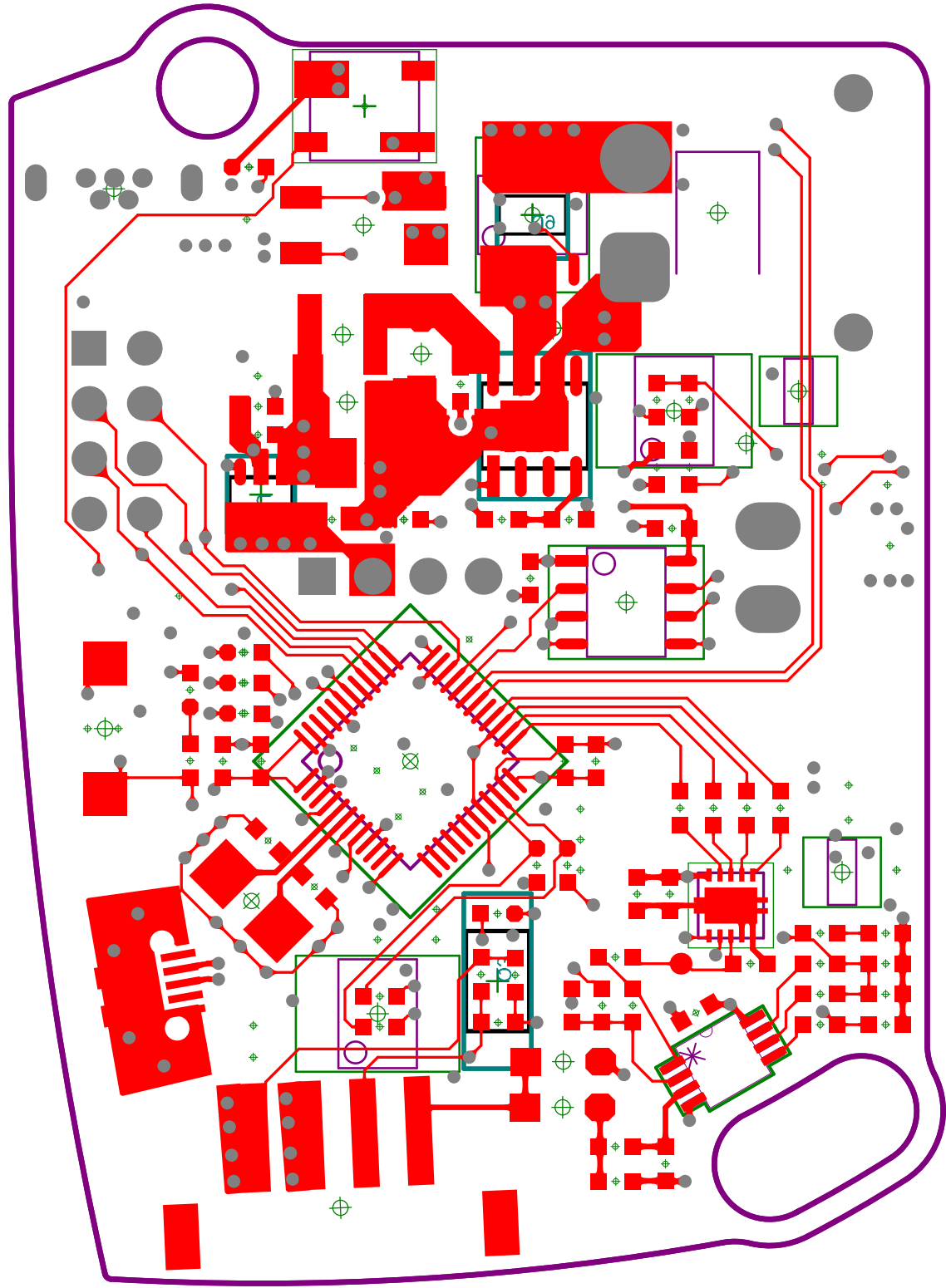
## Optocoupler

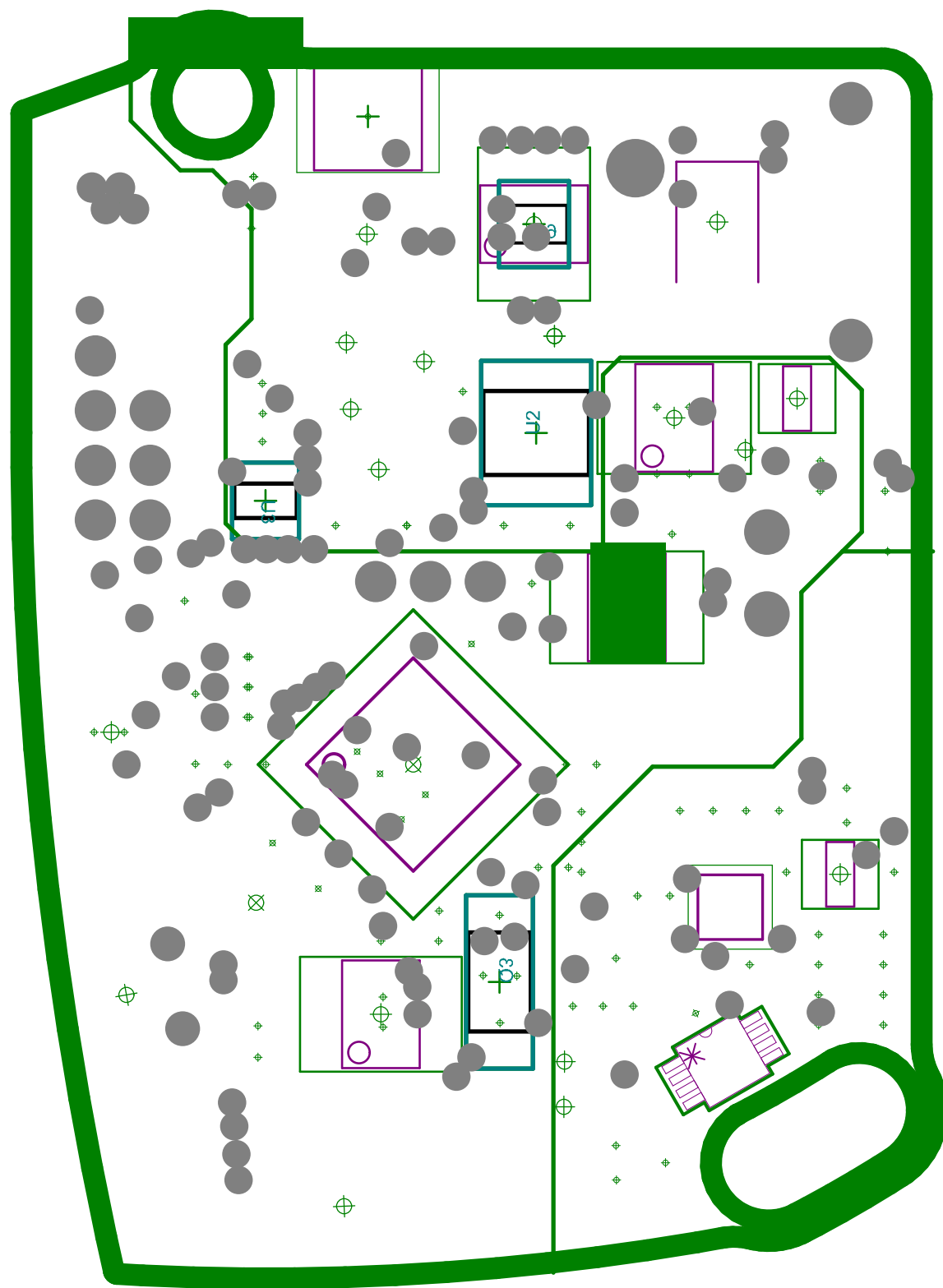


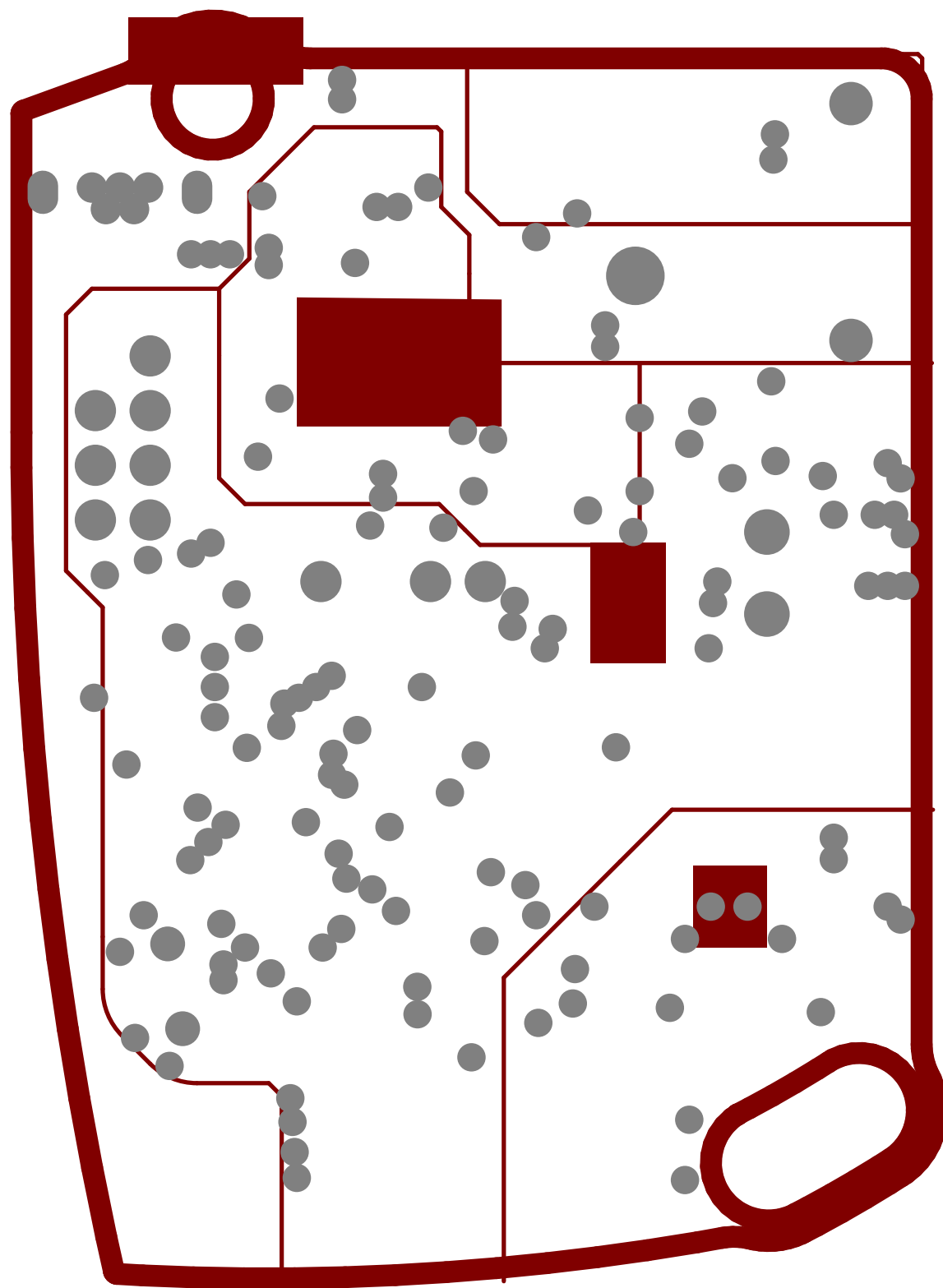
## UART TO USB

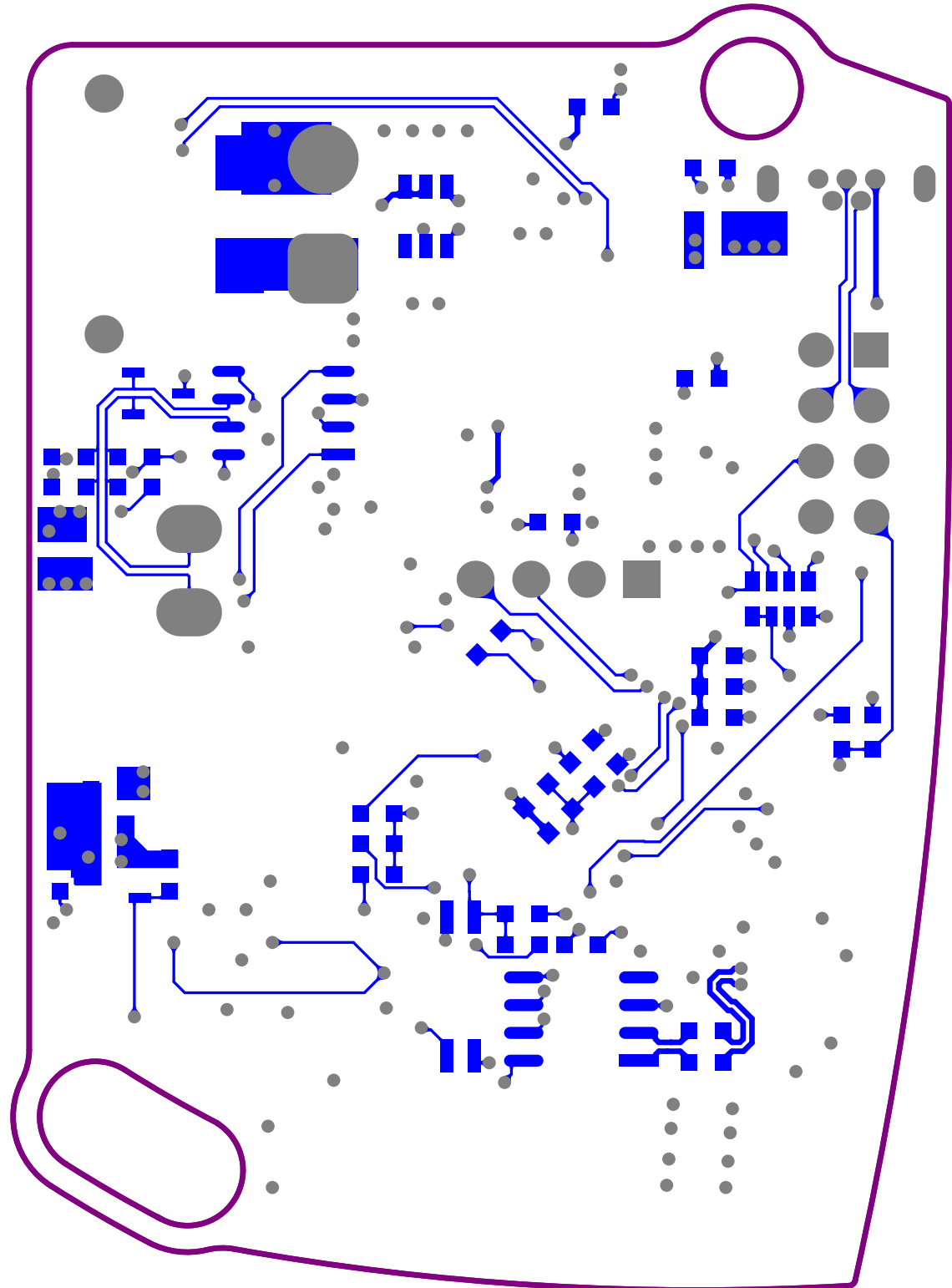
Title <i>Data ACQ for 4-20mA Inputs</i>		
Size: A4	Number:02	Revision:V1.1
Date: 2022/12/30	Time: 17:47:46	Sheet2 of 2
File: E:\Git\4-20mA_Acquisition_System\Altium\Communication_V1.1.SchDoc		

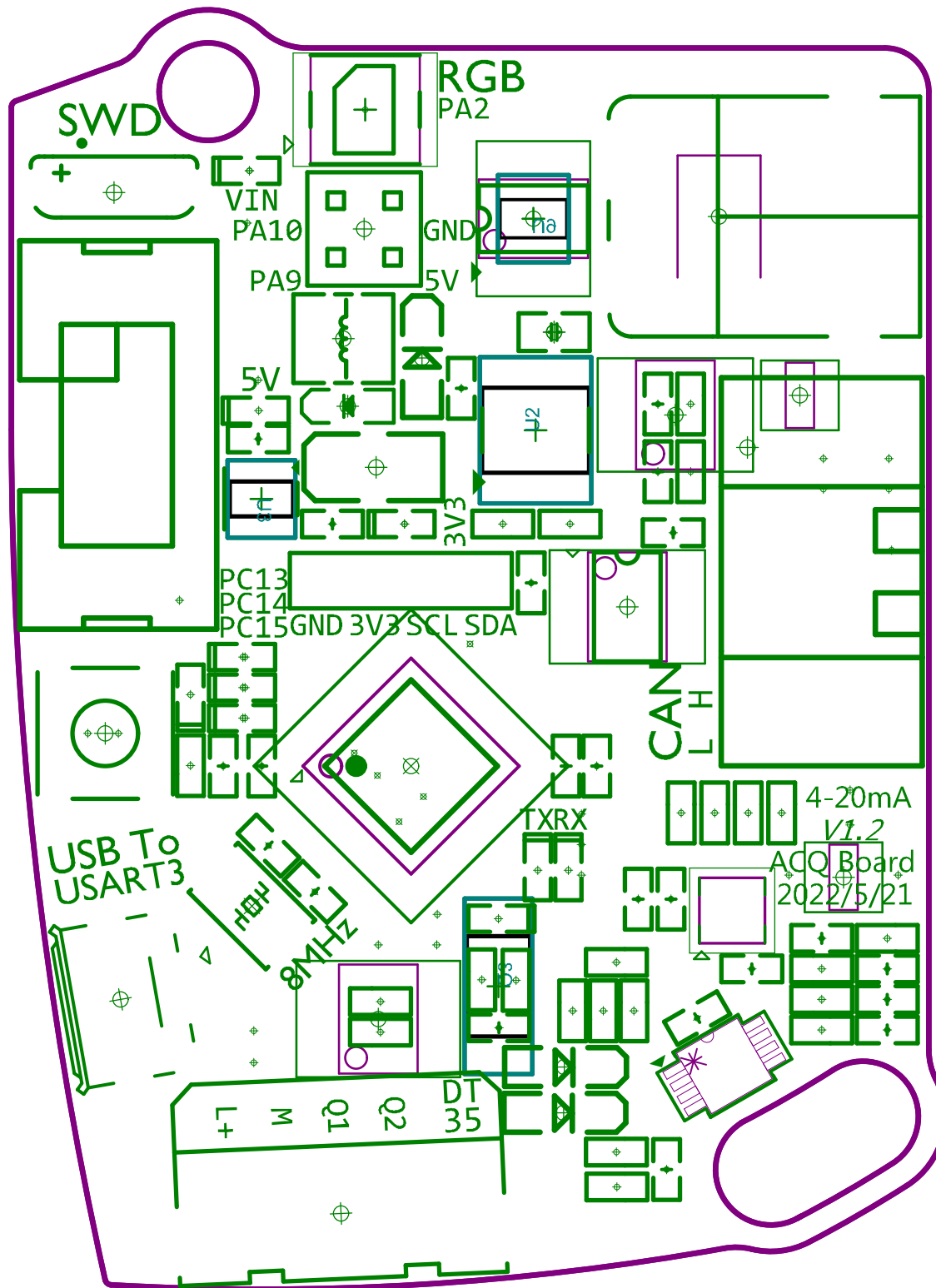


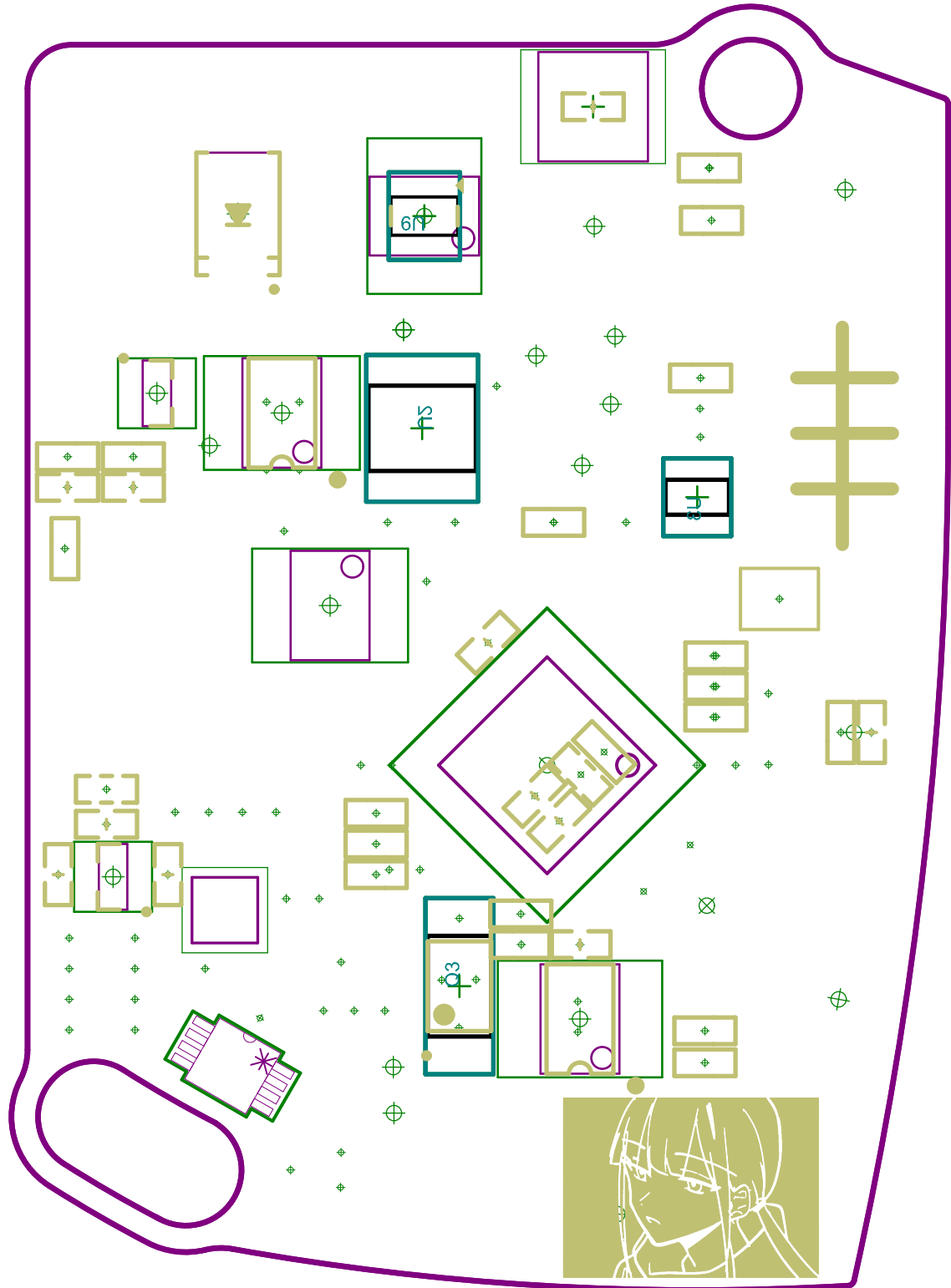














Comment	Description	Designator	Footprint	LibRef	Quantity
103	无极性贴片电容	C1, C16	C 0603_L	C	2
106	无极性贴片电容	C2	C 0805_L	C	1
220pf	无极性贴片电容	C3, C5	C 0603_L	C	2
104	无极性贴片电容	C4, C7, C11, C12, C13, C14, C21, C22, C25, C29, C31, C32, C35, C36, C37	C 0603_L	C	15
2.2uF	无极性贴片电容	C6, C8, C10	C 0603_L	C	3
105	无极性贴片电容	C9, C17, C19, C20, C23, C24	C 0603_L	C	6
4.7uF	无极性贴片电容	C15	C 0603_L	C	1
47uF	无极性贴片电容	C18	C 0603_L	C	1
100nF	无极性贴片电容	C26	C 0603_L	C	1
1000pf	无极性贴片电容	C27, C30	C 0603_L	C	2
4.7nF	无极性贴片电容	C28	C 0603_L	C	1
EDG-RM-3.81	3.81间距	CAN	19LDRRM-02P-3.81mm	罐头卧式2P	1
XT30PW-M	XT30PW-M PCB板专用卧式连接器，低电平侧驱动接头	CON1	XT30PW-M	XT30PW-M	1
DSK34	肖特基二极管	D1	SOD-123	1N5819	1
1N4148	高速开关二极管	D2, D5	SOD-123	1N4148	2
1N4120S	肖特基二极管-整流	D4	SOT23-3L	BAT54A	1
SM8128CA	精密电压控制二极管	DR1	SMB	DR	1
SMF50A	精密电压控制二极管	DR2	SOD-323	DR	1
HDR-104	4P连接器	D135	MX254-LS-4P	Header 4	1
220MVA-3V	贴片铝电解	E1	C20R35280	C-20	1
H_JTAG_8	8脚JTAG不兼容接口	J1	BD254-LI-2x4P	H_JTAG_8	1
15uH	功率电感单面	L1	NR4020	L_NR	1
10000P100MHz	电感	L81	FB 0603_L	LB	1
13K0P100MHz	电感	L82	FB 0603_L	LB	1
WHITE	贴片LED	LED1	LED 0603W	LED-SMD	1
RED	贴片LED	LED2	LED 0603R	LED-SMD	1
GREEN	贴片LED	LED3, LED10	LED 0603G	LED-SMD	2
BLUE	贴片LED	LED4, LED8	LED 0603B	LED-SMD	2
PINK	贴片LED	LED5, LED9	LED 0603R	LED-SMD	2
YELLOW	贴片LED	LED6	LED 0603R	LED-SMD	1
ORANGE	贴片LED	LED7	LED 0603R	LED-SMD	1
HDR-104	4P连接器	OLED1	OLED 0V6-T-LI-4P	OLED_QC_128' 64	1
RF7416	Model Transistor, P Channel, -10 A, -30 V, 20 Mohm, 10 V, -1 V	Q1	SOP8_L	RF741618PBF	1
TLP291	Optocoupler DC-IN 1-CH Transistor DC-OUT 4-Pin SSOP 1/8"	Q3	Everlight_EL3H7-G_MFG	EL3H7_C_TA_-VG	1
1K	贴片电阻	R1, R2, R3, R5, R15, R26, R33, R43, R44	R 0603_L	R	9
10K	贴片电阻	R4, R6, R10, R14, R17, R24, R30, R40	R 0603_L	R	8
0	贴片电阻	R7, R8	R 0603_L	R	2
3.2K	贴片电阻	R9	R 0603_L	R	1
2K	贴片电阻	R11	R 0603_L	R	1
1.3K	贴片电阻	R12	R 0603_L	R	1
2K	贴片电阻	R13	R 0603_L	R	1
2.2K	贴片电阻	R16	R 0603_L	R	1
10	贴片电阻	R18, R21	R 0603_L	R	2
5.11K	贴片电阻	R19	R 0603_L	R	1
51	贴片电阻	R20	R 0603_L	R	1
20	贴片电阻	R22, R23, R26, R27, R36, R37, R39, R41	R 0603_L	R	8
120 0.1%	贴片电阻	R25	R 0603_L	R	1
120K	贴片电阻	R29	R 0603_L	R	1
60	贴片电阻	R31, R34	R 0603_L	R	2
5.1K	贴片电阻	R38	R 0603_L	R	1
1.1K	贴片电阻	R42	R 0603_L	R	1
104	贴片引脚排阻	RP1	KCA-8P4R-0603	R-8P4R	1
ada65	2脚贴片 646无引脚硅橡胶封装	DW1	TS 2PIN ada64.8	TSW SMD-2PIN-ada6	1
	测试点	TP1	TEST 1	TEST	1
STM32F302C8T6	ARM Cortex-M4 32-bit MCU, 64 KB Flash, 16 KB Internal RAM, 37 I/Os, 48-Pin LQFP -40 to 85 degC, Tray	U1	LQFP48 7X7_L	STM32F302C8T6	1
TP5430	5.5V to 36V Input, 3A, 500kHz Step-Down Converter 8-SO PowerPAD 0 to 0	U2	Texas_Instruments_D	TP5430DDA	1
ADP7118AUJZ-3.3	20 V, 200 mA, Low Noise, CMOS LDO Linear Regulator	U3	Analog_Devices_INC_-UJ-3_IPC_C	ADP7118AUJZ-3.3-R7	1
AD1582BRIZ-REEL7	Micropower, Precision Series Mode Voltage Reference, 2.5 V Output, 2.7 to 12 V Supply, Industrial, 3-pin SOT23 (RT-3), Reel	U4	SOT23-3L	AD1582BRIZ-REEL7	1
AD8606ARMZ-REEL	Double Channel Wide Bandwidth Operational Amplifier, 10 MHz BW, 5 V/us SR, Industrial, 8-pin SOP (RM-B, Reel)	U5	RM_8_ADI-L	AD8606ARMZ-REEL	1
ADS8864IDRCR	16-Bit, 400-KSPS, 1-CH SAR ADC with single-ended input, SPI interface and daisy-chain I/O-NSCNR-40 to 85	U6	DRC10_TEX	ADS8864IDRCR	1
WS2812	Intelligent Control LED Integrated Light Source, 3.5 to 5.3 V, ±25 to 80 degC, 4-Pin SMD, RoHS, Bulk and Reel	U7	WS2812B_B	WS2812	1
SN65HVD1050	EMC Optimized CAN Bus Transceiver	U8	SOP8_L	SN65HVD1050	1
LTC4412E56	Low Loss PowerPath(TM) Controller, 2.5 to 28 V Vin, 6-pin SOT23 (56-6), -40 to 85 degC, Pb-Free, Tape and Reel	U9	Texas_Instruments_D	LTC4412E56T8PBF	1
ISO7221BDR	5 Mbps Dual Channels, 1 / 1 Digital Isolator, 3.3 V / 5 V, -40 to +125 degC, 8-pin SOIC (8), Green (RoHS & no Sb/Br)	U10	SOP8_L	ISO7221BDR	1
CH340N	USB转串口芯片 Full speed USB 2.0	U11	SOP8_N	CH340N	1
Header2X2	2*2针插座	USART1	HDR254-M-LS-2x2P	Header 2X2	1
SWD	微型USB母座	USB1	USB-MICRO_C	USB-SP	1
USB-SP	微型USB母座	USB2	USB-MICRO_E	USB-SP	1
RMHz	2脚无引脚晶振	X1	OSC_5032-2P	XTAL_-2P	1