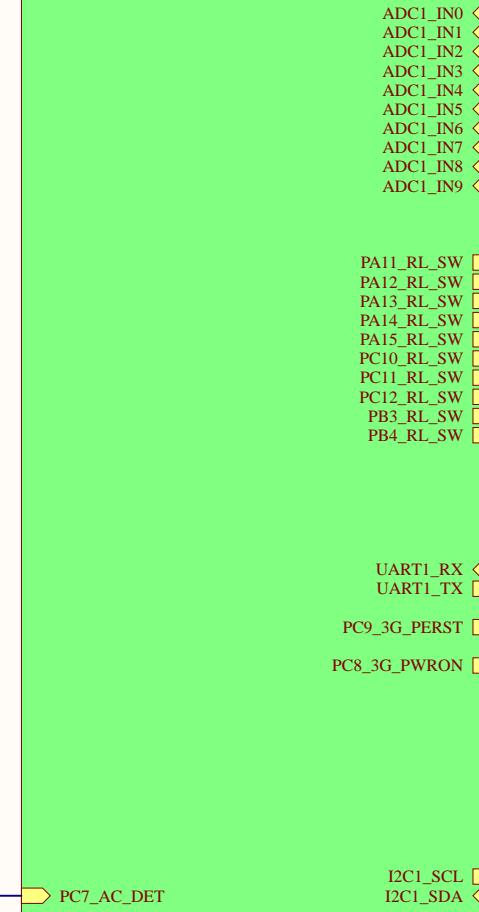
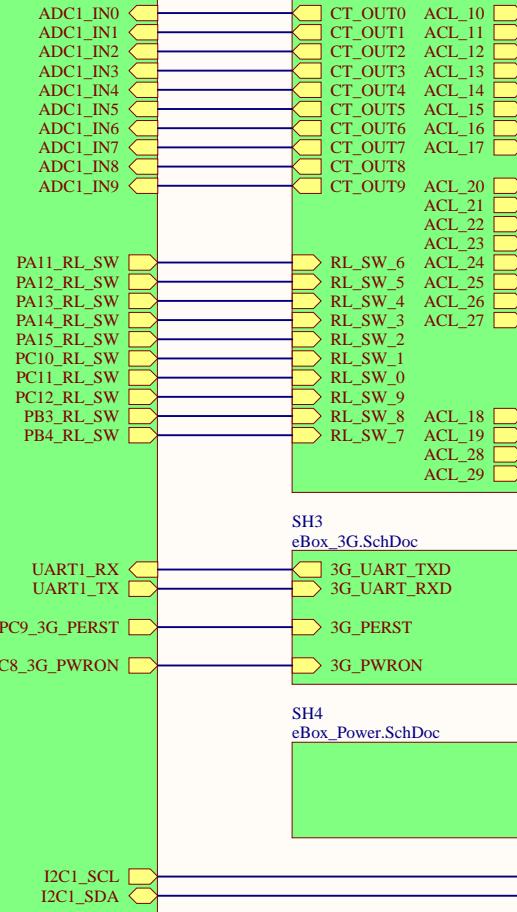
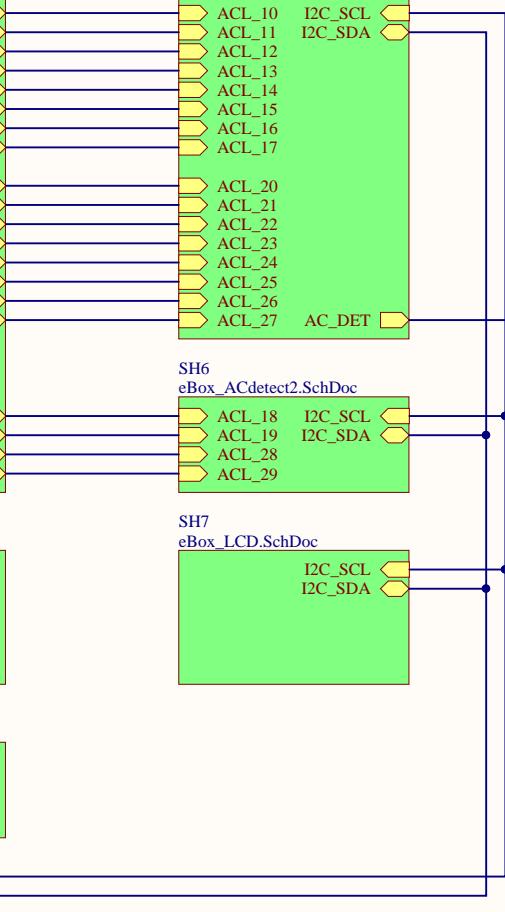
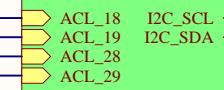
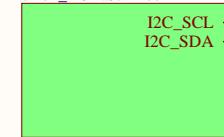


History		
Date (d/m/y)	Version	Note
02/12/2019	0.1	Draft version
04/12/2019	0.2	- Add resistors for CTs - Add 1.8V power for CTs - Add buffer ICs for MCU - Replace single transistors by darlington transistors array. - Fixbug
07/12/2019	0.3	- Add LED signal for relay - Change CTs - Add feedback signals from AC ports - Add WAKE-UP pin for 3G module
09/12/2019	0.4	- Add Buzzer - Add PCB document - Fixbug
12/12/2019	0.5	[x] Thêm chân nạp cho STM32 [x] Chính số cho nguồn 3G (R1,R2) hoặc recommend cái nào thì tò đậy [x] Thêm test point cho máy chở nguồn 12v, 3v3, 1v8 [x] Đèn led blink trạng thái chân B2 [x] Sim 5320 cũng ra hàng rào hoặc test point uart để test
24/12/2019	0.6	- Add PCB layout
29/12/2019	0.7	- Fix bug
27/02/2020	1.0	-

SH1
eBox_MCU.SchDocSH2
eBox_Peripherals.SchDocSH5
eBox_ACdetect.SchDocSH6
eBox_ACdetect2.SchDocSH7
eBox_LCD.SchDoc

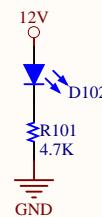
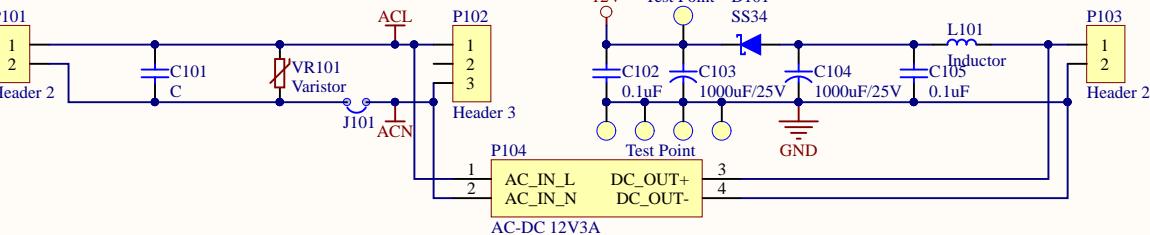
1

2

3

4

AC-DC MODULE



A

A

B

B

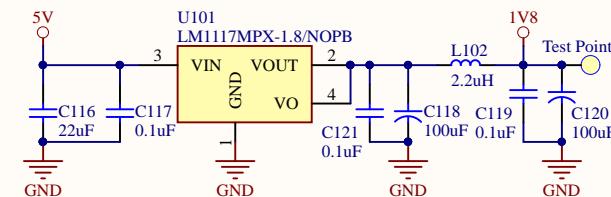
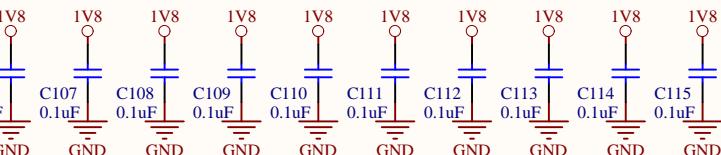
C

C

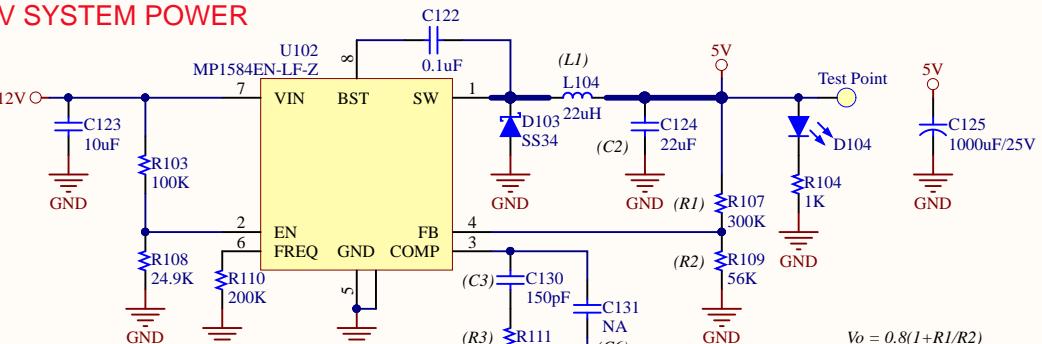
D

D

1.8V FOR TA12



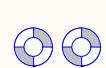
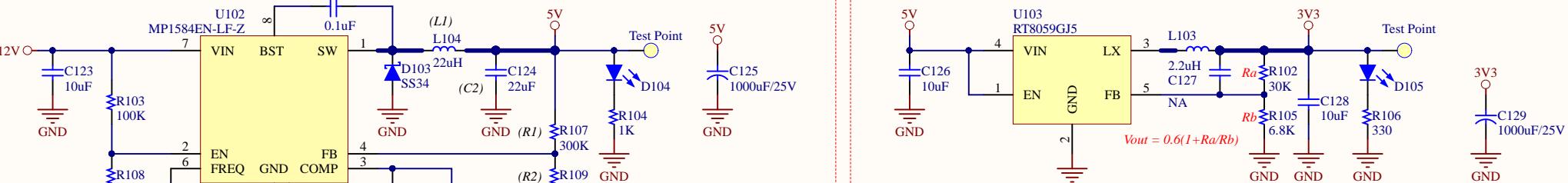
5V SYSTEM POWER



$$V_o = 0.8(I + R1/R2)$$

V_{out} (V)	L (μ H)	C_2 (μ F)	R_3 (k Ω)	C_3 (pF)	C_6
1.8	4.7	47	105	100	None
2.5	4.7 - 6.8	22	54.9	220	None
3.3	6.8 - 10	22	68.1	220	None
5	15 - 22	22	100	150	None
12	22 - 33	22	147	150	None

3.3V SYSTEM POWER



Title **eBox_Power**

Size: **A4**

Number: **2**

Revision: **2.0**

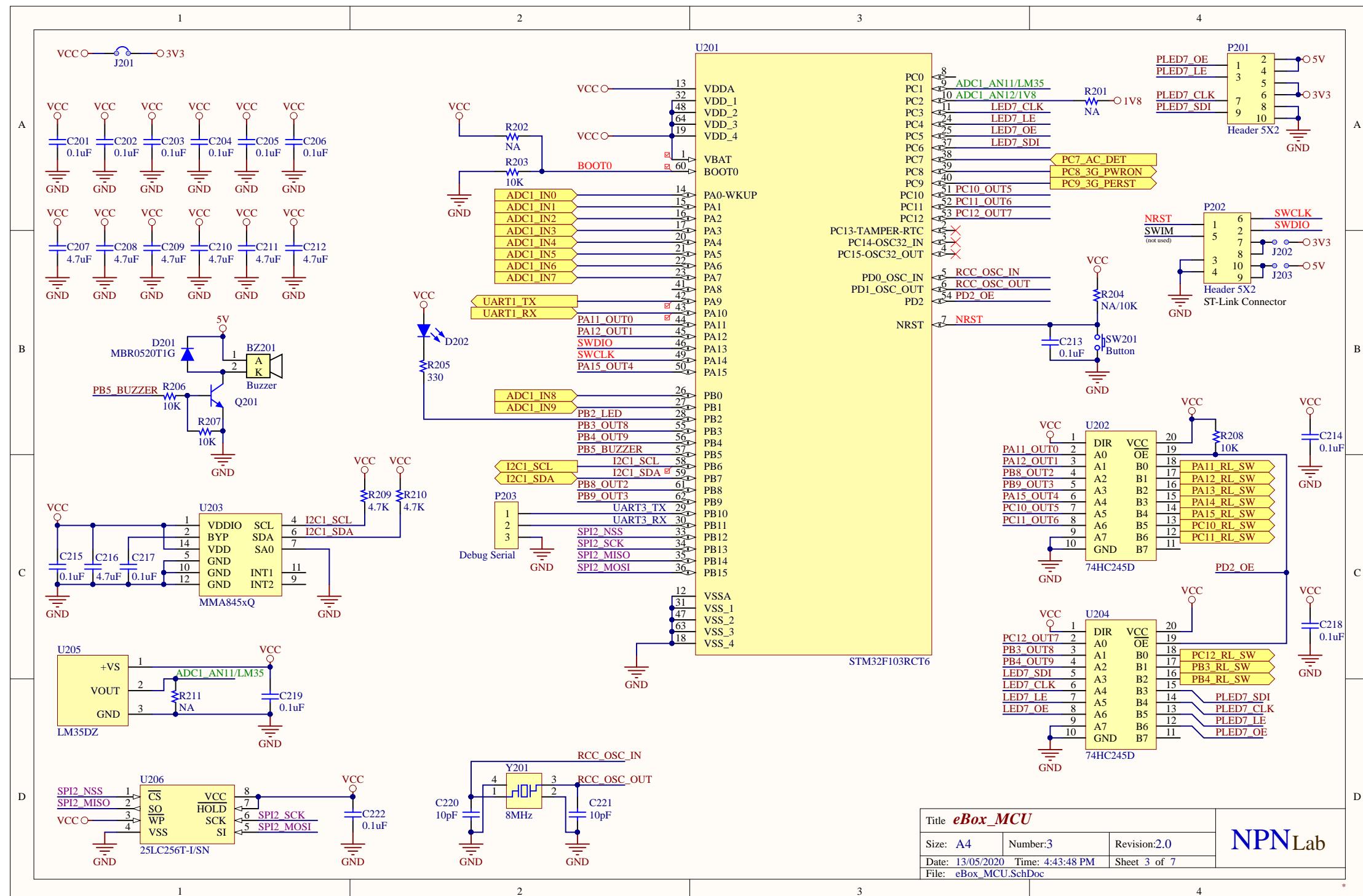
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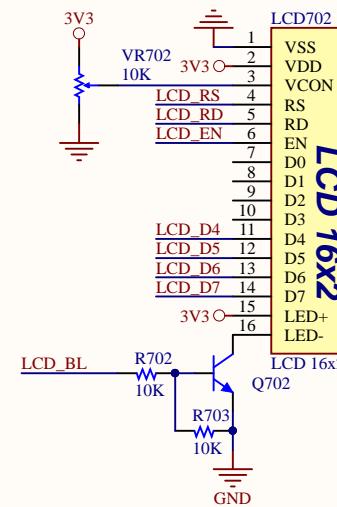
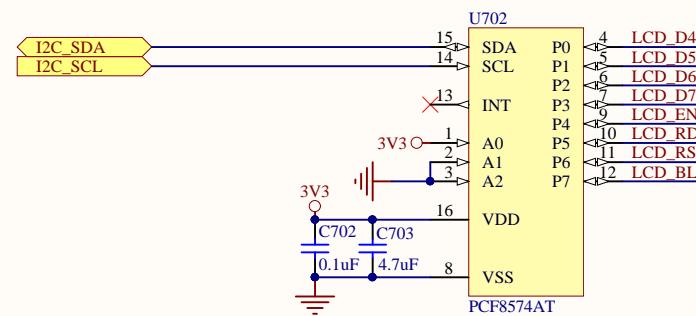
Time: **4:43:48 PM**

Sheet **2** of **6**

File: **eBox_Power.SchDoc**

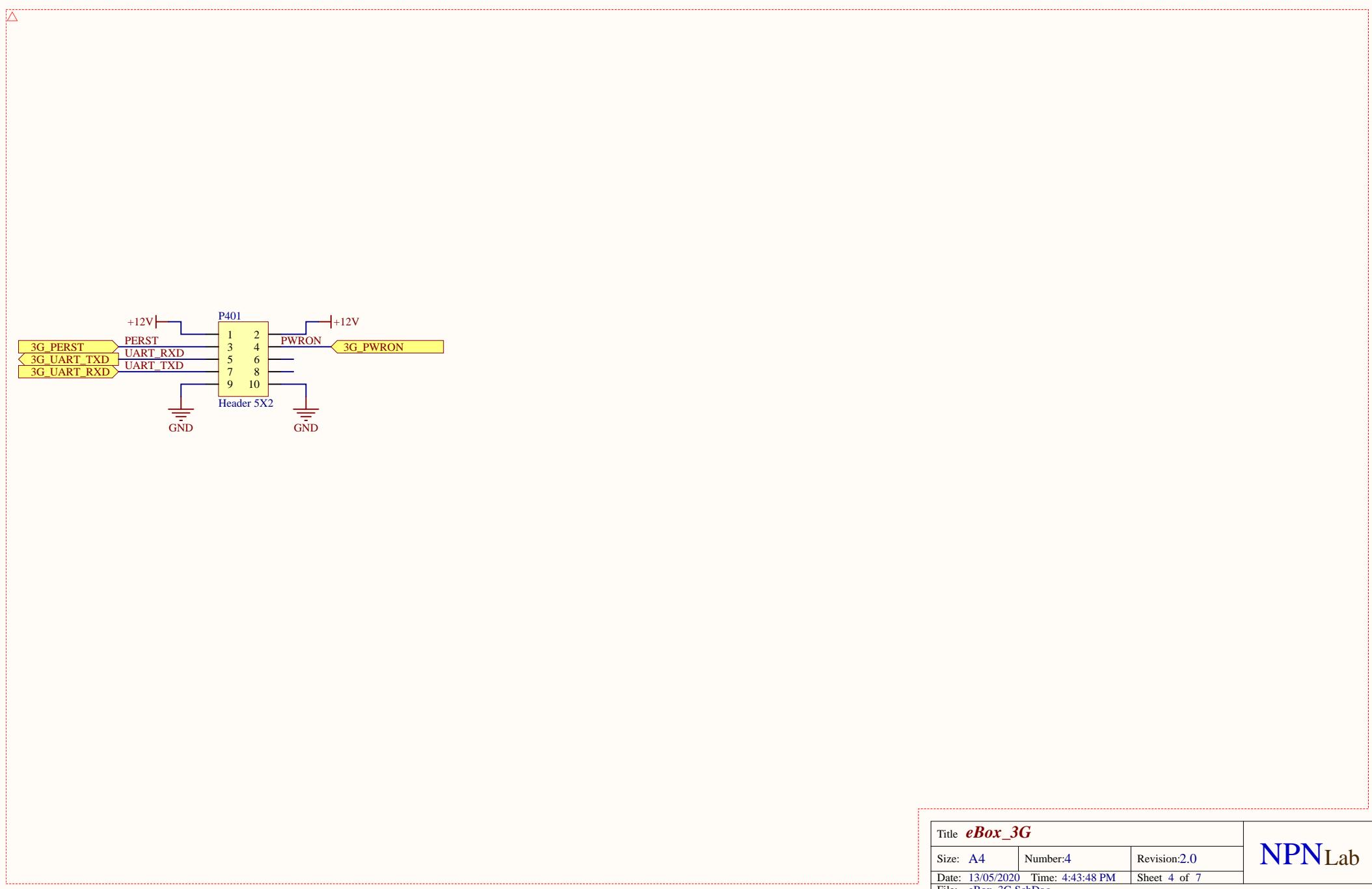
NPN Lab



Title **eBox_LCD**

Size: A4	Number: 4	Revision: 2.0
Date: 13/05/2020	Time: 4:43:48 PM	Sheet 4 of 7
File: eBox_LCD.SchDoc		

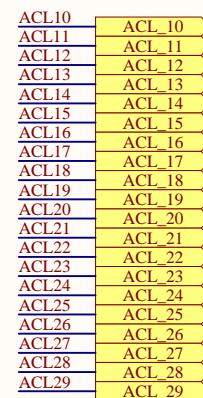
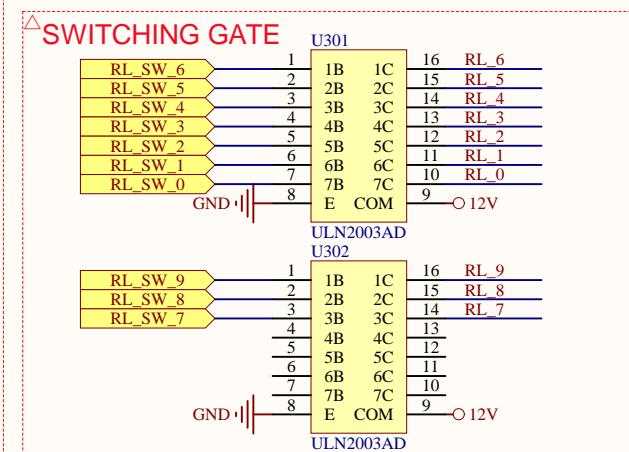
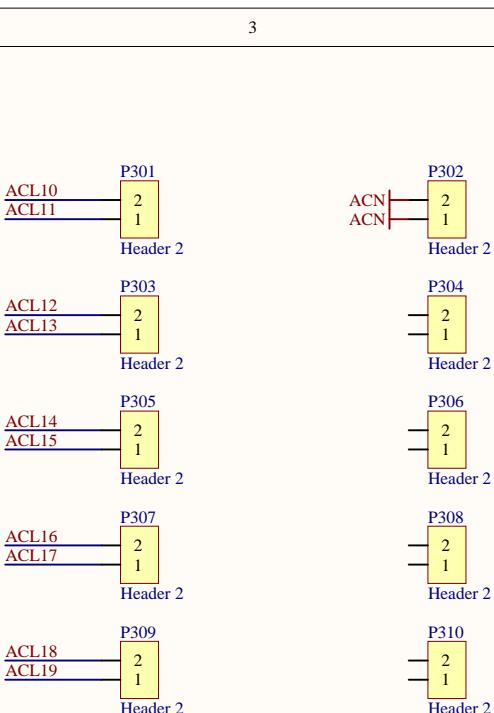
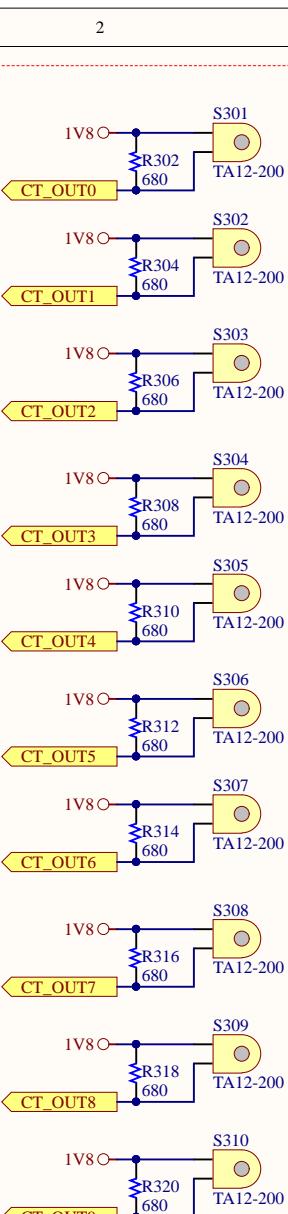
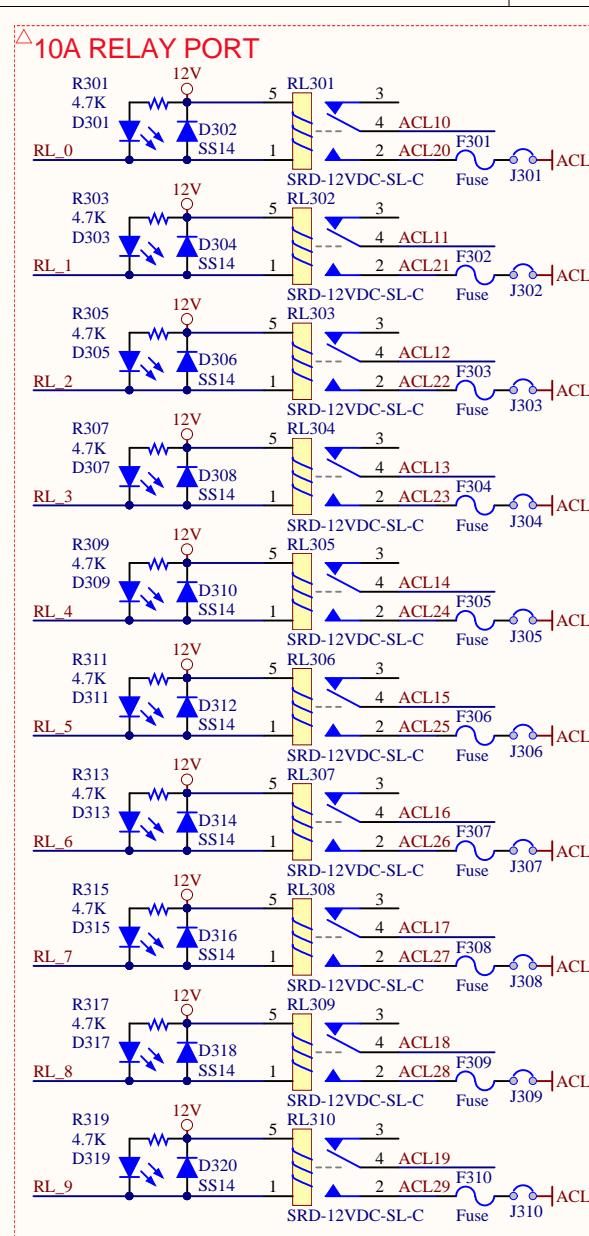
NPN Lab



Title **eBox_3G**

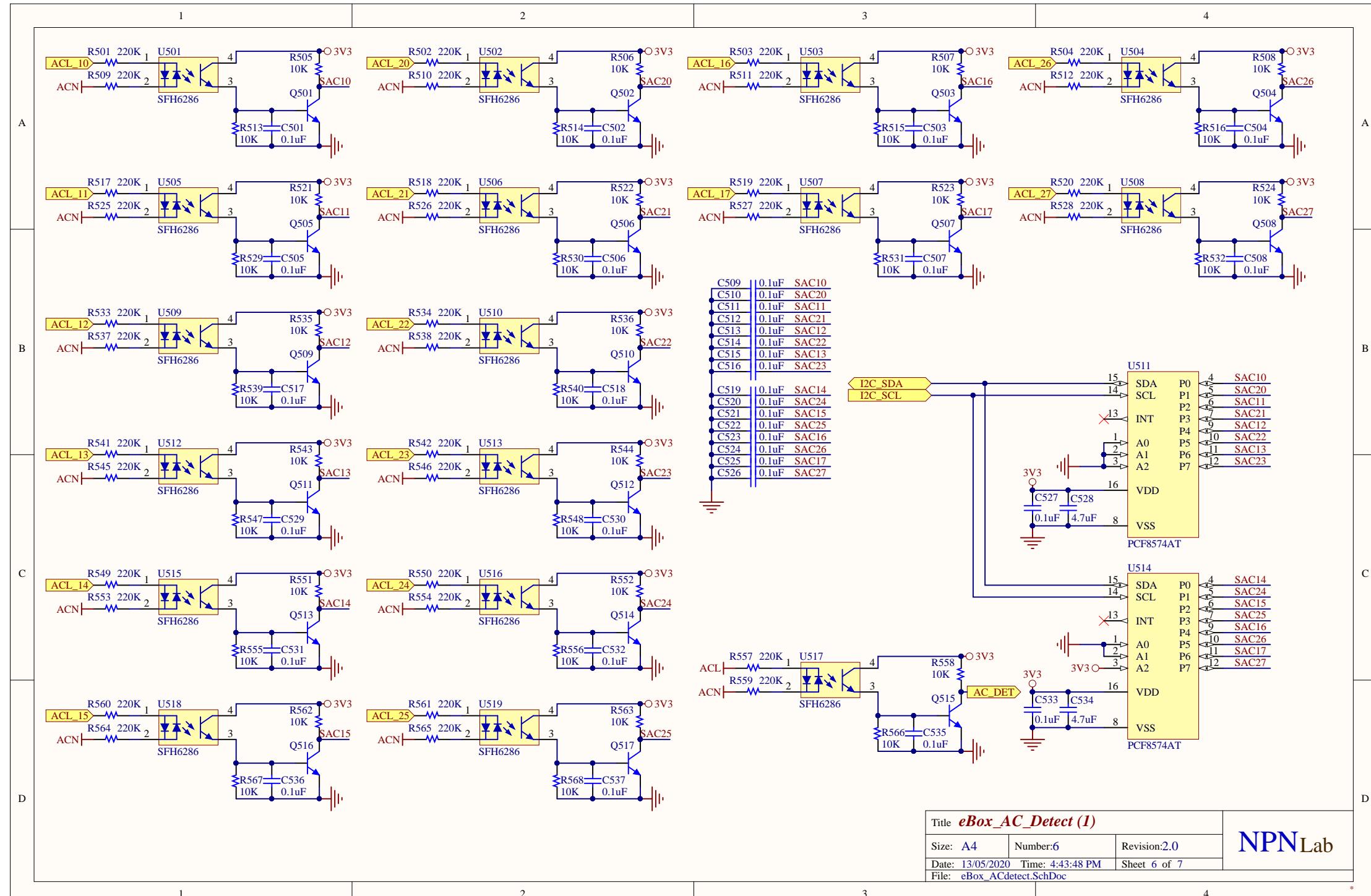
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Date: 13/05/2020	Time: 4:43:48 PM	Sheet 4 of 7
File: eBox_3G.SchDoc		

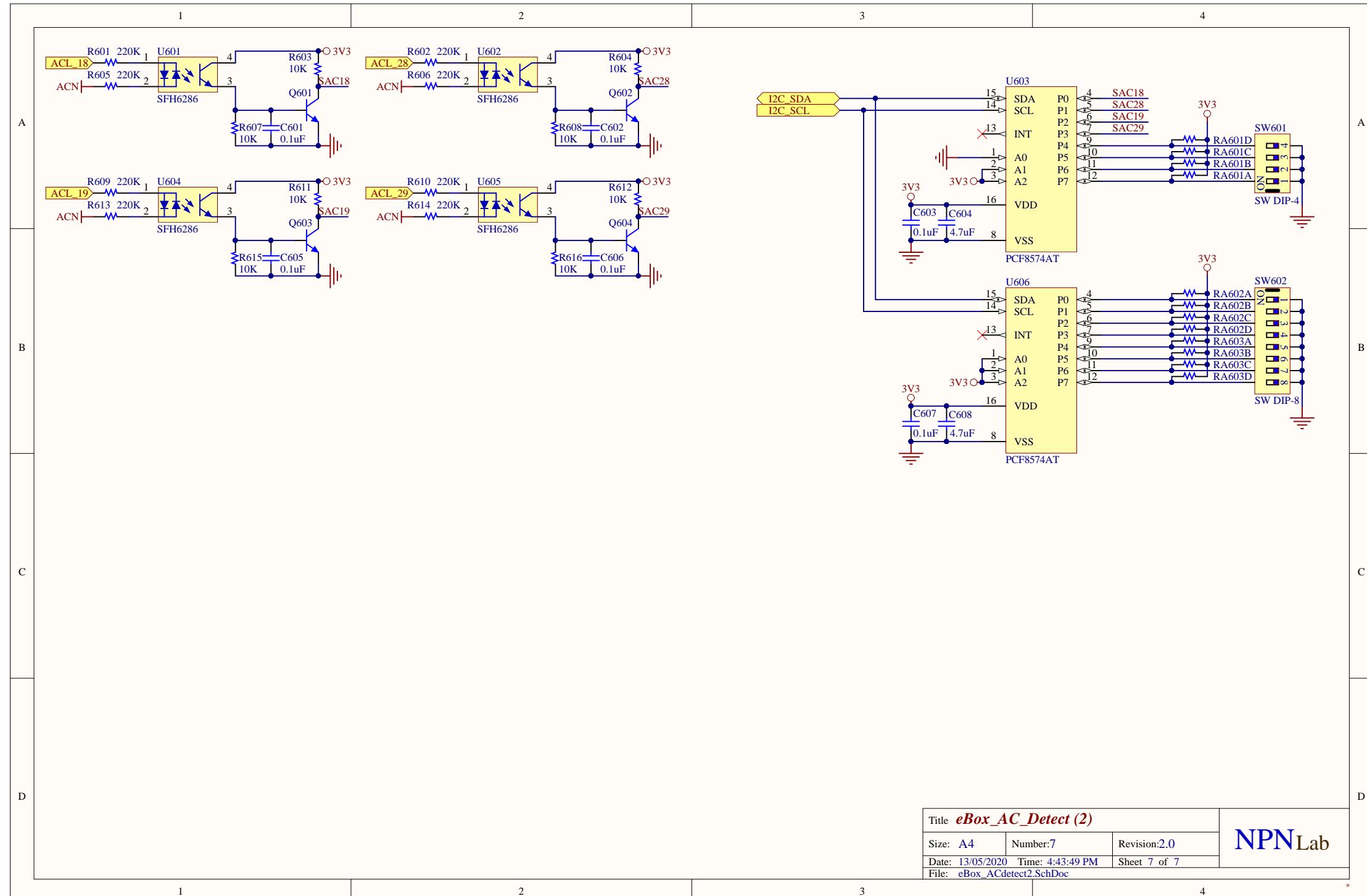
NPN Lab

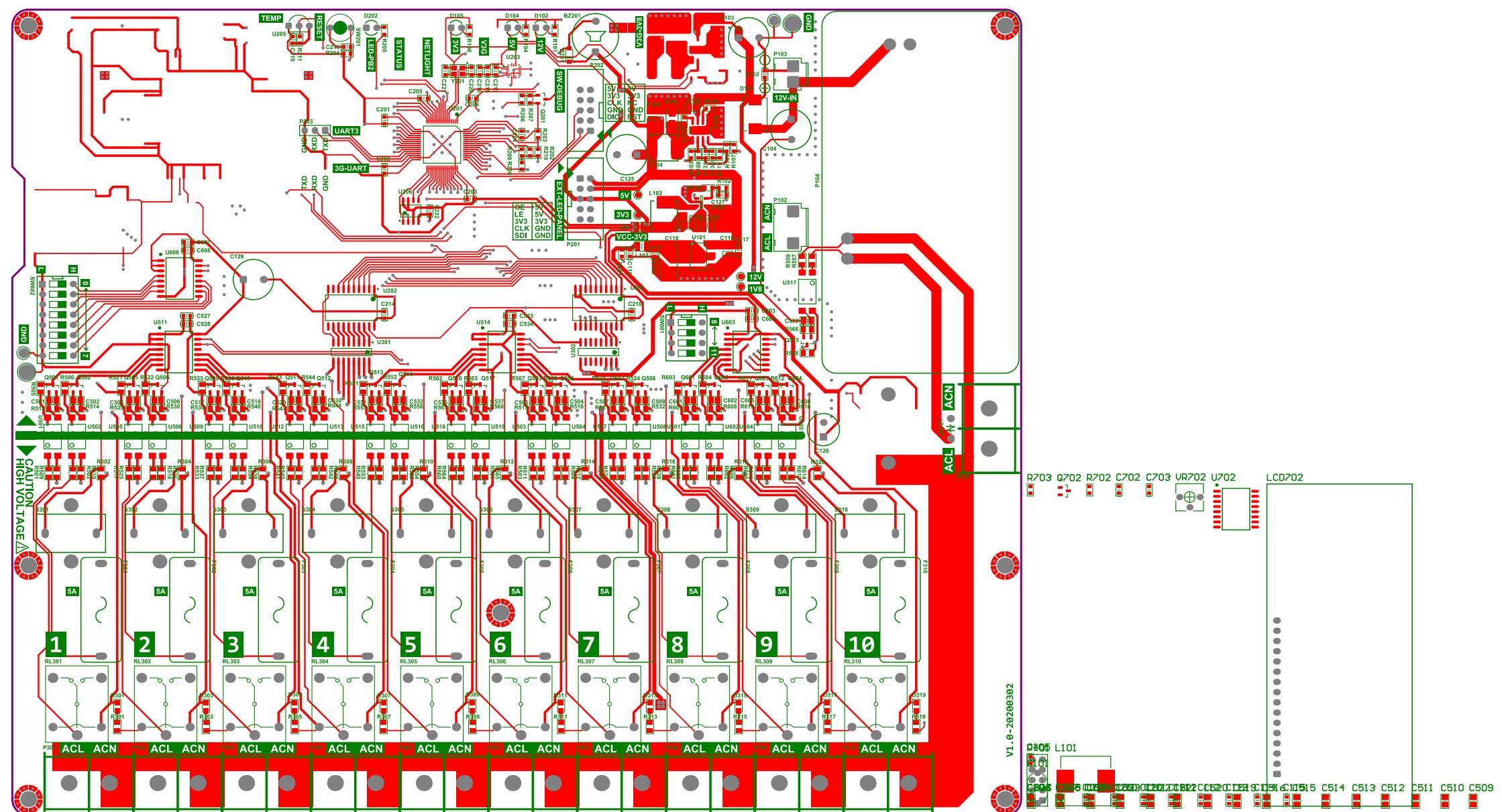


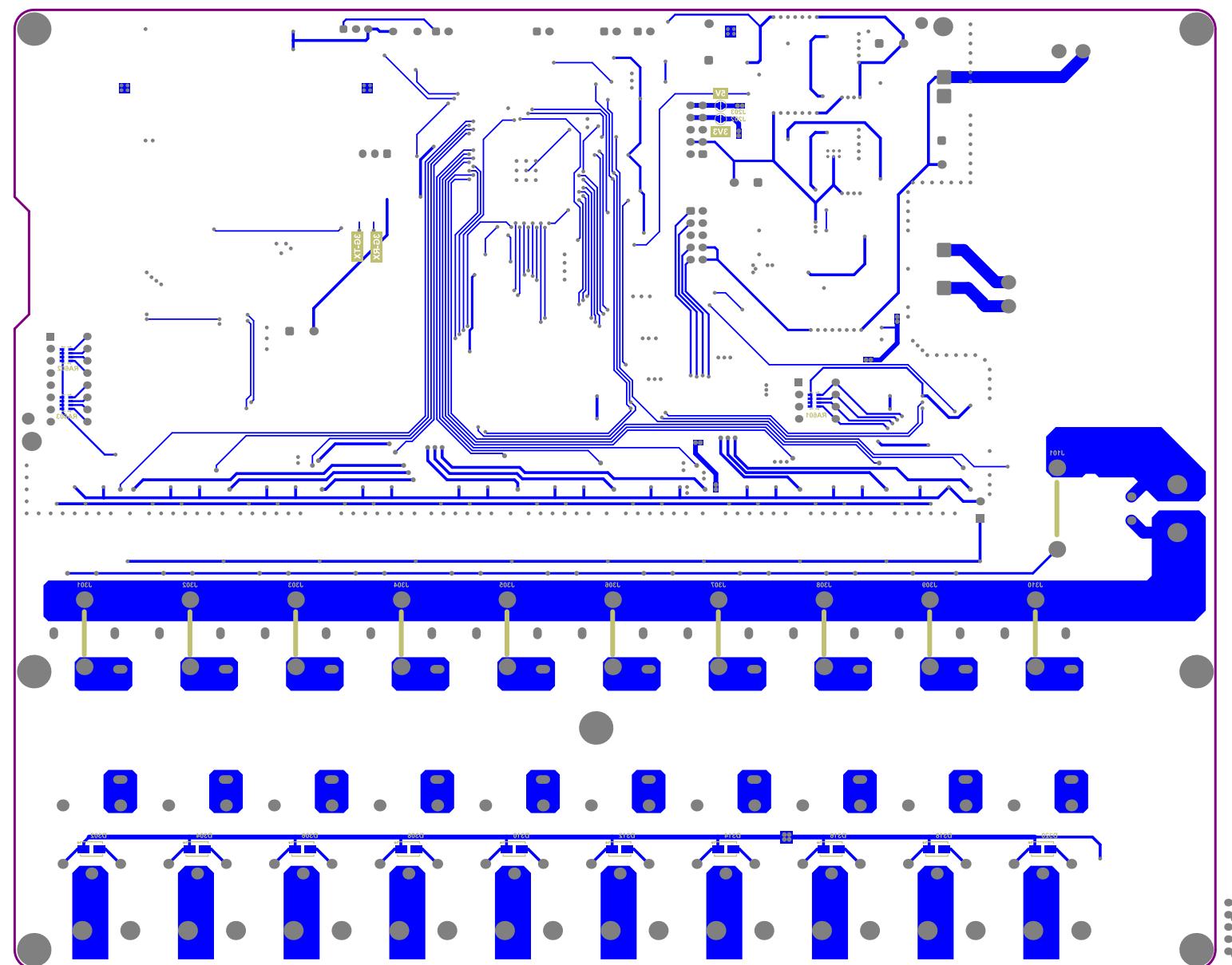
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Size: **A4** Number: **5** Revision: **2.0**
Date: **13/05/2020** Time: **4:43:48 PM** Sheet **5** of **7**
File: **eBox_Peripherals.SchDoc**

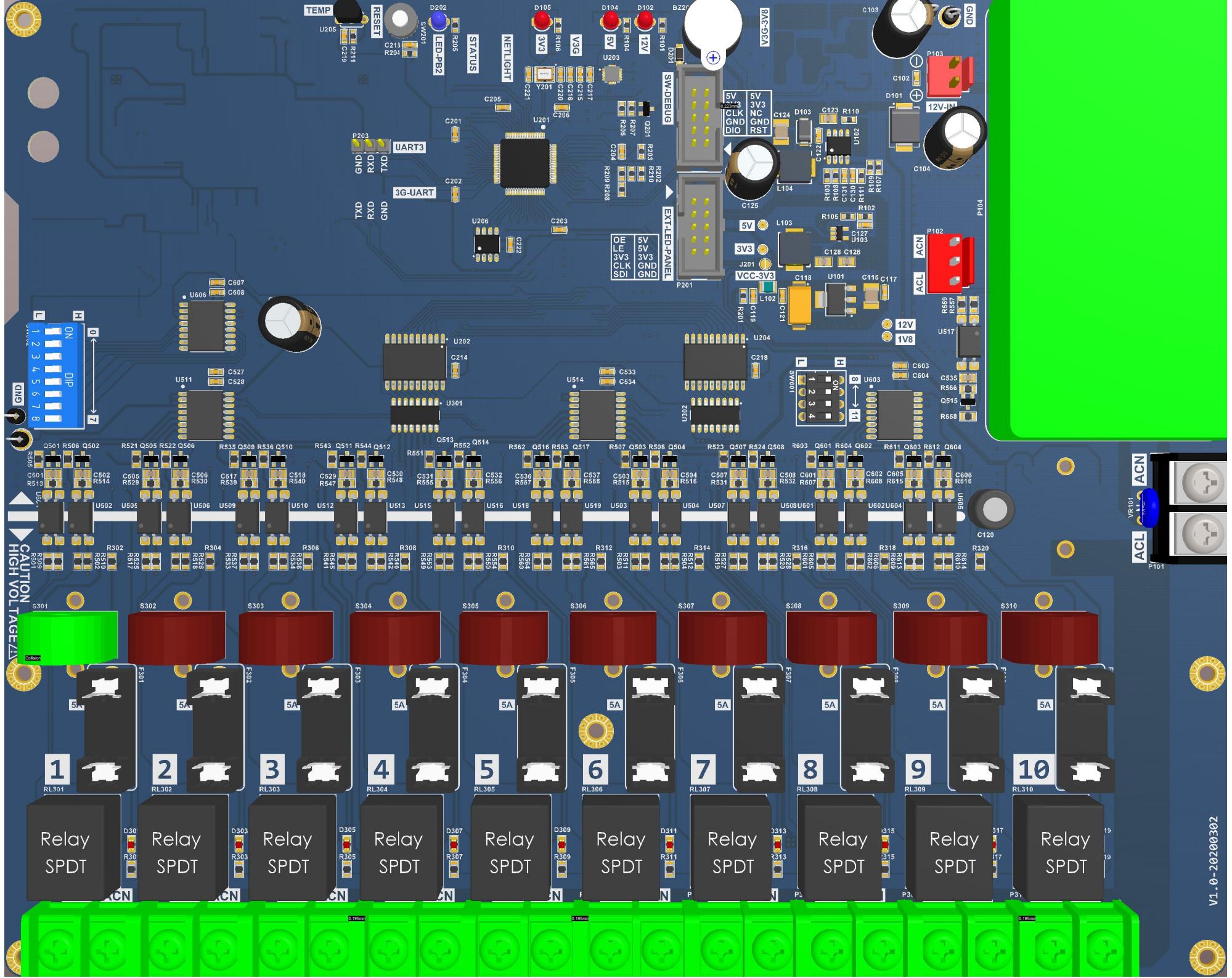
NPN Lab











0.246mm

