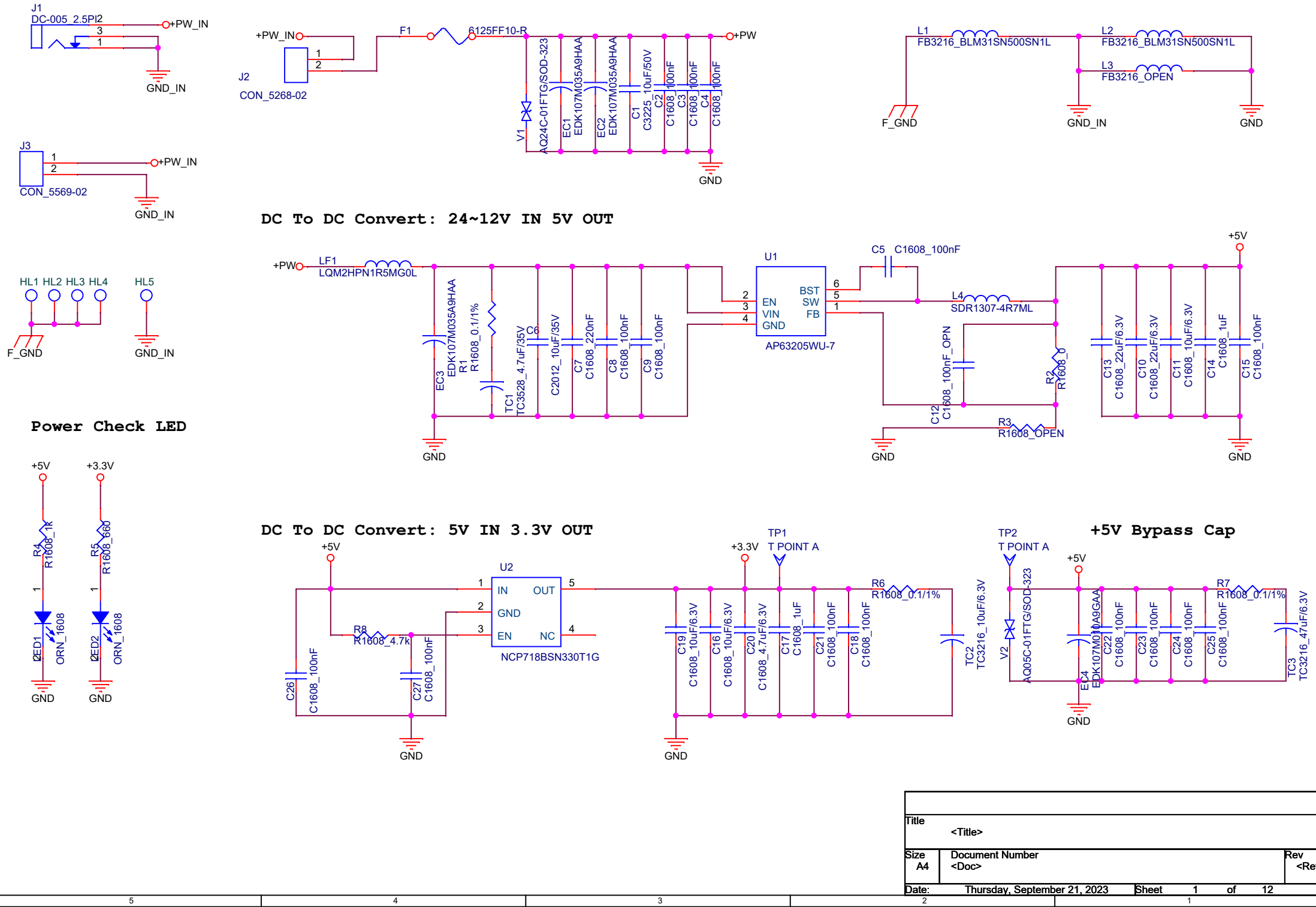


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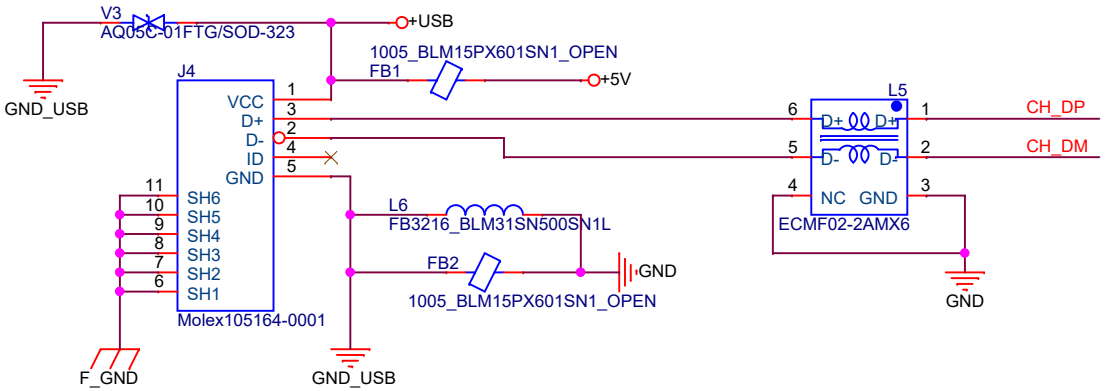
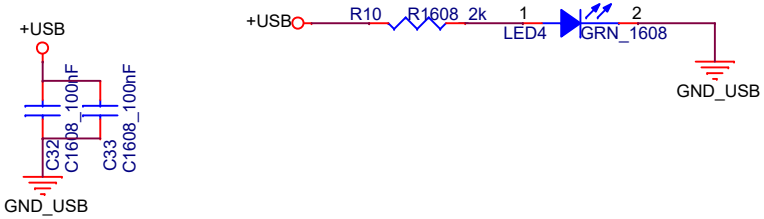
| Date: Thursday, September 21, 2023 | Sheet 1 of 12 | |

## USB Connector

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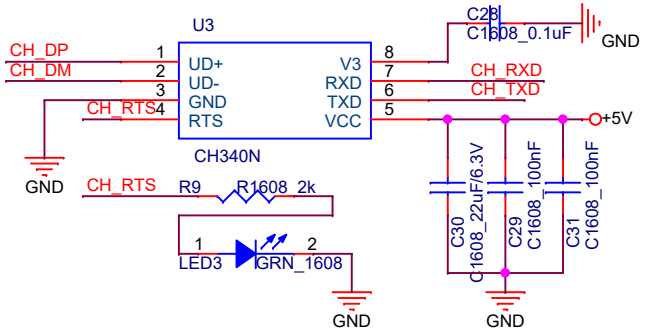


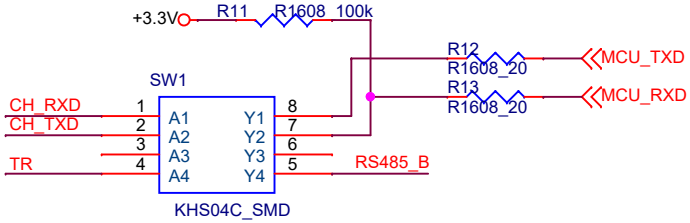


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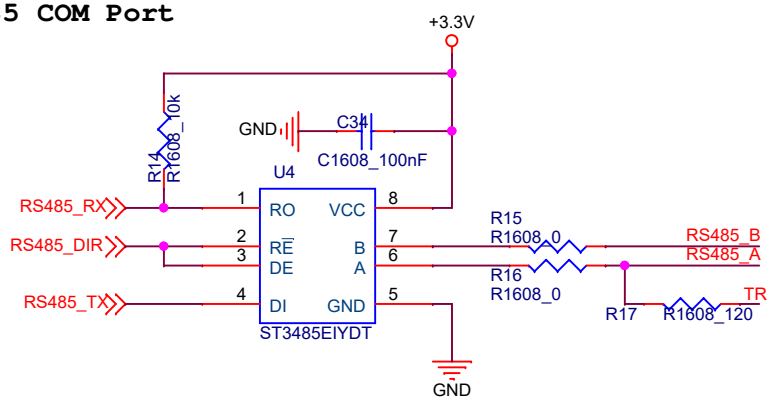


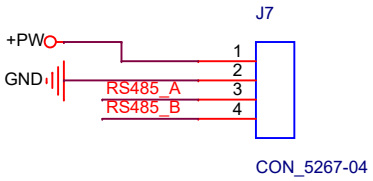


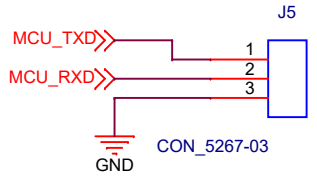


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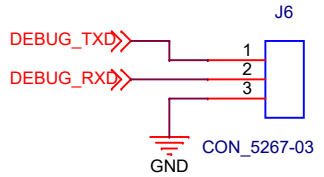


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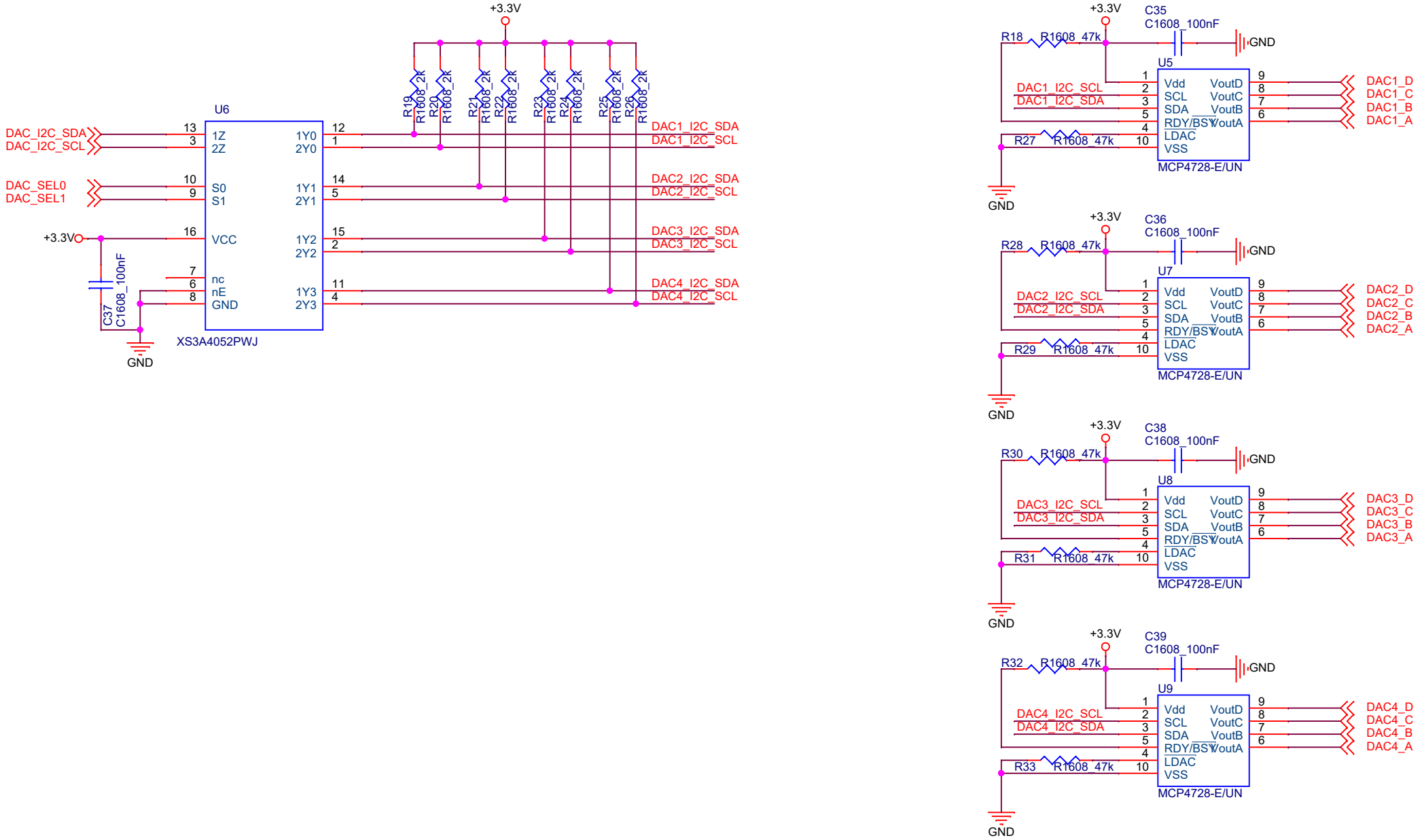
| Date: Thursday, September 21, 2023 | Sheet 2 of 12 | |

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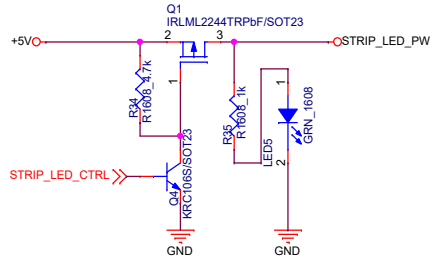
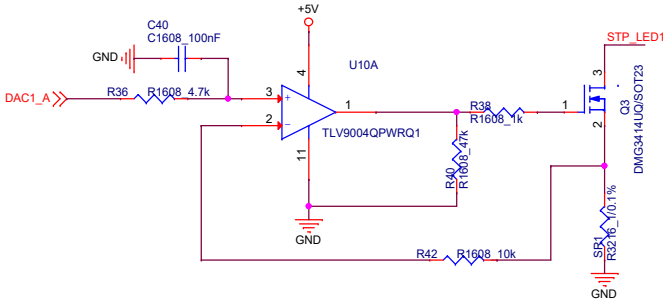
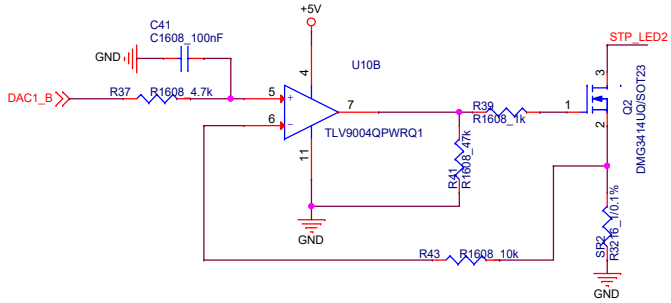
| Date: Thursday, September 21, 2023 | Sheet 3 of 12 | |

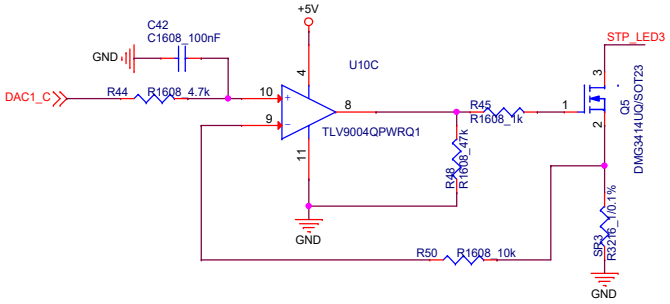
## Strip Light Source Power ON/OFF

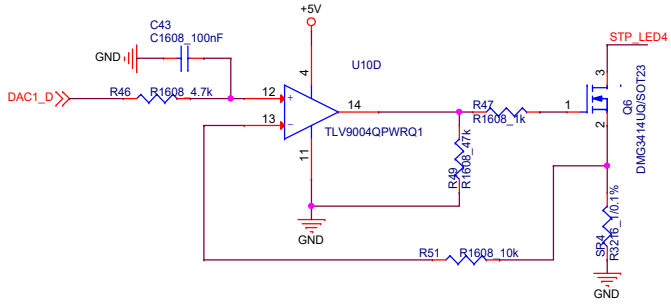


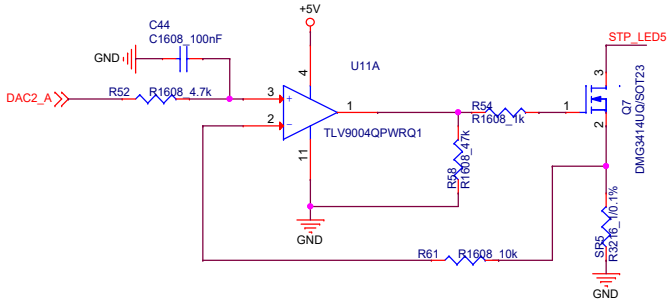

## Strip LED Driv 8 Channel

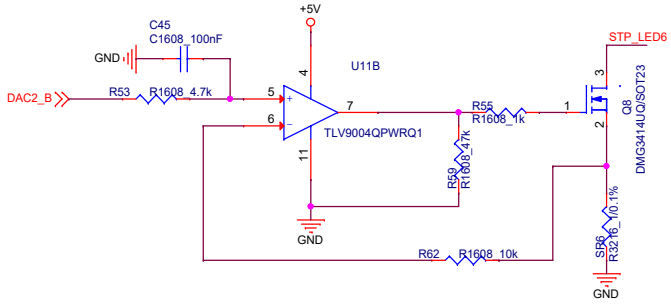


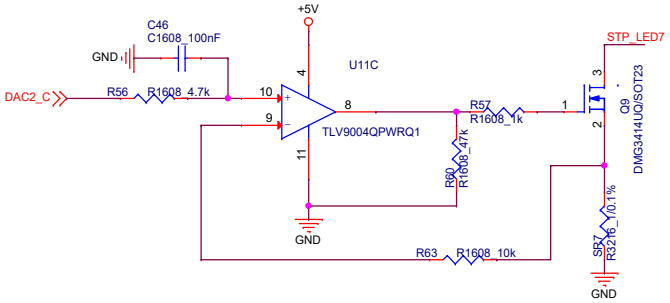



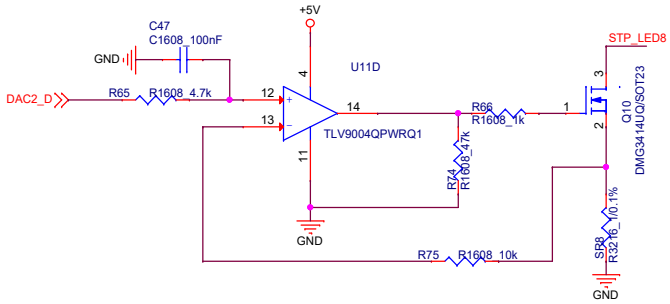

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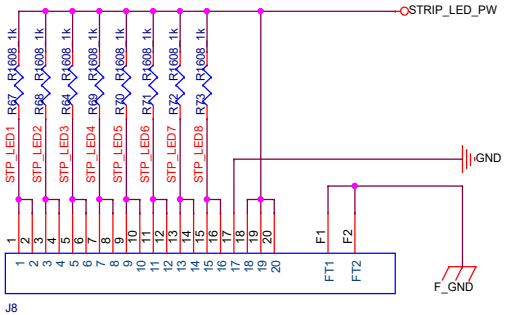


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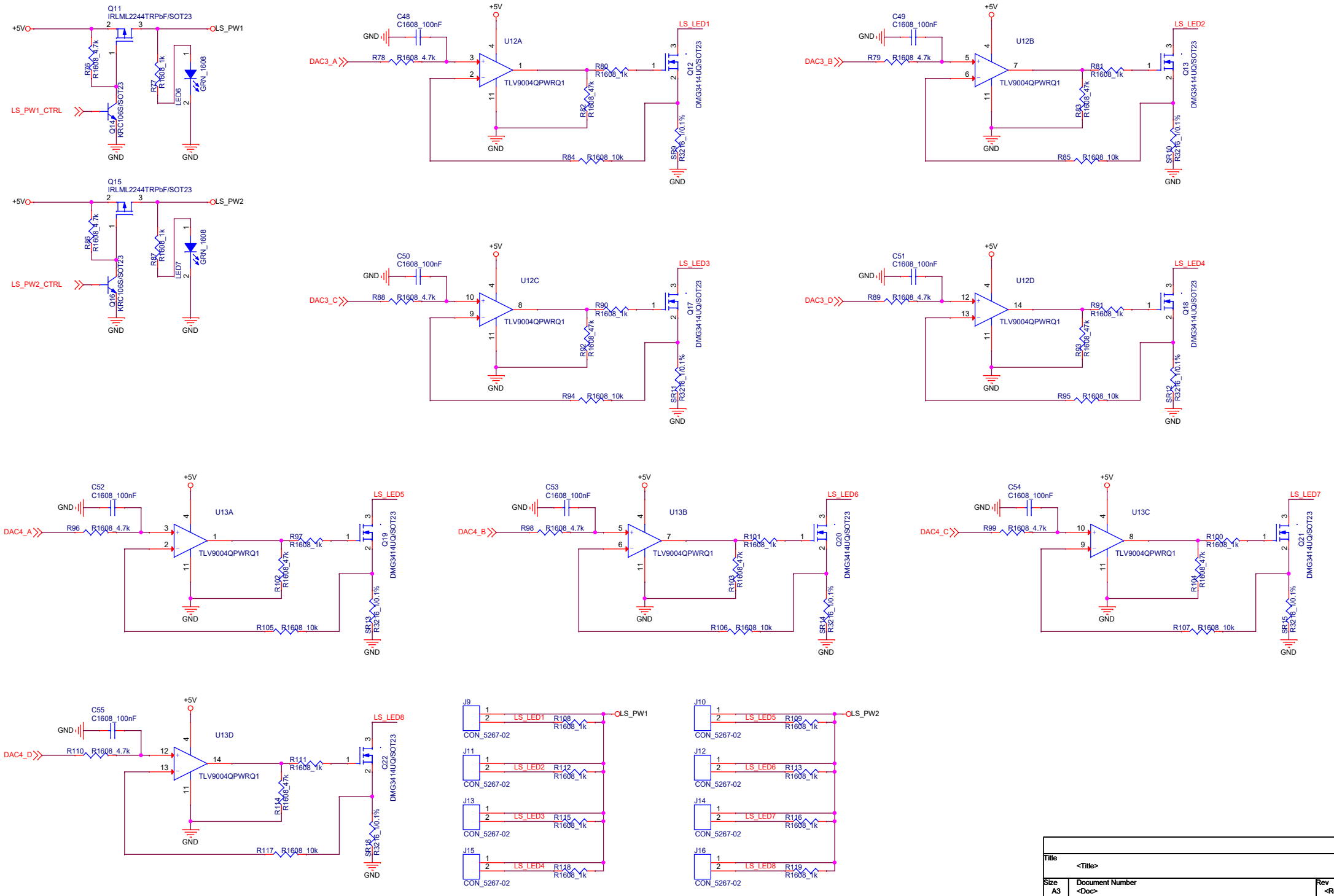
| Date: Thursday, September 21, 2023 | Sheet 4 of 12 | |

# Light Source Power ON/OFF

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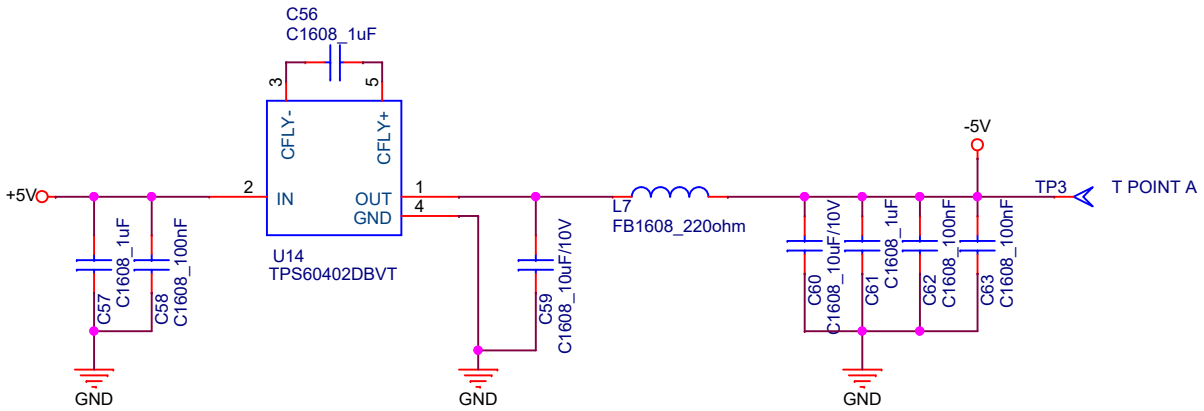
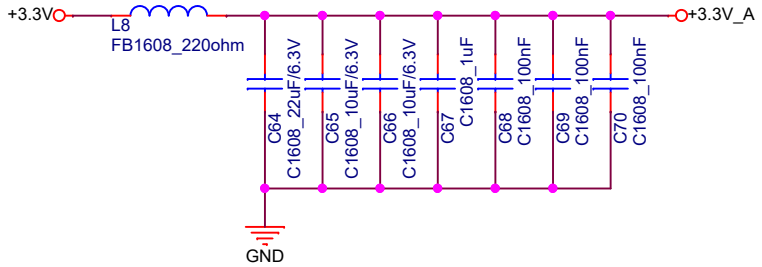
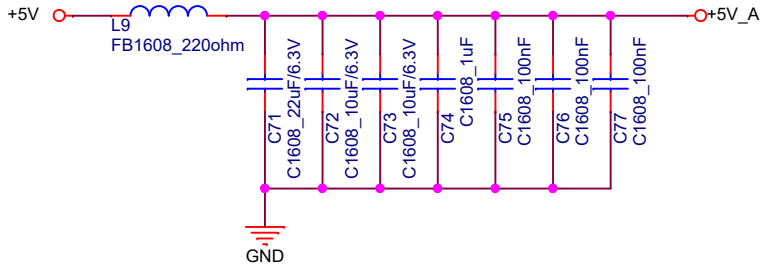
| Date: Thursday, September 21, 2023 | Sheet 5 of 12 | |

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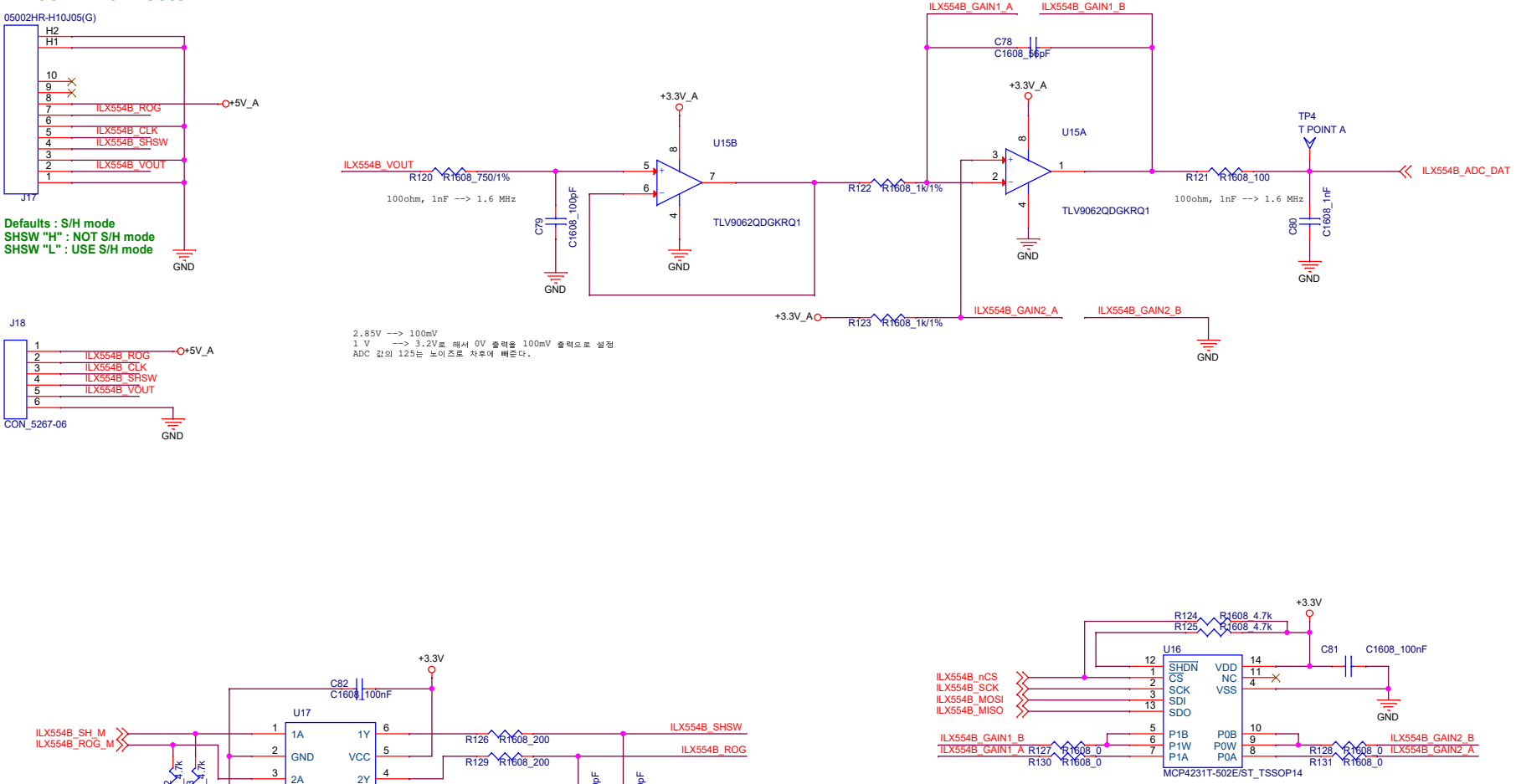
| Date: Thursday, September 21, 2023 | Sheet 6 of 12 | |

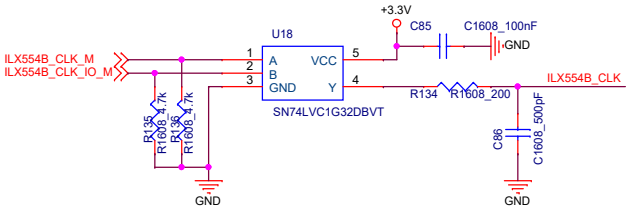
# ILX554B Connector







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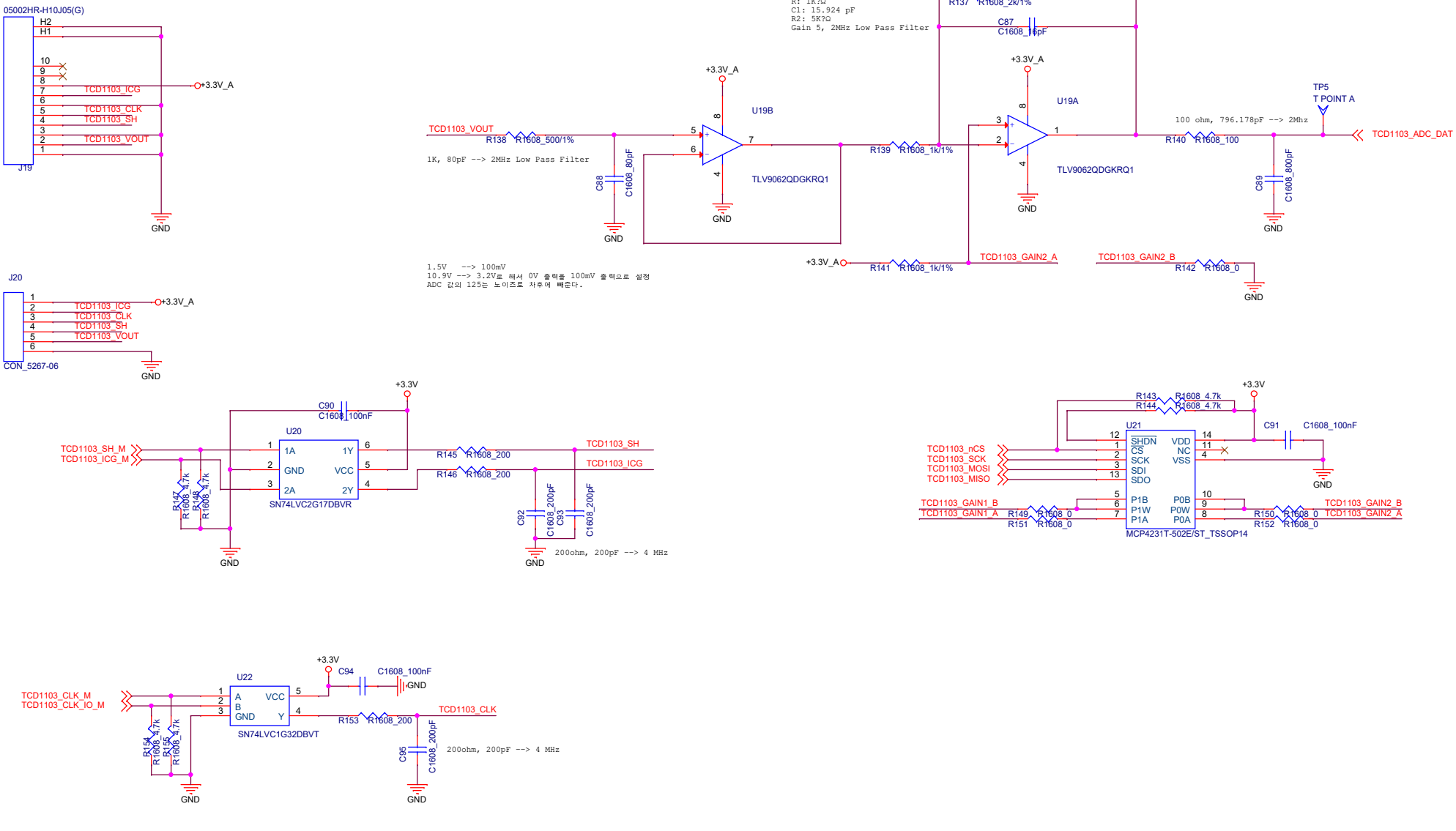
| Date: Thursday, September 21, 2023 | Sheet 7 of 12 | |

# TCD1103 Connector

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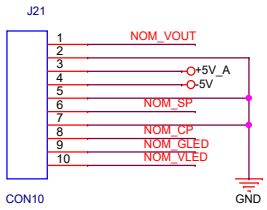
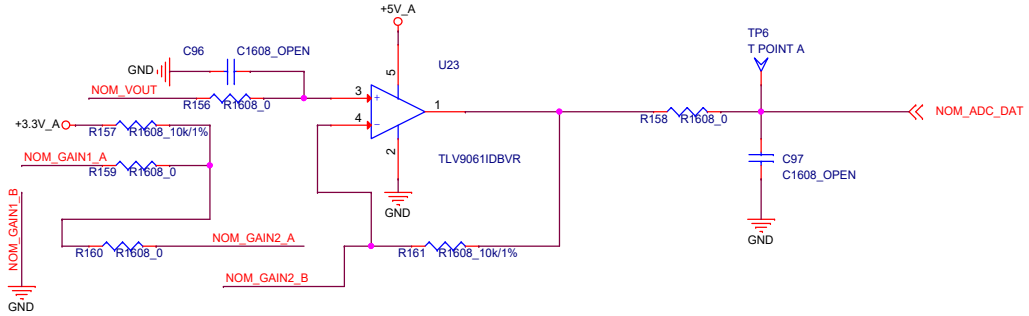
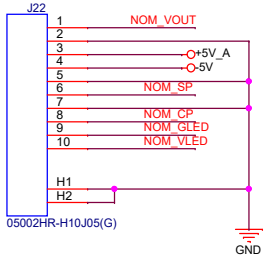
| Date: Thursday, September 21, 2023 | Sheet 8 of 12 | |

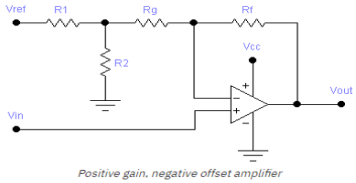
# NOM02A4 Connector

Positive Slop and Negative Offset




*Positive gain, negative offset amplifier*

$$R_2 = \frac{-b\,R_1}{(m-1)\,V_{REF} + b}$$

$$R_G = \frac{b\,R_1 + V_{REF}\,R_F}{(m-1)\,V_{REF}}$$

$$V_{OUT} = \frac{\left(R_F + R_G + \frac{R_1 R_2}{R_1 + R_2}\right) V_{IN}}{R_G + \frac{R_1 R_2}{R_1 + R_2}} - \frac{V_{REF}\,R_2\,R_F}{(R_1 + R_2)\left(R_G + \frac{R_1 R_2}{R_1 + R_2}\right)}$$

VOUT= mVIN +b

설계자는 R 1 및 R F 값을 선택해야 하며 , 다음 공식을 사용하여 R 2 및 R G 의 적절한 값을 계산할 수 있습니다.

1.3 - 0.15 = 1.15 --> 1.15 X = 3.2, X = 2.8
1.3 x 2.8 = 3.64
0.15 x 2.8 = 0.42

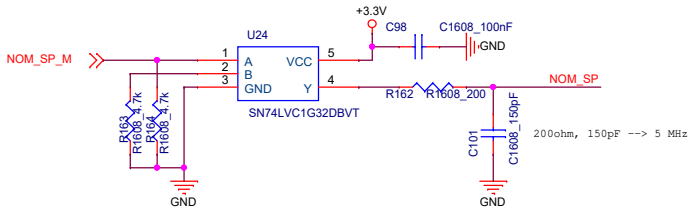
m = 2.8
b = 0.32

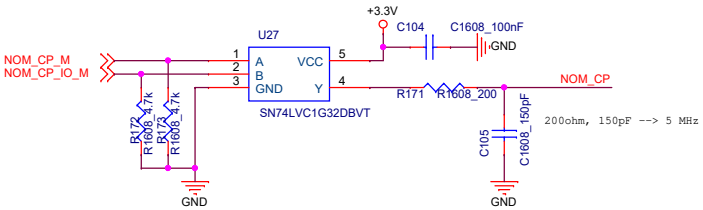
R1 = 10000
R2 = ?

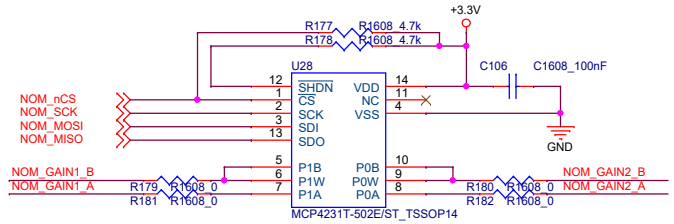
RF = 10000
Rg = ?

R2 = -bR1 /( (m-1)Vref + b)
= 0.32 x 10000 / ( (2.8-1)3.3 -0.32) = R2 = 569

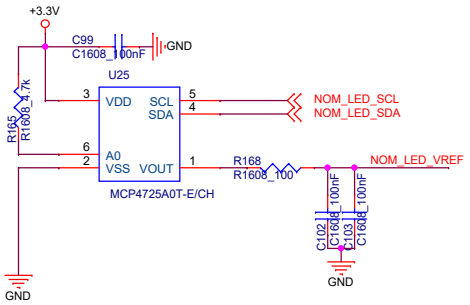
Rg = (bR1+VrefRf) /((m-1) Vref)
= (-0.32x10000 + 3.3x10000)/((2.8-1)3.3) = 5,016



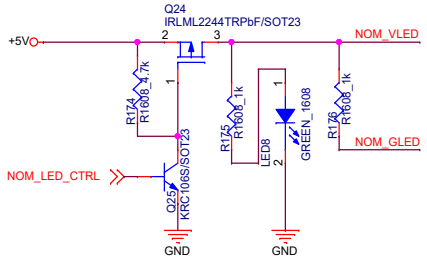



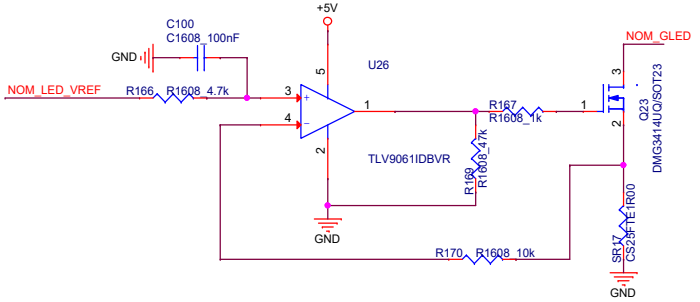

## NOM LED Current Controll




## NOM LED Source Power ON/OFF




## NOM LED Drive

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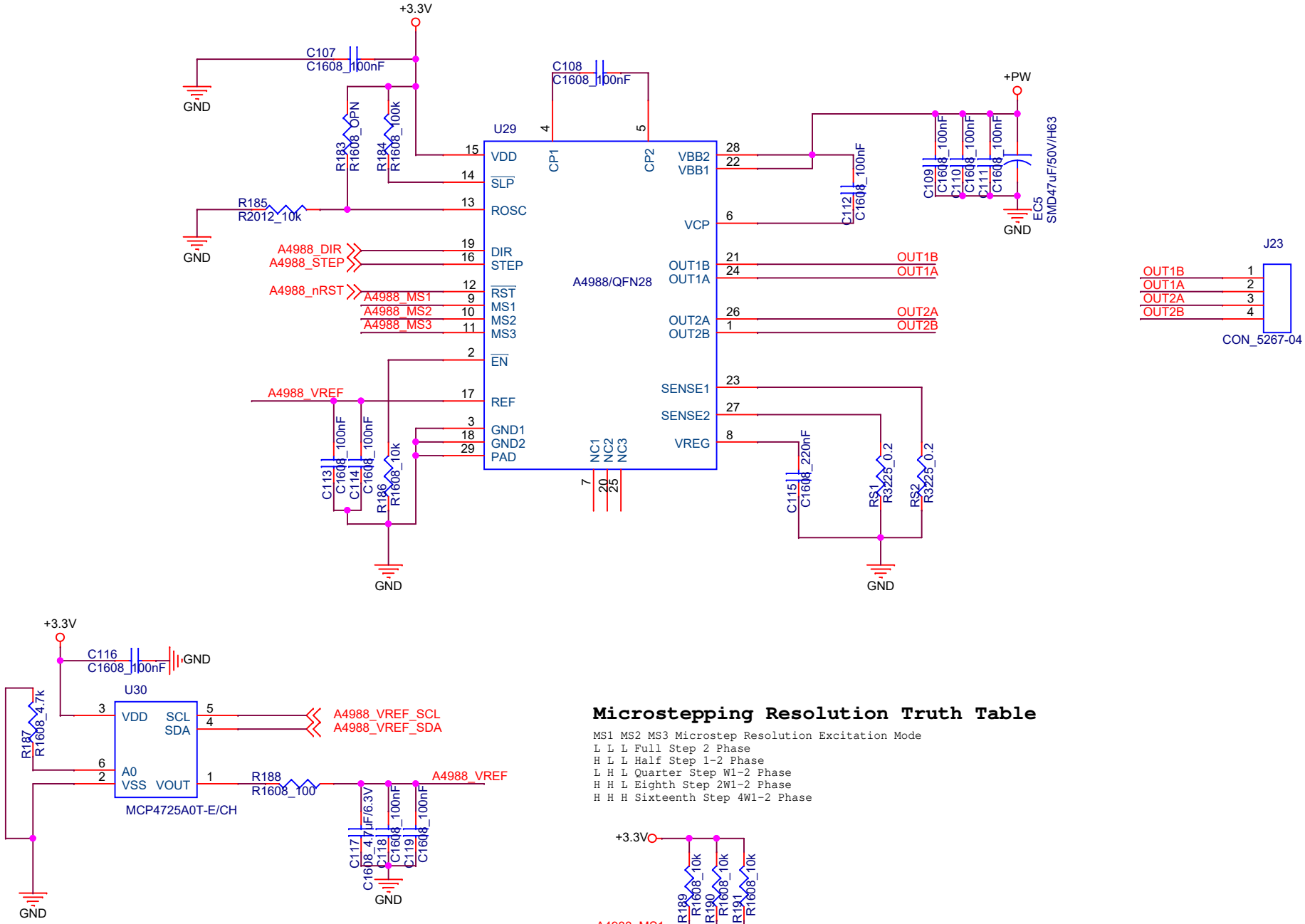
| Title | <Title> | | |
| Size A3 | Document Number <Doc> | | Rev <RevCode> |
| Date: Thursday, September 21, 2023 | Sheet 9 of 12 | | |




## Microstepping Resolution Truth Table

| MS1 | MS2 | MS3 | Microstep Resolution | Excitation Mode |
|---|---|---|---|---|
| L | L | L | Full Step | 2 Phase |
| H | L | L | Half Step | 1-2 Phase |
| L | H | L | Quarter Step | W1-2 Phase |
| H | H | L | Eighth Step | 2W1-2 Phase |
| H | H | H | Sixteenth Step | 4W1-2 Phase |

| | | | | |
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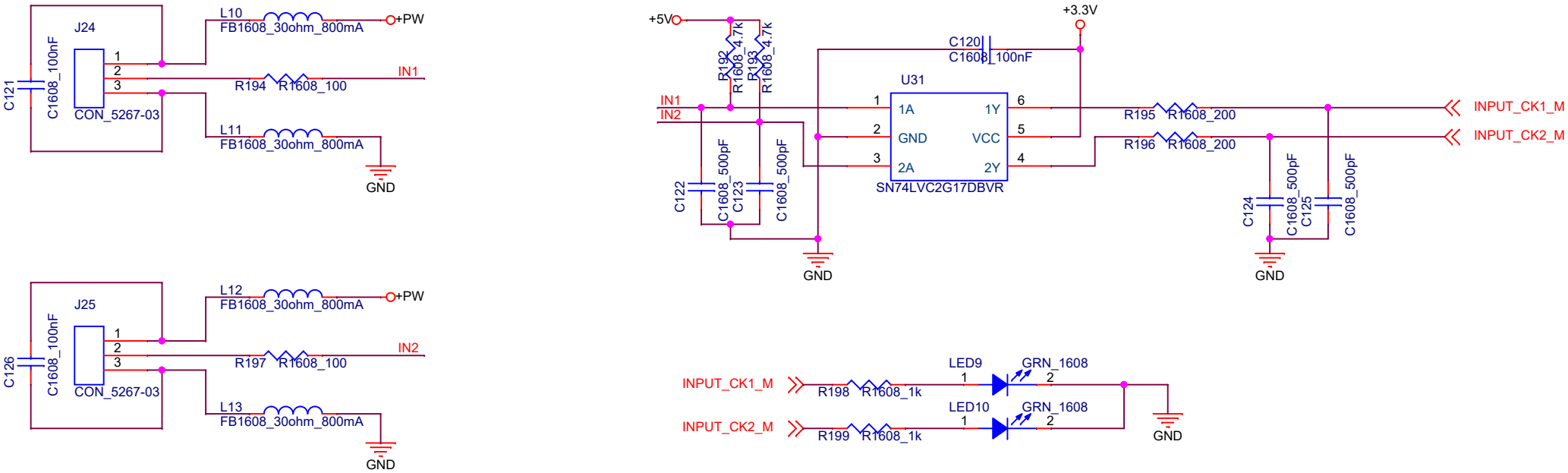
| Title | <Title> | | | |
| Size A4 | Document Number <Doc> | | | Rev <RevCo |
| Date: Thursday, September 21, 2023 | | Sheet 10 of 12 | | |

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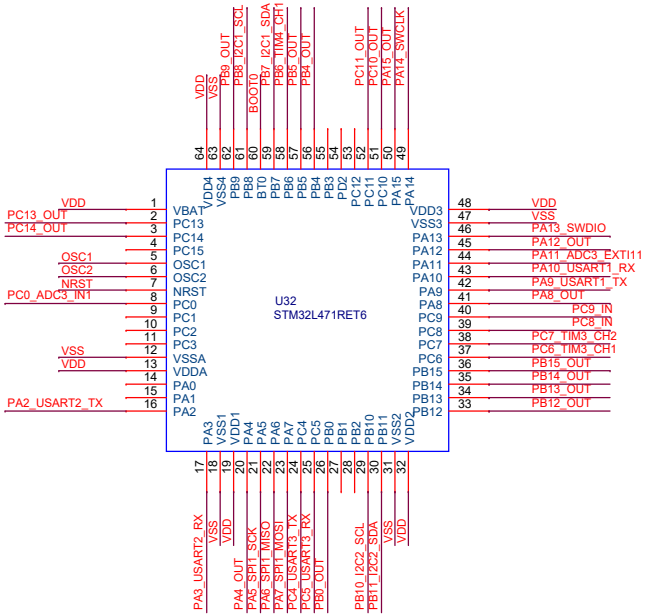
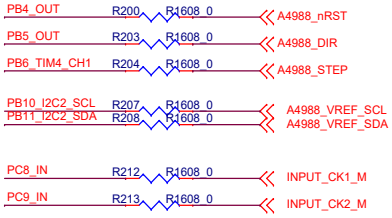
| Size A4 | Document Number <Doc> | Rev <RevCo |
| Date: Thursday, September 21, 2023 | Sheet 11 of 12 | |

## MCU




## Light Source Control


## A4988 Control

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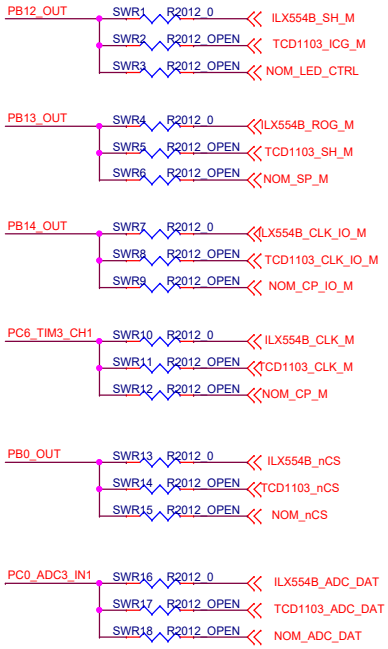
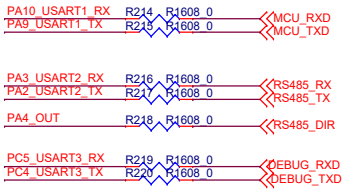
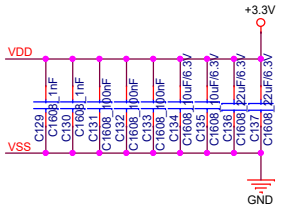


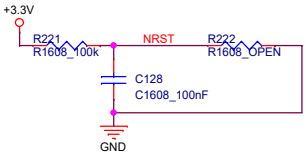

## Communication Interface



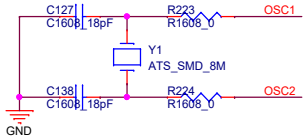

## MCU Power




## Reset

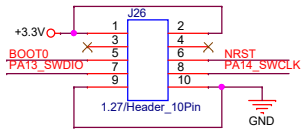



## Main Clock

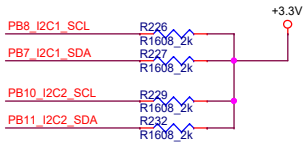



## BOOT0

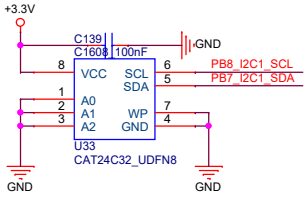

## SWD Interface



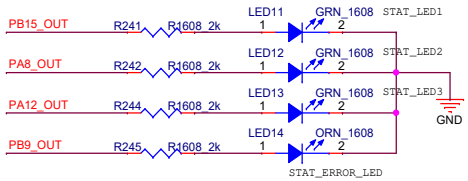

## I2C Pull-Up




## EEPROM

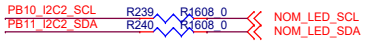



## MCU Run Status LED




## PA5_SPI1_SCK / PA6_SPI1_MISO / PA7_SPI1_MOSI


## PB10_I2C2_SCL / PB11_I2C2_SDA




## PC7_TIM3_CH2 / PA11_ADC3_EXTI11


| | | |
|---|---|---|
| Title | <Title> | |
| Size A3 | Document Number <Doc> | Rev <RevCode> |
| Date: Thursday, September 21, 2023 | Sheet 12 of 12 | |