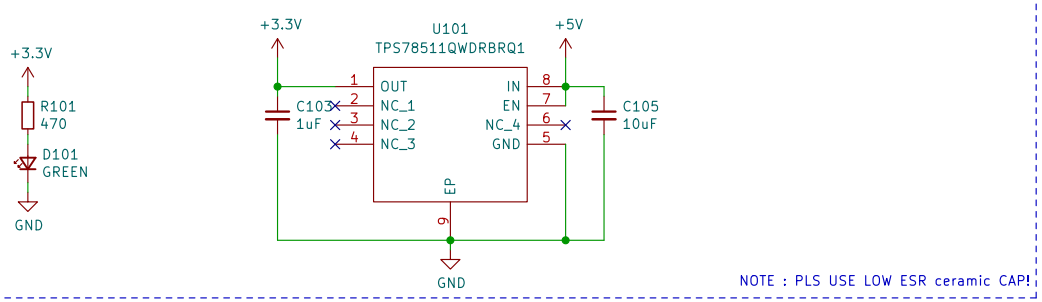
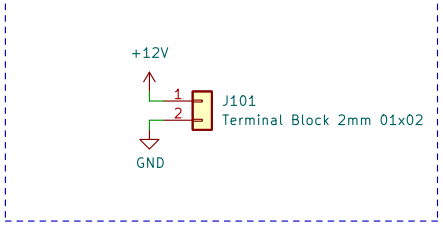
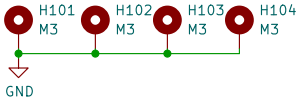
(1) Power

Linear Regulator : 5 V to 3.3 V

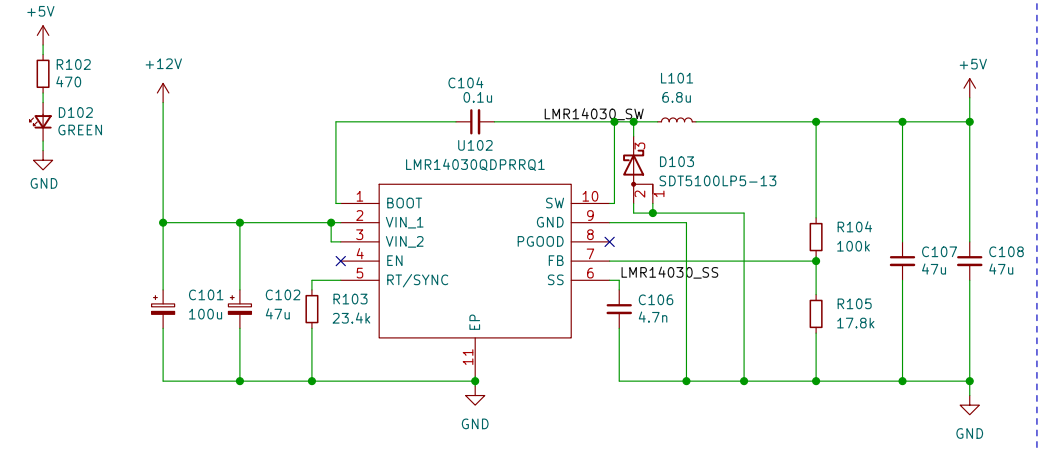


Secondary Power Input





Switching Regulator : 12 V to 5 V

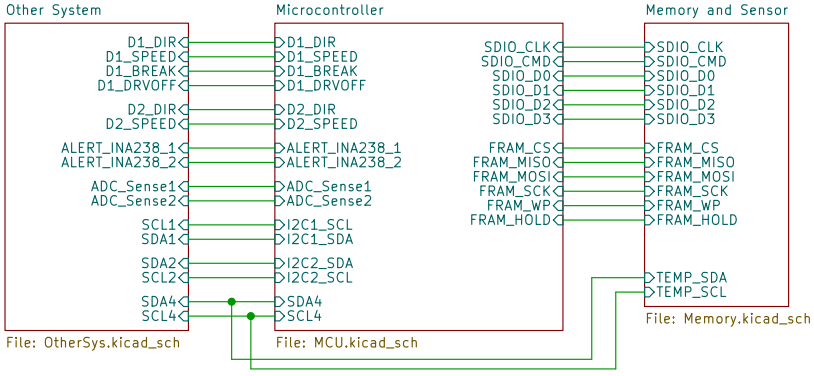


R_T = 42904 * f_sw(khz) ^ −1.088 = 42904 * 1000 ^ −1.088 = 23.4kΩ

Choose R_FBT = 100k
R_FBB = (0.75 * R_FBT) / (V_OUT − 0.75) = (0.75 * 100k) / (5 − 0.75) = 17.8kΩ

L_MIN = ((V_IN_MAX − V_OUT) * V_OUT) / (I_OUT * K_IND * V_IN_MAX * f_sw)
= ((15 − 5) * 5) / (1.5 * 0.4 * 15 * 1000000) = 5.55 uH
Choosing around 7 uH

Data Sheet : https://www.ti.com/lit/ds/symlink/lmr14020.pdf?ts=1640080437341&ref_url=https%253A%252F%252Fwww.google.com%252F



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Title: Power		
Size: A4	Date: 2021-12-27	**Rev: REV1**
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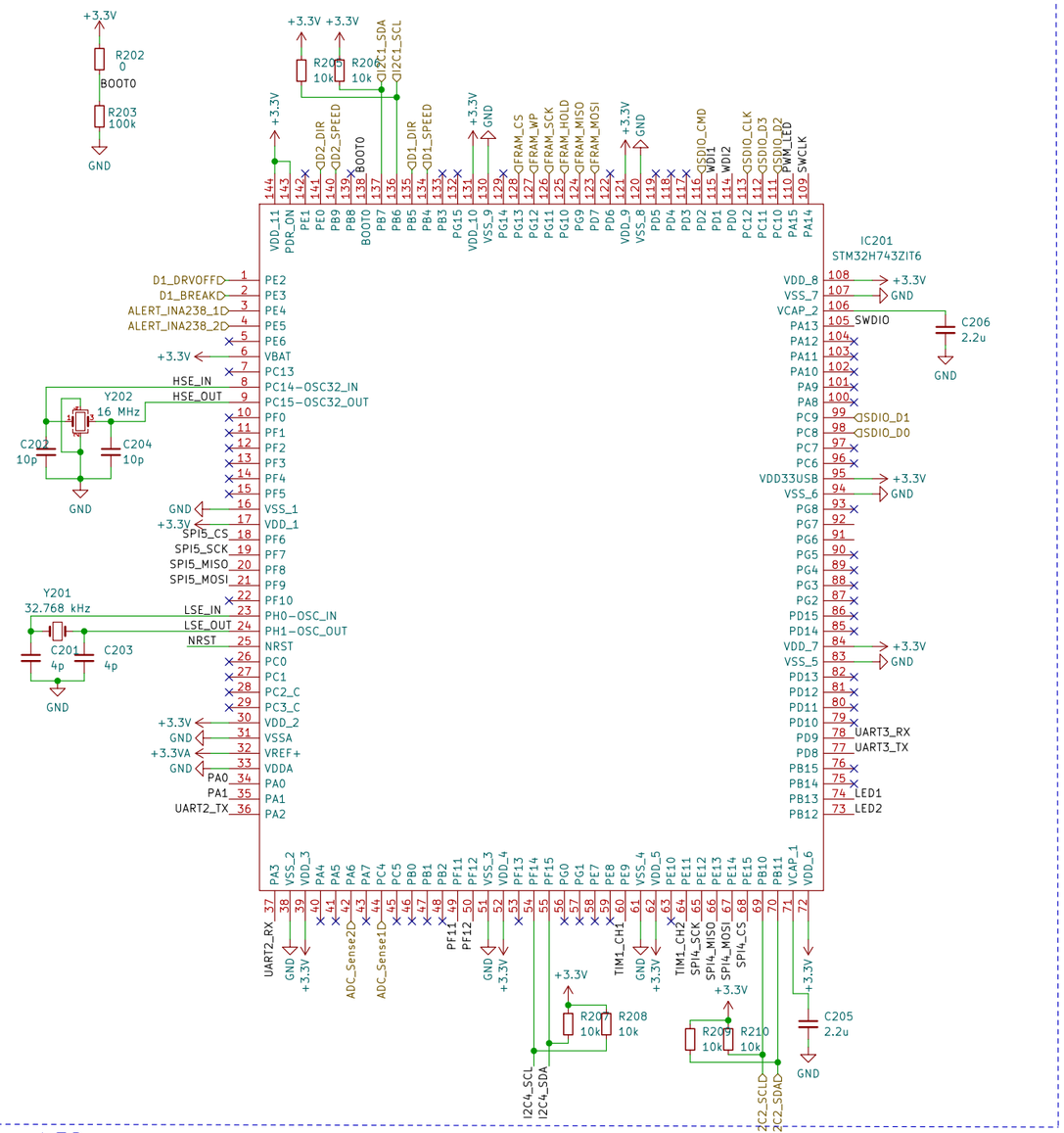
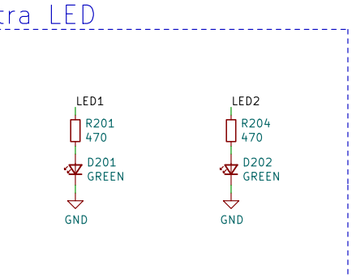
(2) Microcontroller and Pheripheral

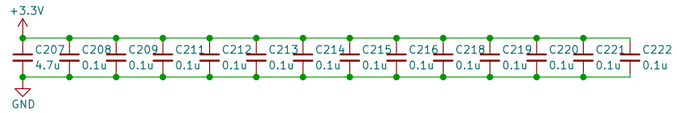
Microcontroller



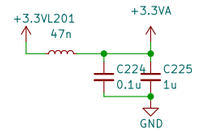
Extra LED



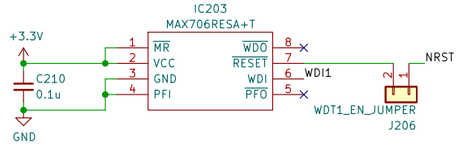
Decoupling Capacitor



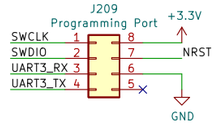
Analog VDDA Filter



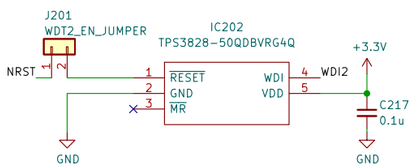
Watchdog no.1



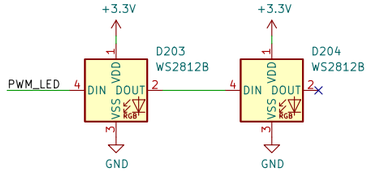
Programming Port



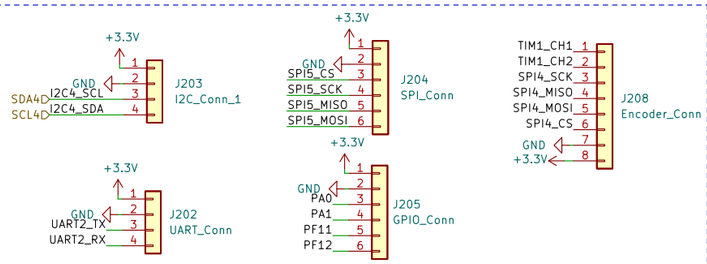
Watchdog no.2



Neopixel

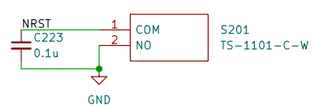


Extra Connector



PA0, PA1 can be pwm output
PF11, PF12 can be analog in

Reset Button



already has internal resistor

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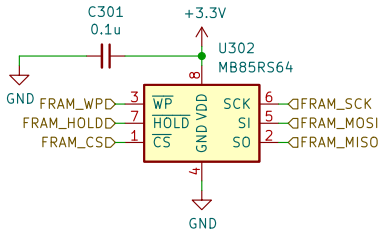
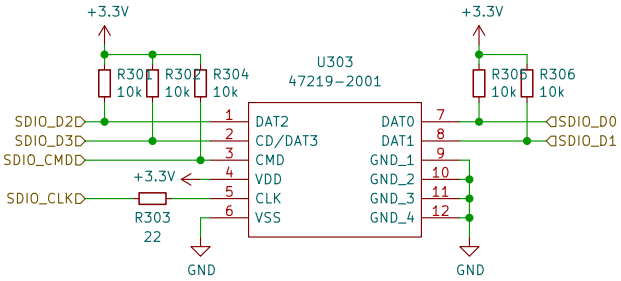
Sheet: /Microcontroller/	
File: MCU.kicad_sch	
Title: Power	
Size: A3	Date:
KiCad E.D.A. kicad (6.0.0)	Rev: REV1
	Id: 2/4

(3) Memory and Sensor

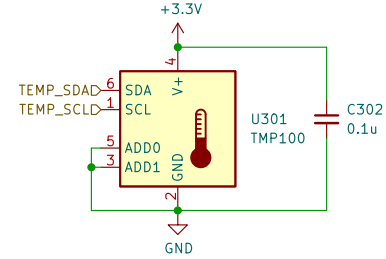
FRAM (SPI Interface)



uSDCard (SDMMC Interface)



Temperature Sensor (I2C)



I2C address: 0x88

FIBO		
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Size: A4	Date:	**Rev: REV1**
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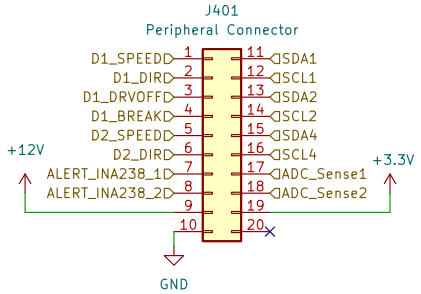

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KiCad E.D.A. kicad (6.0.0)		Id: 5/4