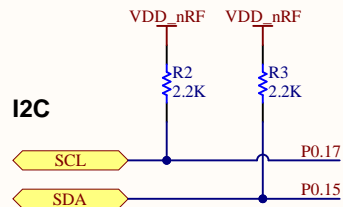


Inputs/Outputs



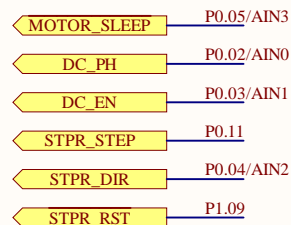
LED



IMU Sensor



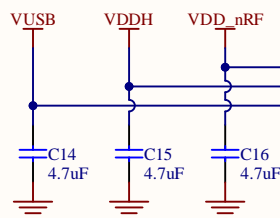
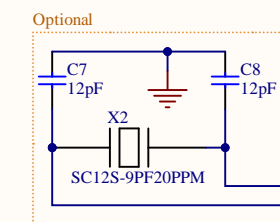
Motor Controller



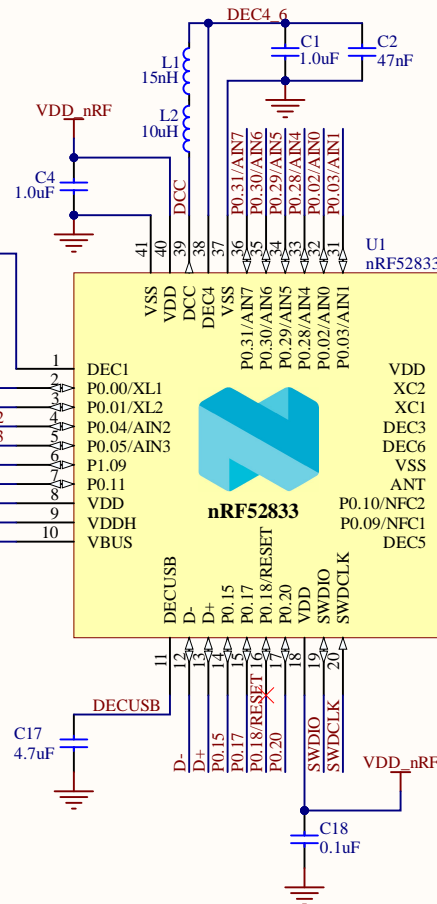
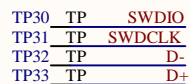
Power



Microcontroller



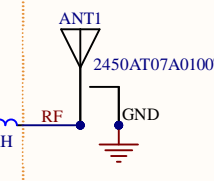
Interface



JLCPCB_JLC04081H-7628_Stackup

layer	Material Type	Thickness
Top Layer1	Copper	0.035mm
Prepreg	7628*1	0.2104mm
Inner Layer2	Copper	0.0152mm
Core	Core	0.25mm
Inner Layer3	Copper	0.0152mm
Prepreg	7628*1	0.2104mm
Bottom Layer4	Copper	0.035mm

50 Ohm trace using this stackup



DESIGN NOTE:
820 pF to DEC5 is not required
for BXX and later. Woot!

Test Points

TP34 TP P0.10/NFC2
TP35 TP P0.09/NFC1

DESIGN NOTE:
NFC pins can only be
used as GPIOs



juskim
GitHub jus-kim
YouTube @juskim

Rev: A
Var: [No Variations]

Project: Main.PrjPcb

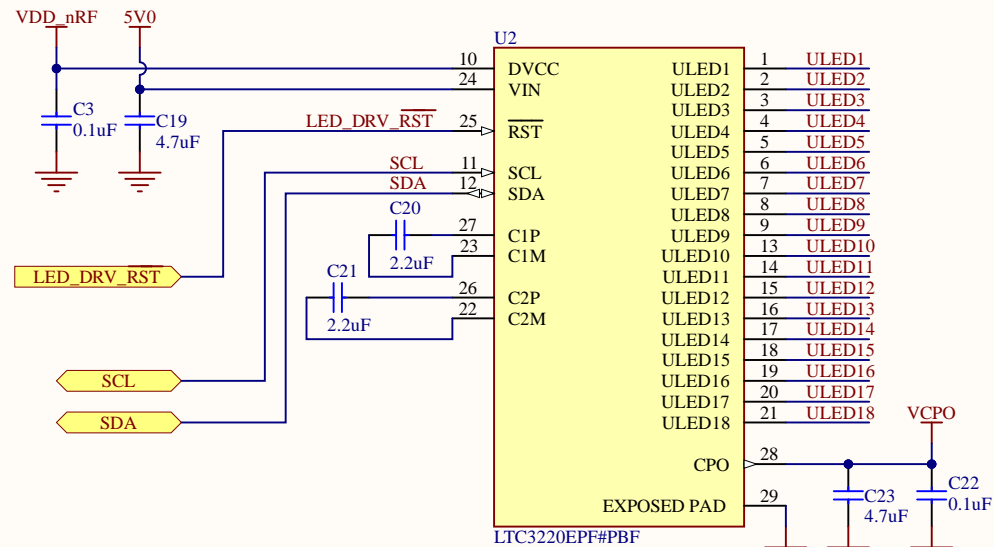
Name: Microcontroller.SchDoc

Date: 2023-08-28

Sheet 2 of 6

DESIGN NOTE:
 $I_{MAX_DVCC} < 1 \mu A$
Okay to supply from

LED Driver




Front Lights

ULED1	TP	TP1
ULED2	TP	TP2
ULED3	TP	TP3
ULED4	TP	TP5
ULED5	TP	TP6
ULED6	TP	TP7
ULED7	TP	TP8
ULED8	TP	TP9
ULED9	TP	TP10

Rear Lights

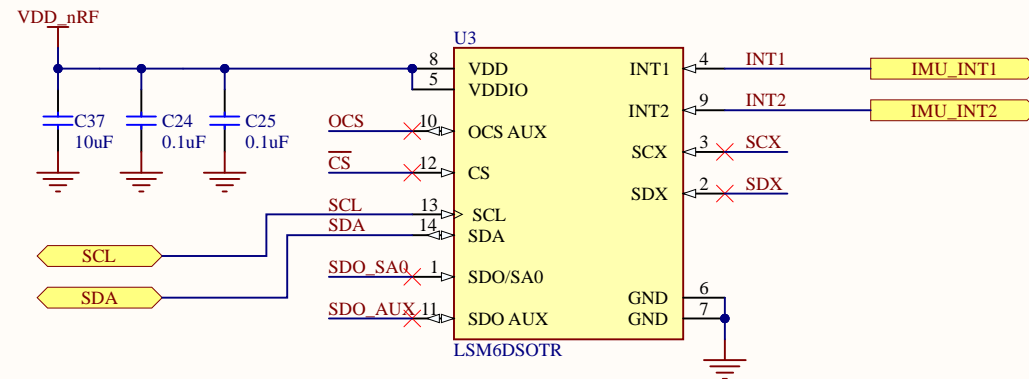
ULED10	TP	TP11
ULED11	TP	TP12
ULED12	TP	TP13
ULED13	TP	TP15
ULED14	TP	TP16
ULED15	TP	TP17
ULED16	TP	TP18
ULED17	TP	TP19
ULED18	TP	TP20


	juskim GitHub jus-kim YouTube @juskim	Rev: A
		Var: [No Variations]
Project: Main.PrjPcb		
Name: LED_Driver.SchDoc		
Date: 2023-08-28	Sheet 3	of 6

IMU (6-Axis)

DESIGN NOTE:
I_MAX = 0.55 mA

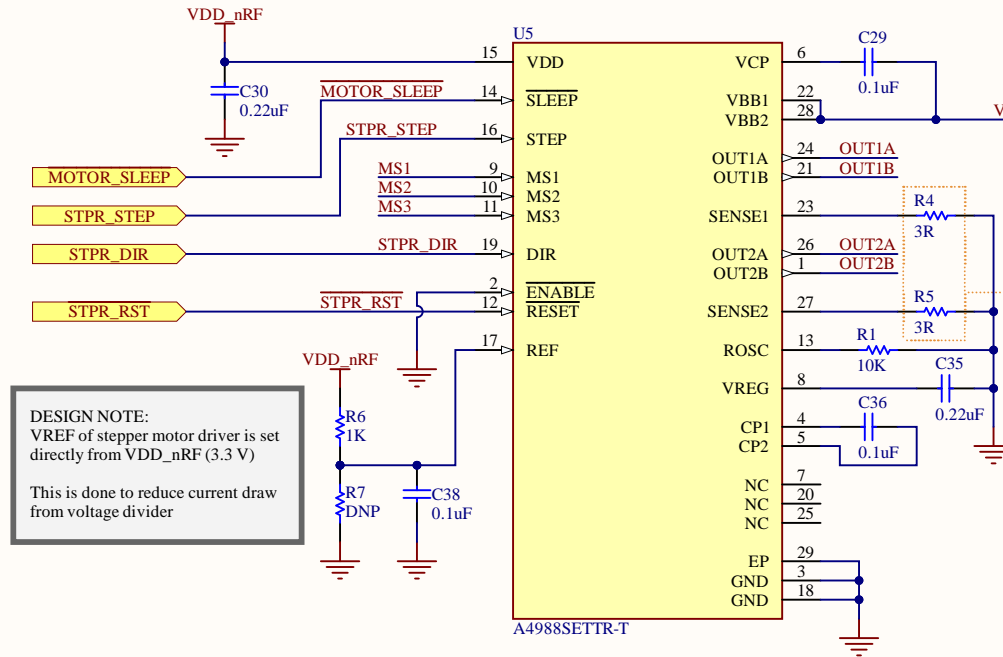
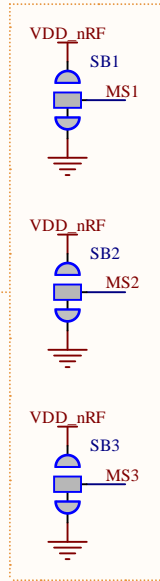
Should be okay to supply from
VDD_nRF



 juskim GitHub jus-kim YouTube @juskim	Rev: A
	Var: [No Variations]
Project: Main.PrjPcb	
Name: IMU.SchDoc	
Date: 2023-08-28	Sheet 4 of 6

A4988 (Stepper Motor)

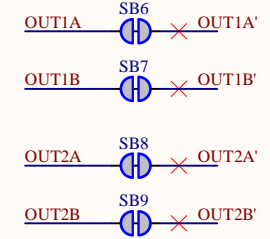
DESIGN NOTE:
Torque significantly reduced if set
to PULLED-HIGH for higher phase
resolution. SET ALL TO LOW!



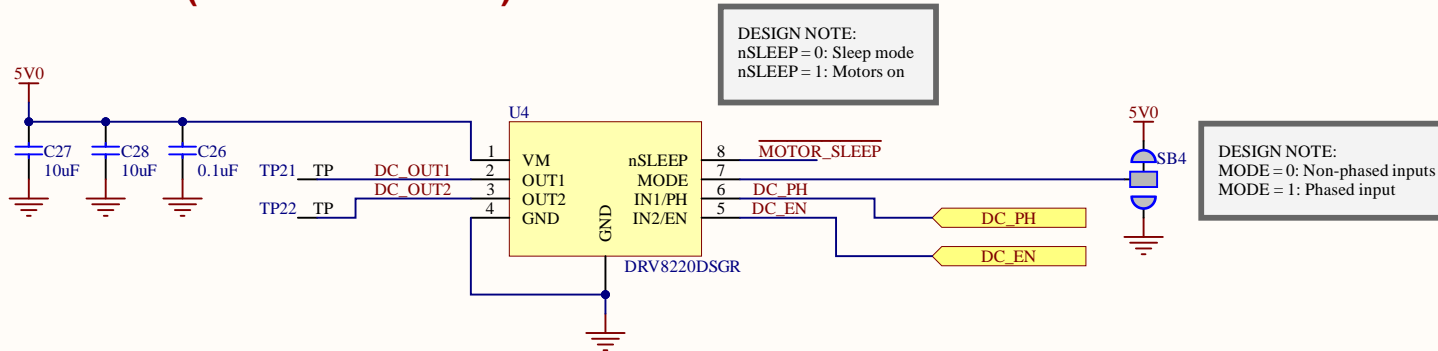
DESIGN NOTE:
VREF of stepper motor driver is set
directly from VDD_nRF (3.3 V)

This is done to reduce current draw
from voltage divider

DESIGN NOTE:
 $I_{TripMAX} = V_{REF} / (8 * R_S)$
Set to 138 mA per OUT in this example



DRV8220 (Brushed DC Motor)



DESIGN NOTE:
nSLEEP = 0: Sleep mode
nSLEEP = 1: Motors on

DESIGN NOTE:
MODE = 0: Non-phased inputs
MODE = 1: Phased input

 juskim GitHub jus-kim YouTube @juskim	Rev: A
	Var: [No Variations]
Project: Main.PrjPcb	
Name: Motor_Controllers.SchDoc	
Date: 2023-08-28	Sheet 5 of 6

