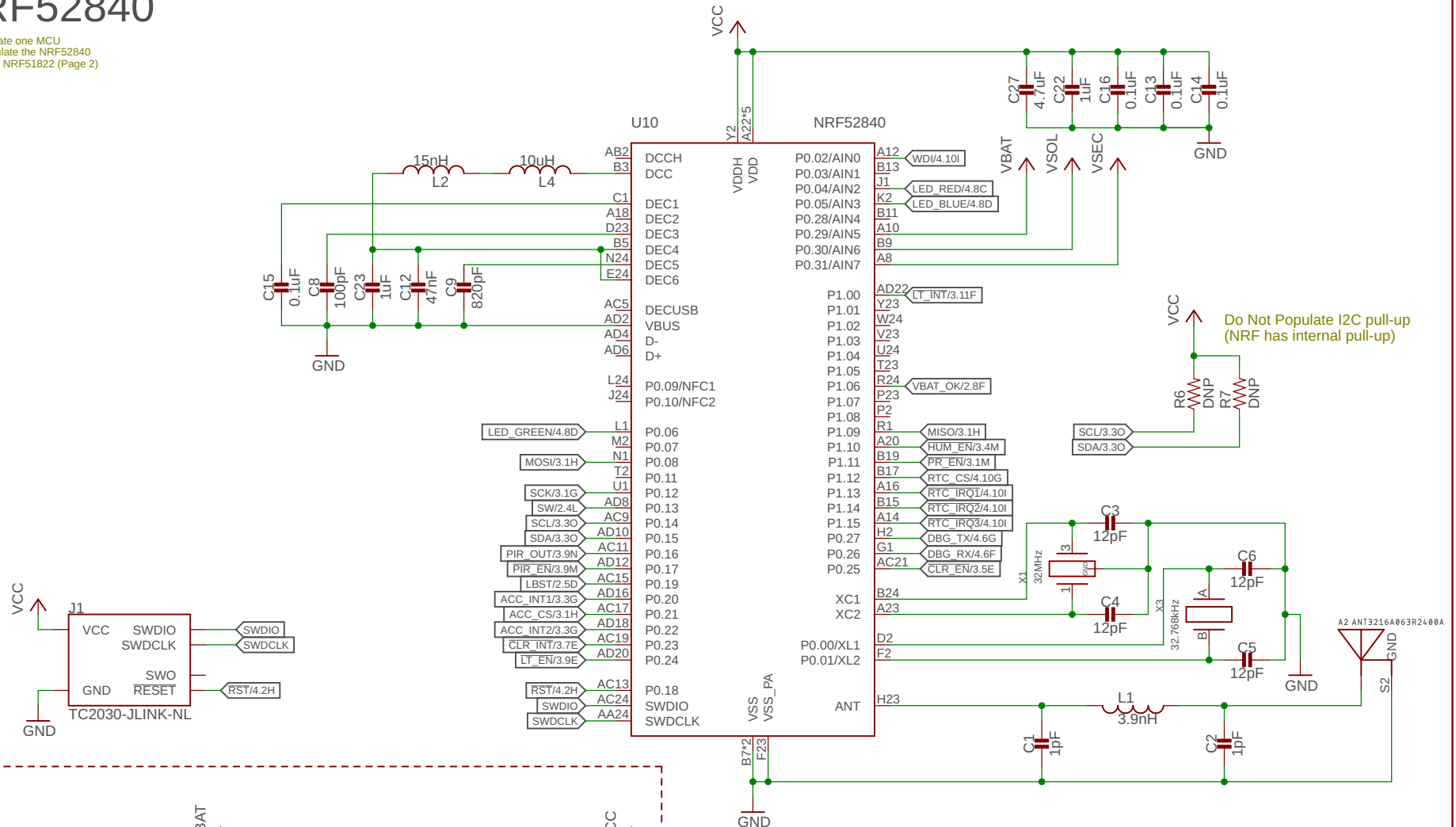


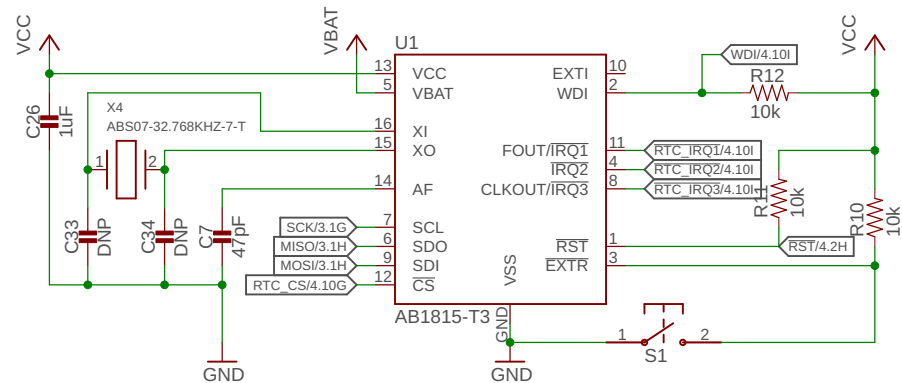
NRF52840

Only populate one MCU
Either populate the NRF52840
(Page 1) or NRF51822 (Page 2)



Do Not Populate I2C pull-up
(NRF has internal pull-up)

RTC



PERMAMOTE

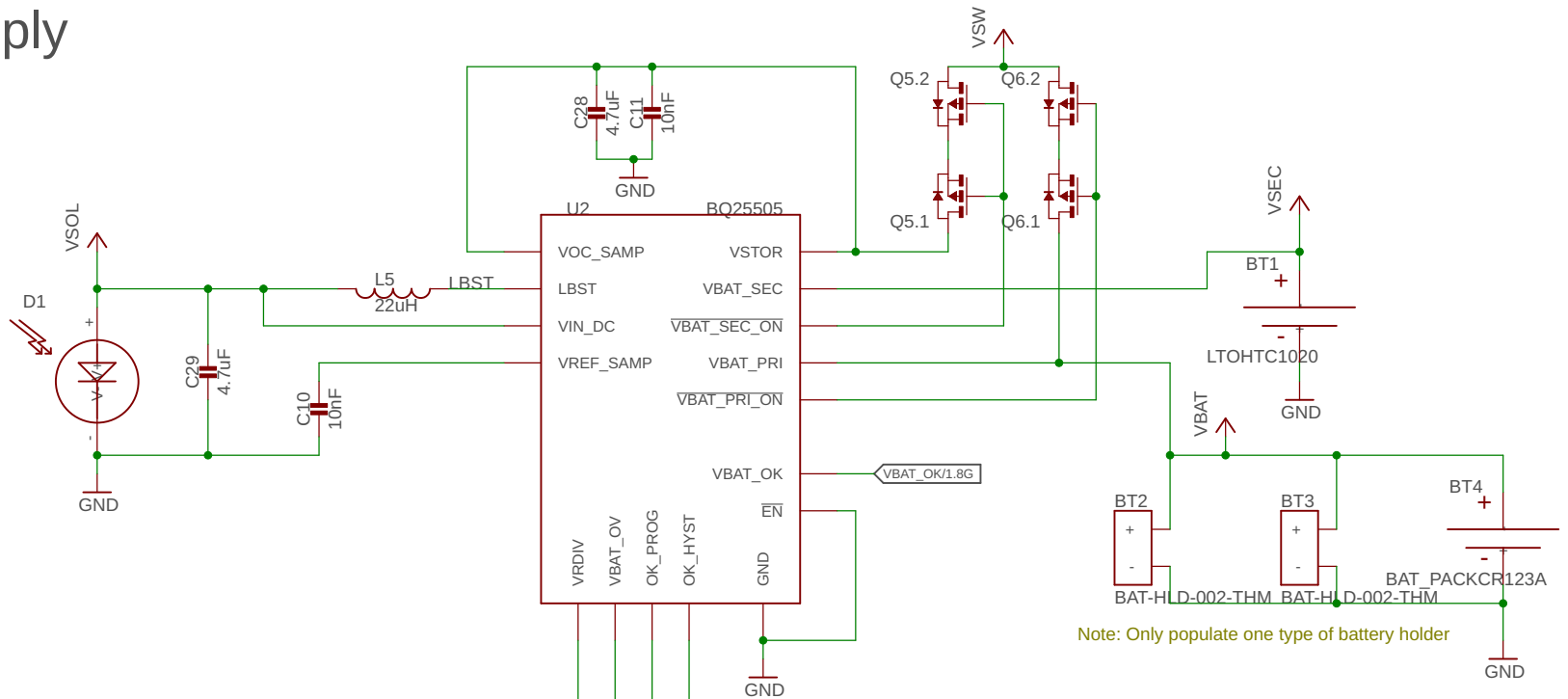
Author: NEAL JACKSON

Date: 2/25/19 11:04 AM

REV:
C

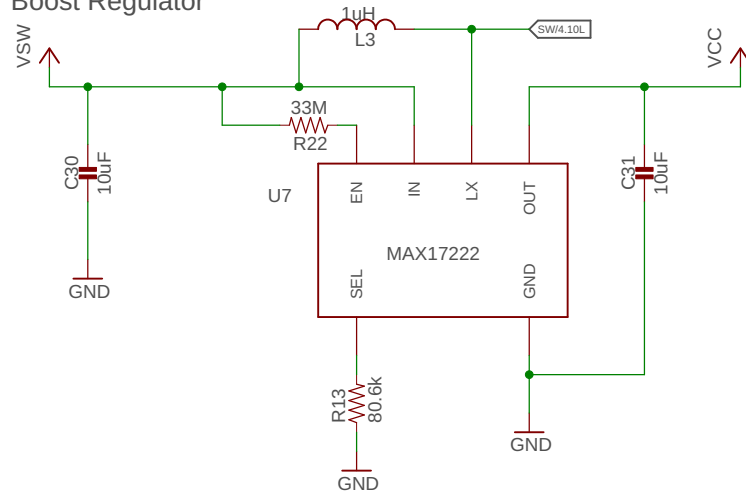
Sheet: 1/4

Power Supply



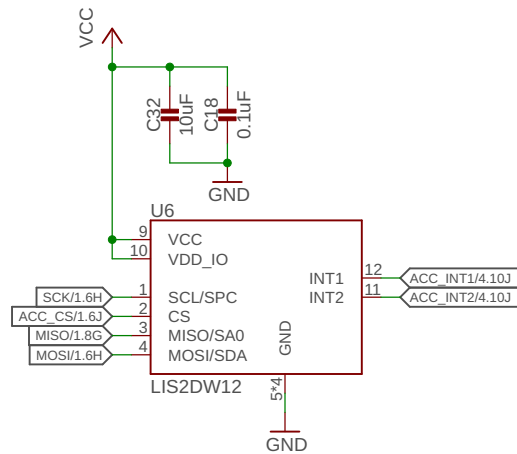
Note: Only populate one type of battery holder

Boost Regulator

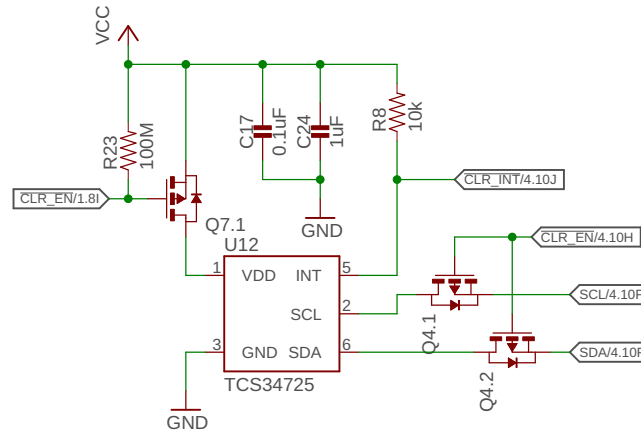


Sensors

Accelerometer

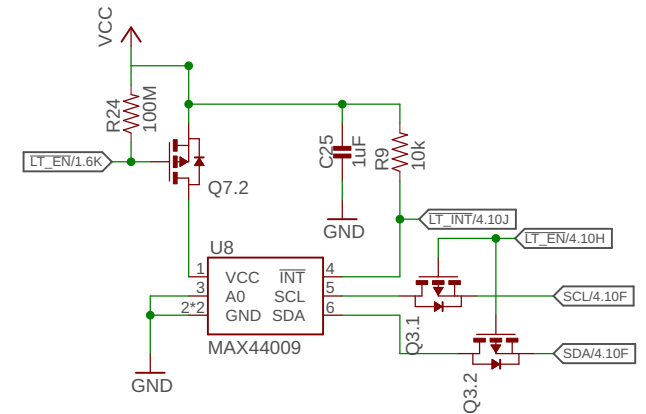


Light Color



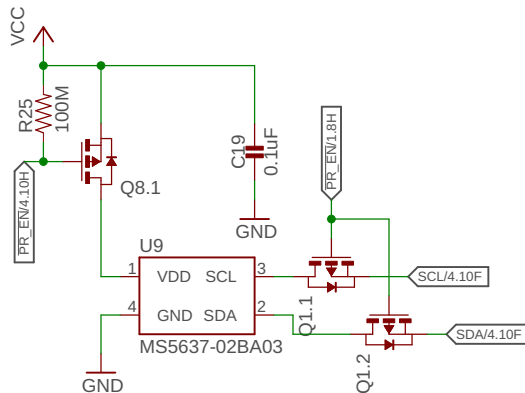
Light

Ambient Light

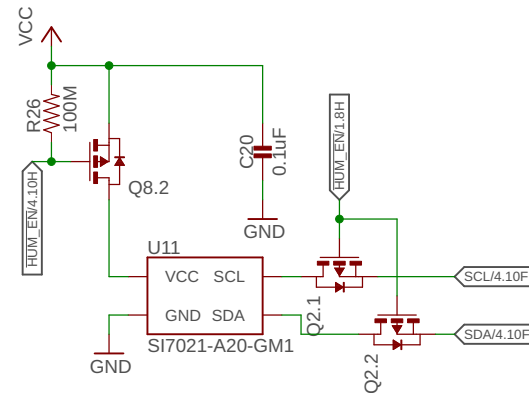


Temperature

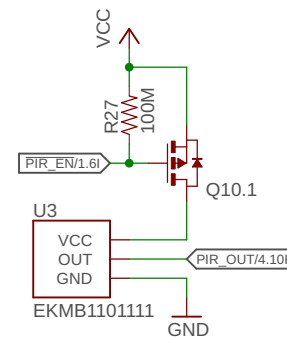
Pressure



Humidity



Occupancy



PERMAMOTE

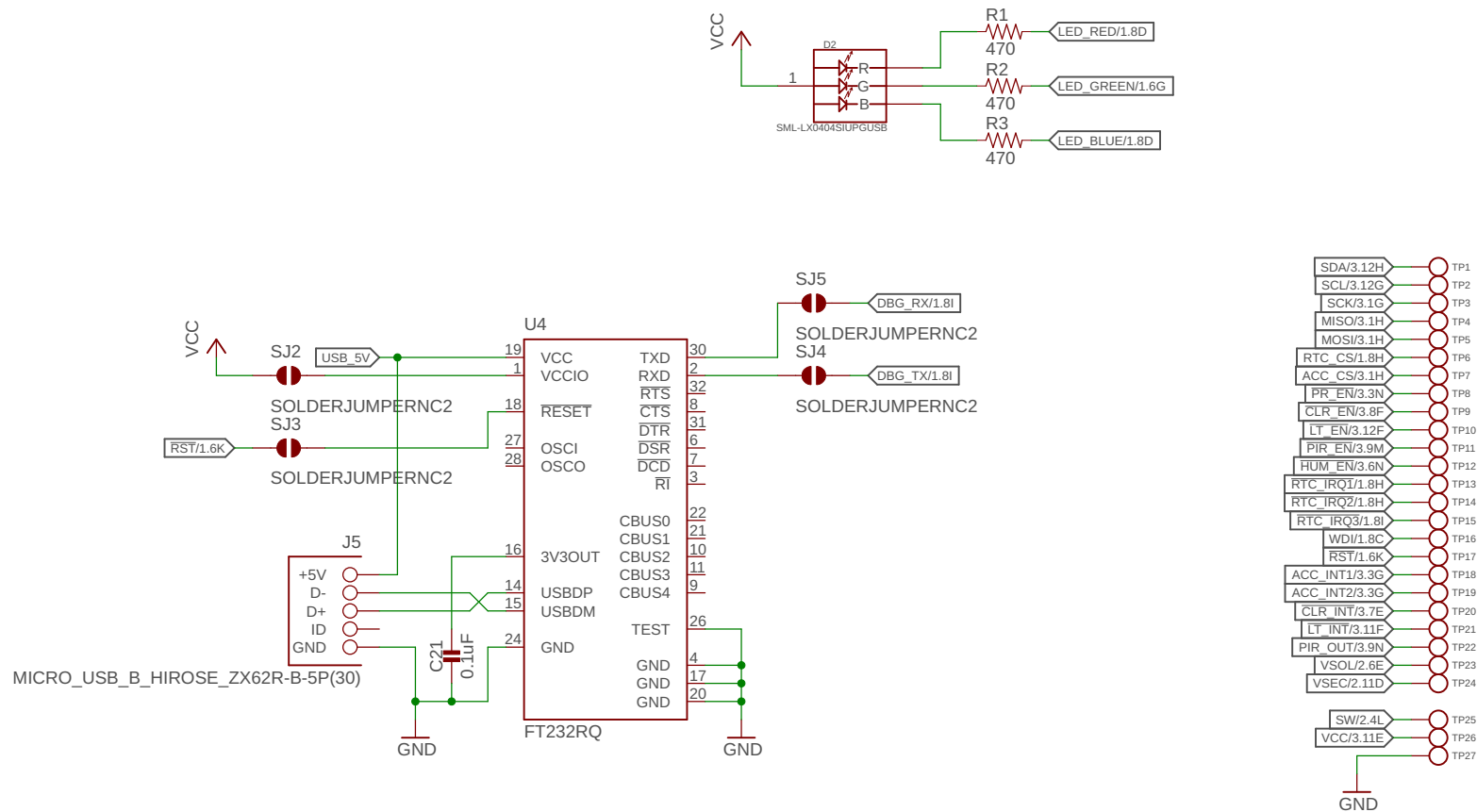
Author: NEAL JACKSON

Date: 2/25/19 11:04 AM

REV:
C

Sheet: 3/4

Debugging



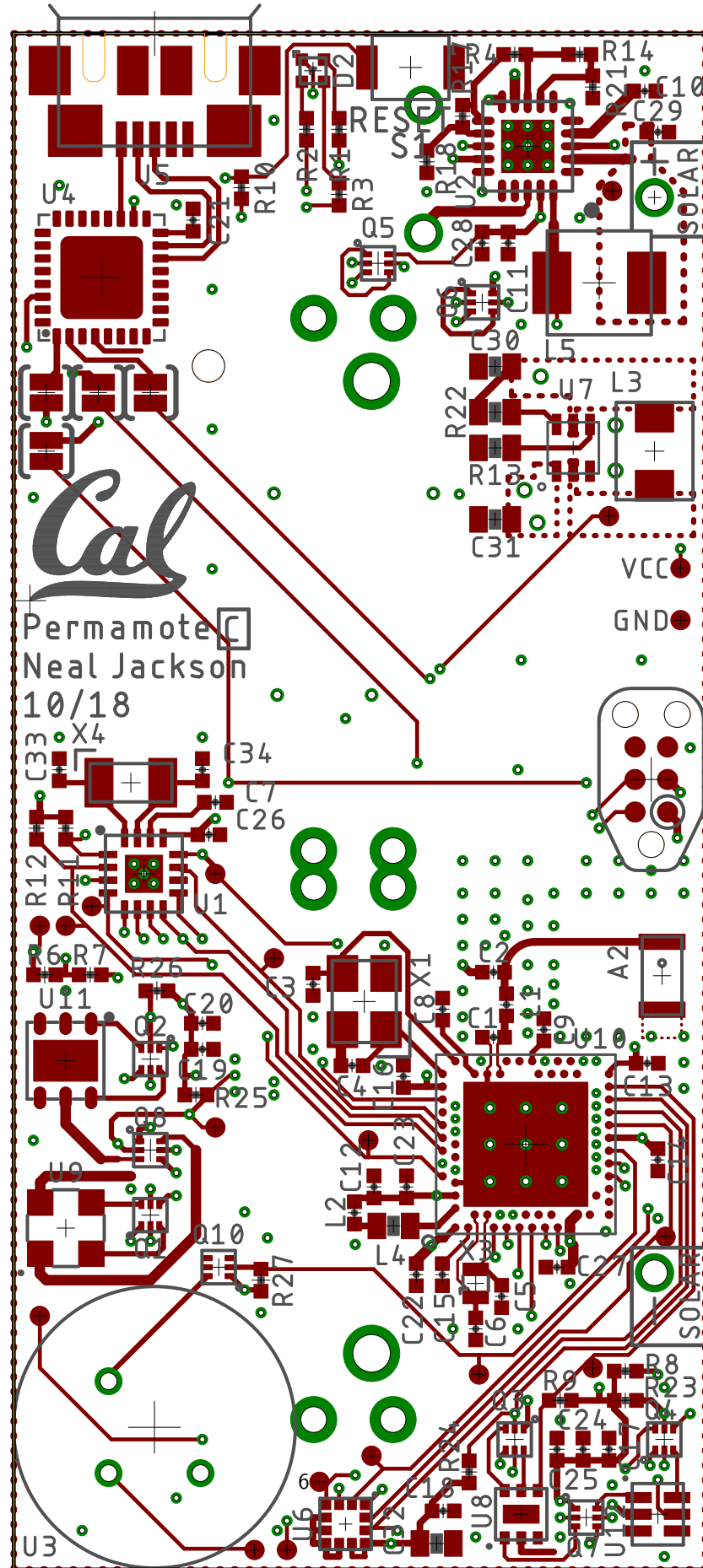
PERMAMOTE

Author: NEAL JACKSON

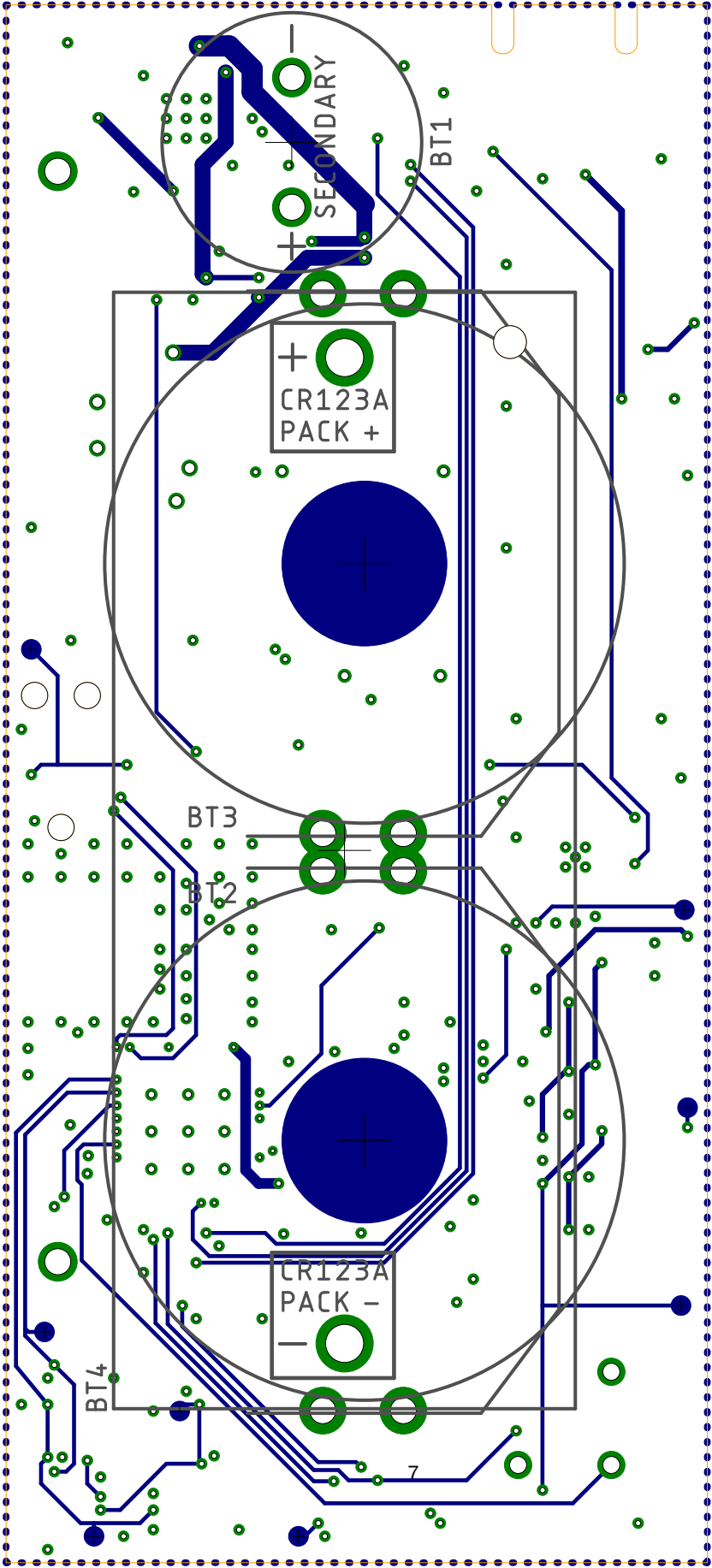
Date: 2/25/19 11:04 AM

REV:
C

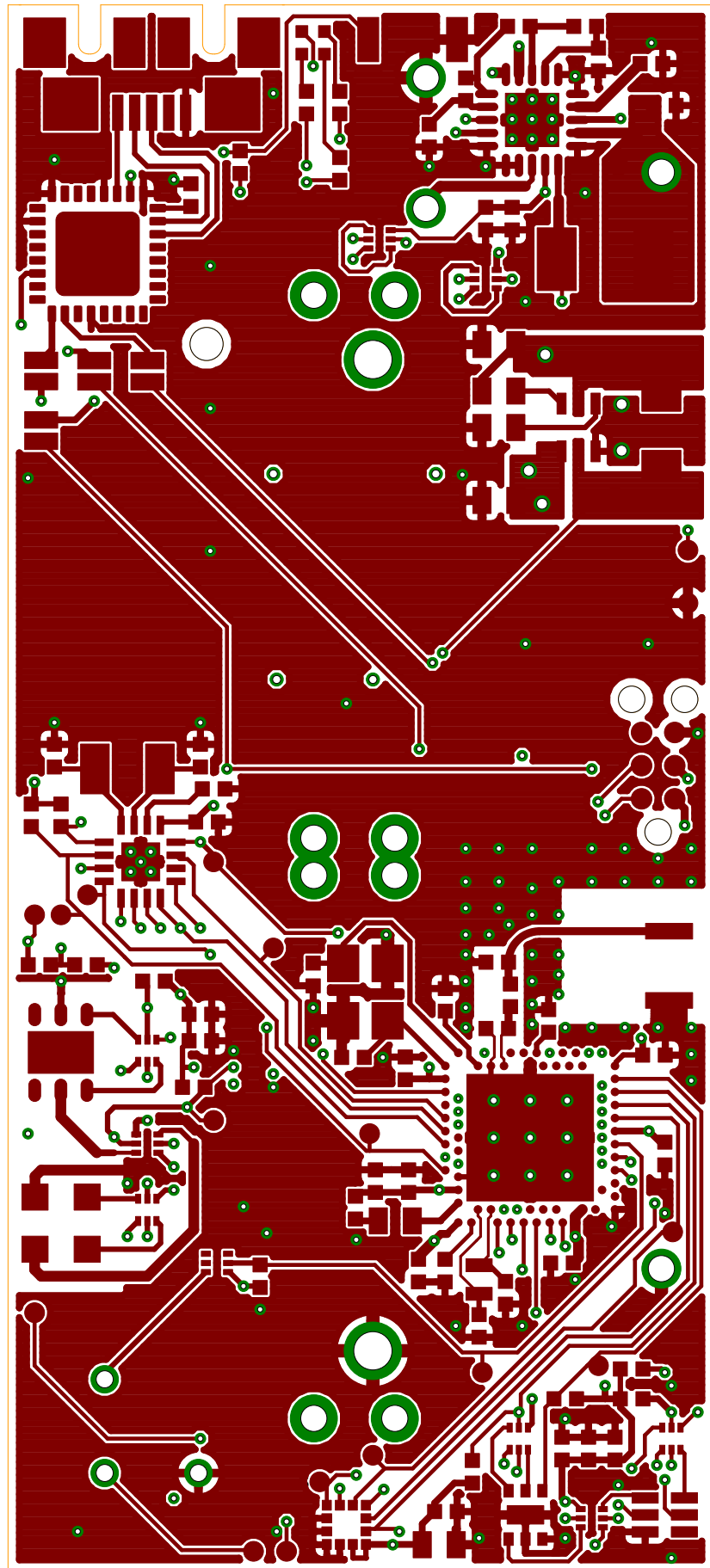
Sheet: 4/4



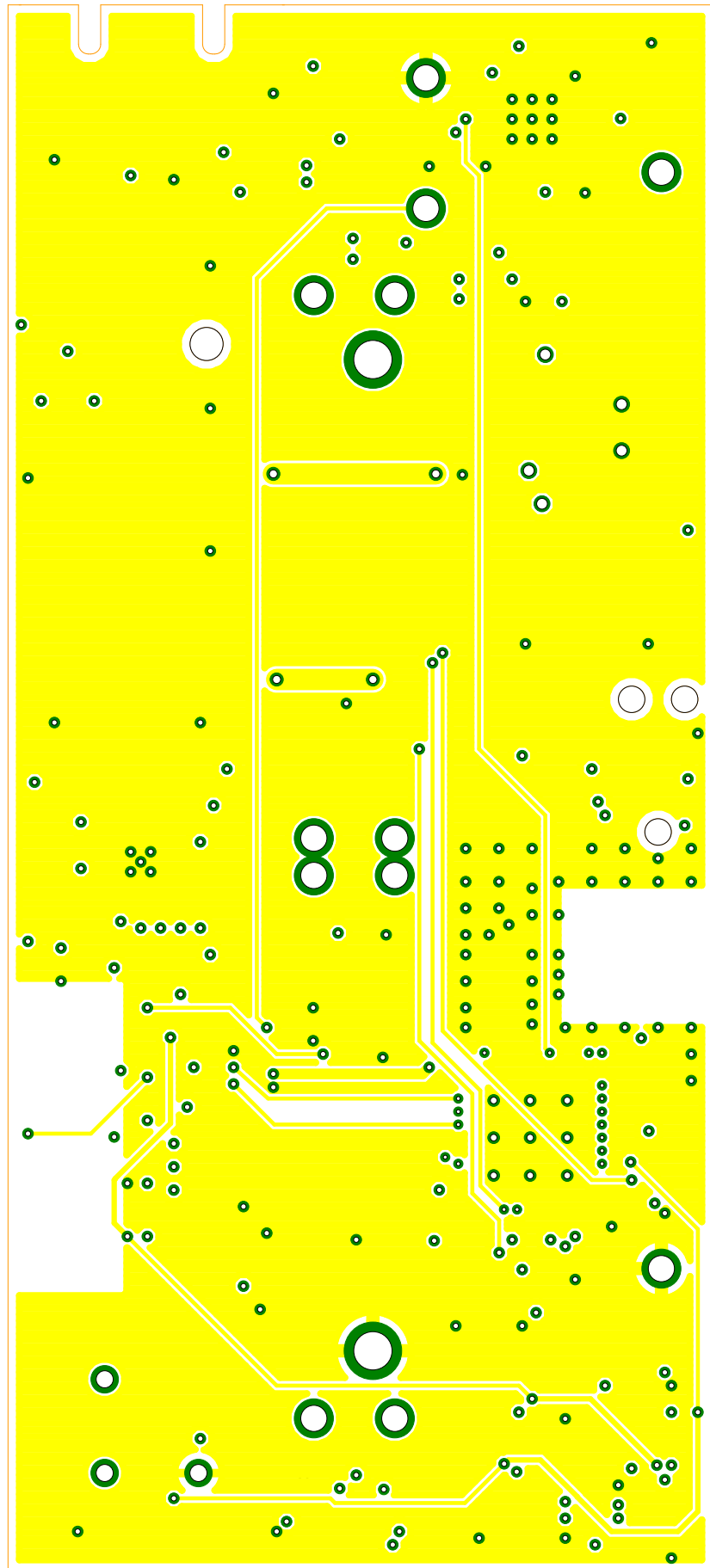
Bottom Layer



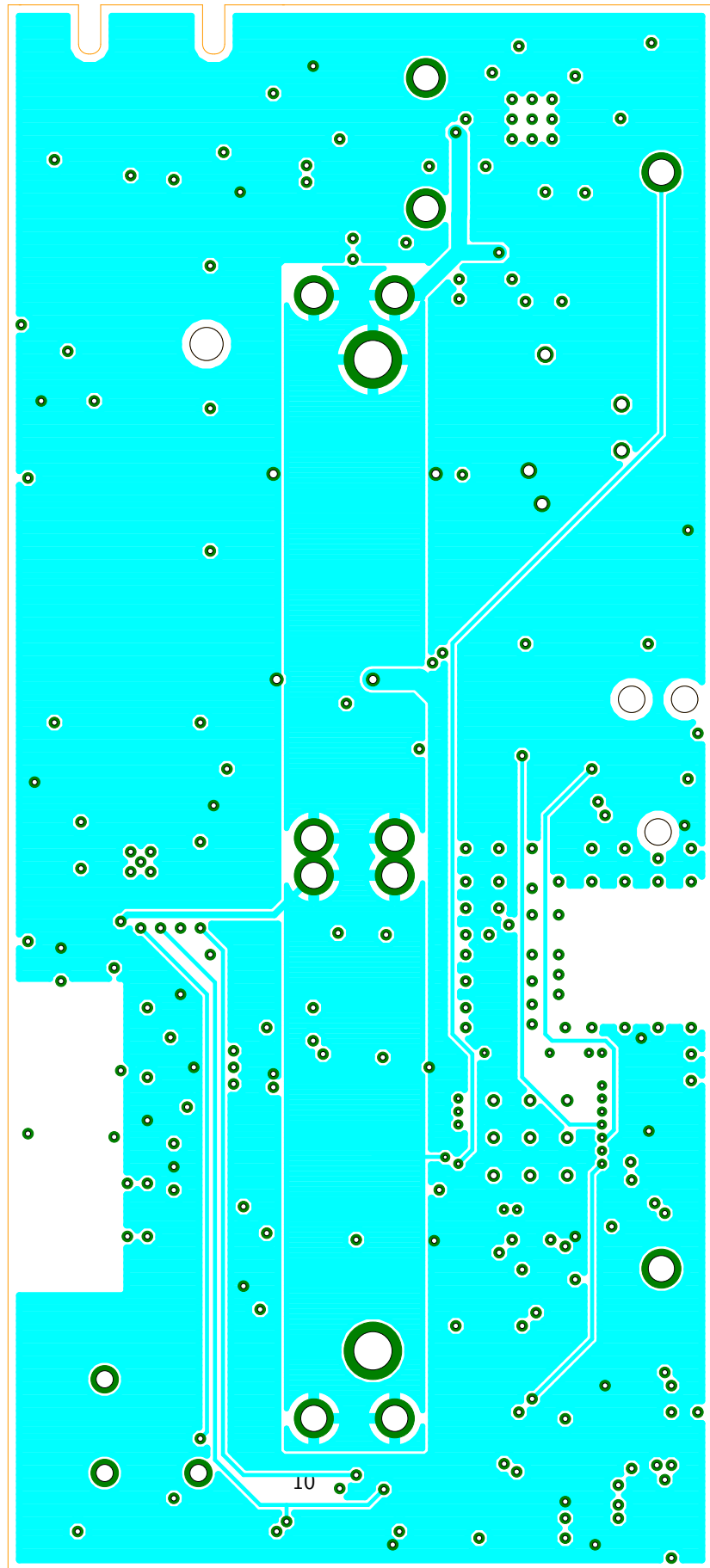
Top Copper Layer



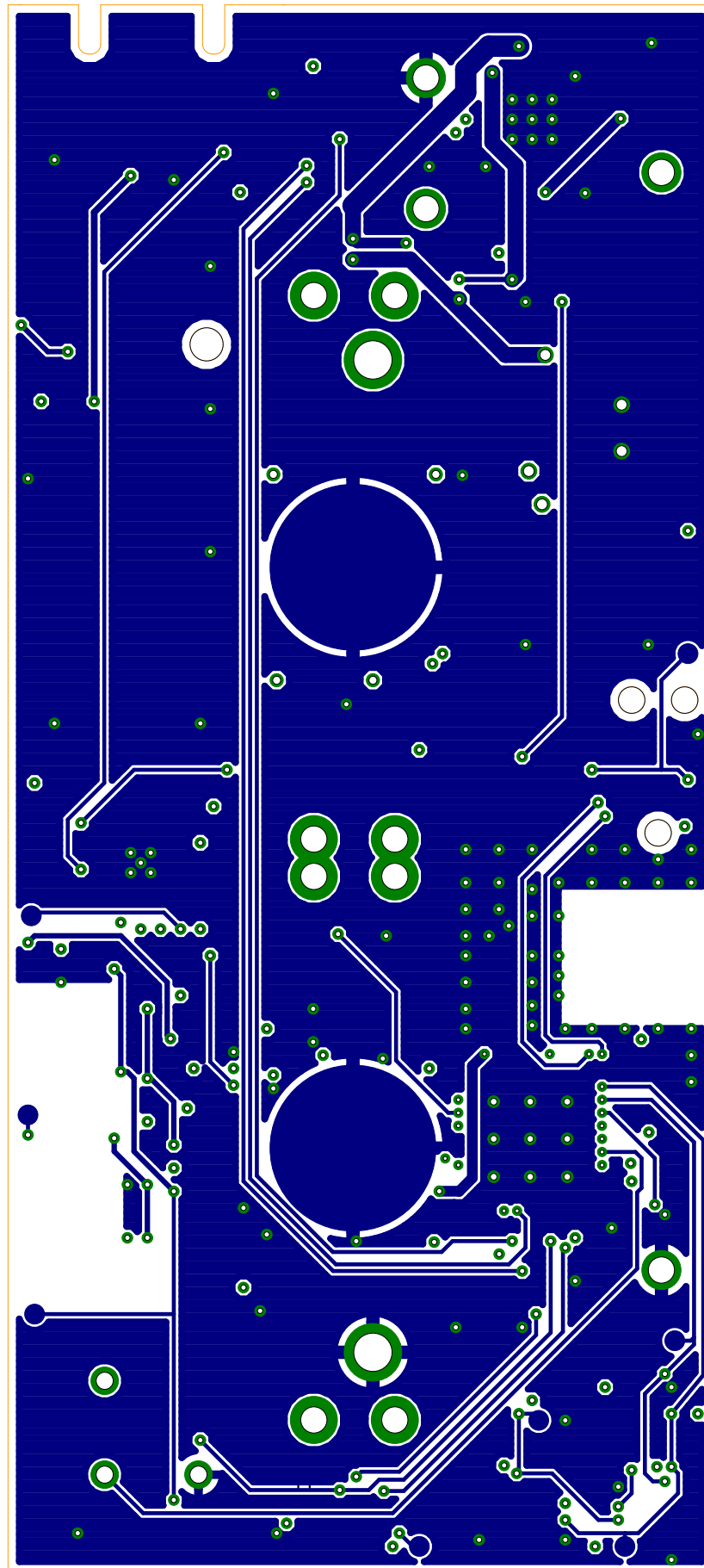
Layer 2 Copper

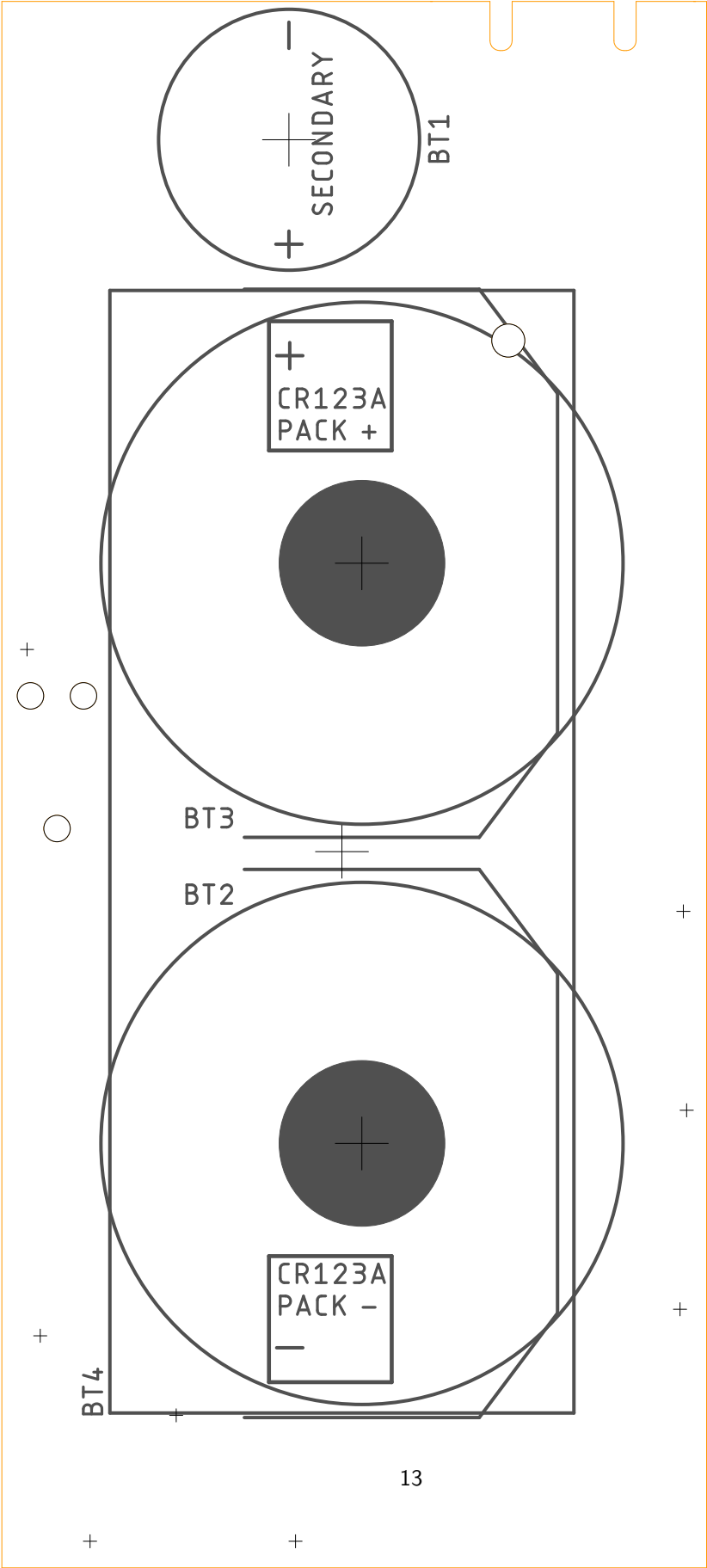


Layer 3 Copper

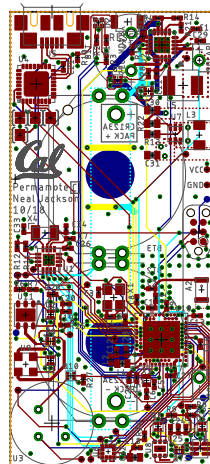


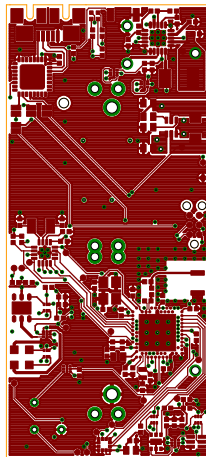
Bottom Copper Layer

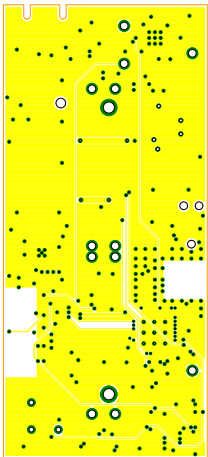


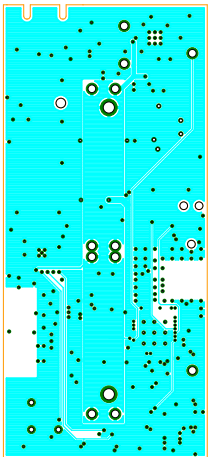


Top and Bottom Layers 1:1 Scale

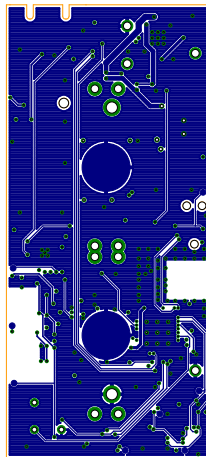








Bottom Copper Layer 1:1 Scale



permamote_bom

Qty	Value	Device
	9 0.1uF	CAPACITOR0402_CAP
	5 100M	RESISTOR0402_RES
	1 100pF	CAPACITOR0402_CAP
	5 10k	RESISTOR0402_RES
	2 10nF	CAPACITOR0402_CAP
	3 10uF	CAPACITOR0603_CAP
	1 10uH	INDUCTOR0603
	4 12pF	CAPACITOR0402_CAP
	1 15nH	INDUCTOR0402
	2 1pF	CAPACITOR0402_CAP
	5 1uF	CAPACITOR0402_CAP
	1 1uH	INDUCTOR1HL
	1 22uH	INDUCTOR74437324220
	1 3.9M	RESISTOR0402_RES
	1 3.9nH	INDUCTOR0402
	1 32.768kHz	ABS05-32.768KHZ-9-T
	1 32MHz	7V-32.000MAHV-T
	1 33M	RESISTOR0603_RES
	3 4.7uF	CAPACITOR0402_CAP
	3	470 RESISTOR0402_RES
	1 47nF	CAPACITOR0402_CAP
	1 47pF	CAPACITOR0402_CAP
	1 6.04k	RESISTOR0402_RES
	1 6.2M	RESISTOR0402_RES
	1 6.8M	RESISTOR0402_RES
	1 80.6k	RESISTOR0603_RES
	1 820pF	CAPACITOR0402_CAP
	1 9.1M	RESISTOR0402_RES
	1 AB1815-T3	AB1815-T3
	1 ABS07-32.768KHZ-7-T	ABS07-32.768KHZ-7-T
	1 ANT3216A063R2400A	ANT3216A063R2400A
	2 BAT-HLD-002-THM	BAT-HLD-002-THM
	1 BAT_PACKCR123A	BAT_PACKCR123A
	1 BQ25505	BQ25505
	2 DNP	CAPACITOR0402_CAP
	2 DNP	RESISTOR0402_RES
	1 EKMB1101111	EKMB1101111
	1 B3U-1000P	B3U-1000P
	1 FT232RQ	FT232RQ
	1 LIS2DW12	LIS2DW12
	1 LTOHTC1020	LTOHTC1020
	1 MAX17222	MAX17222
	1 MAX44009	MAX44009
	1 MICRO_USB_B_HIROSE_ZX62R-B-5P(30)	MICRO_USB_B_HIROSE_ZX62R-B-5P(30)
	1 MS5637-02BA03	MS5637-02BA03
	1 NRF52840	NRF52840
	9 PMDXB950UPEL	PMDXB950UPEL
	1 SI7021-A20-GM1	SI7021-A20-GM1

permamote_bom

1 SML-LX0404SIUPGUSB
1 SOLARCELLHOLES
1 TCS34725

SML-LX0404SIUPGUSB
SOLARCELLHOLES
TCS34725

permamote_bom

Package	
0402_CAP	
0402_RES	
0402_CAP	
0402_RES	
0402_CAP	
0603_CAP	
0603_CAP	
0402_CAP	
0402_CAP	
0402_CAP	
0402_CAP	
IHL-1212BZ-11	
	74437324220
0402_RES	
0402_CAP	
ABS05	
TXC-7V	
0603-RES	
0402_CAP	
0402_RES	
0402_CAP	
0402_CAP	
0402_RES	
0402_RES	
0402_RES	
0603-RES	
0402_CAP	
0402_RES	
QFN-16-3MM	
2-SMD	
ANT3216A063R2400A	
BAT-HLD-002-THM	
BH123A	
S-PVQFN-N20-RGR	
0402_CAP	
0402_RES	
AMN2	
B3U-1000P	
QFN32	
LGA-12	
	1020
UDFN-6-MAXIM	
UDFN-6-EXPOSED	
MICRO_USB_B_HIROSE_ZX62R-B-5P(30)	
4-SMD	
AQFN73	
XDFN-6	
DFN-6/3MM	

permamote_bom

1MM_SQ_4PAD
SOLAR_HOLES
FN-6

permamote_bom

Parts

C13, C14, C15, C16, C17, C18, C19, C20, C21

R23, R24, R25, R26, R27

C8

R8, R9, R10, R11, R12

C10, C11

C30, C31, C32

L4

C3, C4, C5, C6

L2

C1, C2

C22, C23, C24, C25, C26

L3

L5

R14

L1

X3

X1

R22

C27, C28, C29

R1, R2, R3

C12

C7

R4

R17

R18

R13

C9

R21

U1

X4

A2

BT2, BT3

BT4

U2

C33, C34

R6, R7

U3

S1

U4

U6

BT1

U7

U8

J5

U9

U10

Q1, Q2, Q3, Q4, Q5, Q6, Q7, Q8, Q10

U11

permamote_bom

D2
D1
U12

permamote_bom

Description

SMD Capacitor

Resistor

SMD Capacitor

Resistor

SMD Capacitor

SMD Capacitor

A very specific inductor

SMD Capacitor

A very specific inductor

SMD Capacitor

SMD Capacitor

A very specific inductor

A very specific inductor

Resistor

A very specific inductor

32.768kHz Crystal

TXC CRYSTAL SMD

Resistor

SMD Capacitor

Resistor

SMD Capacitor

SMD Capacitor

Resistor

Resistor

Resistor

Resistor

SMD Capacitor

Resistor

Ultra-low current RTC. 55nA quiescent @ 3V. 1.5-3.6V input.

32.768kHz Crystal

Yageo 2.4GHz

RETAINER BATT CR2016 PC PINS

collection of battery footprints

EH front end for switching between primary and secondary cells

SMD Capacitor

Resistor

Passive infrared human detection sensor with built-in amp.

SWITCH TACTILE

Source: http://www.ftdichip.com/Documents/DataSheets/DS_FT232R_v104.pdf

ultra low power 3 axis accelerometer

Very high efficiency, very low power boost converter suitable for EH applications

low power ambient light sensor

USB Micro B Connector

low power pressure sensor

ultra-low power 2.4 GHz wireless system on chip (SoC) integrating a multiprotocol 2.4 GHz transceiver, an ARM® Cortex®-M

20 V 500mA, dual P-channel Trench MOSFET

IC TEMP SENSOR RH 2% DFN

permamote_bom

1mm^2 RGB LED

Generic solar cell

Color Light-to-Digital Converter with IR Filter

permamote_bom

DIGIKEY	MANUFACTURER	MF	MOUSER
490-6328-1-ND			
HMC0402JT100MCT-ND			
490-5922-1-ND			
311-10KJRCT-ND			
490-4516-1-ND			
490-3896-1-ND			
490-4025-1-ND			
490-6197-1-ND			
587-1521-1-ND			
1276-1595-1-ND			
490-7195-1-ND			
541-1319-1-ND	Vishay Dale		
732-3340-1-ND			
YAG3301CT-ND			
490-1131-1-ND			
535-11897-1-ND	Abracon		
887-2568-1-ND	TXC CORPORATION		
HMC0603JT33M0CT-ND			
445-5947-1-ND			
311-470JRCT-ND			
445-1264-1-ND			
490-5942-1-ND			
YAG2293CT-ND			
YAG3309CT-ND			
YAG3310CT-ND			
311-80.6KHRCT-ND			
1276-6535-1-ND			
YAG3322CT-ND			
535-11936-1-ND	Abracon		
535-9543-1-ND	ABRACON		
311-1542-1-ND	YAGEO		
BAT-HLD-001-THM-ND			712-BAT-HLD-001-THM
BH123A-ND	MPD		
296-37078-1-ND	TI		
311-10KJRCT-ND			
255-3065-ND	PANASONIC		
SW1020CT-ND			
	STMicroelectronics		511-LIS2DW12TR
MAX17222ELT+TCT-ND	MAXIM INTEGRATED		
MAX44009EDT+TCT-ND	MAXIM		
H125274CT-ND			798-ZX62R-B-5P30
223-1199-1-ND	TE CONNECTIVITY		
1490-1071-1-ND	NORIDIC SEMICONDUCTOR		
1727-2601-1-ND	NEXPERIA		
336-3141-ND			634-SI7021-A20-GM1

permamote_bom

67-2125-1-ND
869-1001-ND
TCS34725FNCT-ND
Lumex Opto

permamote_bom

MPN	NEWARK	OC_FARNELL	OC_NEWARK
GRM155R71C104KA88J			
HMC0402JT100M			
GRM1555C1H101JA01D			
RC0402JR-0710KL			
GRM155R71H103KA88D			
GRM188R60J106ME47D			
LQM18FN100M00D			
GRM1555C1H120GA01D			
HK100515NJ-T			
CL05C010CB5NNNC			
GRM155R70G105KA12D			
IHLP1212BZER1R0M11			
74437324220			
RC0402JR-073M9L			
LQP15MN3N9B02D			
ABS05-32.768KHZ-9-T			
7M-32.000MAHV-T			
HMC0603JT33M0			
C1005X5R0J475K050BC			
RC0402JR-07470RL			
C1005X7R1C473K050BC			
GRM1555C1H470JA01D			
RC0402FR-076K04L			
RC0402JR-076M2L			
RC0402JR-076M8L			
RC0603FR-0780K6L			
CL05B821KO5NNNC			
RC0402JR-079M1L			
AB1815-T3			
ABS07-32.768KHZ-7-T			
ANT3216A063R2400A			
BAT-HLD-001-THM			
BH123A			
BQ25505RGRR			
RC0402JR-0710KL			
EKMB1101111			
B3U-1000P			
FT232RQ			1146033 91K9919
LIS2DW12TR			
MAX17222ELT+T			
MAX44009EDT+T			
ZX62R-B-5P(30)	84Y6712		
MS563702BA03-50			
NRF52840			
PMDXB950UPELZ			
SI7021-A20-GM1			

permamote_bom

SML-LX0404SIUPGUSB
AM-1454CA
TCS34725FN

Notes

Only populate half of boards. When populating: place solder on ground pads before soldering clips,
DNP

DNP
DNP

DNP

permamote_bom

add kapton tape over CR123A PACK + hole.