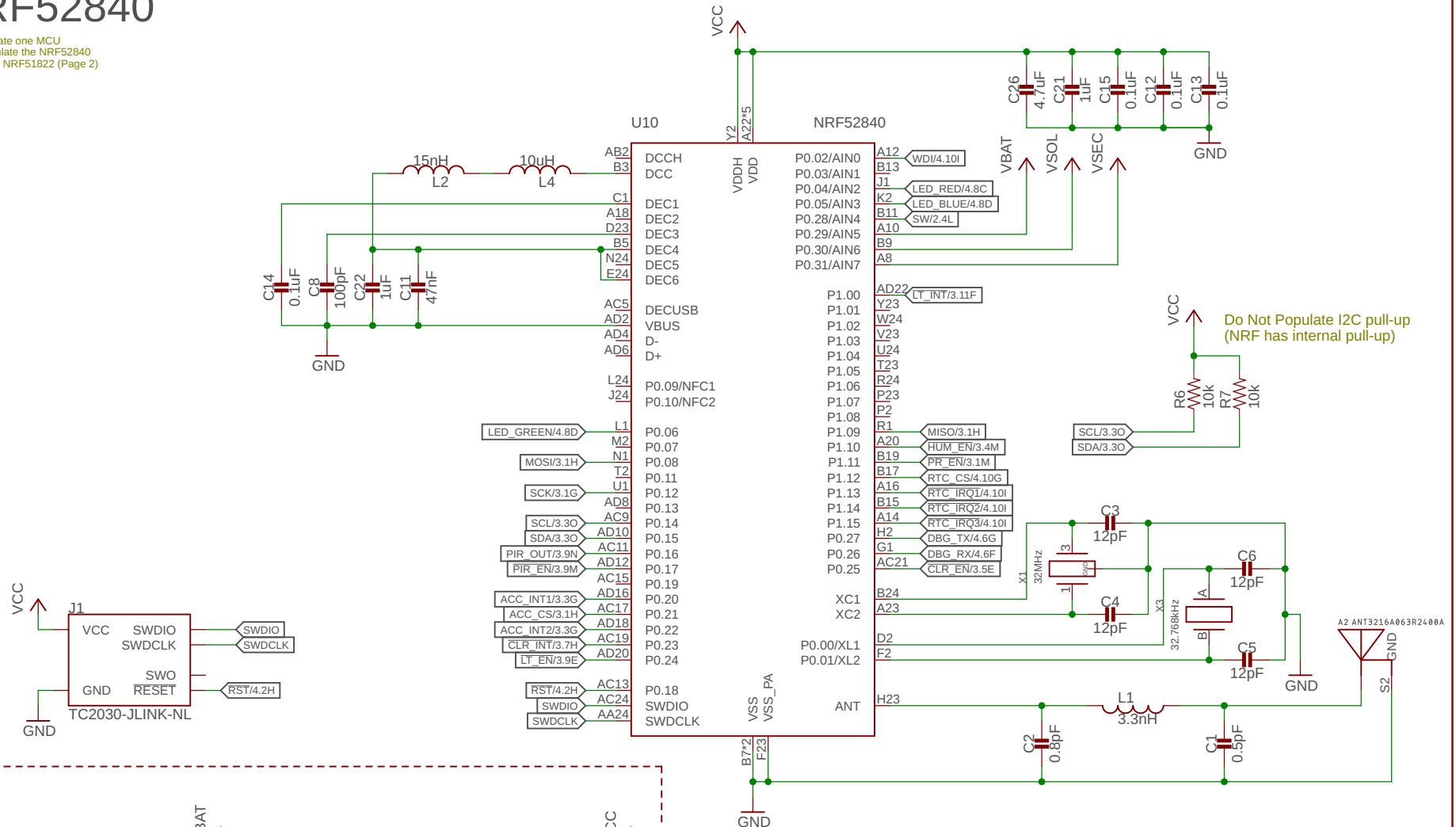
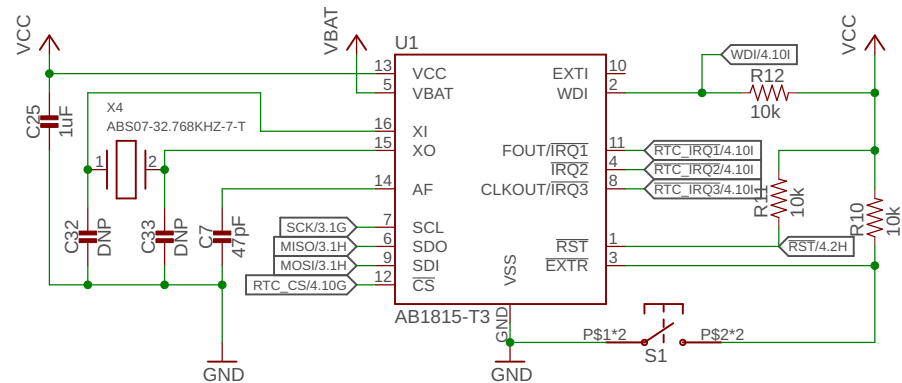


NRF52840

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



RTC



MOTE

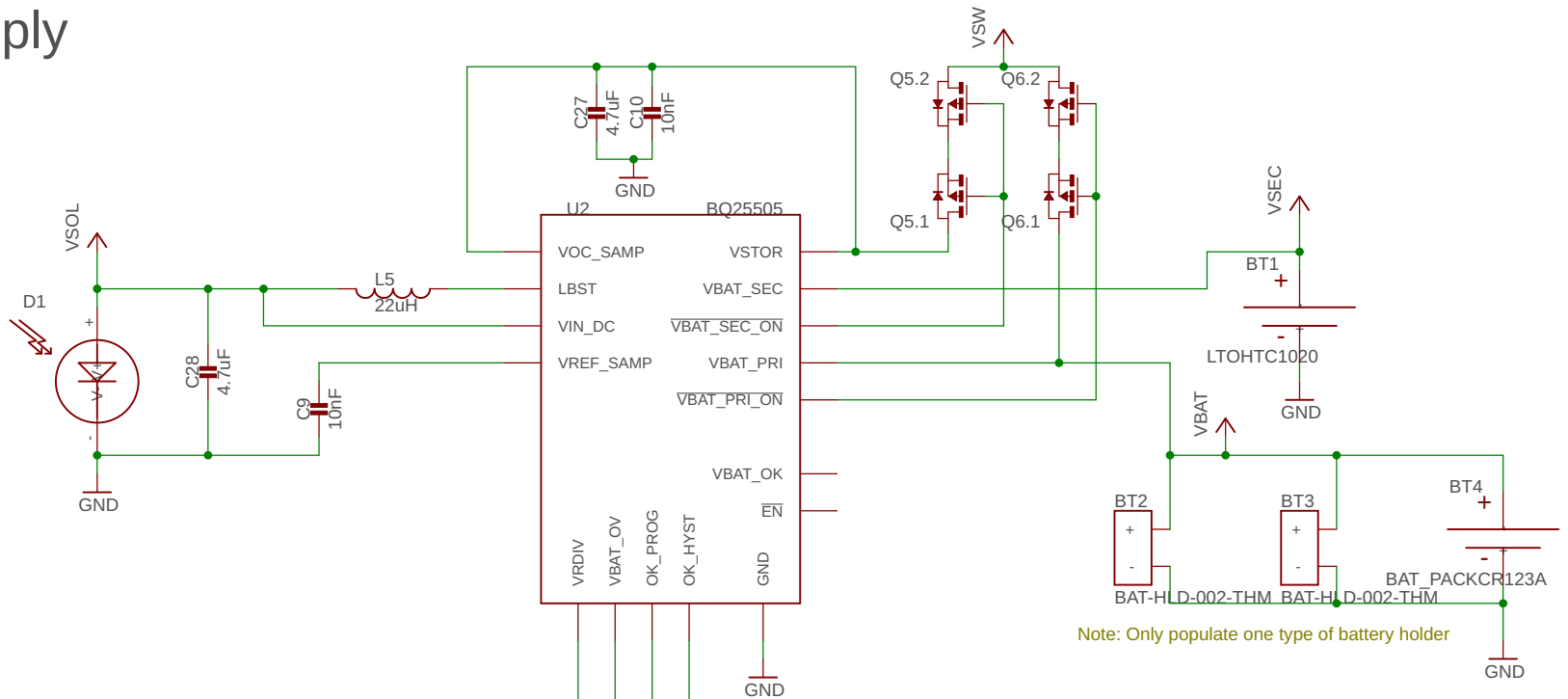
Author: NEAL JACKSON

Date: 1/23/18 2:00 PM

REV:
A

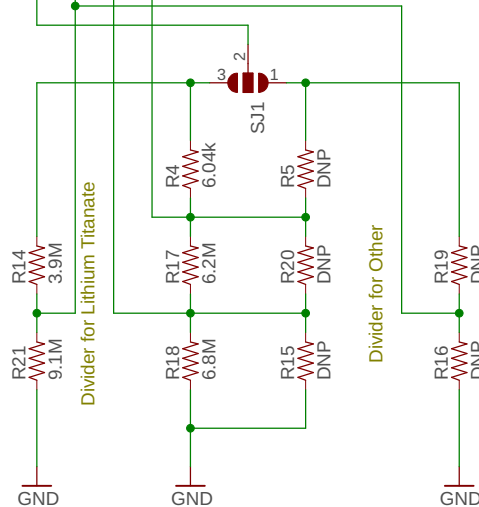
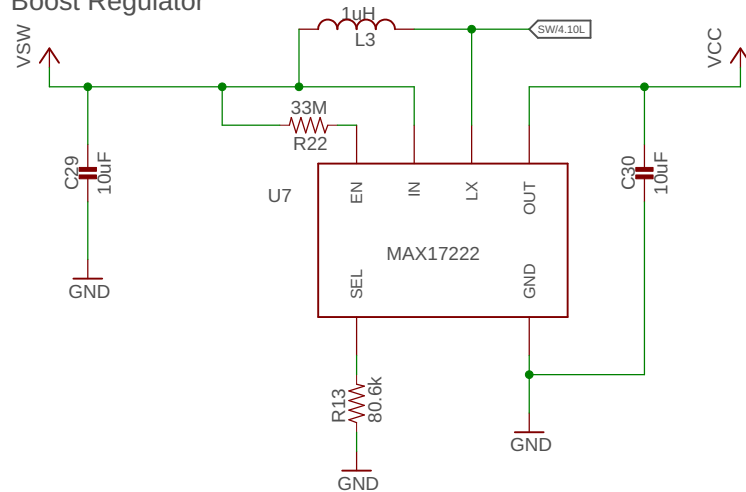
Sheet: 1/4

Power Supply



Note: Only populate one type of battery holder

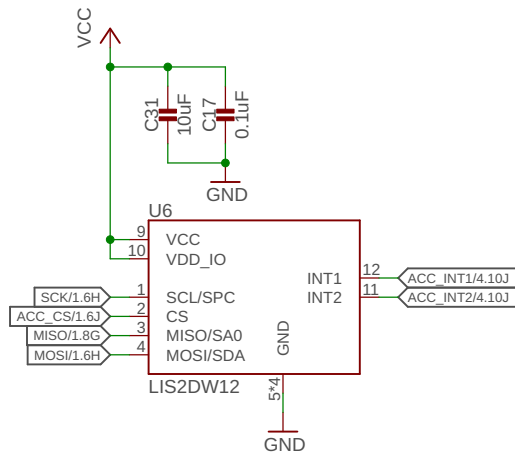
Boost Regulator



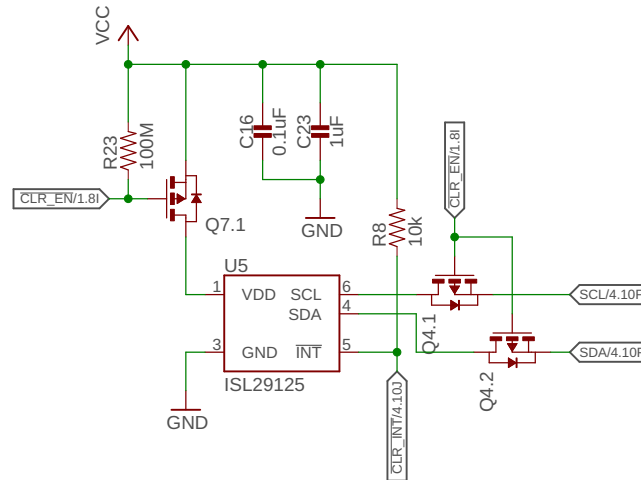
NOTE		REV: A
Author: NEAL JACKSON		
Date: 1/23/18 2:00 PM		Sheet: 2/4

Sensors

Accelerometer

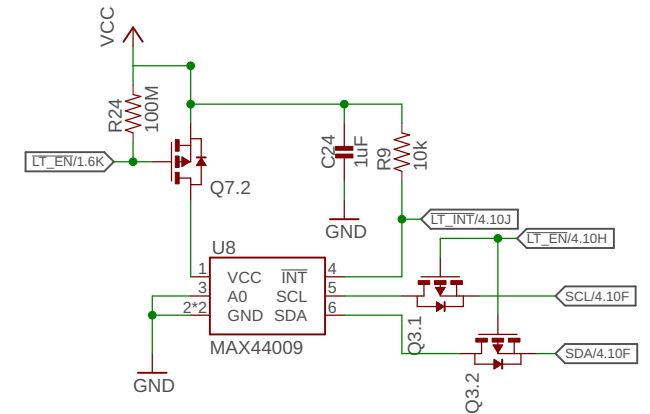


Light Color



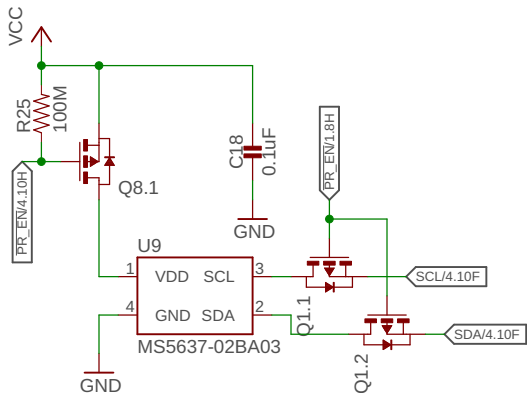
Light

Ambient Light

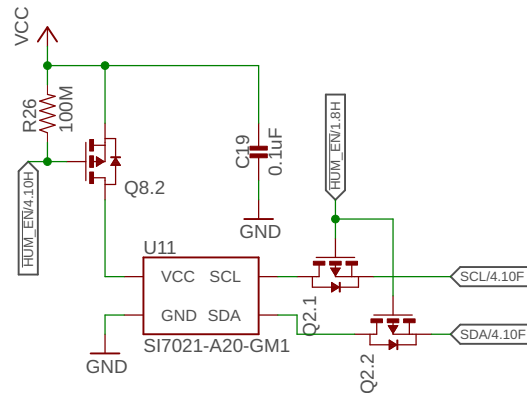


Temperature

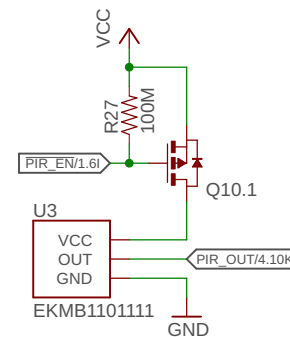
Pressure



Humidity



Occupancy



MOTE

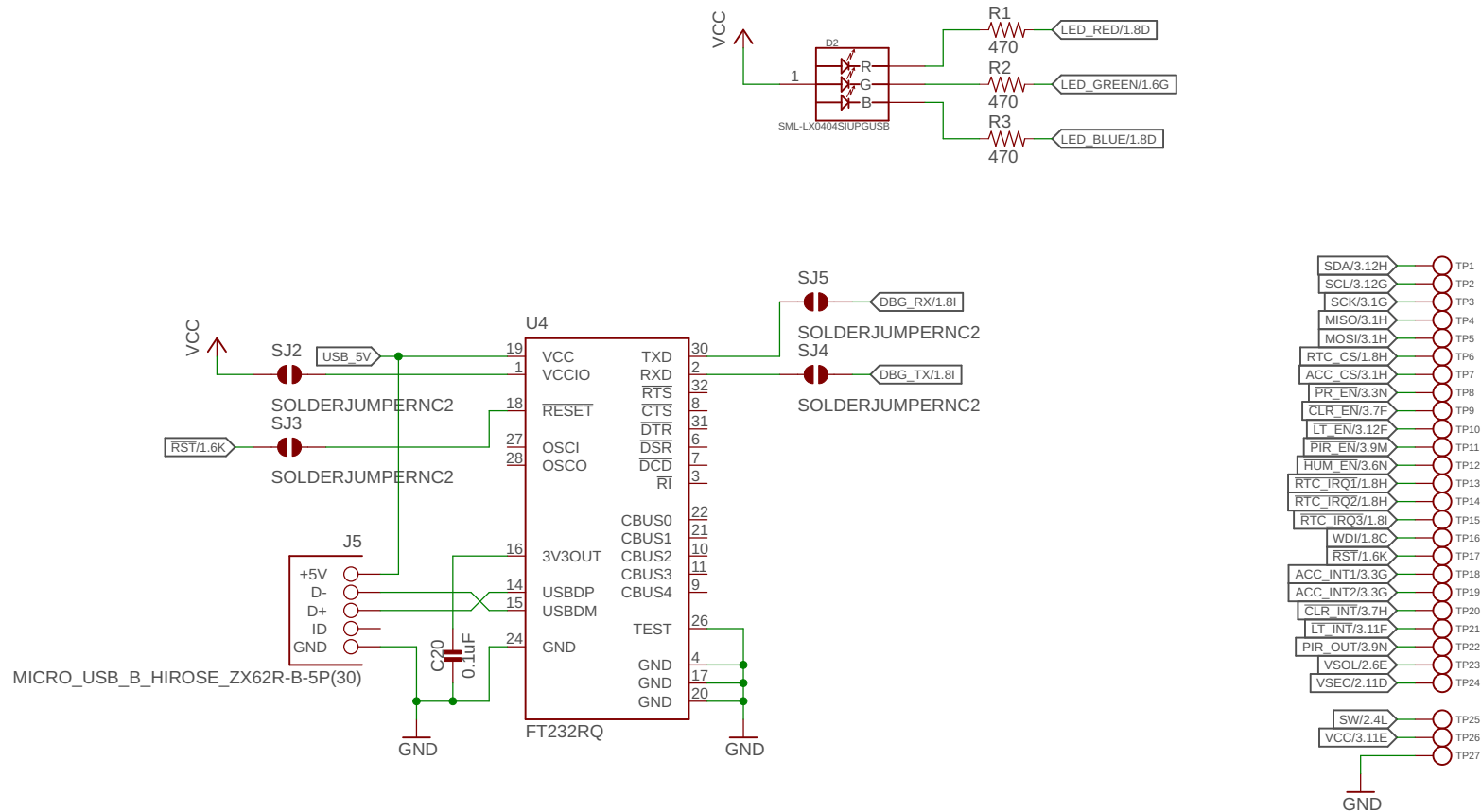
Author: NEAL JACKSON

Date: 1/23/18 2:00 PM

REV:
A

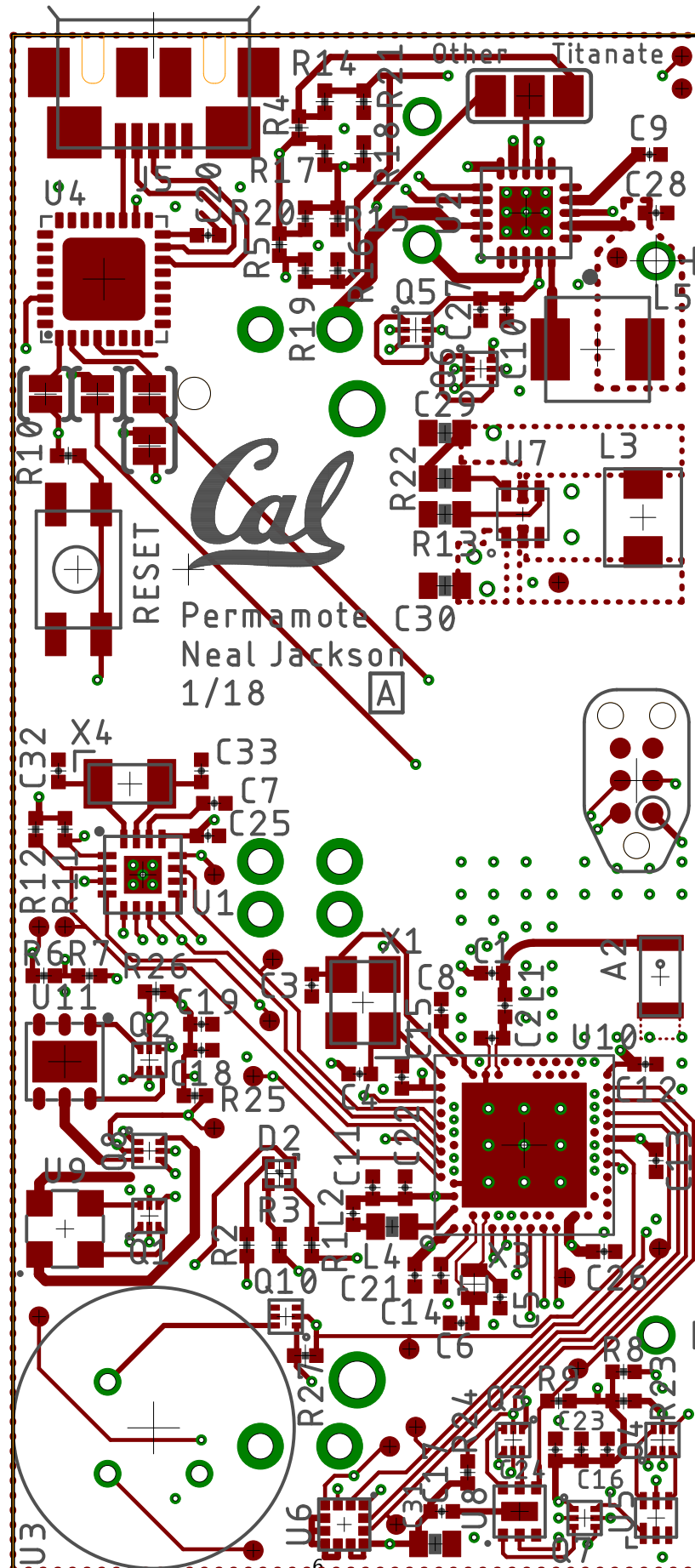
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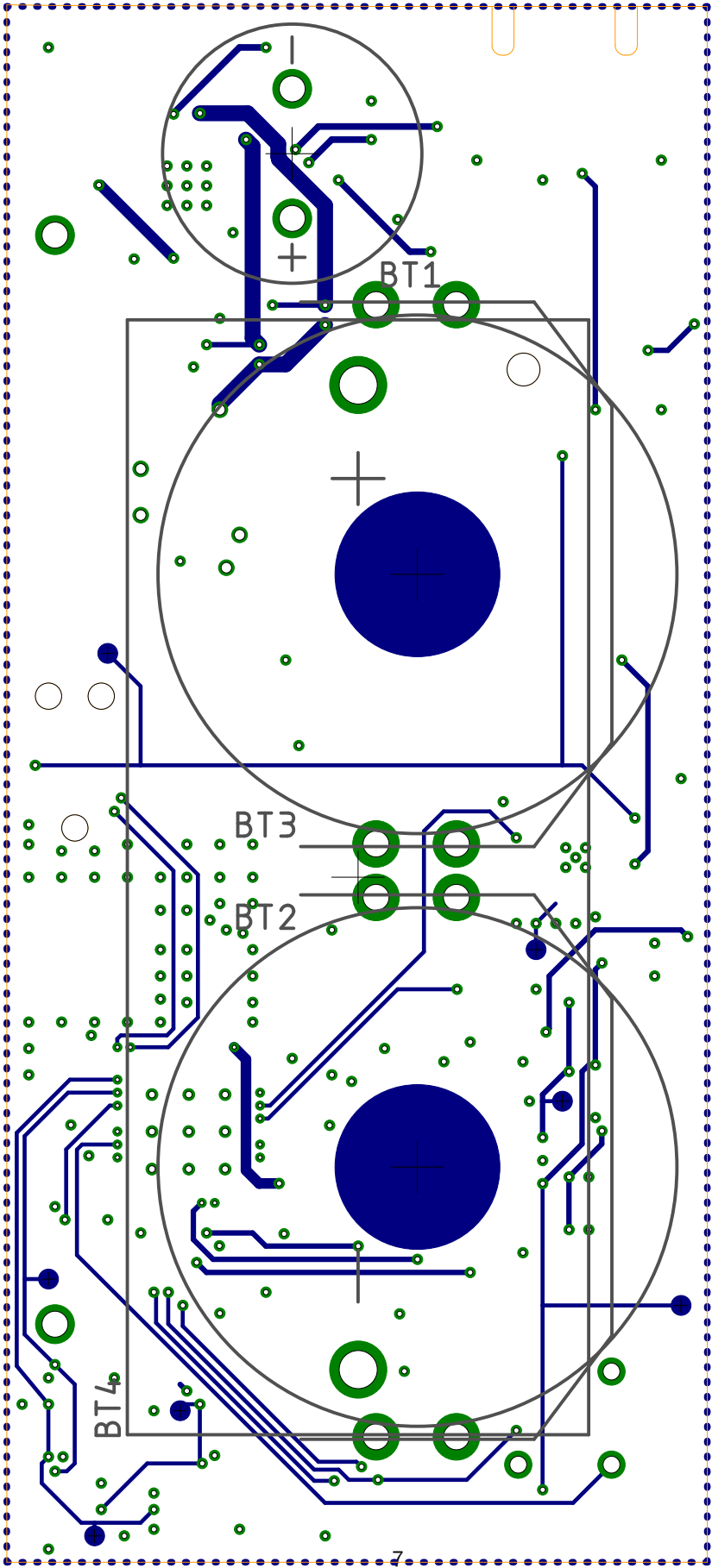
Debugging



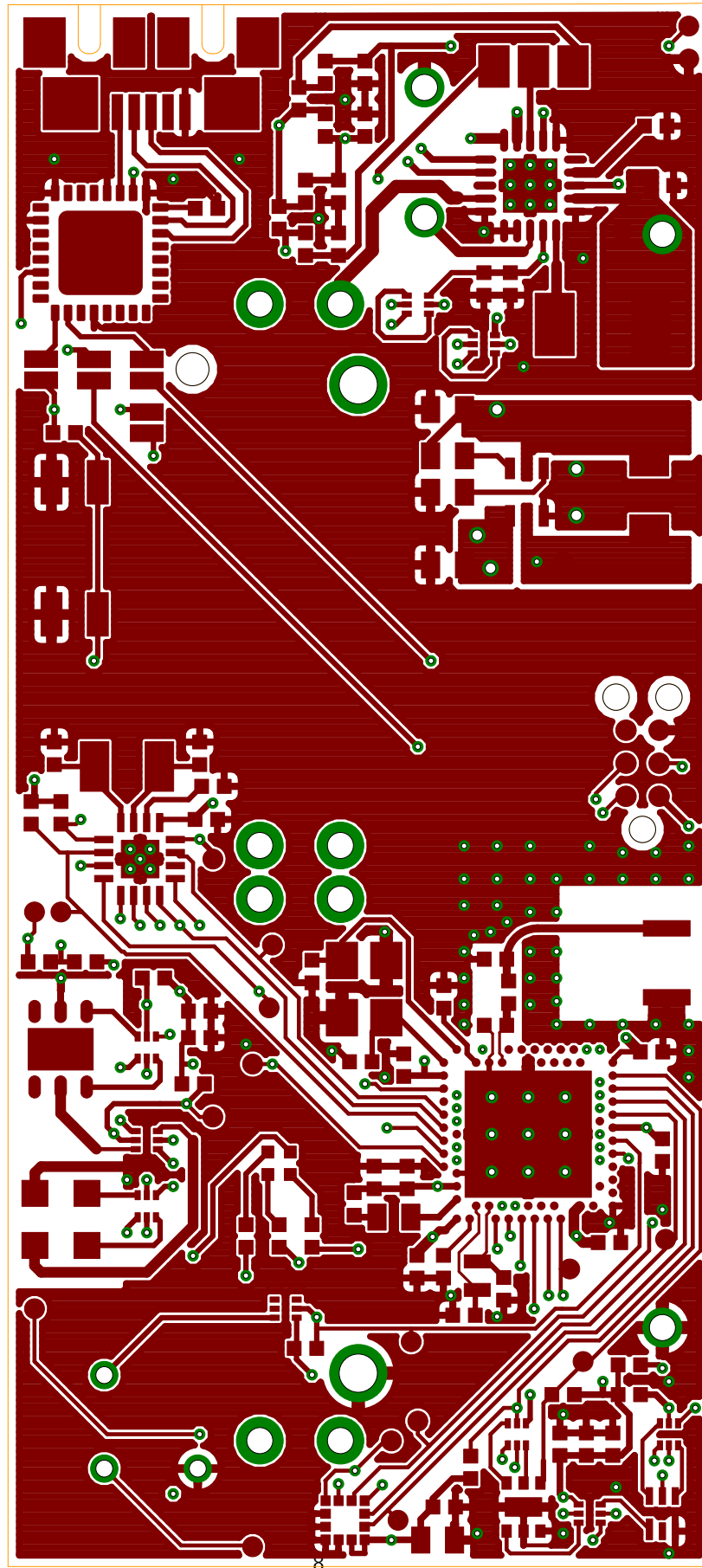
NOTE		REV: A
Author: NEAL JACKSON		
Date: 1/23/18 2:00 PM		Sheet: 4/4

A detailed and colorful circuit board layout for a Commodore 64. The board is densely packed with components, including integrated circuits (chips), capacitors, resistors, and other electronic parts. The components are color-coded: red for most components, green for capacitors, and blue for resistors. The layout is complex, with many traces and connections. A central blue circle contains the text "Cal" in a stylized font, with "Permanote" and "Neal Jackson" below it, and "1/18" and a small box with the letter "A" further down. The board is labeled with various component identifiers such as R1, R2, R3, R4, R5, R6, R7, R8, R9, R10, R11, R12, R13, R14, R15, R16, R17, R18, R19, R20, R21, R22, R23, R24, R25, R26, R27, R28, R29, R30, R31, R32, R33, R34, R35, R36, R37, R38, R39, R40, R41, R42, R43, R44, R45, R46, R47, R48, R49, R50, R51, R52, R53, R54, R55, R56, R57, R58, R59, R60, R61, R62, R63, R64, R65, R66, R67, R68, R69, R70, R71, R72, R73, R74, R75, R76, R77, R78, R79, R80, R81, R82, R83, R84, R85, R86, R87, R88, R89, R90, R91, R92, R93, R94, R95, R96, R97, R98, R99, R100, R101, R102, R103, R104, R105, R106, R107, R108, R109, R110, R111, R112, R113, R114, R115, R116, R117, R118, R119, R120, R121, R122, R123, R124, R125, R126, R127, R128, R129, R130, R131, R132, R133, R134, R135, R136, R137, R138, R139, R140, R141, R142, R143, R144, R145, R146, R147, R148, R149, R150, R151, R152, R153, R154, R155, R156, R157, R158, R159, R160, R161, R162, R163, R164, R165, R166, R167, R168, R169, R170, R171, R172, R173, R174, R175, R176, R177, R178, R179, R180, R181, R182, R183, R184, R185, R186, R187, R188, R189, R190, R191, R192, R193, R194, R195, R196, R197, R198, R199, R200, R201, R202, R203, R204, R205, R206, R207, R208, R209, R210, R211, R212, R213, R214, R215, R216, R217, R218, R219, R220, R221, R222, R223, R224, R225, R226, R227, R228, R229, R230, R231, R232, R233, R234, R235, R236, R237, R238, R239, R240, R241, R242, R243, R244, R245, R246, R247, R248, R249, R250, R251, R252, R253, R254, R255, R256, R257, R258, R259, R260, R261, R262, R263, R264, R265, R266, R267, R268, R269, R270, R271, R272, R273, R274, R275, R276, R277, R278, R279, R280, R281, R282, R283, R284, R285, R286, R287, R288, R289, R290, R291, R292, R293, R294, R295, R296, R297, R298, R299, R300, R301, R302, R303, R304, R305, R306, R307, R308, R309, R310, R311, R312, R313, R314, R315, R316, R317, R318, R319, R320, R321, R322, R323, R324, R325, R326, R327, R328, R329, R330, R331, R332, R333, R334, R335, R336, R337, R338, R339, R340, R341, R342, R343, R344, R345, R346, R347, R348, R349, R350, R351, R352, R353, R354, R355, R356, R357, R358, R359, R360, R361, R362, R363, R364, R365, R366, R367, R368, R369, R370, R371, R372, R373, R374, R375, R376, R377, R378, R379, R380, R381, R382, R383, R384, R385, R386, R387, R388, R389, R390, R391, R392, R393, R394, R395, R396, R397, R398, R399, R400, R401, R402, R403, R404, R405, R406, R407, R408, R409, R410, R411, R412, R413, R414, R415, R416, R417, R418, R419, R420, R421, R422, R423, R424, R425, R426, R427, R428, R429, R430, R431, R432, R433, R434, R435, R436, R437, R438, R439, R440, R441, R442, R443, R444, R445, R446, R447, R448, R449, R450, R451, R452, R453, R454, R455, R456, R457, R458, R459, R460, R461, R462, R463, R464, R465, R466, R467, R468, R469, R470, R471, R472, R473, R474, R475, R476, R477, R478, R479, R480, R481, R482, R483, R484, R485, R486, R487, R488, R489, R490, R491, R492, R493, R494, R495, R496, R497, R498, R499, R500, R501, R502, R503, R504, R505, R506, R507, R508, R509, R510, R511, R512, R513, R514, R515, R516, R517, R518, R519, R520, R521, R522, R523, R524, R525, R526, R527, R528, R529, R530, R531, R532, R533, R534, R535, R536, R537, R538, R539, R540, R541, R542, R543, R544, R545, R546, R547, R548, R549, R550, R551, R552, R553, R554, R555, R556, R557, R558, R559, R560, R561, R562, R563, R564, R565, R566, R567, R568, R569, R570, R571, R572, R573, R574, R575, R576, R577, R578, R579, R580, R581, R582, R583, R584, R585, R586, R587, R588, R589, R590, R591, R592, R593, R594, R595, R596, R597, R598, R599, R600, R601, R602, R603, R604, R605, R606, R607, R608, R609, R610, R611, R612, R613, R614, R615, R616, R617, R618, R619, R620, R621, R622, R623, R624, R625, R626, R627, R628, R629, R630, R631, R632, R633, R634, R635, R636, R637, R638, R639, R640, R641, R642, R643, R644, R645, R646, R647, R648, R649, R650, R651, R652, R653, R654, R655, R656, R657, R658, R659, R660, R661, R662, R663, R664, R665, R666, R667, R668, R669, R670, R671, R672, R673, R674, R675, R676, R677, R678, R679, R680, R681, R682, R683, R684, R685, R686, R687, R688, R689, R690, R691, R692, R693, R694, R695, R696, R697, R698, R699, R700, R701, R702, R703, R704, R705, R706, R707, R708, R709, R710, R711, R712, R713, R714, R715, R716, R717, R718, R719, R720, R721, R722, R723, R724, R725, R726, R727, R728, R729, R730, R731, R732, R733, R734, R735, R736, R737, R738, R739, R740, R741, R742, R743, R744, R745, R746, R747, R748, R749, R750, R751, R752, R753, R754, R755, R756, R757, R758, R759, R760, R761, R762, R763, R764, R765, R766, R767, R768, R769, R770, R771, R772, R773, R774, R775, R776, R777, R778, R779, R780, R781, R782, R783, R784, R785, R786, R787, R788, R789, R790, R791, R792, R793, R794, R795, R796, R797, R798, R799, R800, R801, R802, R803, R804, R805, R8

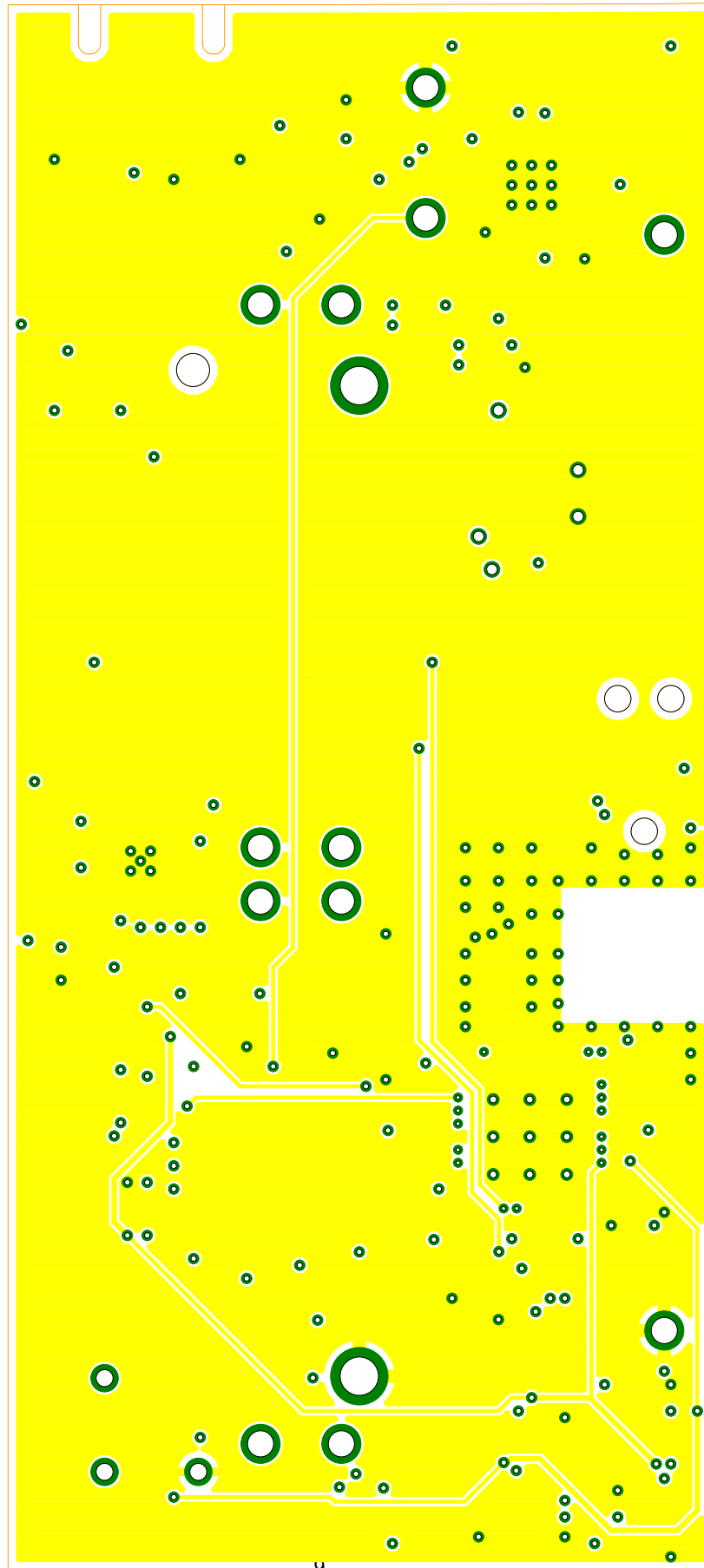


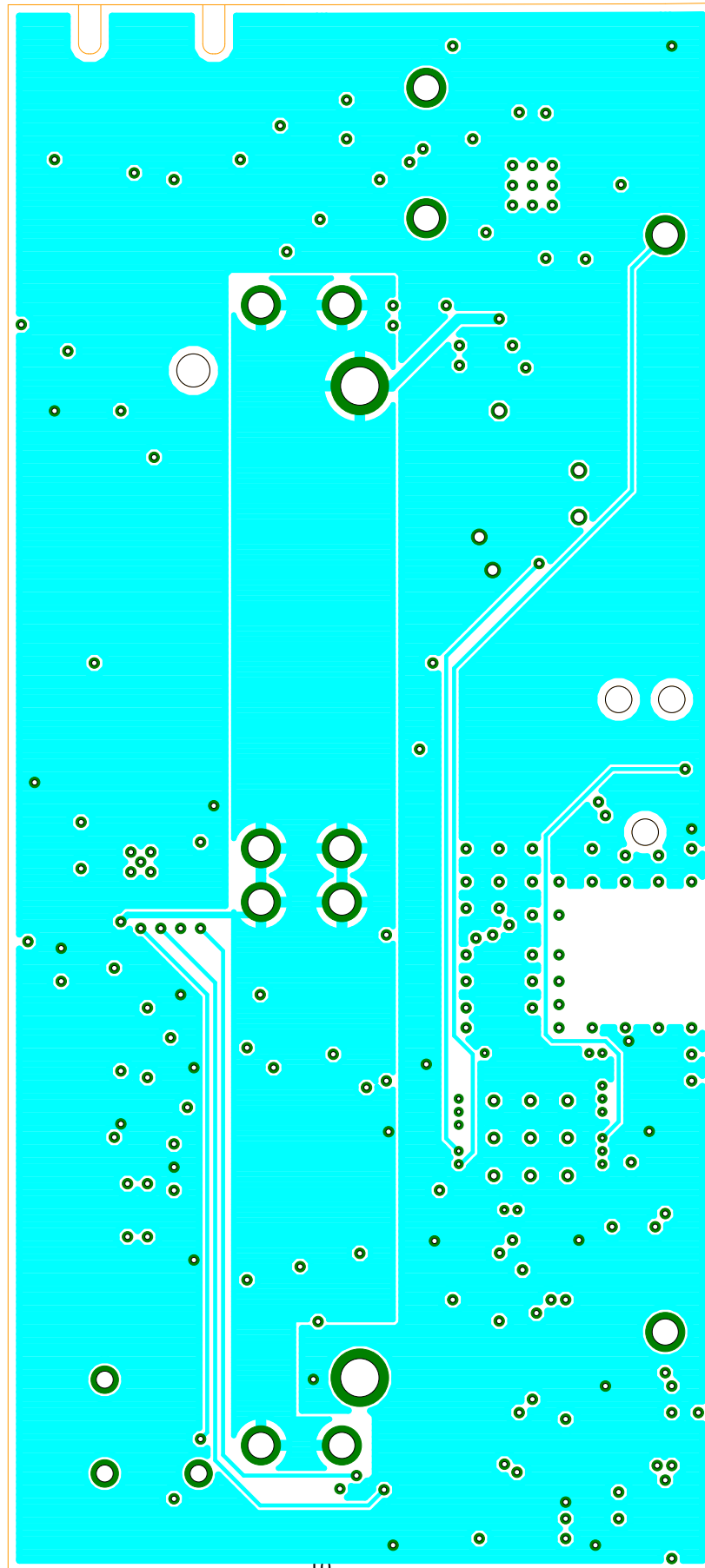


Top Copper Layer

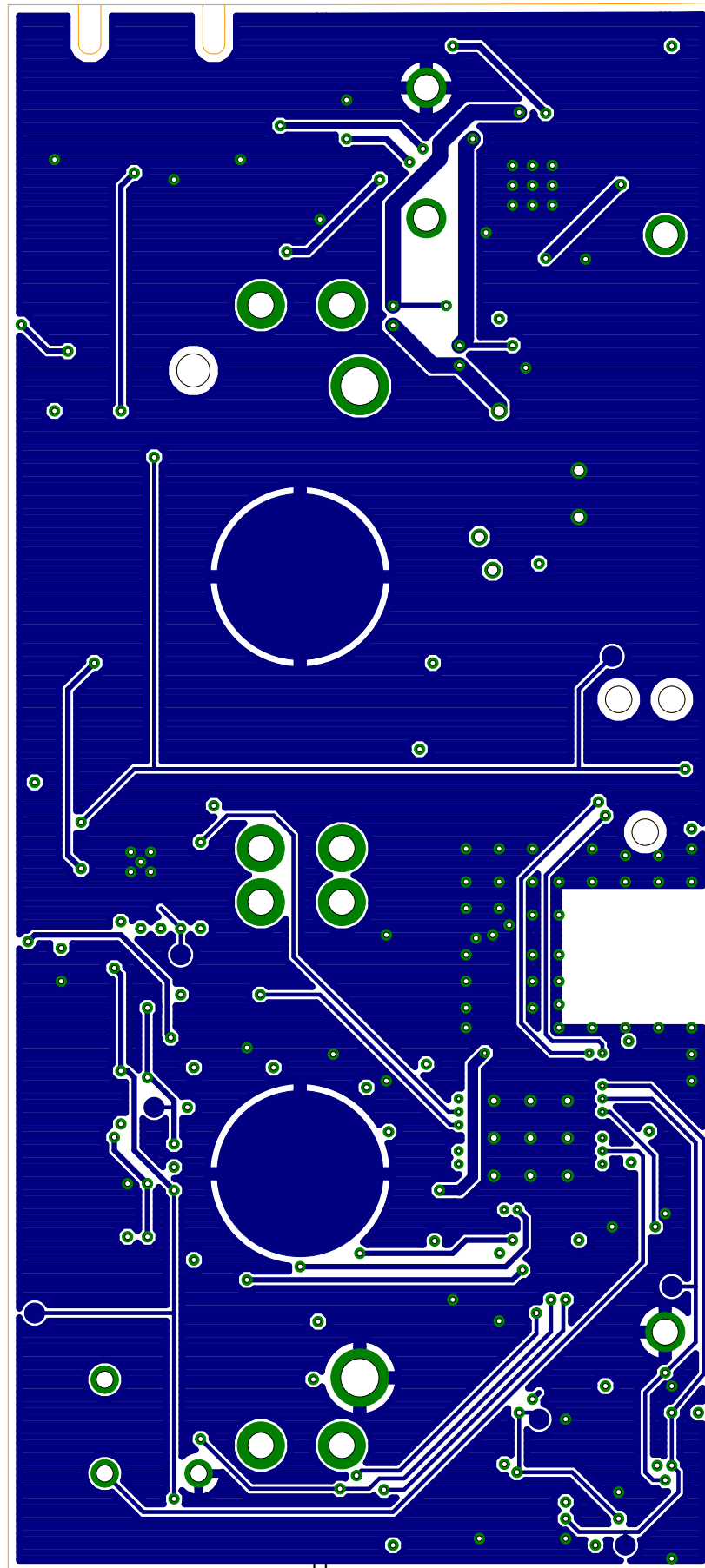


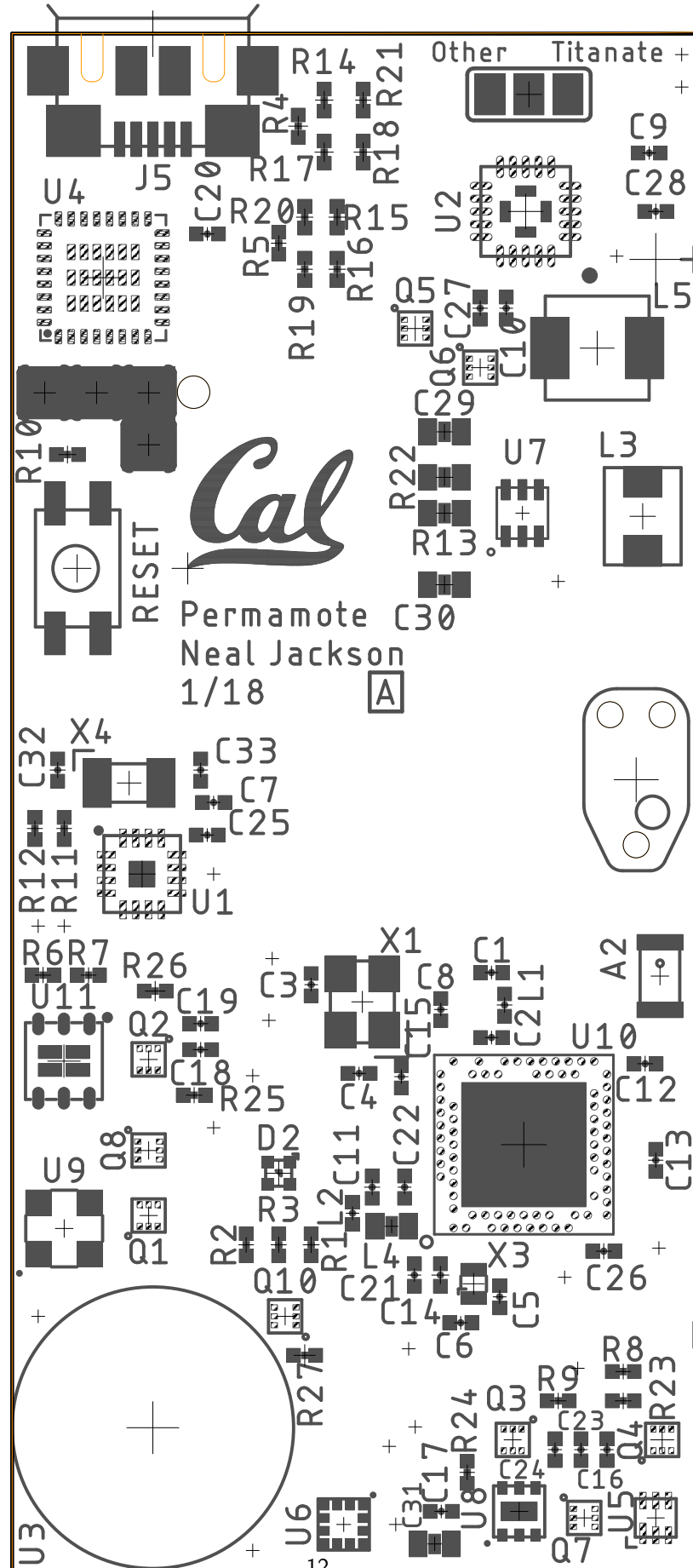
Layer 2 Copper



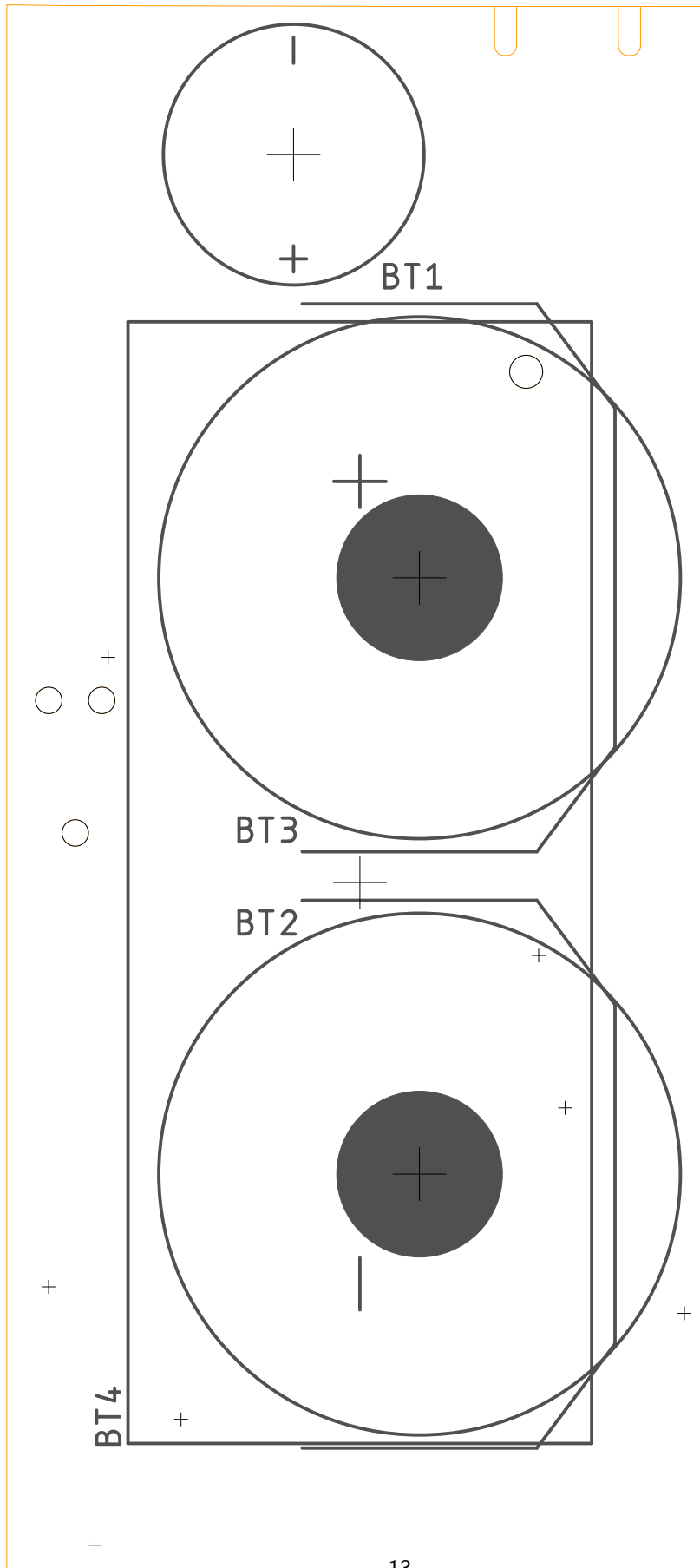


Bottom Copper Layer

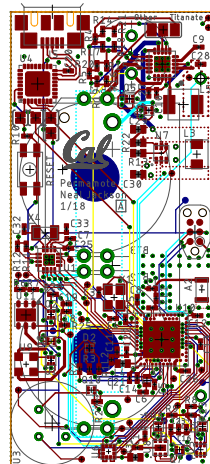


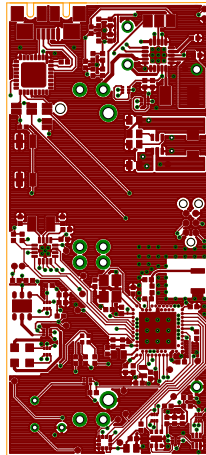


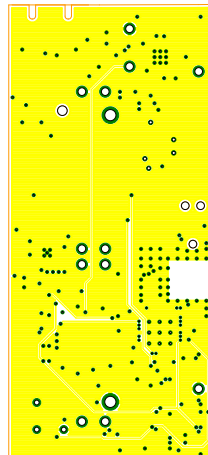
Bottom Paste Layer with Silkscreen

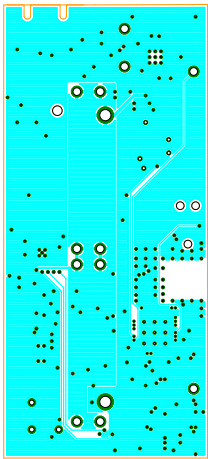


Top and Bottom Layers 1:1 Scale

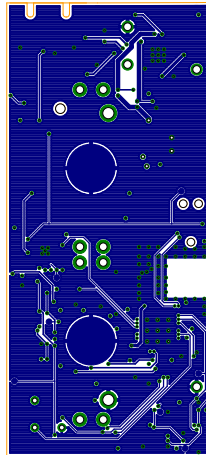








Bottom Copper Layer 1:1 Scale



permamote

Qty	Value	Device
	9 0.1uF	CAPACITOR0402_CAP
	1 0.5pF	CAPACITOR0402_CAP
	1 0.8pF	CAPACITOR0402_CAP
	5 100M	RESISTOR0402_RES
	1 100pF	CAPACITOR0402_CAP
	7 10k	RESISTOR0402_RES
	2 10nF	CAPACITOR0402_CAP
	3 10uF	CAPACITOR0603_CAP
	1 10uH	INDUCTOR0603
	4 12pF	CAPACITOR0402_CAP
	1 15nH	INDUCTOR0402
	5 1uF	CAPACITOR0402_CAP
	1 1uH	INDUCTOR0402
	1 22uH	INDUCTOR0402
	1 3.3nH	INDUCTOR0402
	1 3.9M	RESISTOR0402_RES
	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 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
	5 DNP	RESISTOR0402_RES
	1 EKMB1101111	EKMB1101111
	1 EVQP2	EVQP2
	1 FT232RQ	FT232RQ
	1 ISL29125	ISL29125
	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

permamote

1 SI7021-A20-GM1
1 SML-LX0404SIUPGUSB
1 SOLARCELLHOLES

SI7021-A20-GM1
SML-LX0404SIUPGUSB
SOLARCELLHOLES

Package
 0402_CAP
 0402_CAP
 0402_CAP
 0402_RES
 0402_CAP
 0402_RES
 0402_CAP
 0603_CAP
 0603_CAP
 0402_CAP
 0402_CAP
 0402_CAP
 IHL-1212BZ-11

74437324220

0402_CAP
 0402_RES
 ABS05
 TXC-7V
 0603-RES
 0402_CAP
 0402_RES
 0402_CAP
 0402_CAP
 0402_RES
 0402_RES
 0402_RES
 0603-RES
 0402_RES
 QFN-16-3MM
 2-SMD
 ANT3216A063R2400A
 BAT-HLD-002-THM
 BH123A
 S-PVQFN-N20-RGR
 0402_CAP
 0402_RES
 AMN2
 EVQP2
 QFN32
 ODFN-6-1.5MMX1.6MM
 LGA-12

1020

UDFN-6-MAXIM
 UDFN-6-EXPOSED
 MICRO_USB_B_HIROSE_ZX62R-B-5P(30)
 4-SMD
 AQFN73
 XDFN-6

permanote

DFN-6/3MM
1MM_SQ_4PAD
SOLAR_HOLES

Parts

C12, C13, C14, C15, C16, C17, C18, C19, C20

C1

C2

R23, R24, R25, R26, R27

C8

R6, R7, R8, R9, R10, R11, R12

C9, C10

C29, C30, C31

L4

C3, C4, C5, C6

L2

C21, C22, C23, C24, C25

L3

L5

L1

R14

X3

X1

R22

C26, C27, C28

R1, R2, R3

C11

C7

R4

R17

R18

R13

R21

U1

X4

A2

BT2, BT3

BT4

U2

C32, C33

R5, R15, R16, R19, R20

U3

S1

U4

U5

U6

BT1

U7

U8

J5

U9

U10

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

permamote

U11
D2
D1

Description

SMD Capacitor

SMD Capacitor

SMD Capacitor

Resistor

SMD Capacitor

Resistor

SMD Capacitor

SMD Capacitor

A very specific inductor

SMD Capacitor

A very specific inductor

SMD Capacitor

A very specific inductor

A very specific inductor

A very specific inductor

Resistor

32.768kHz Crystal

TXC CRYSTAL SMD

Resistor

SMD Capacitor

Resistor

SMD Capacitor

SMD Capacitor

Resistor

Resistor

Resistor

Resistor

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 SPST-NO 0.02A 15V

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

low power i2c color sensor

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

permanote

IC TEMP SENSOR RH 2% DFN
1mm^2 RGB LED
Generic solar cell

permamote

DIGIKEY	MANUFACTURER	MF	MOUSER
490-6328-1-ND			
490-6264-1-ND			
490-6269-1-ND			
541-100MAHCT-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			
490-7195-1-ND			
541-1319-1-ND	Vishay Dale		
732-3340-1-ND			
535-10426-1-ND			
YAG3301CT-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			
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		
YAG3306CT-ND			
255-3065-ND	PANASONIC		
P11084SCT-ND			
ISL29125IROZ-T7ACT-ND	INTERSIL		
	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		

permamote

336-3141-ND
67-2125-1-ND

Lumex Opto

634-SI7021-A20-GM1

permamote

MPN	NEWARK	OC_FARNELL	OC_NEWARK	Notes
GRM155R71C104KA88J				
GRM1555C1HR50WA01D				
GRM1555C1HR80BA01D				
HMC0402JT100M				
GRM1555C1H101JA01D				
RC0402JR-0710KL				Do not populate R6 & R7
GRM155R71H103KA88D				
GRM188R60J106ME47D				
LQM18FN100M00D				
GRM1555C1H120GA01D				
HK100515NJ-T				
GRM155R70G105KA12D				
IHLP1212BZER1R0M11				
74437324220				
AISC-0402-3N3J-T				
RC0402JR-073M9L				
ABS05-32.768KHZ-9-T				
7M-32.000MAHV-T				
HMC0603JT33M0				
C1005X5R0J475K050BC				
RC0402JR-07470RL				
C1005X7R1C473K050BC				
GRM1555C1H470JA01D				
RC0402FR-076K04L				
RC0402JR-076M2L				
RC0402JR-076M8L				
RC0603FR-0780K6L				
RC0402JR-079M1L				
AB1815-T3				
ABS07-32.768KHZ-7-T				
ANT3216A063R2400A				
BAT-HLD-001-THM				Do not populate
BH123A				Do not populate
BQ25505RGRR				
				Do not populate
				Do not populate
EKMB1101111				
EVQ-P2K02Q				
FT232RQ			1146033 91K9919	
ISL29125IROZ-T7A				Will Consign (Part is out of s
LIS2DW12TR				
				Do not populate
MAX17222ELT+T				
MAX44009EDT+T				
ZX62R-B-5P(30)		84Y6712		
MS563702BA03-50				
NRF52840				Will Consign (Part is not yet
PMDXB950UPELZ				

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SI7021-A20-GM1
SML-LX0404SIUPGUSB

Do not populate

permamote

stock everywhere)

in production)