BeeBoard

PMC

SwarmUS

Revision 1.000

Date : 2021-03-18

TOP
BEE_BOARD_TOP.SchDoc

TOP
BEE_BOARD_BLOCK_DIAG.SchDoc

Mounting holes

MTH1 MTH2 MTH3 MTH4

Fiducials

FID1 FID 1MM
FID2 FID 1MM
FID3 FID 1MM

Revision history	

Section name

power

Package size conversion	
Metric	*Imperial*
1005	0402
1608	0603
2012	0805
3216	1206
3225	1210
6432	2512

Power notes

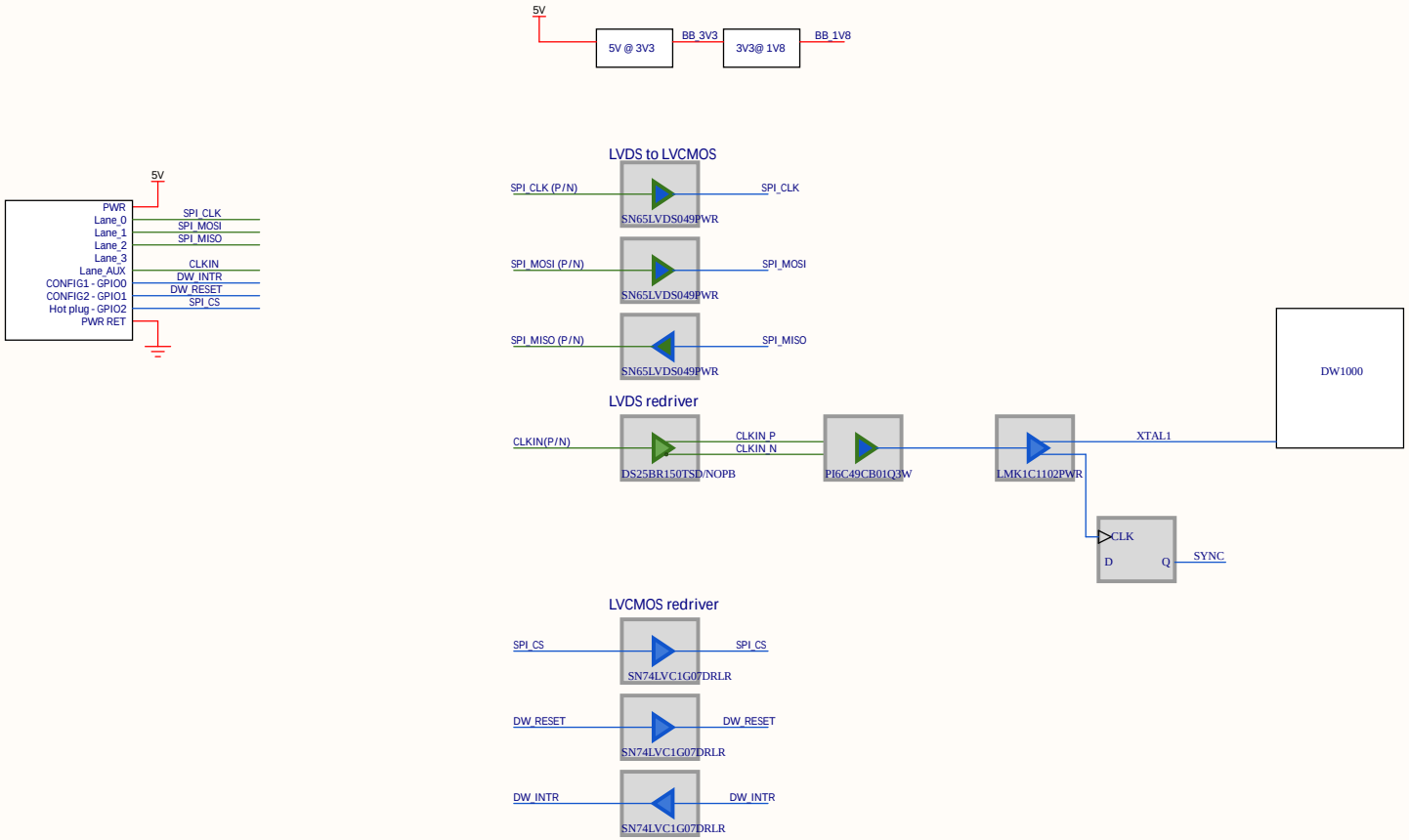
Usage notes

Questions / TODO

Routing notes

TODO R15 * 1% 0402
TODO C26 * * *
GENERAL_POWER_PORT
INSIDE_SHEET_POWER_PORT
ISOLATED_GROUND
GENERAL_GROUND

Project Title	BeeBoard		
Global Project	*PMC*		
Size 11x17	Group SwarmUS	Revision 1.000	
Date 2021-03-18	Sheet 1 of 6		
Filename BEE_BOARD_TITLE.SchDoc	Designers Philippe Arsenault, Hubert Dube, Louis-Daniel Gaulin		



Sheet Name	Insert name in Document Parameters		
Project Title	BeeBoard		
Global Project	*PMC*		
Size: 11x17	Group: SwarmUS		Revision: 1.000
Date: 2021-03-18	Sheet: 2 of 6		
Filename: BEE_BOARD_BLOCK_DIAG.SchDoc		Designers: Philippe Arsenault, Hubert Dube, Louis-Daniel Gaulin	

DP diff pair are 85 ohm

J2
12401598E4#2A

USB-C CONNECTOR

POWER
BEE_BOARD_POWER.SchDoc

J1
0705430005
100 mil HDR
vertical

MISC
BEE_BOARD_RECEIVE.SchDoc

DECAWAVE
BEE_BOARD_DECAWAVE.SchDoc

J3
DNI

Polarity Check
BEE_BOARD_USB_C_POLARITY.SchDoc

On flat cable (no twisting) :
RX1 : SPI CLK
RX2: SPI_MOSI
TX1 : CLK_38.4MHz
TX2 : SYNC
D+/D- : MISO
SBU1 : DW_RESET
SBU2 : SPI_nCS
CC1 : outputs IRQ
CC2 : NC

TVS Protection

D3
SMBJ5.0CA

D1
DT1140-04LP-7

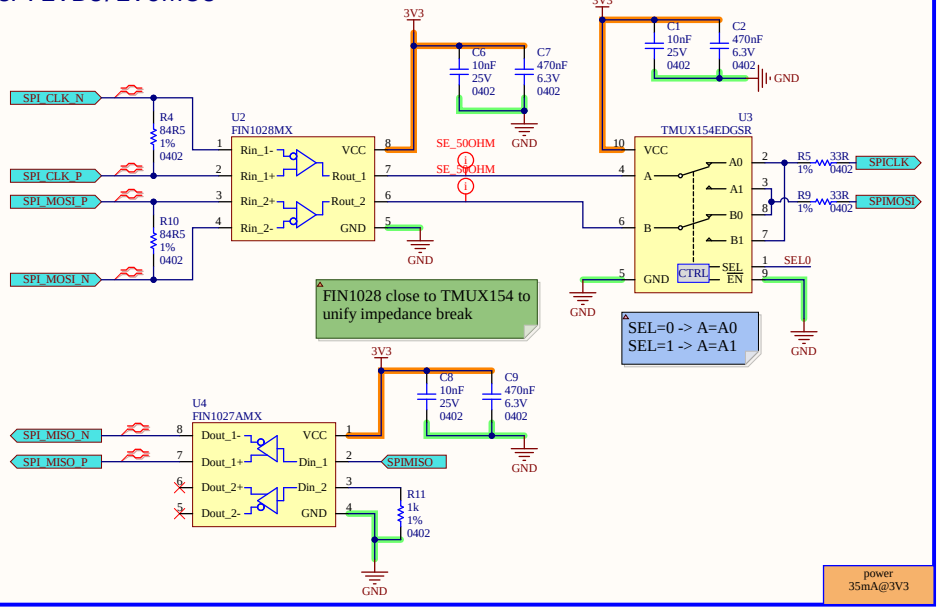
D2
DT1140-04LP-7

D4
DT1140-04LP-7

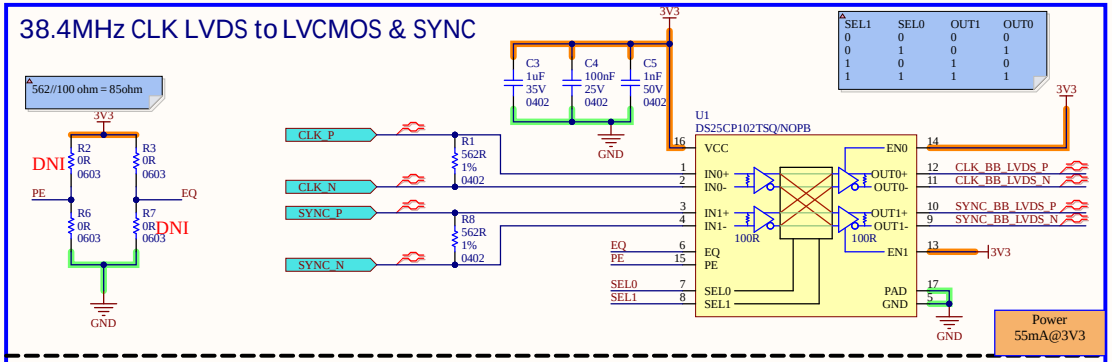
D5
DT1140-04LP-7

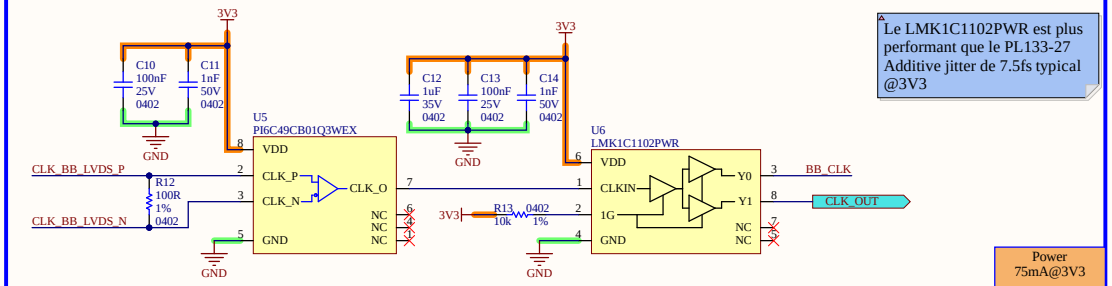
Sheet Name	Top
Project Title	BeeBoard
Global Project	PMC
Size	11x17
Group	SwarmUS
Revision	1.000
Date	2021-03-18
Sheet	3 of 6
Filename	BEE_BOARD_TOP.SchDoc
Designers	Philippe Arsenault Hubert Dube Louis-Daniel Gaulin

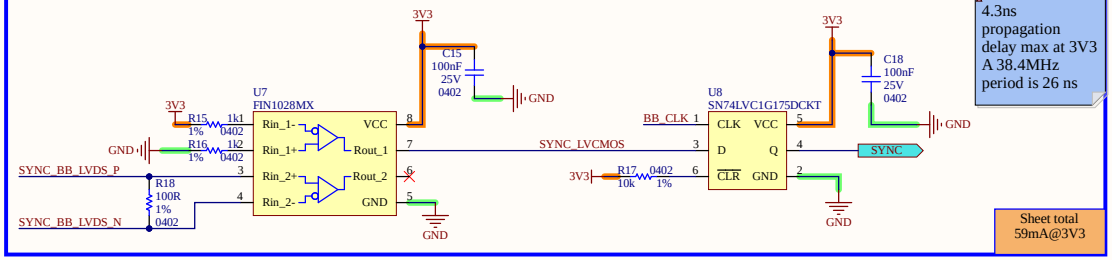
SPI LVDS/LVCMOS



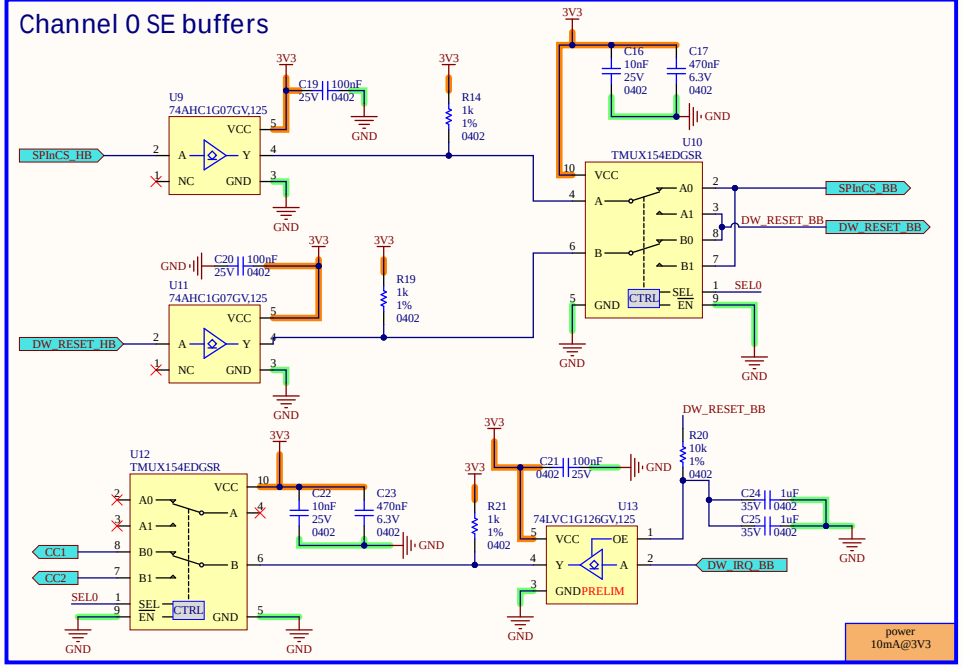
38.4MHz CLK LVDS to LVCMOS & SYNC



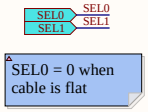




Channel 0 SE buffers



Pol. SEL

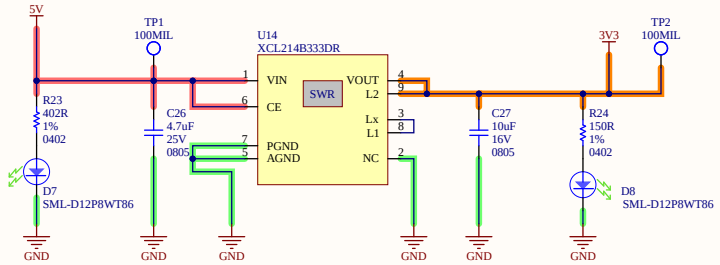


RC = 0.02
VIH is 2V
OE = 2V after DW_RESET = 3V3 for 18ms

Sheet total
234mA@3V3

Sheet Name	Receive modules	
Project Title	BeeBoard	
Global Project	*PMC*	
Size: 11x17	Group: SwarmUS	Revision: 1.000
Date: 2021-03-18	Sheet: 4 of 6	
Filename: BEE_BOARD_RECEIVE.SchDoc	Designers: Philippe Arsenault, Hubert Dube, Louis-Daniel Gaulin	

3V3 Generation



395mA@5V MAX

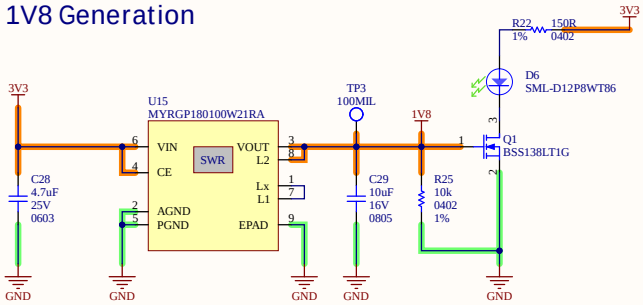
EFFICENCY = 90%+ @250mA

512mA@3V3 MAX

Design Note:
Use CL = 20uF or more when VIN-VOUT (T) <1.5V. Otherwise : CL = 10uF

PCB Note:
Routing must be carefully done following P.11 of the datasheet

1V8 Generation



138mA@3V3 MAX

EFFICENCY = 90%+ @180mA

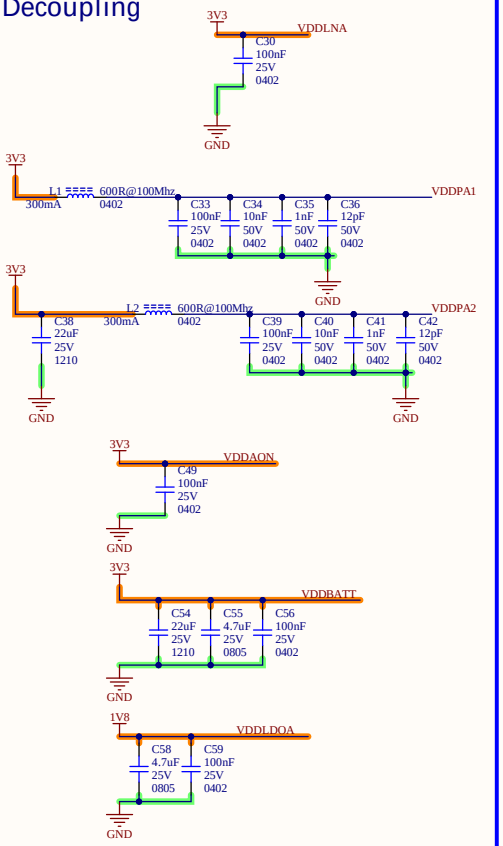
228mA@1V8 MAX

PCB Note:
Routing must be carefully done following P.12 of the datasheet

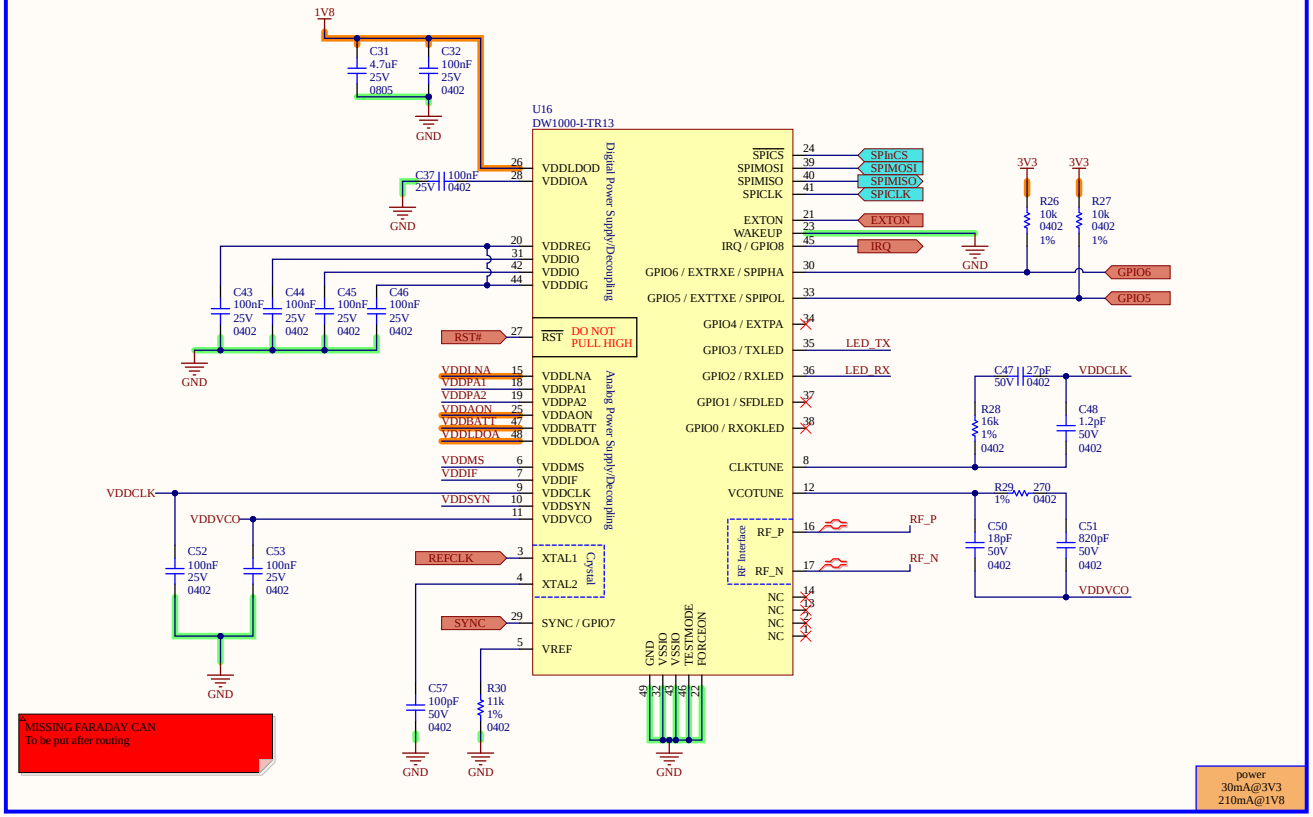
Close to DW

Sheet Name	POWER	
Project Title	BeeBoard	
Global Project	*PMC*	
Size: 11x17	Group: SwarmUS	Revision: 1.000
Date: 2021-03-18	Sheet: 5 of 6	
Filename: BEE_BOARD_POWER.SchDoc	Designers: Philippe Arsenault, Hubert Dube, Louis-Daniel Gaulin	

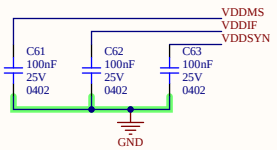
Decoupling



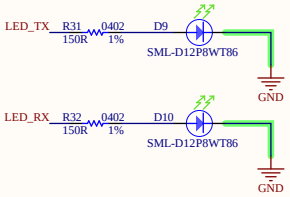
Decawave



Off-chip capacitance

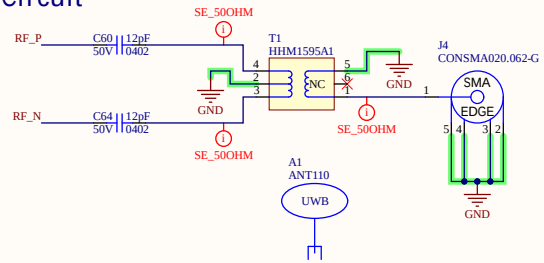


Debug LED



power
40mA@3V3

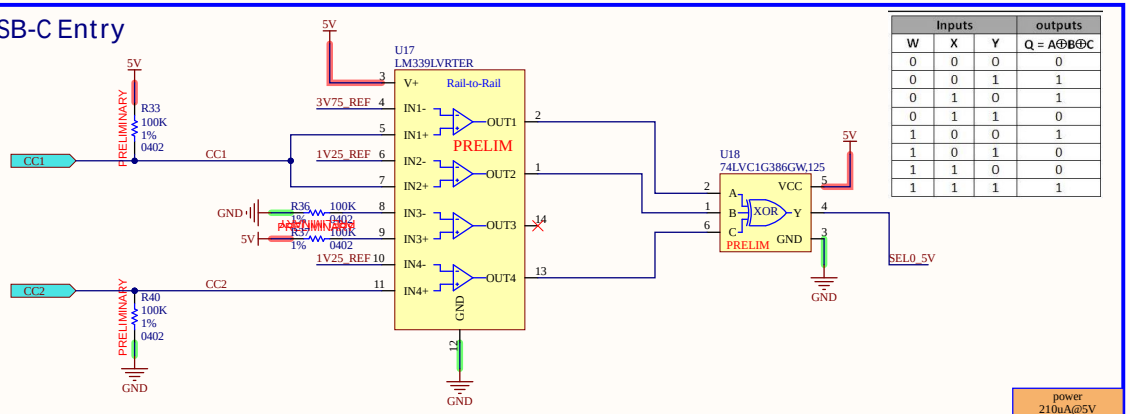
RF Circuit



Sheet total
70mA@3V3
210mA@1V8

Sheet Name	DECAWAVE	
Project Title	BeeBoard	
Global Project	*PMC*	
Size: 11x17	Group: SwarmUS	Revision: 1.000
Date: 2021-03-18	Sheet: 6 of 6	
Filename: BEE_BOARD_DECAWAVE.SchDoc	Designers: Philippe Arsenault, Hubert Dube, Louis-Daniel Gaulin	

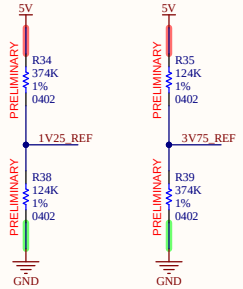
USB-C Entry



Inputs			outputs
W	X	Y	Q = A⊕B⊕C
0	0	0	0
0	0	1	1
0	1	0	1
0	1	1	0
1	0	0	1
1	0	1	0
1	1	0	0
1	1	1	1

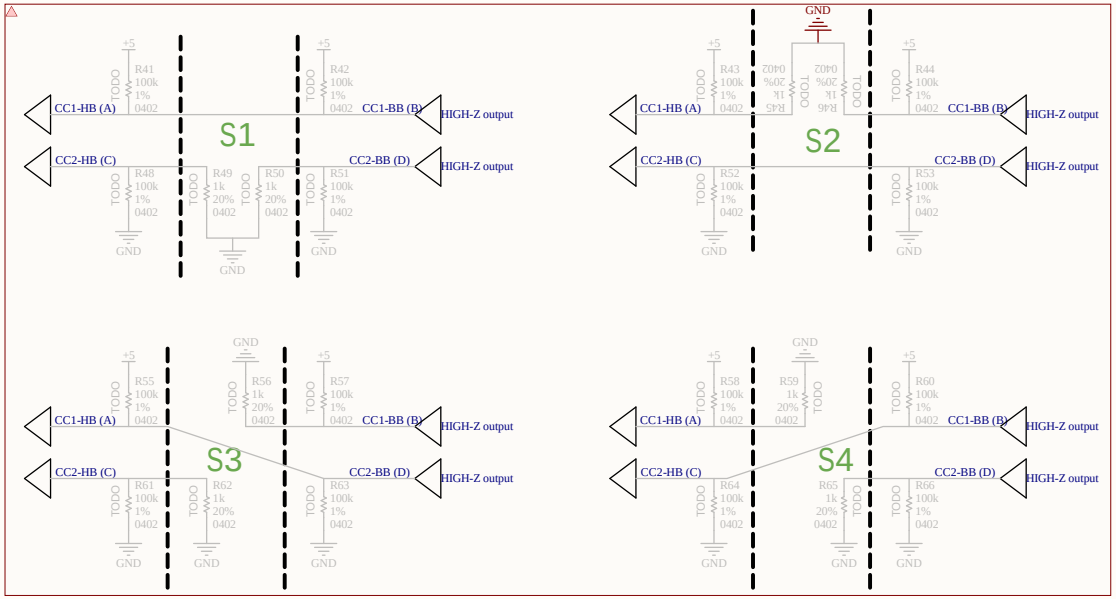
power
210uA@5V

Resistor comparative

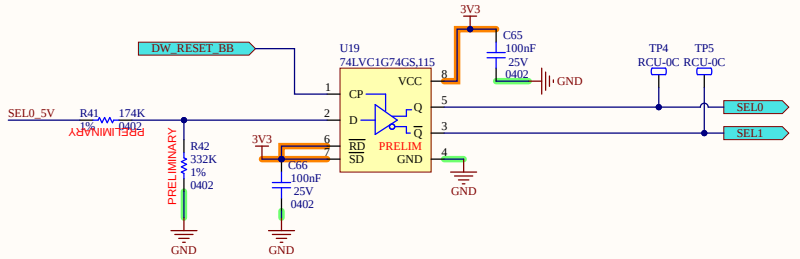


power
20uA@5V

USB-C Polarity Check REFERENCE FIGURES



Selection fanout



Pas sur si je dois faire un diviseur de tension pour l'entrée de la D flipflop

power
100mA@3V3

VA VOIR LE JIRA (its a link btw)

Sheet total
100mA@3V3
230uA@5V

Sheet Name	USB Polarity Check	
Project Title	BeeBoard	
Global Project	*PMC*	
Size: 11x17	Group: SwarmUS	Revision: 1.000
Date: 2021-03-18	Sheet: * of *	
Filename: BEE_BOARD_USB_C_POLARITY.SchDoc	Designers: Philippe Arsenault, Hubert Dube, Louis-Daniel Gaulin	