

# BeeBoard

## PMC

SwarmUS

Revision 1.000

Date : 2021-03-18

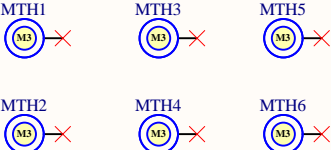
TOP  
BEE\_BOARD\_TOP.SchDoc



TOP  
BEE\_BOARD\_BLOCK\_DIAG.SchDoc



### Mounting holes



### Fiducials



### Revision history


### Section name

power

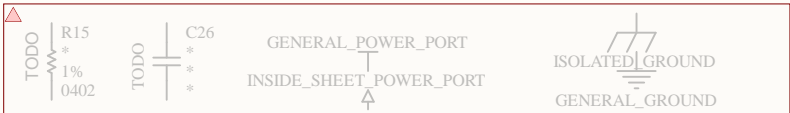
Power notes

Usage notes

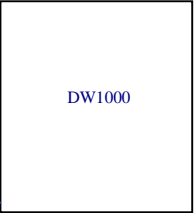
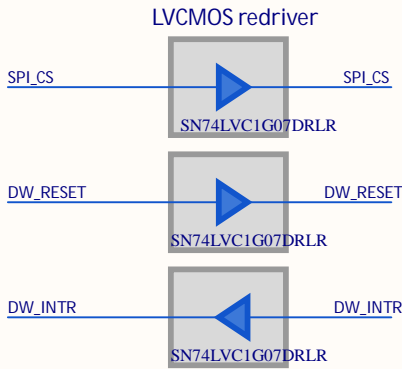
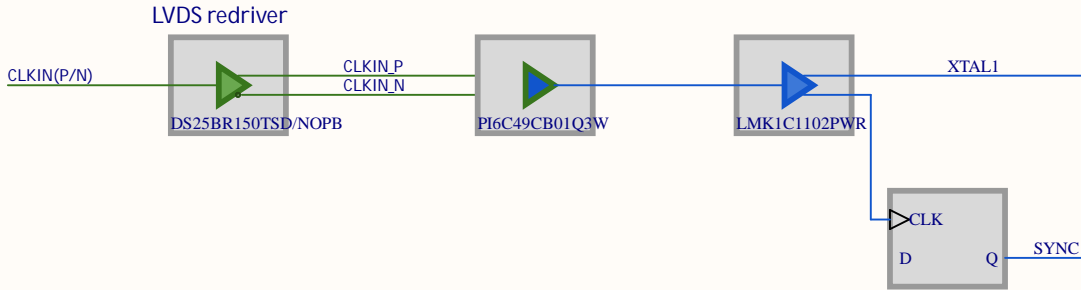
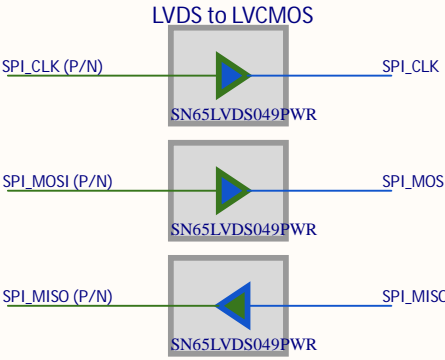
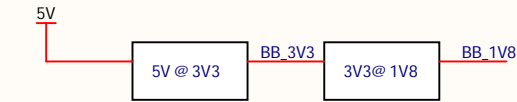
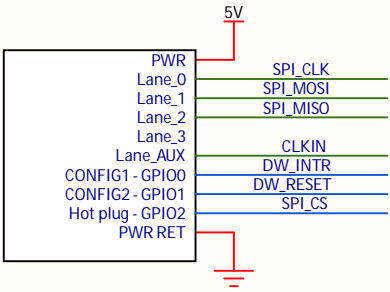
Questions / TODO

Routing notes

Package size conversion	
<i>Metric</i>	<i>Imperial</i>
1005	0402
1608	0603
2012	0805
3216	1206
3225	1210
6432	2512

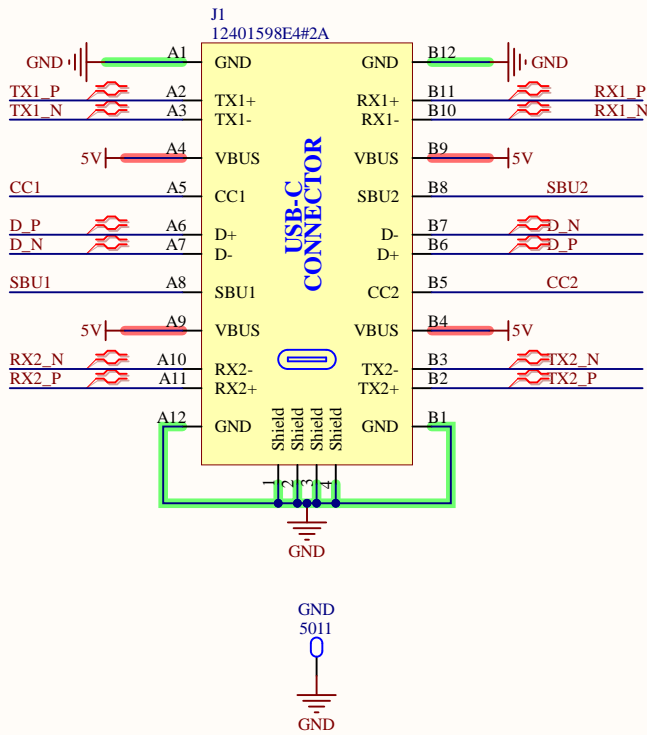


Project Title			BeeBoard	
Global Project			PMC	
Size	11x17	Group	SwarmUS	Revision 1.000
Date	2021-03-18			Sheet 1 of 7
Filename	BEE_BOARD_TITLE.SchDoc			Designers Philippe Arsenault Hubert Dube Louis-Daniel Gaulin

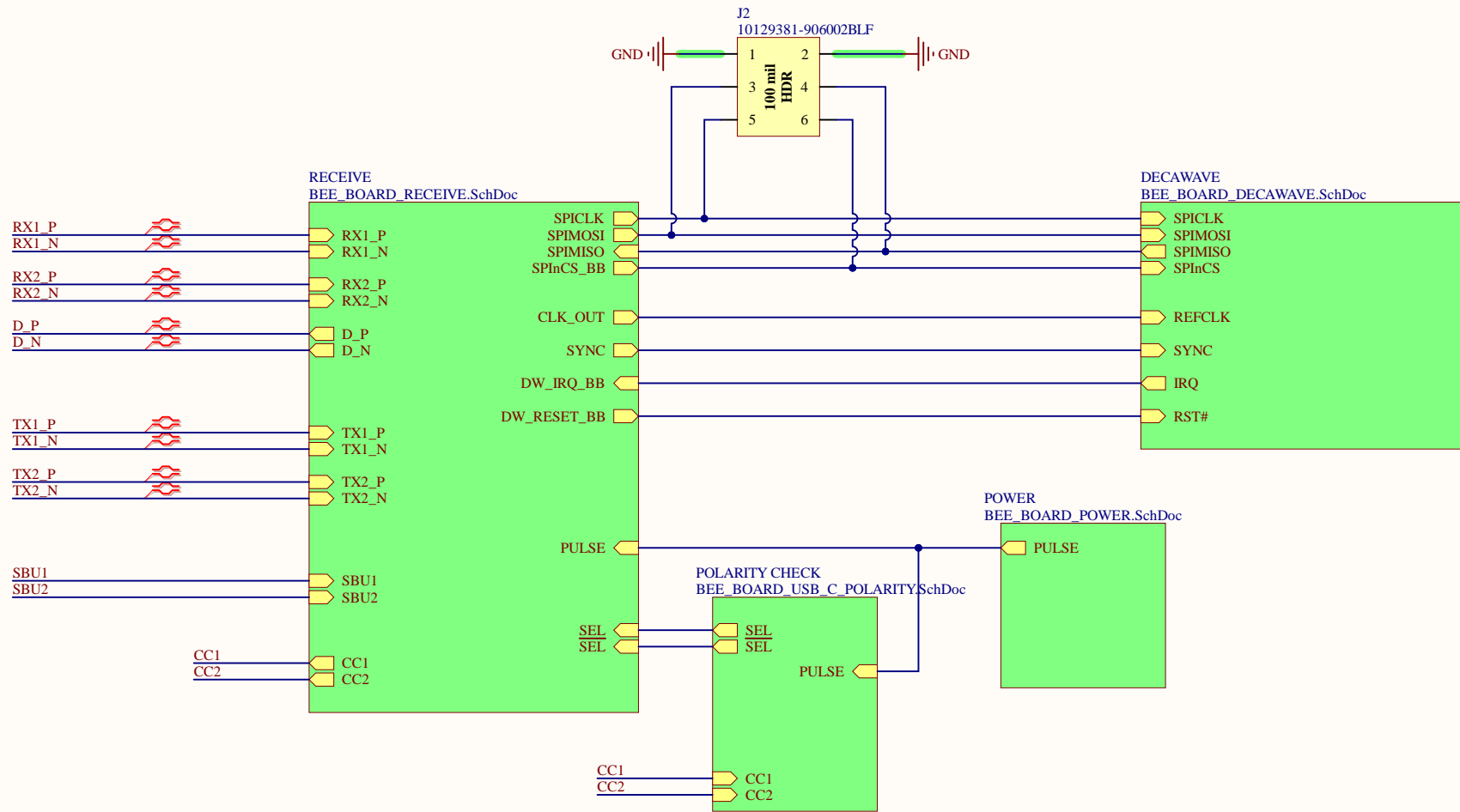


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Project Title			BeeBoard		
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BEE_BOARD_BLOCK_DIAG.SchDoc			Philippe Arsenault Hubert Dube Louis-Daniel Gaulin		

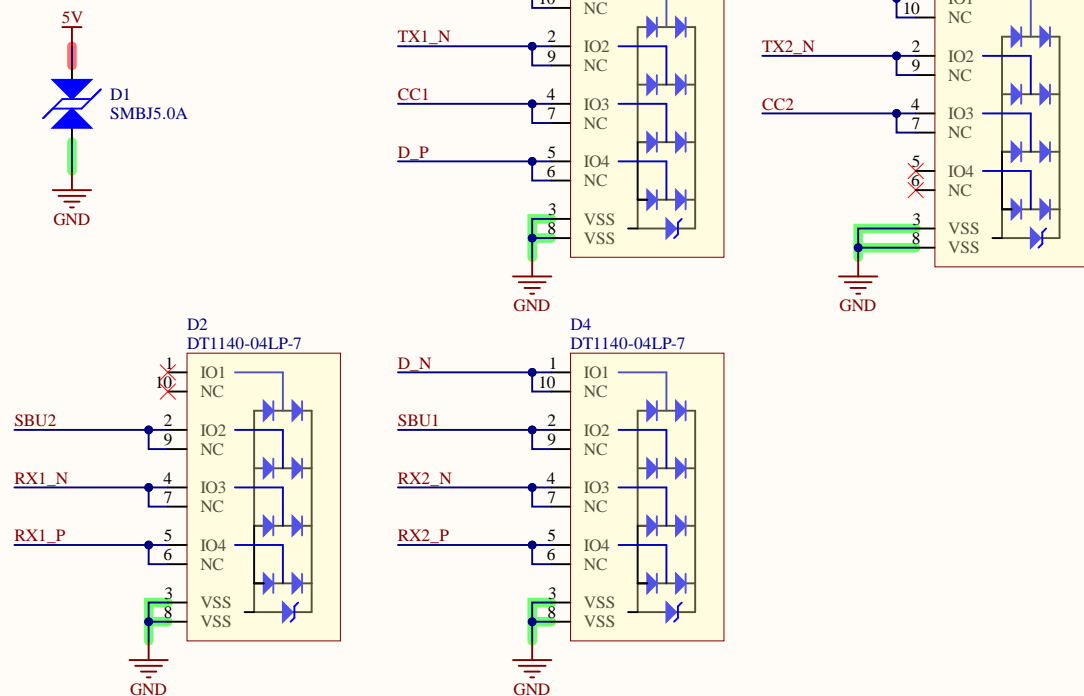
DP diff pair are 85 ohm



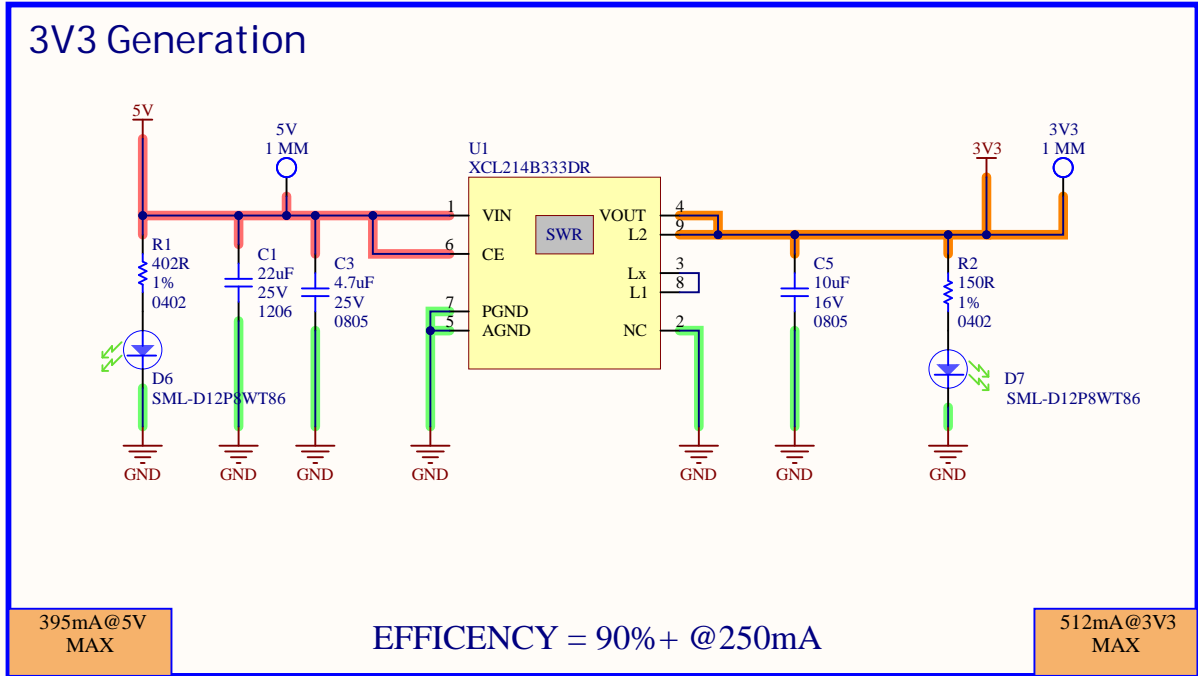
On flat cable (no twisting) :  
RX1 : SPI CLK  
RX2: SPI\_MOSI  
TX1 : CLK\_38.4MHz  
TX2 : SYNC  
D+/D- : MISO  
SBU1 : DW\_RESET  
SBU2 : SPI\_nCS  
CC1 : outputs IRQ  
CC2 : NC



## TVS Protection

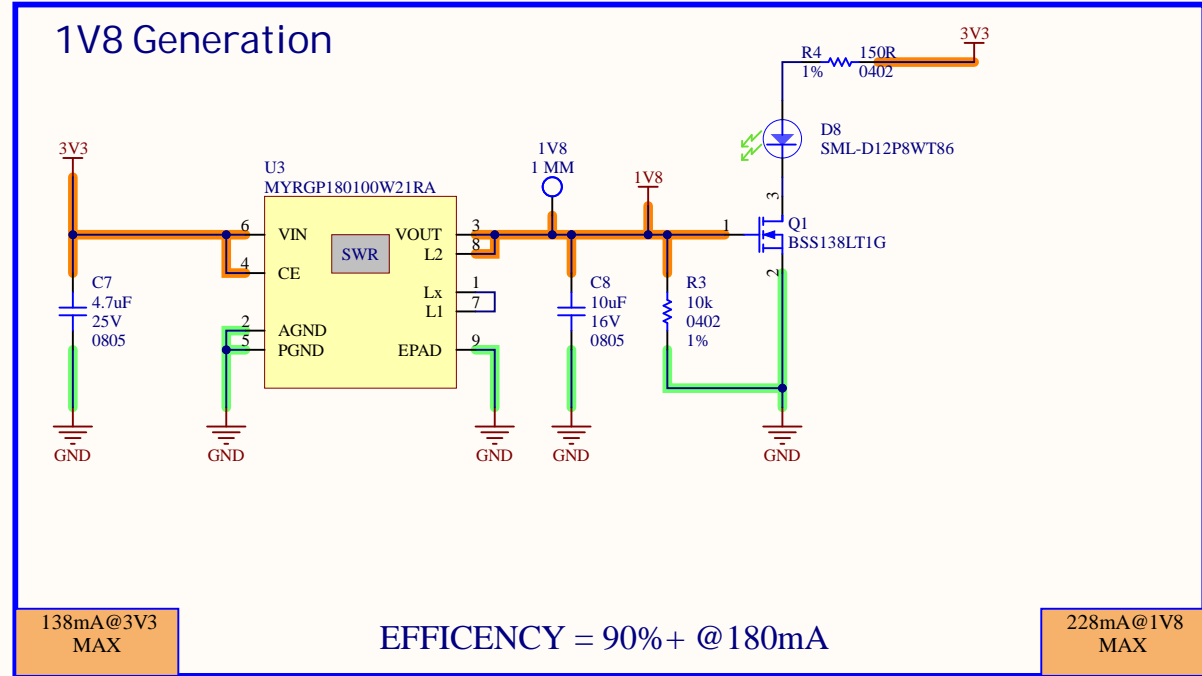


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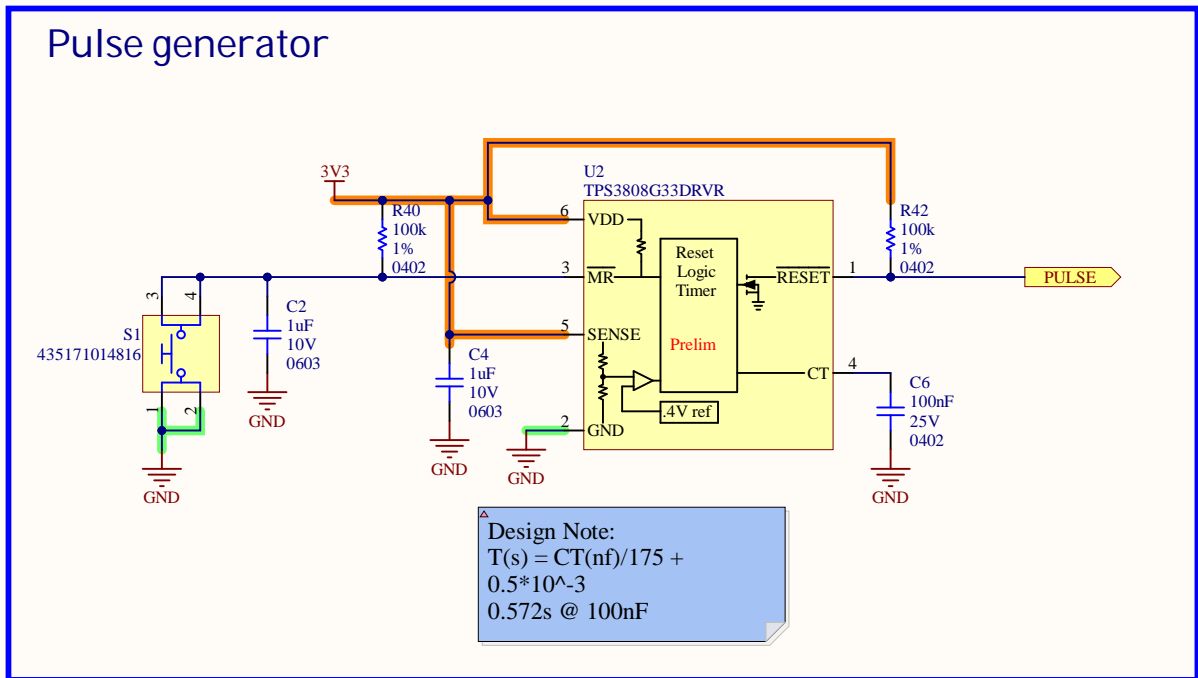
Design Note:  
Use CL = 20uF or more  
when VIN-VOUT (T) <1.5V.  
Otherwise : CL = 10uF

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



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

Close to DW



Sheet Name			POWER		
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**USB-C Entry**

The circuit diagram shows two input channels, CC1 and CC2, connected to a 3V3 supply through resistors R25 and R26 (100k, 1% tolerance, 0402 package). The signals are then connected to a 4-input OR gate (U16, LM339LV) and a 3-input XOR gate (U17, 74LVC1G386GW). The XOR gate output is connected to a 3V3 supply through a capacitor C33 (1uF, 10V, 0603 package). A truth table for the XOR gate is provided.

Inputs			outputs
W	X	Y	$Q = A \oplus B \oplus C$
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

Inputs			outputs
W	X	Y	$Q = A \oplus B \oplus C$
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

# Resistor comparative

The diagram illustrates a resistor comparative circuit. It features a vertical stack of three resistors connected between a 3V3 supply and GND. The resistors are labeled R29, R30, and R31. R29 is a 100k 1% 0402 resistor, R30 is a 200K 1% 0402 resistor, and R31 is a 100k 1% 0402 resistor. The circuit is powered by a 3V3 supply at the top and connected to GND at the bottom. Two reference voltages are indicated: 2V475\_REF at the node between R29 and R30, and 0V825\_REF at the node between R30 and R31. The resistors are represented by blue zigzag lines, and the supply and ground are represented by orange and green symbols respectively.

power  
20uA@5V

## USB-C Polarity Check REFERENCE FIGURES

The diagrams illustrate four different USB-C polarity configurations, labeled S1, S2, S3, and S4, showing the connection of CC1, CC2, and GND pins to the USB-C connector. Each diagram is divided into three sections by vertical dashed lines, representing the connector pins.

- S1:** CC1-HB (A) and CC2-HB (C) are connected to 3V3 via resistors RA? (100k, 1%) and RC? (100k, 1%) respectively. CC1-BB (B) and CC2-BB (D) are connected to GND via resistors RB? (100k, 1%) and RD? (100k, 1%) respectively. A 1k 20% resistor RUSB is connected between CC1 and CC2.
- S2:** CC1-HB (A) and CC2-HB (C) are connected to 3V3 via resistors RA? (100k, 1%) and RC? (100k, 1%) respectively. CC1-BB (B) and CC2-BB (D) are connected to GND via resistors RB? (100k, 1%) and RD? (100k, 1%) respectively. A 1k 20% resistor RUSB is connected between CC1 and CC2. A 1k 20% resistor RUSB? is connected between CC1 and CC2.
- S3:** CC1-HB (A) and CC2-HB (C) are connected to 3V3 via resistors RA? (100k, 1%) and RC? (100k, 1%) respectively. CC1-BB (B) and CC2-BB (D) are connected to GND via resistors RB? (100k, 1%) and RD? (100k, 1%) respectively. A 1k 20% resistor RUSB is connected between CC1 and CC2. A 1k 20% resistor RUSB? is connected between CC1 and CC2.
- S4:** CC1-HB (A) and CC2-HB (C) are connected to 3V3 via resistors RA? (100k, 1%) and RC? (100k, 1%) respectively. CC1-BB (B) and CC2-BB (D) are connected to GND via resistors RB? (100k, 1%) and RD? (100k, 1%) respectively. A 1k 20% resistor RUSB is connected between CC1 and CC2. A 1k 20% resistor RUSB? is connected between CC1 and CC2.

# Selection fanout

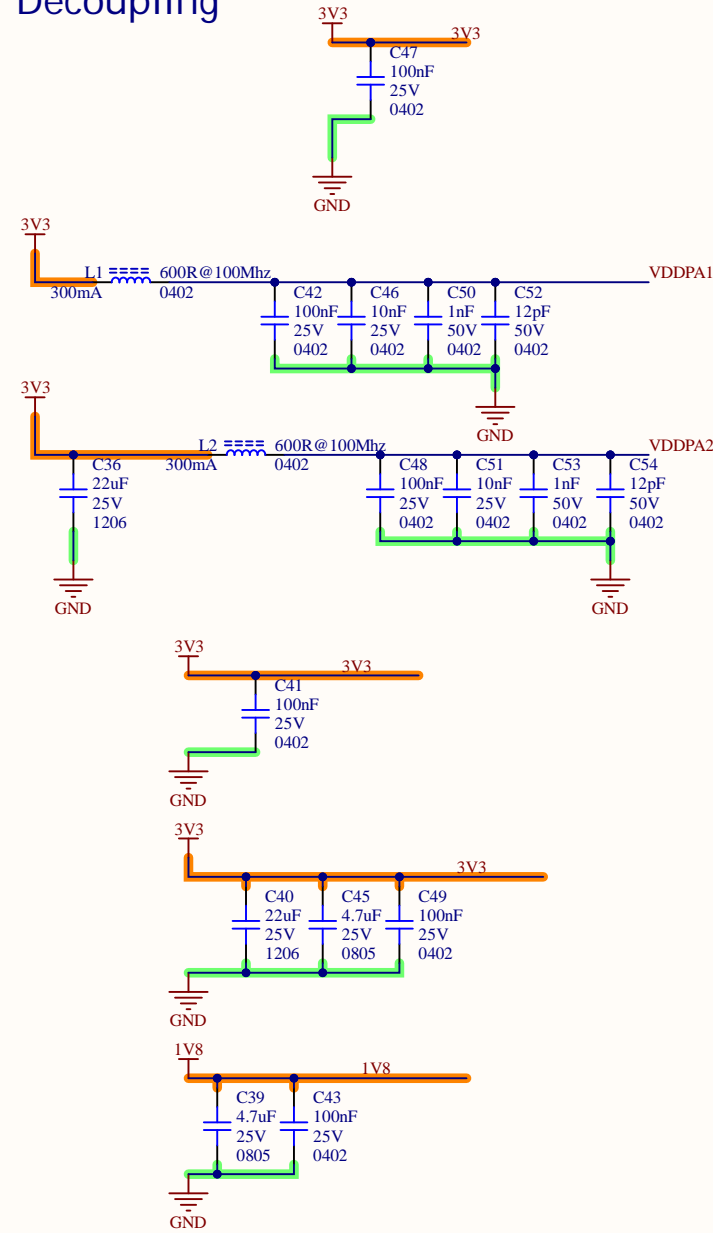
The diagram illustrates a circuit for Selection fanout using a 74LVC1G74DC.125 inverter. The circuit includes a PULSE input connected to the CP pin, a 3V3 supply connected to the D pin and VCC, and a 100nF capacitor (C34) connected to the D pin. The Q output is connected to a 3V3 supply and a 100nF capacitor (C35). The Q-bar output is connected to a 1 MM probe labeled SEL#. The circuit is powered by a 3V3 supply connected to VCC and GND.

power  
100mA@3V3

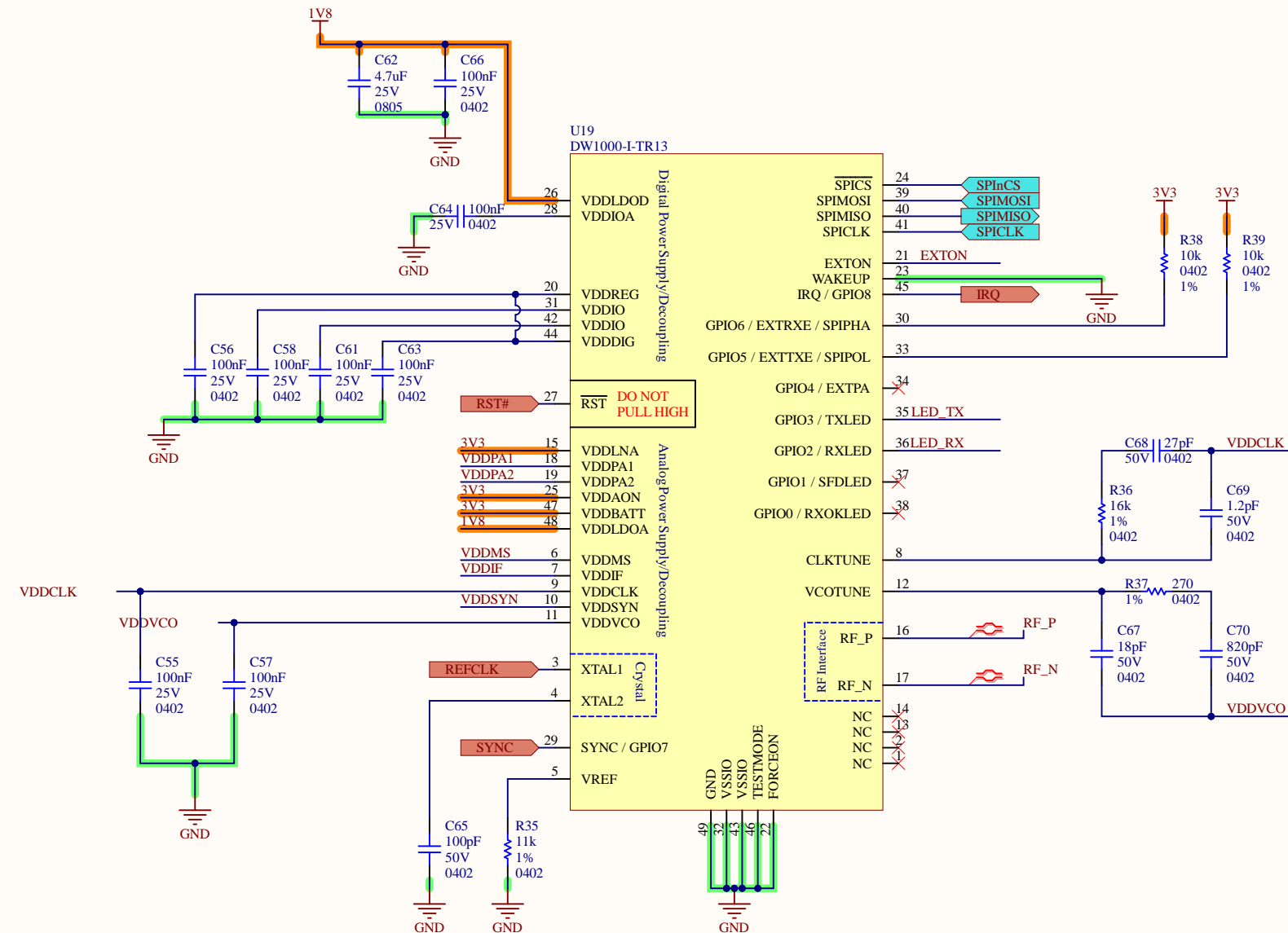
VA VOIR LE JIRA (its a link btw)

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BEE_BOARD_USB_C_POLARITY.SchDoc			Philippe Arsenault Hubert Dube Louis-Daniel Gaulin		

## Decoupling

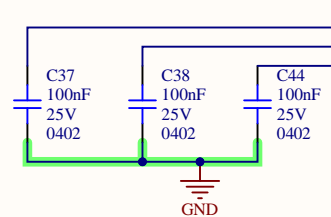


## Decawave

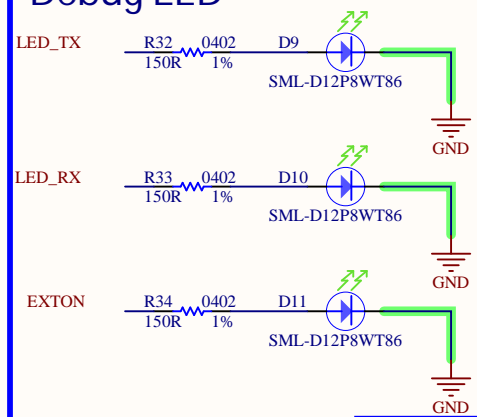


power  
30mA@3V3  
210mA@1V8

## Off-chip capacitance

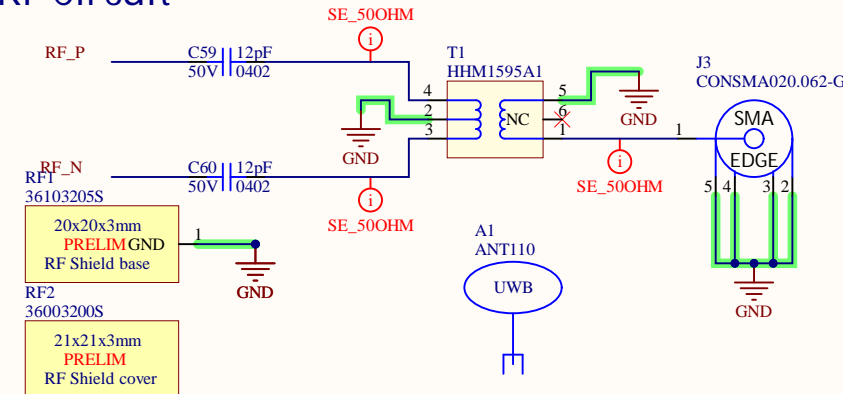


## Debug LED



power  
60mA@3V3

## RF Circuit



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Sheet total  
90mA@3V3  
210mA@1V8