

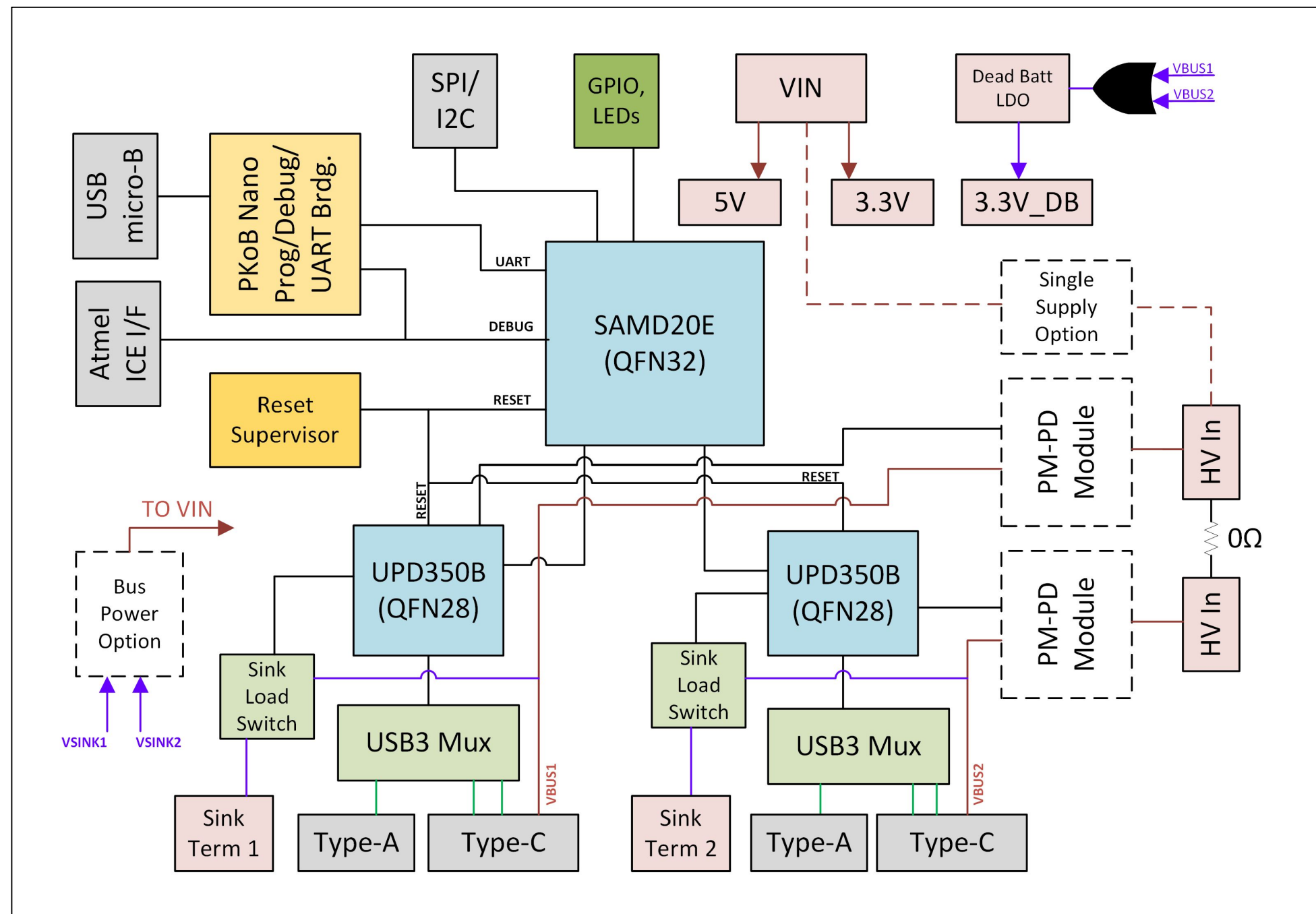
USB Power Delivery Software Framework EVB

Table of Contents

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3	Signal Breakout, Headers and Debug
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Revision History

Revision	Date	Revision Summary	Author
1.00	04/02/2020	Initial Public Release	Shiva Balasubramanian
1.10	06/23/2020	UART TX/RX swap for PKOB, silk errata and block diagram fixed	Shiva Balasubramanian
2.00	02/05/2021	BOM changes for U6, JP1 & LABEL1. China RoHS logo revised. Board Silk updated.	Shiva Balasubramanian



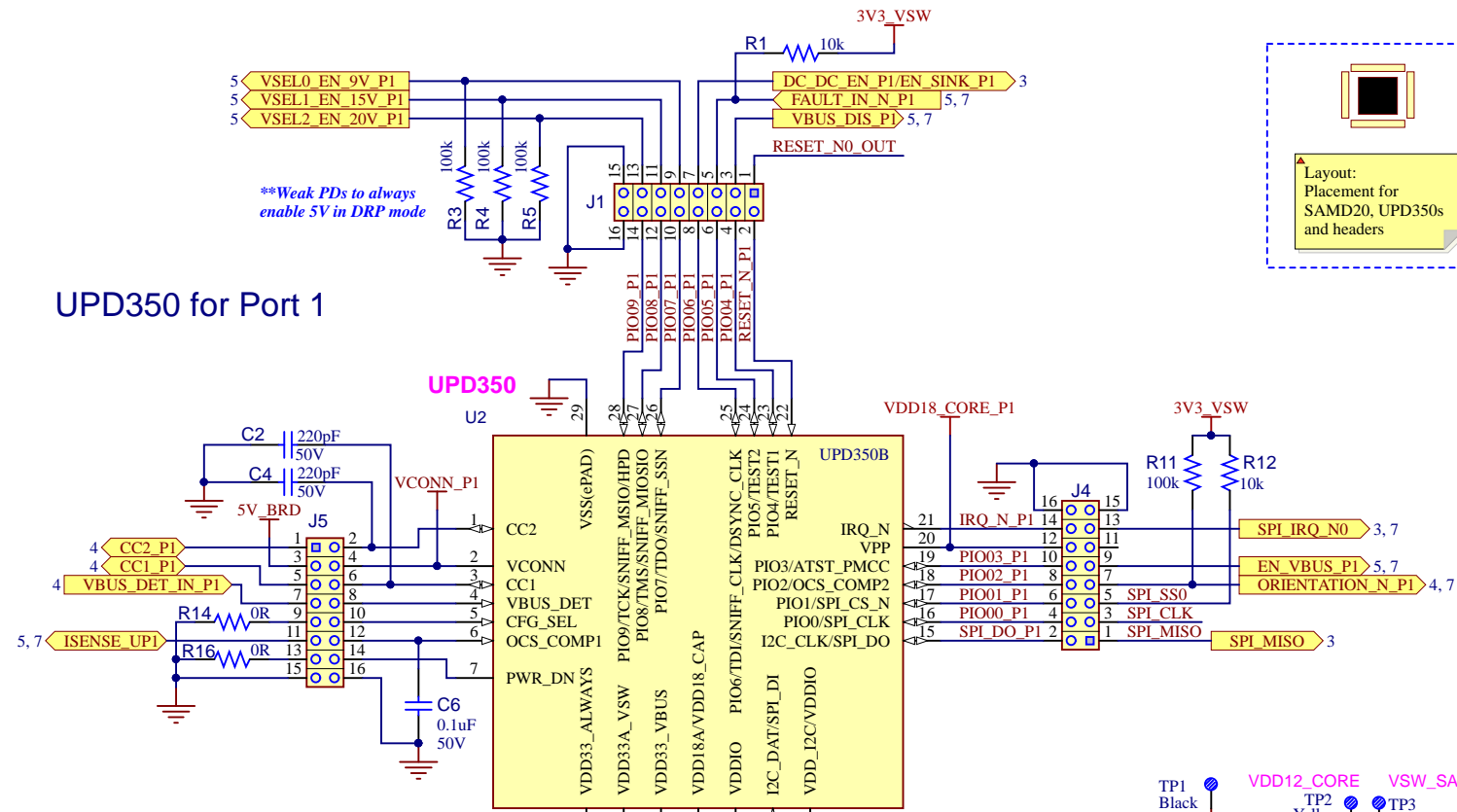
Notes

- 01 All resistors to have +/- 1% tolerance.
- 02 This design will fail the USB PD source mode compliance test for "unpowered CC Voltage" since it uses the UPD350 with dead battery support.
- 03 Default jumper placements can be found in the kit user guide and the board assembly drawing (02-00022-D).

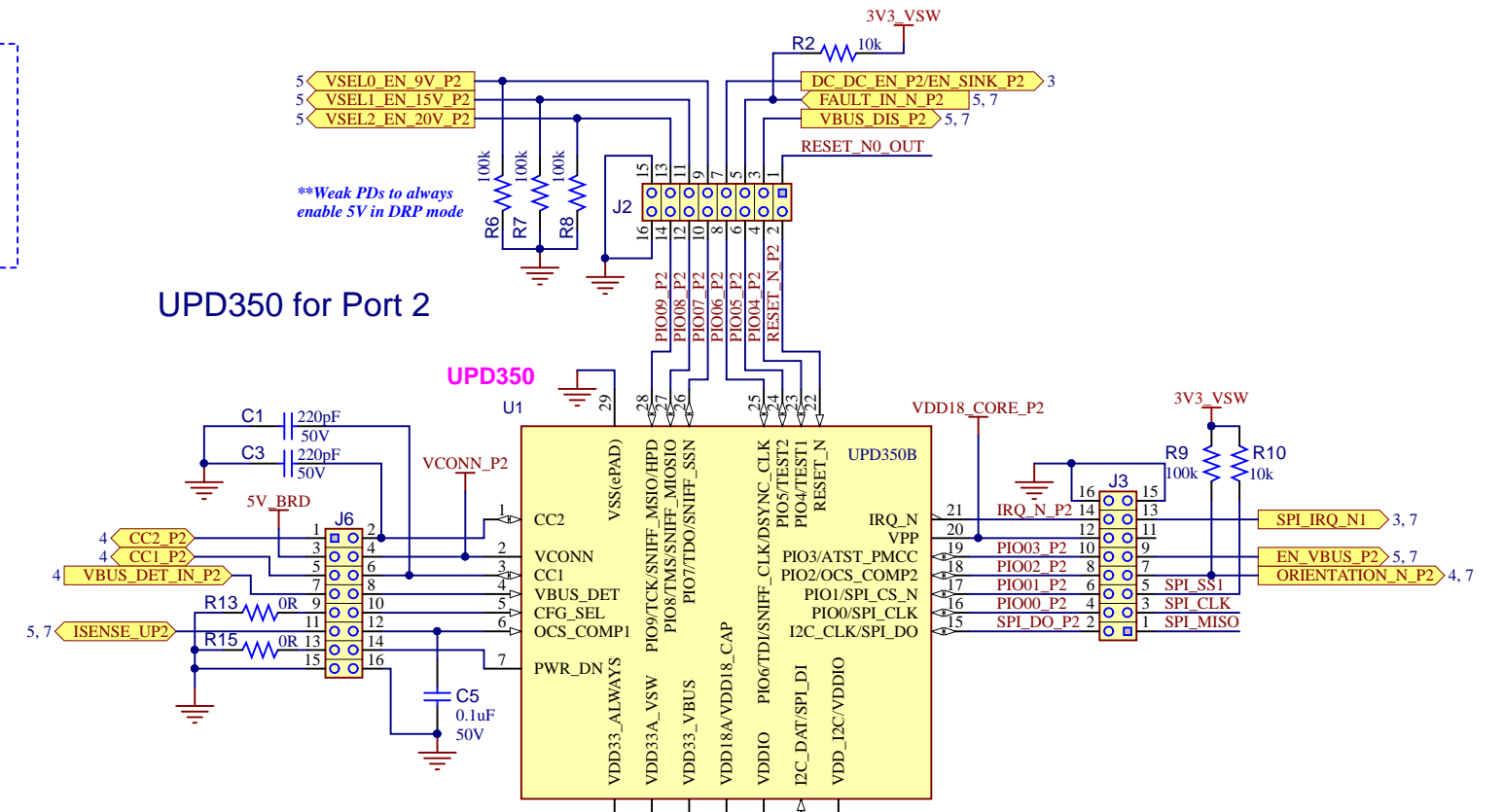
Drawn By: Carl J/Sam C			
Engineer: Shiva B			
PartNumber: EV65D44A	Project Title EVB-PSF	Variant: [No Variations]	
Sheet Title TOC and Block Diagram			
Size Tabloid	SCH #: 03-00022 PCB #: 04-11138	Rev:2 Rev:2	Date: 2/8/2021 Sheet 1 of 7
File: 11138-1-TOC.SchDoc			Designed with

SAMD20 and UPD350

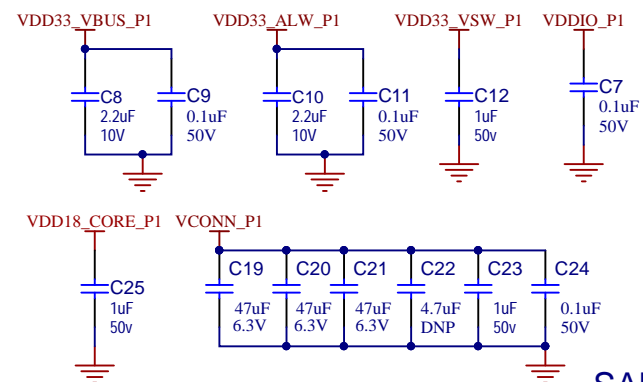
UPD350 for Port 1



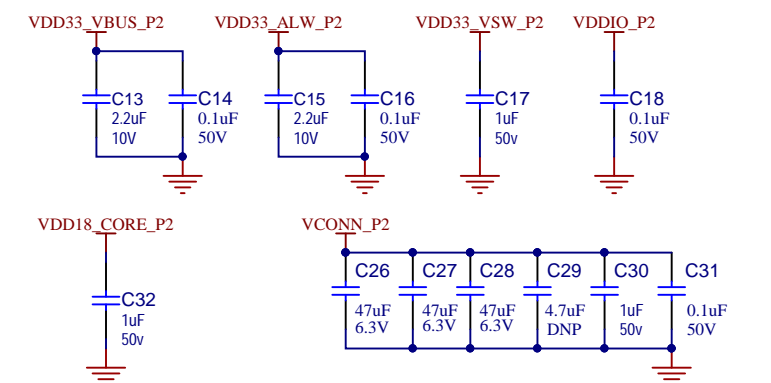
UPD350 for Port 2



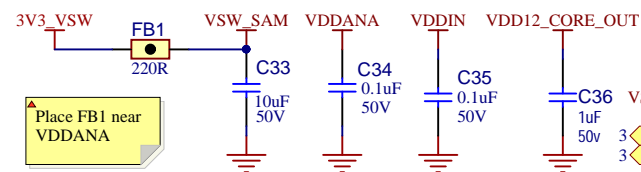
Port 1 UPD350 Bypass Caps



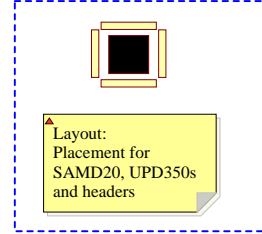
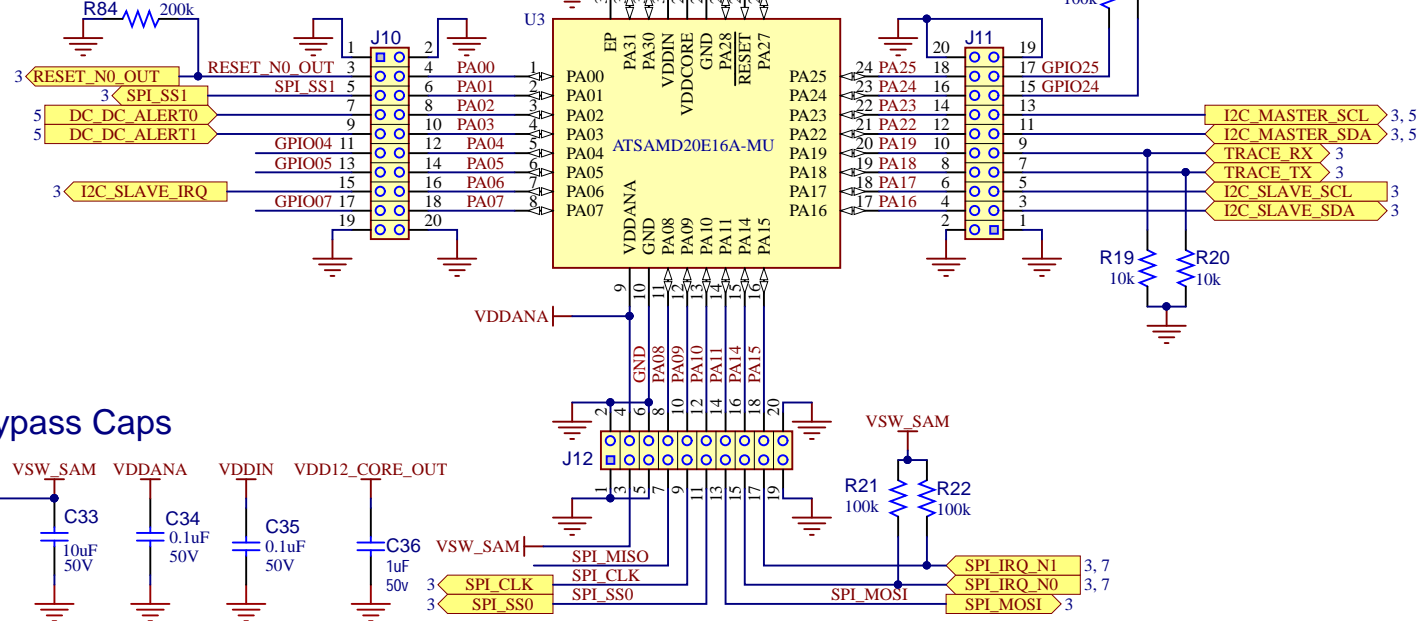
Port 2 UPD350 Bypass Caps



SAMD20 Bypass Caps



ATSAMD20E

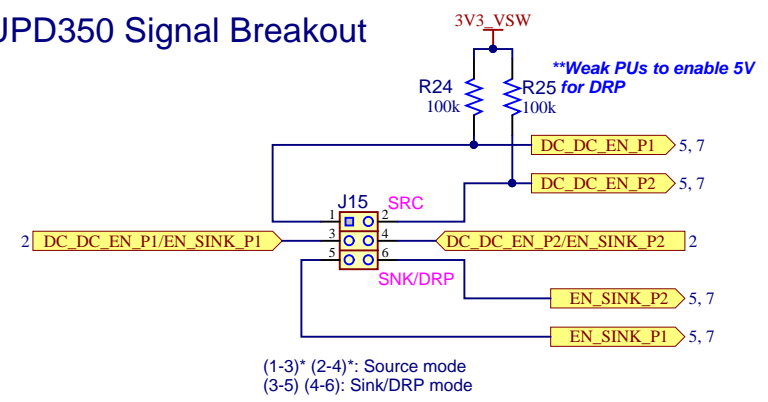


Layout:
Placement for
SAMD20, UPD350s
and headers

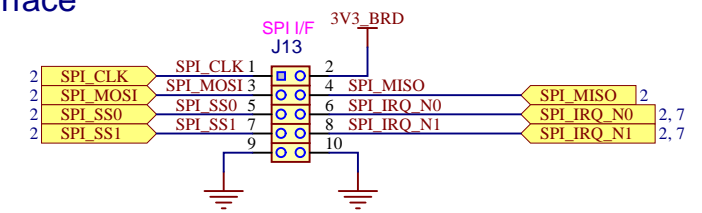
Drawn By: Carl J/Sam C			
Engineer: Shiva B			
PartNumber: EV65D44A	Project Title EVB-PSF	Variant: [No Variations]	
Sheet Title SAMD20 and UPD350			
Size Tabloid	SCH #: 03-00022	Rev:2	Date: 2/8/2021
PCB #: 04-11138	Rev:2	Sheet 2 of 7	
File: 11138-2-SAMD20_UPD350.SchDoc			Designed with

Signal Breakout, Headers and Debug

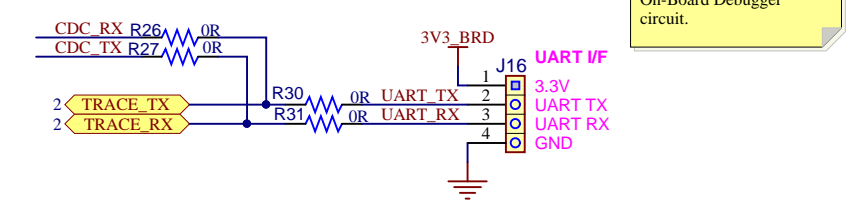
UPD350 Signal Breakout



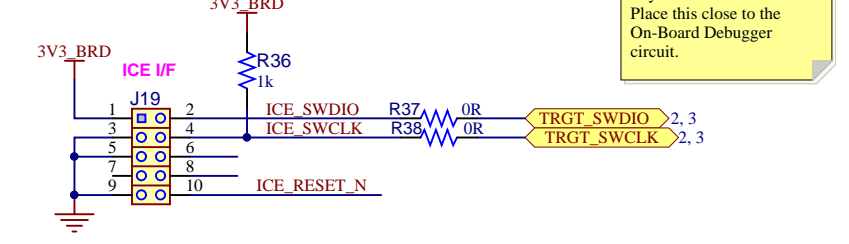
SPI Interface



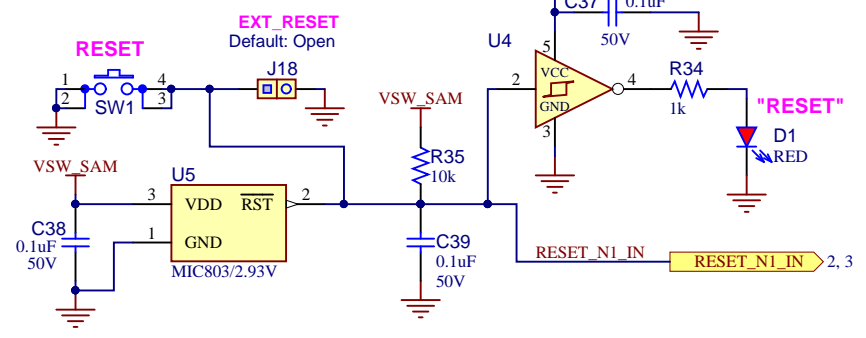
UART Interface



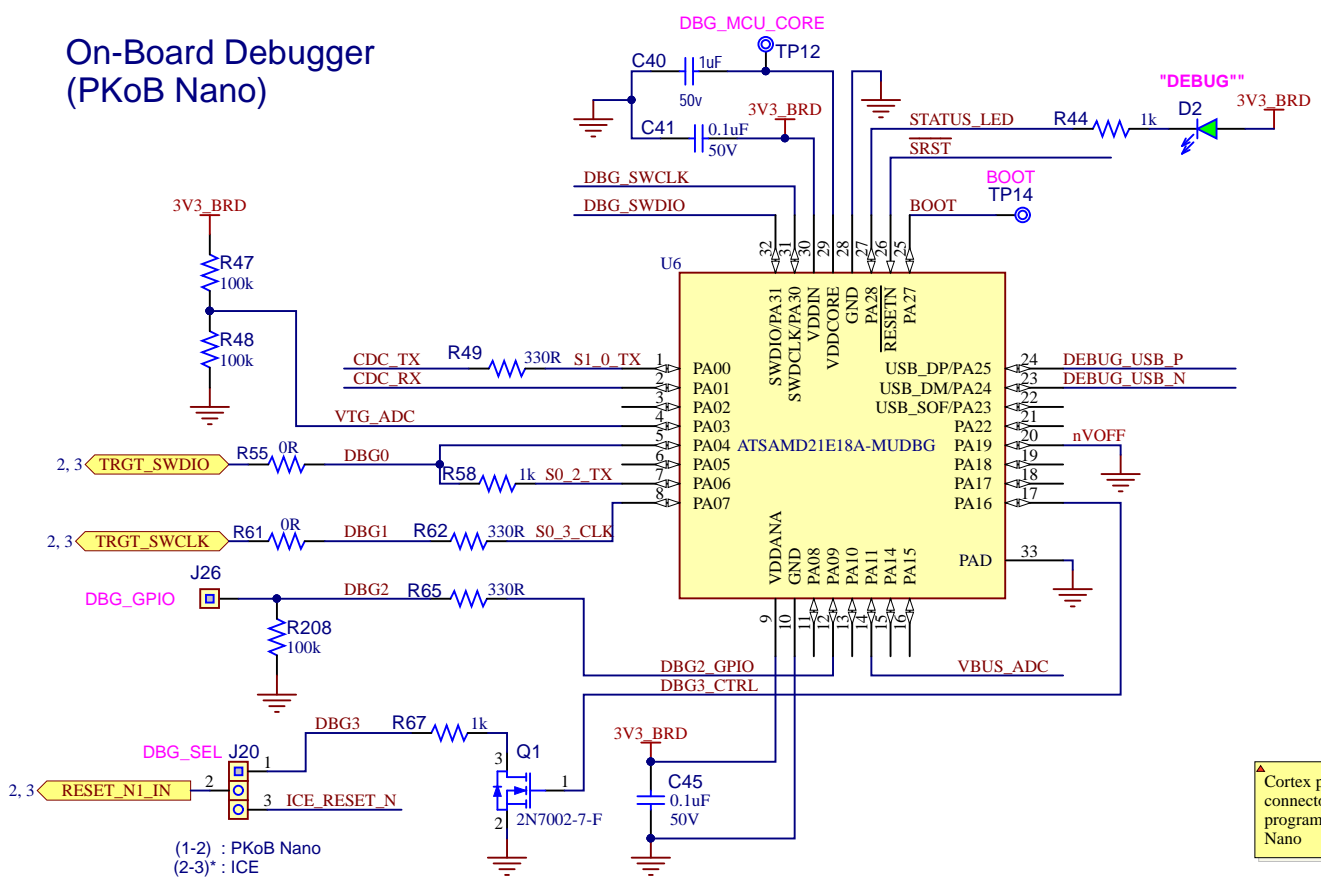
Atmel ICE I/F



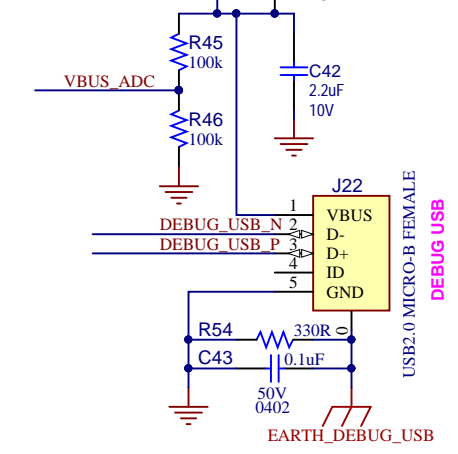
Reset Supervisor



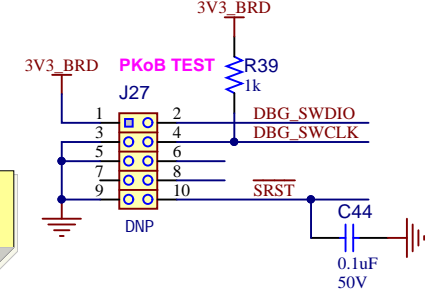
On-Board Debugger (PKoB Nano)



USB Debug I/F

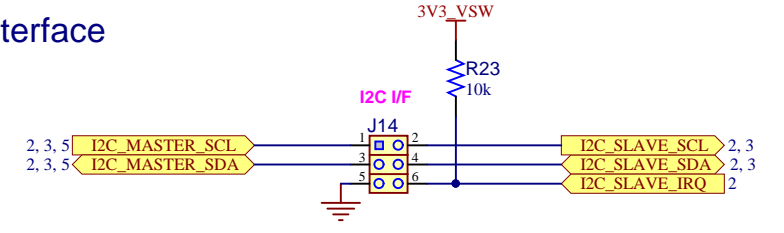


PKoB Nano Test Point

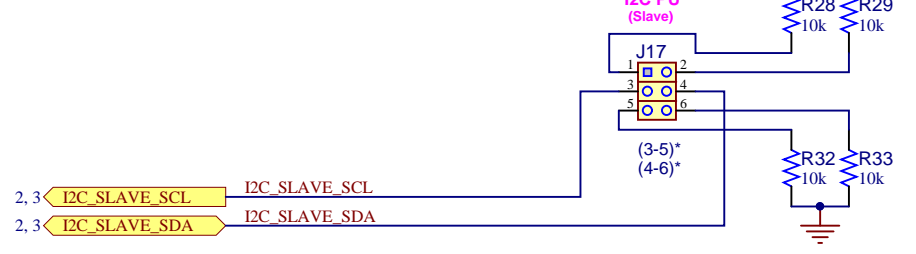


Cortex programming connector for factory programming of PKoB Nano

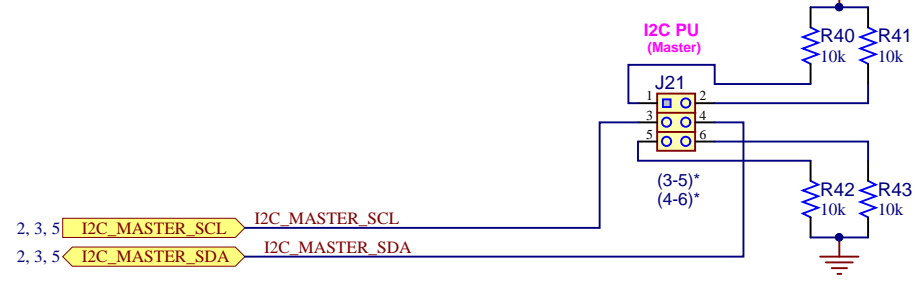
I2C Interface



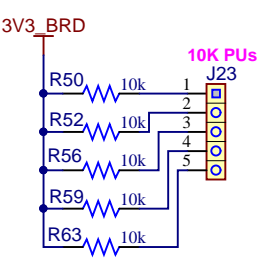
I2C Slave PU/PDs



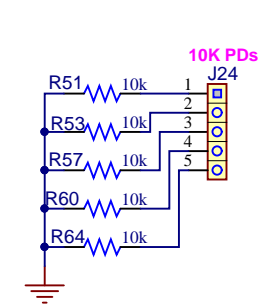
I2C Master PU/PDs



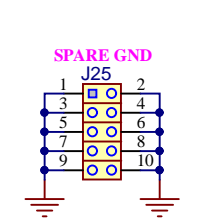
Spare Pull Ups



Spare Pull Downs



Spare Ground



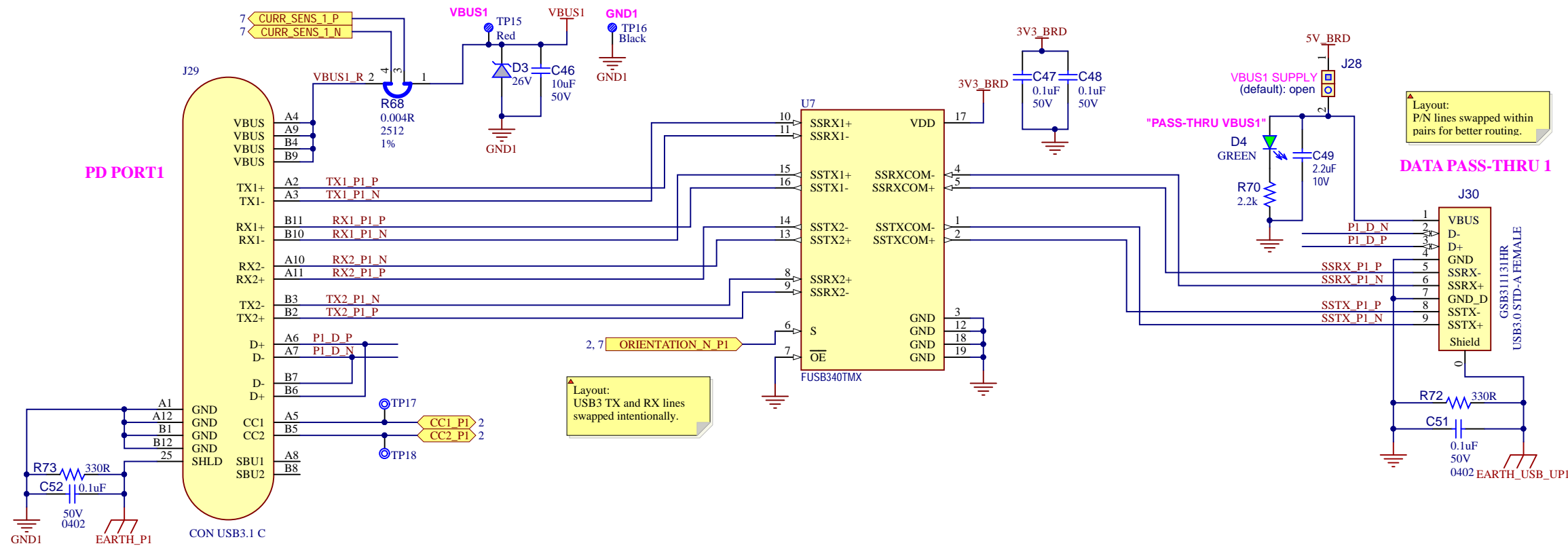
Interface	ICSP TARGET	UPDI TARGET	SWD TARGET
CDC TX	UART RX	UART RX	UART RX
CDC RX	UART TX	UART TX	UART TX
DBG0	DAT	UPDI	SWDIO
DBG1	CLK	GPIO	SWCLK
DBG2	GPIO	GPIO	GPIO
DBG3	MCLR_N	-	RST

Drawn By: Carl J/Sam C
 Engineer: Shiva B
 PartNumber: EV65D44A
 Project Title: EVB-PSF
 Variant: [No Variations]
 Sheet Title: Signal Breakout, Headers and Debug
 Size: Tabloid
 SCH #: 03-00022
 Rev: 2
 Date: 2/8/2021
 PCB #: 04-11138
 Rev: 2
 Sheet 3 of 7
 File: 11138-3-SignalBreakout-Headers-Debug.SchDoc

Designed with Altium

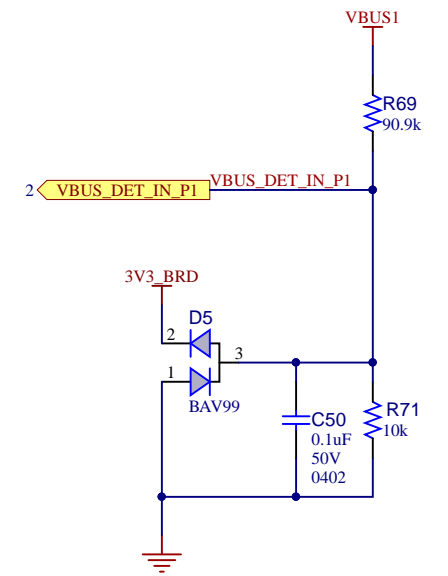
PD Port Data

PD Port 1

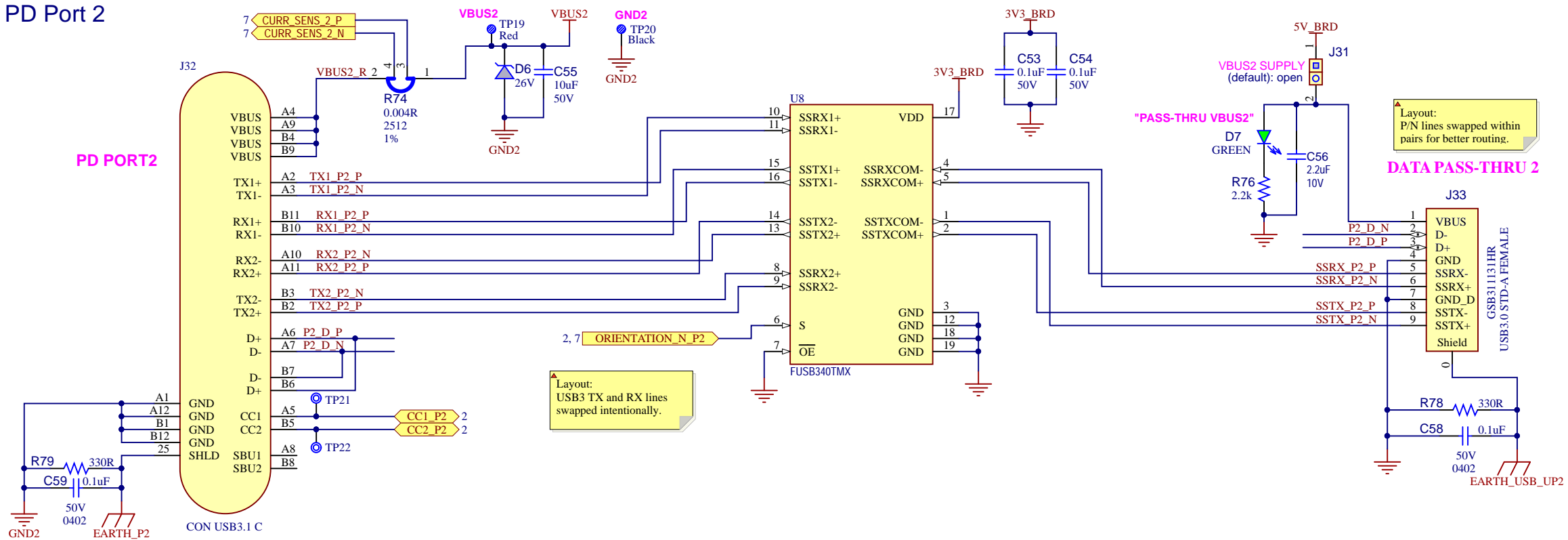


Voltage Divider Port 1

10:1 VBUS_DET

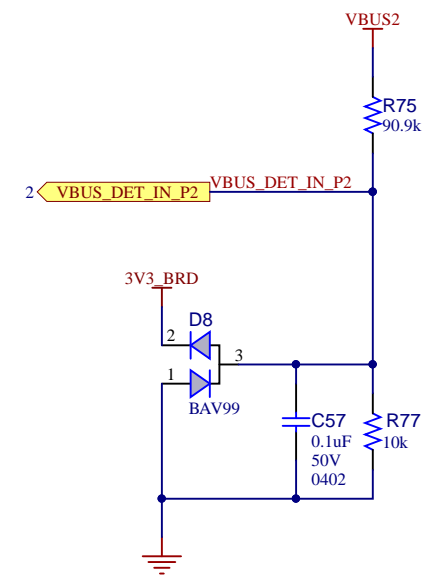


PD Port 2



Voltage Divider Port 2

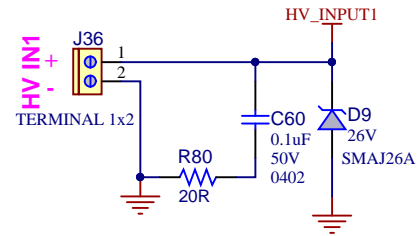
10:1 VBUS_DET



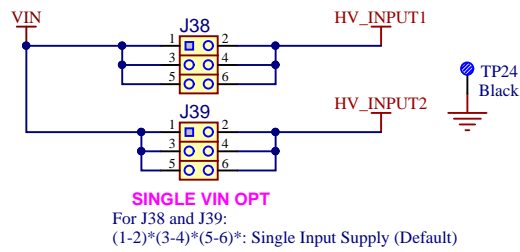
Drawn By: Carl J/Sam C			
Engineer: Shiva B			
PartNumber: EV65D44A	Project Title EVB-PSF	Variant: [No Variations]	
Sheet Title PD Port Data			
Size Tabloid	SCH #: 03-00022	Rev:2	Date: 2/8/2021
File: 11138-4-PD_Port_Data_SchDoc	PCB #: 04-11138	Rev:2	Sheet 4 of 7
			Designed with

PD Port Power

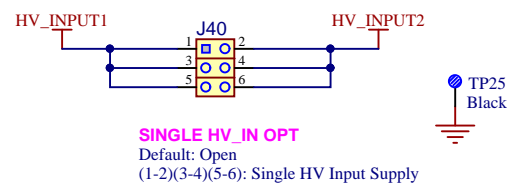
PM-PD Input for Port 1



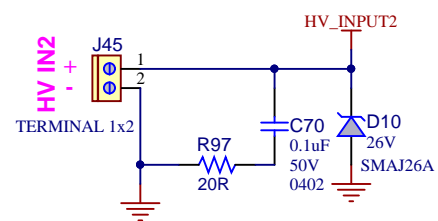
Single Power Supply Option



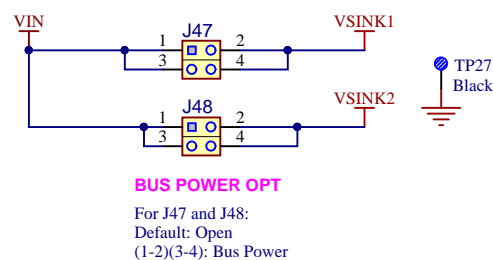
Single PM-PD Input (HV_IN) Option



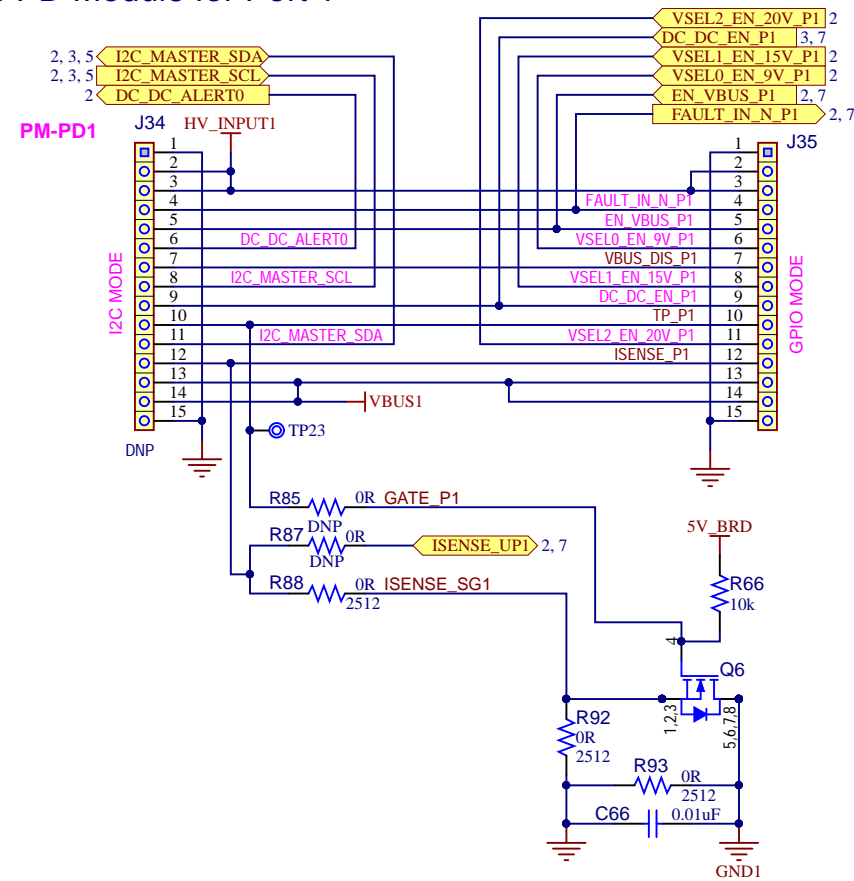
PM-PD Input for Port 2



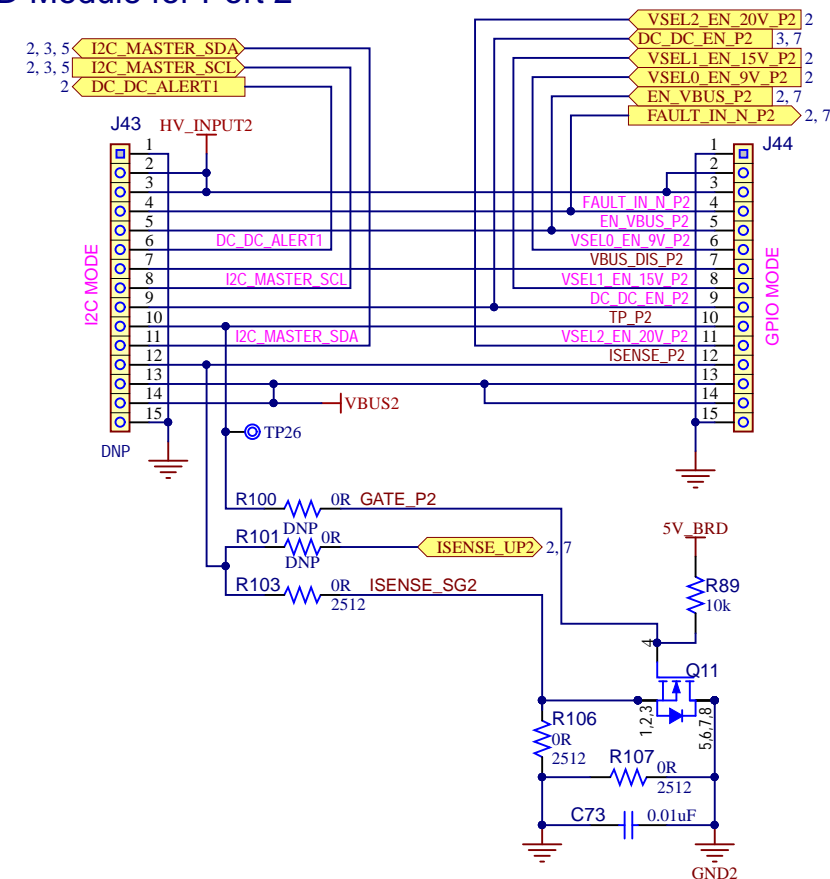
Bus Power Option



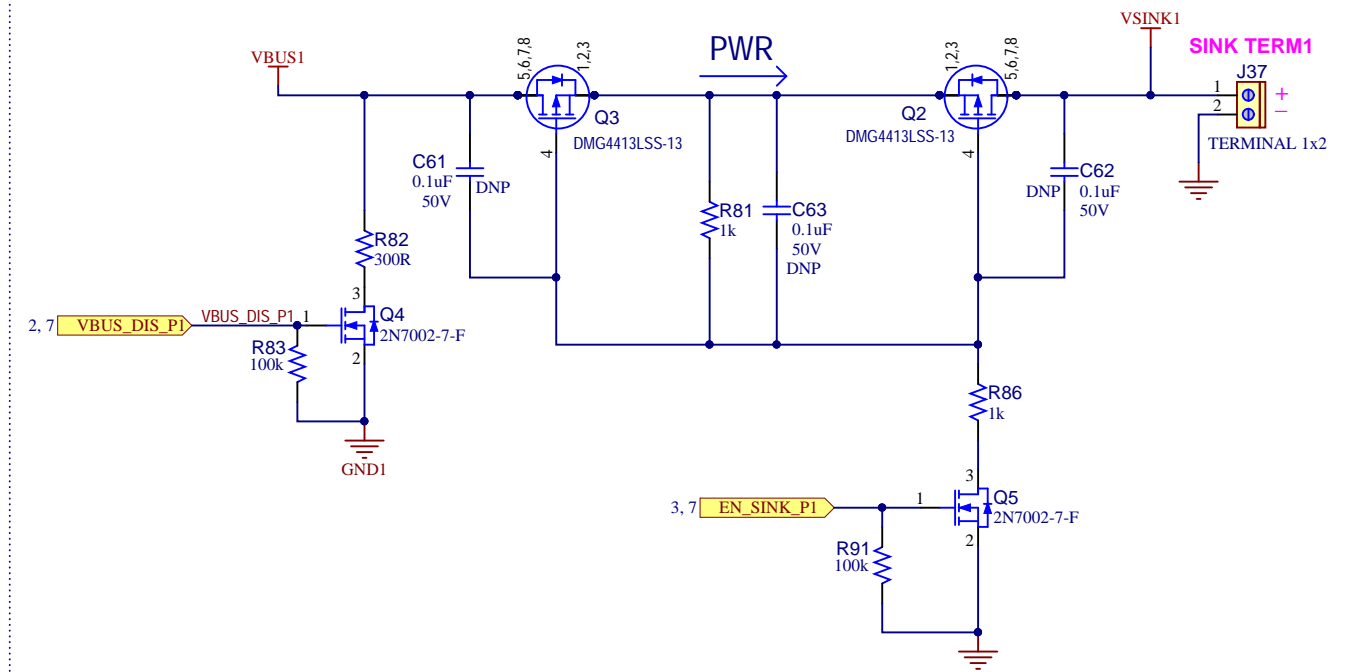
PM-PD Module for Port 1



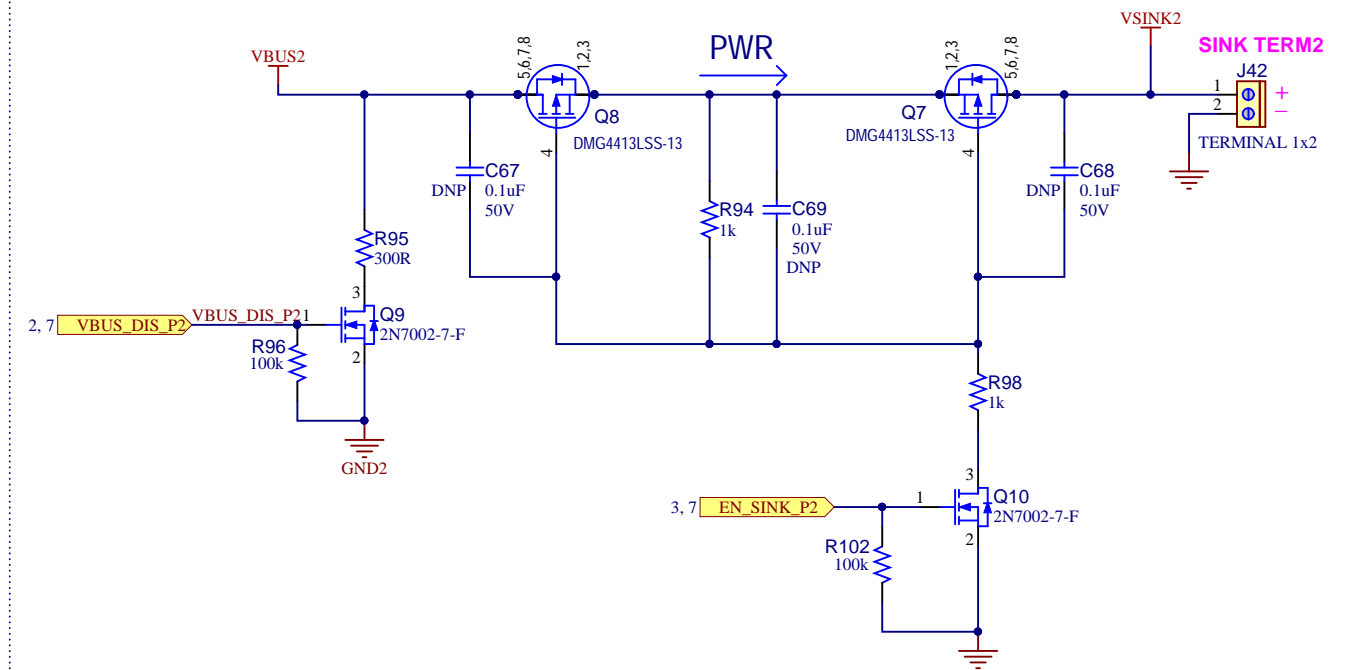
PM-PD Module for Port 2



Port 1 VBUS Sink Load Switch/ Output Connector



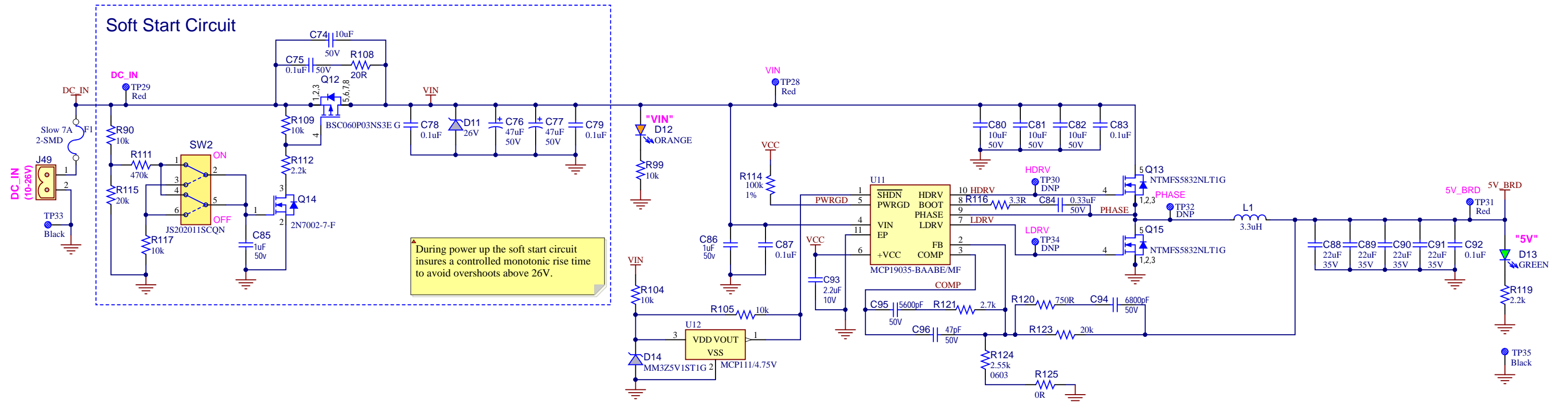
Port 2 VBUS Sink Load Switch/ Output Connector



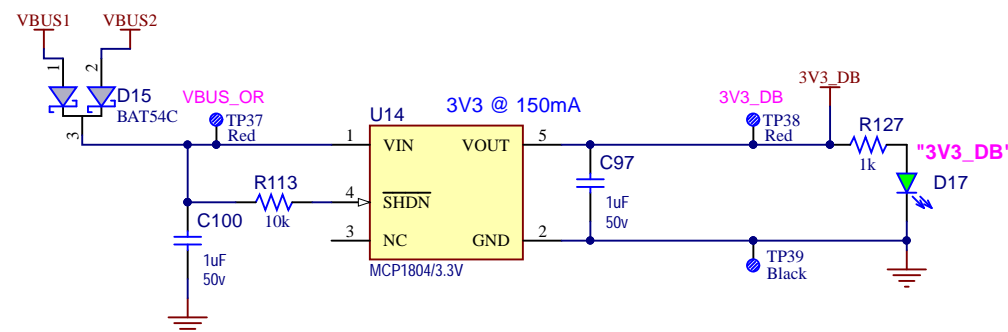
Drawn By: Carl J/Sam C			
Engineer: Shiva B			
PartNumber: EV65D44A	Project Title EVB-PSF	Variant: [No Variations]	
Sheet Title PD Port Power			
Size Tabloid	SCH #: 03-00022 PCB #: 04-11138	Rev:2 Rev:2	Date: 2/8/2021 Sheet 5 of 7
File: 11138-5-PD_Port_Power.SchDoc		Designed with 	

Board Power Supplies

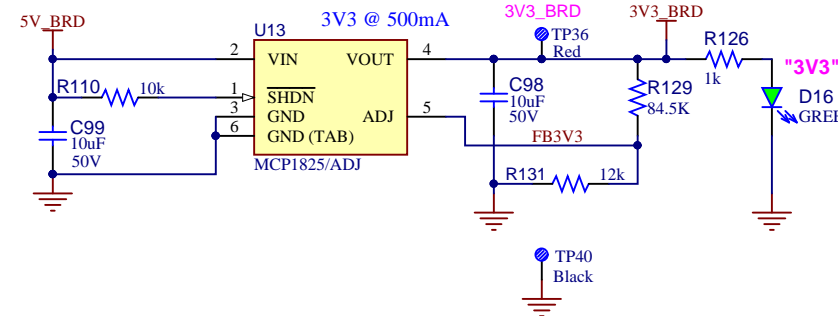
VIN (10-26VDC) TO 5VDC



DEAD BATTERY LDO VBUS(5-20VDC) to 3.3VDC



5VDC to 3.3VDC



Terminal Plug
Populated at Final Assembly

J50
Terminal Plug
OSTTJ025153

Fiducials
FID1 FID2 FID3
FID4 FID5 FID6

Product number/revision
Serial number
PCBA LABEL 18X6mm

JP1
Shunt 2.54mm 1x2

Test1

Mounting Holes
MTHOLE 4-40 120DL 220PAD
MH1 MH2 MH3 MH4 MH5

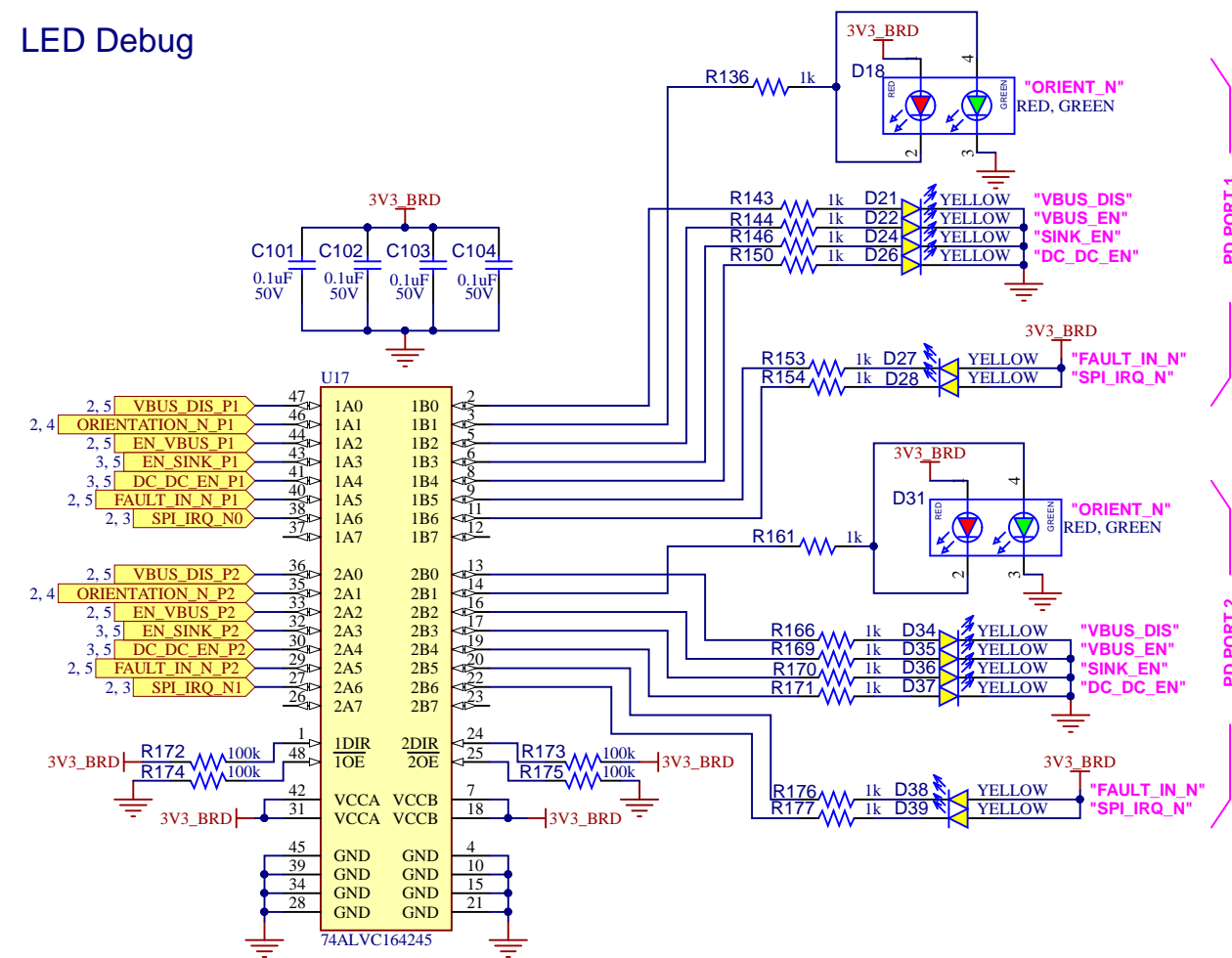
RUBBER PAD D9.5 H4.8
PAD1 PAD2 PAD3 PAD4 PAD5

Drawn By: Carl J/Sam C	MICROCHIP	
Engineer: Shiva B		
PartNumber: EV65D44A	Project Title EVB-PSF	Variant: [No Variations]
Sheet Title Board Power Supplies		
Size Tabloid	SCH #: 03-00022 Rev:2	Date: 2/8/2021
File: 11138-6-Board Power Supplies.SchDoc	Rev:2	Sheet 6 of 7

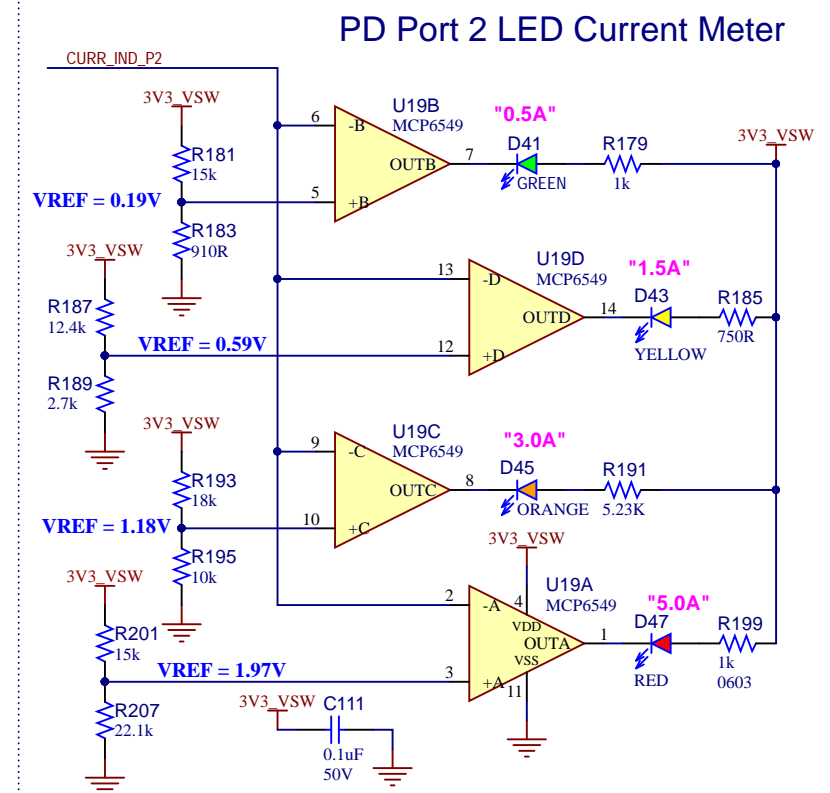
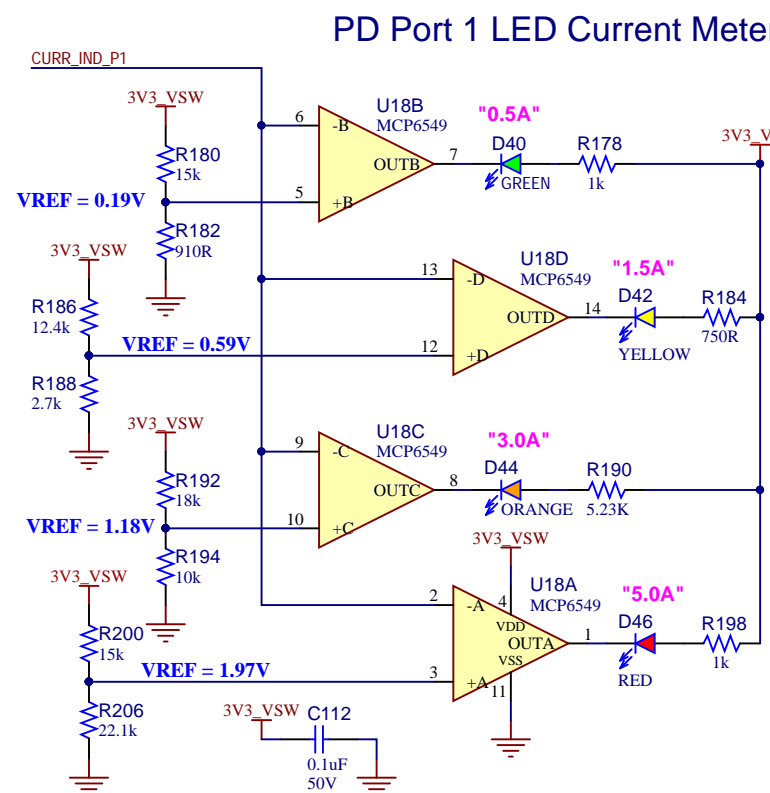
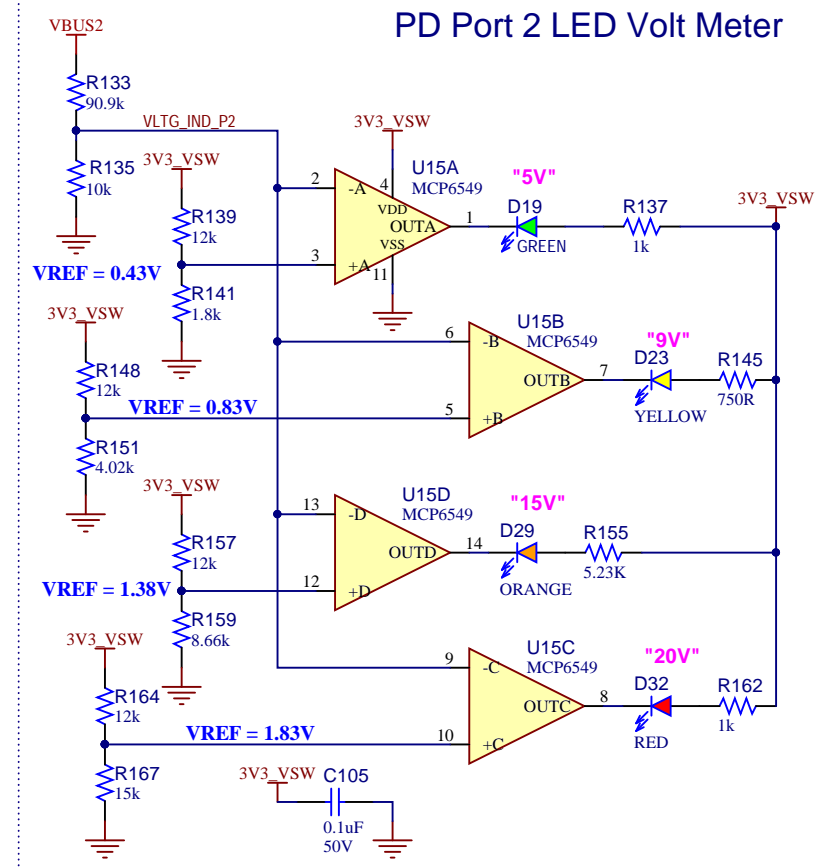
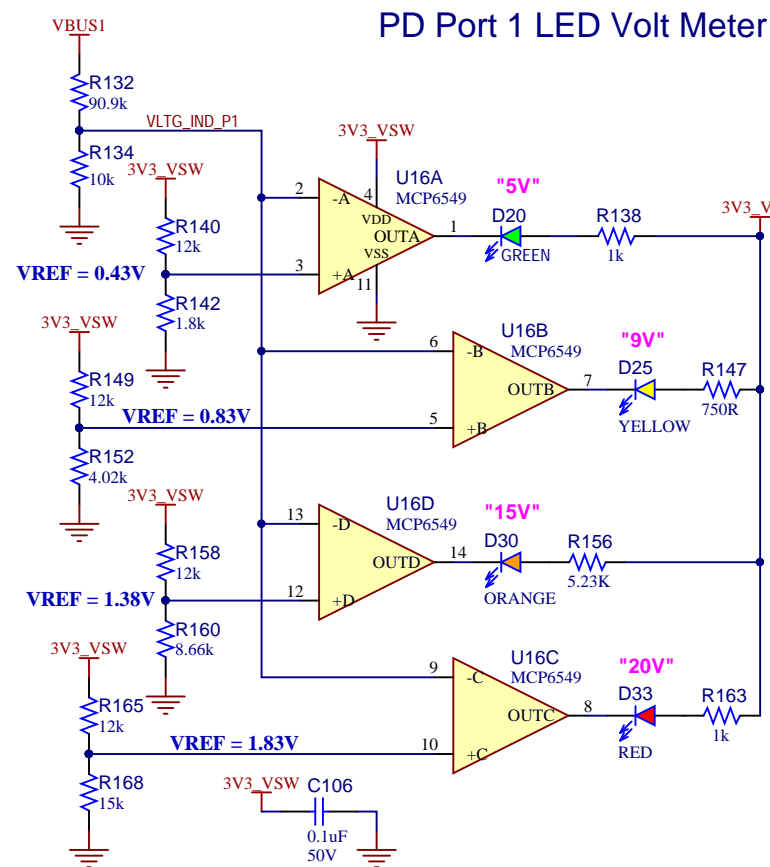
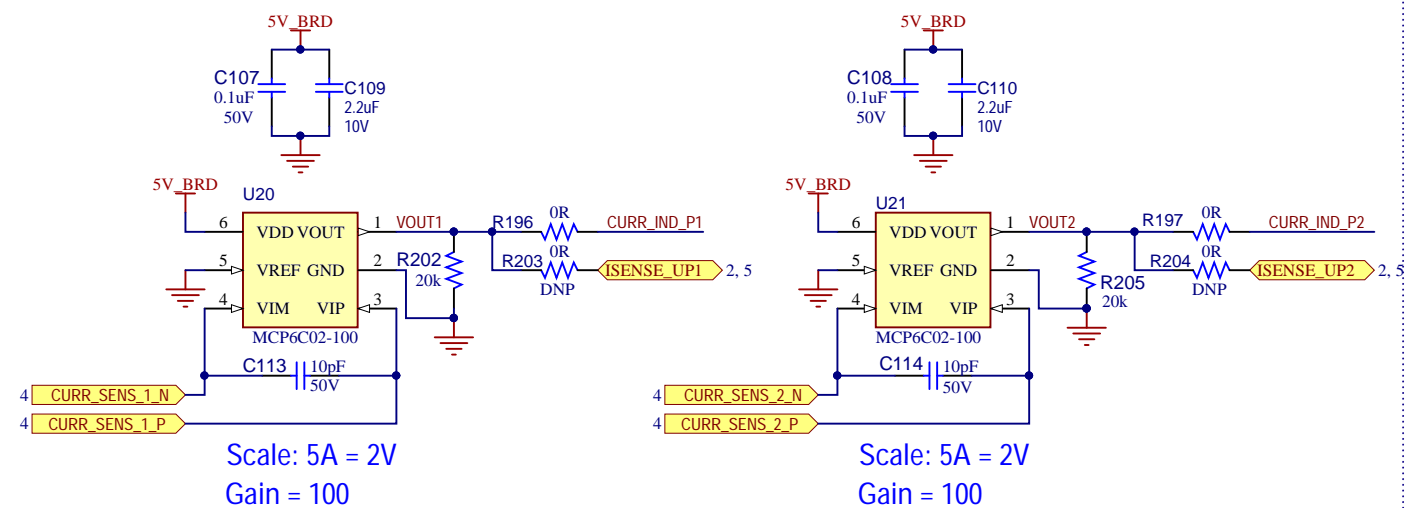
Designed with **Altium**
Altium.com

LED Signal and Power Indicators

LED Debug



Current Sense Amplifier for PD Port 1 and 2



The LED meters provide a visual indication of the approximate voltage and current at the PD connector.

Drawn By: Carl J/Sam C			
Engineer: Shiva B			
PartNumber: EV65D44A	Project Title EV6-PSF	Variant: [No Variations]	
Sheet Title LED Signal and Power Indicators			
Size Tabloid	SCH #: 03-00022	Rev:2	Date: 2/8/2021
PCB #: 04-11138	Rev:2	Sheet 7 of 7	Altium.com
File: 11138-7-LED_Signal_Power_Indicators.SchDoc			