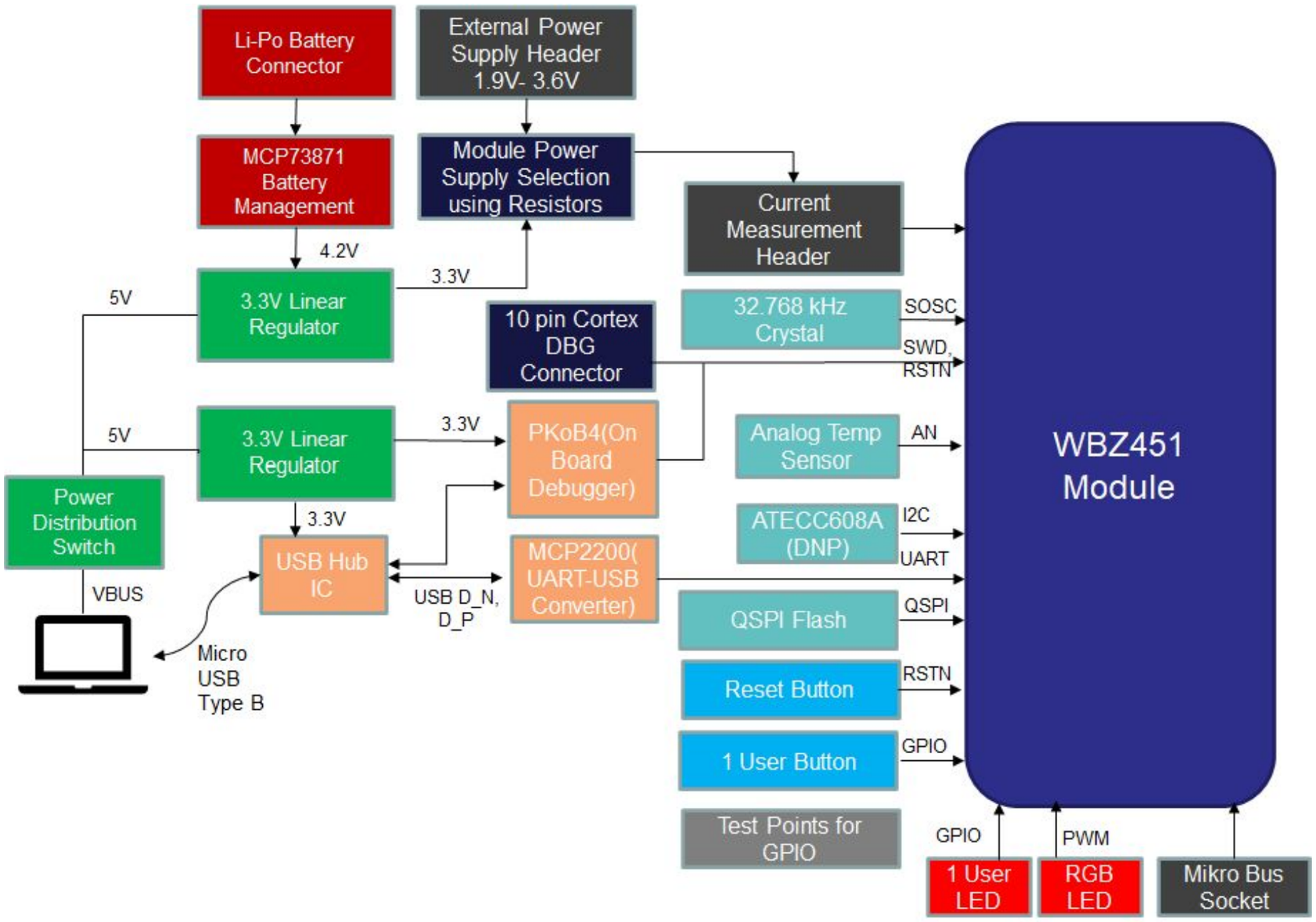

Application Notes

PKoB4 is a Microchip Technology debugger platform that is intended to be integrated into a hardware/firmware application demonstration board.

DGI, CDC Interface of PKoB4 is not used.
MCP2200 is used for providing USB to UART conversion with Hardware Flow Control. MCP2200 can support baud rates from 300k to 1000k.

Voltage to WBZ451 is fixed by default to 3.3V derived from the USB connection from the debugger or Battery. It can also be powered by the application external power supply header (1.9V-3.6V)
For application power supply for device to operate with PKOB4 and MCP2200, translators are added for PKOB4 and MCP2200.

Revision History

Revision 2:
Fixes and improvements
Revision 1:
PKoB4 Based on MPLAB Snap (03-10381-R1).

Revision 3:
D3, LED Footprint
MikroBus UART Rx,Tx
Pull up resistors

Revision 3.1:
3.3V regulator for WBZ451 modified to 3V

LABEL1

[DATE yyyy.mm.dd]
SN: [SERIAL]
[ASSY# / REV]

PCBA LABEL 18X6mm

PAD1 PAD2

Project Owner: RINU CLEETUS				
PCB Layout Contact: BALAJI NARAYANA				
PartNumber: EV96B94A	Project Title: *WBZ451 CURIOSITY BOARD*		Variant: [No Variations]	
Sheet Title: Revision History				
Size B	SCH #: 03-00307	Rev: 3.1	Date: 12/15/2021	
	PCB #: 04-11423	Rev: 3	Sheet 1 of 10	
File: Revision History.SchDoc				

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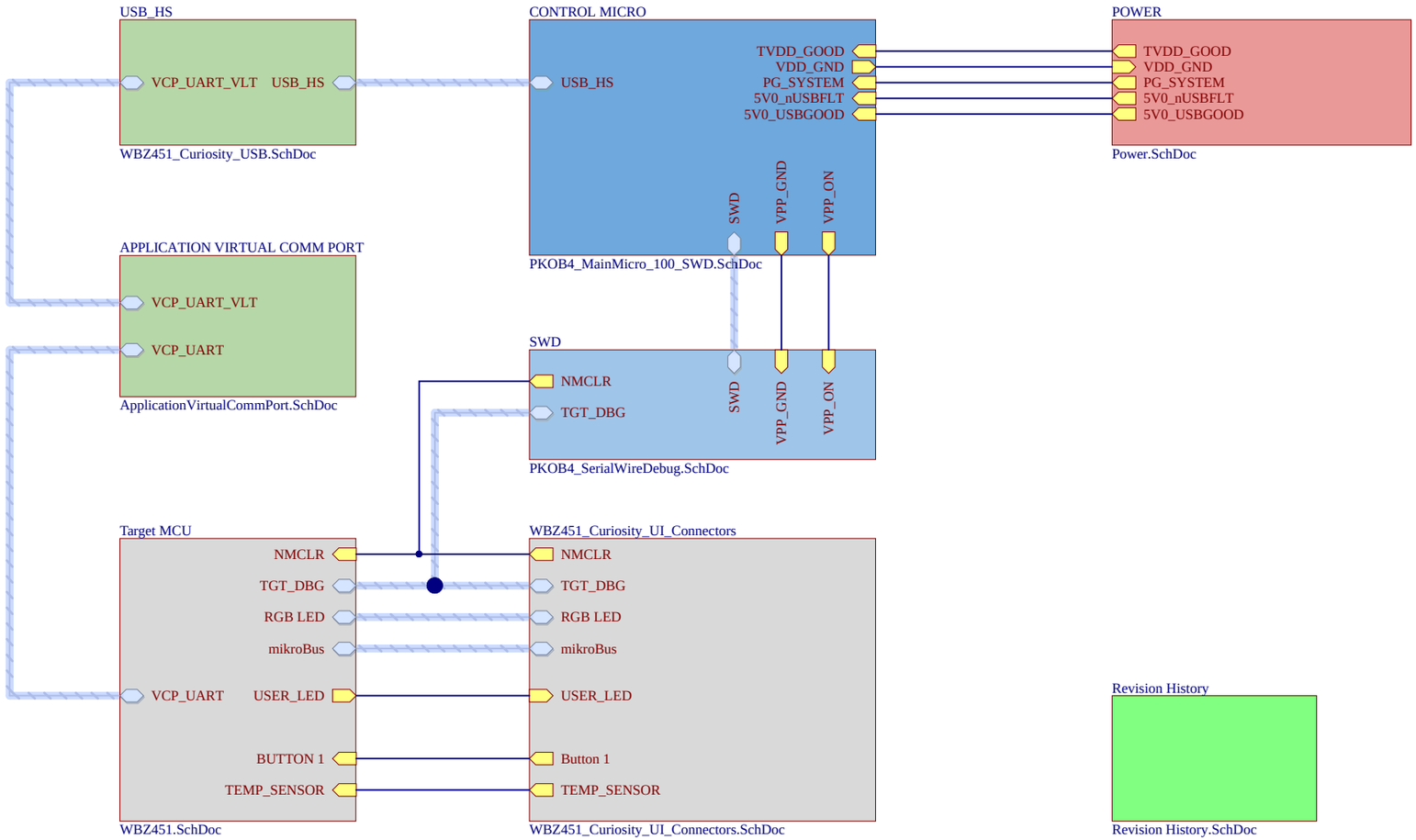
Main System Interconnect



Project Owner: RINU CLEETUS			
PCB Layout Contact: BALAJI NARAYANA			
PartNumber: EV96B94A	Project Title: ***WBZ451 CURIOSITY BOARD***	Variant: [No Variations]	
Sheet Title: WBZ451 Curiosity Board Top Level			Designed with Altium — Altium.com
Size: B	SCH #: 03-00307	Rev: 3.1	Date: 12/15/2021
	PCB #: 04-11423	Rev: 3	Sheet 2 of 10
File: WBZ451_Curiosity_TopLevel.SchDoc			

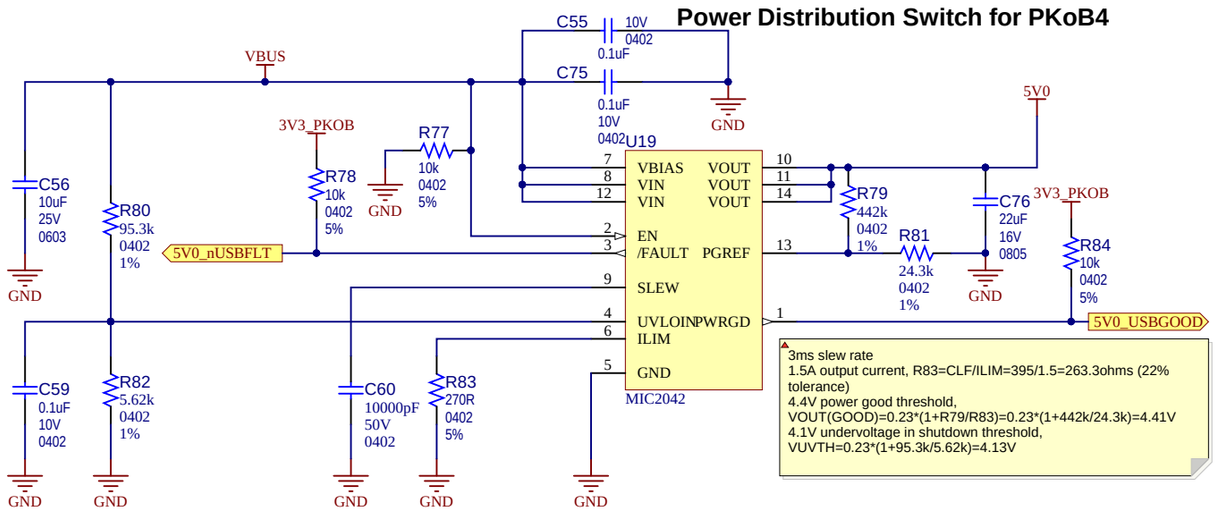
Power

Application Note:

Default, R26 is populated. Application will be using system supplied 3.3V.
Remove R26, populate R32 for using External Supply from J5

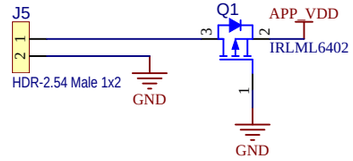
Connect application voltage here if not using system supplied power.
(DO NOT POPULATE R26)

Power Distribution Switch for PKoB4

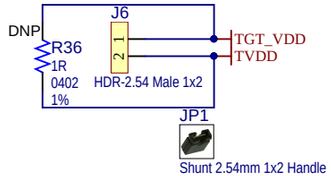


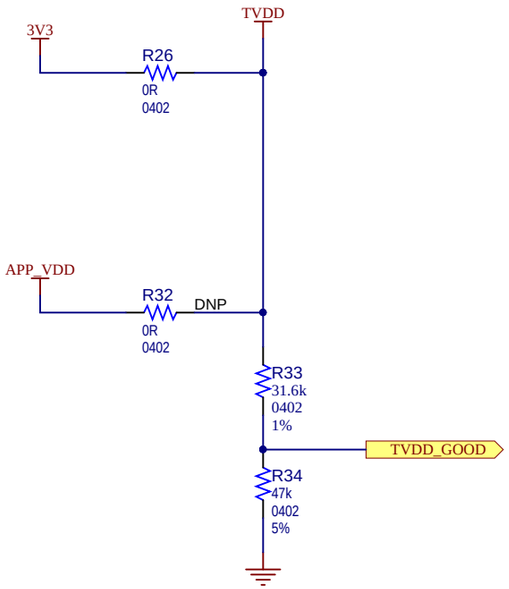
3ms slew rate
1.5A output current, R83=CLF/ILIM=395/1.5=263.3ohms (22% tolerance)
4.4V power good threshold,
VOUT(GOOD)=0.23*(1+R79/R83)=0.23*(1+442k/24.3k)=4.41V
4.1V undervoltage in shutdown threshold,
VUVTH=0.23*(1+95.3k/5.62k)=4.13V

External Power Supply

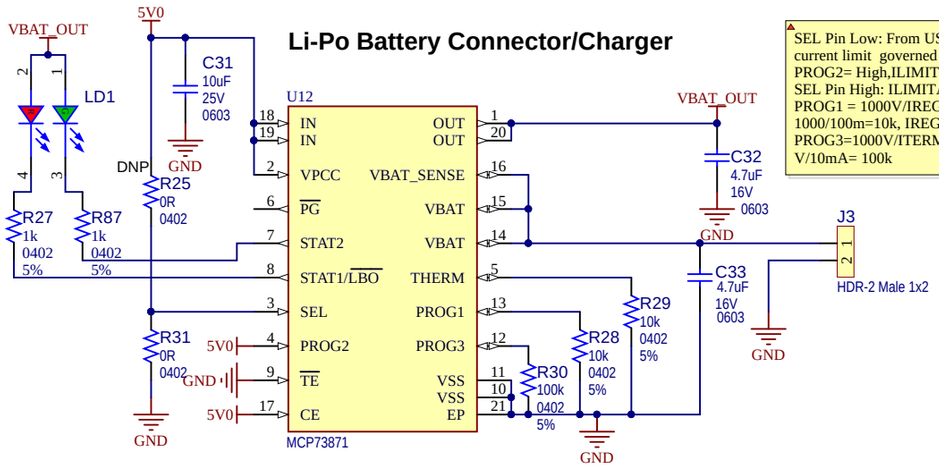


TGT Current Measurement Header



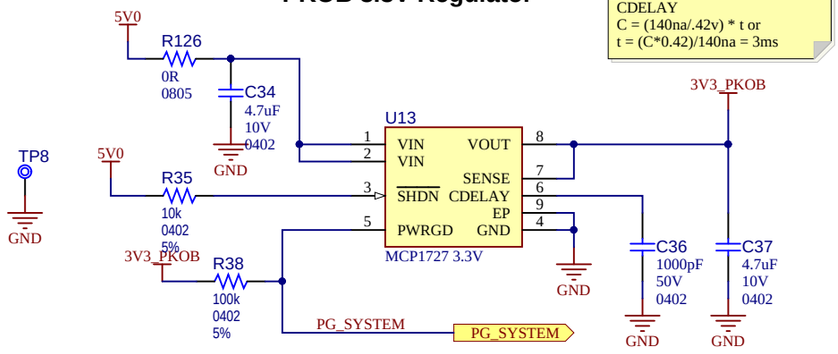


Li-Po Battery Connector/Charger



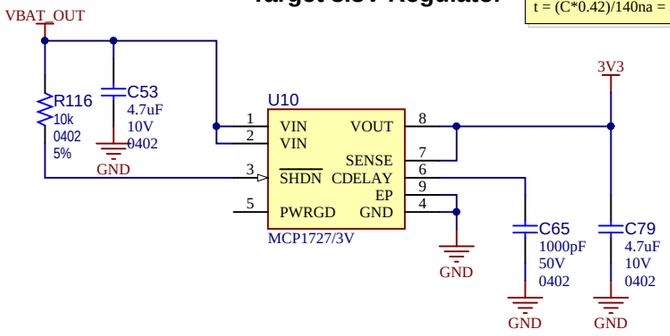
SEL Pin Low: From USB Port, input current limit governed by USB specs, PROG2= High,ILIMITUSB=500mA
SEL Pin High: ILIMITAC = 1.65A
PROG1 = 1000V/IREG= 1000/100m=10k, IREG = 100mA
PROG3=1000V/ITERMINATION=1000V/10mA= 100k

PKOB 3.3V Regulator

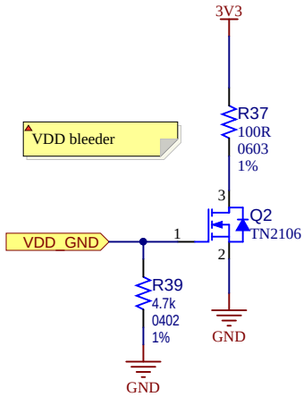


CDELAY
C = (140na/.42v) * t or
t = (C*0.42)/140na = 3ms

Target 3.3V Regulator



CDELAY
C = (140na/.42v) * t or
t = (C*0.42)/140na = 3ms



Project Owner: RINU CLEETUS			
PCB Layout Contact: BALAJI NARAYANA			
PartNumber: EV96B94A	Project Title: *WBZ451 CURIOSITY BOARD*	Variant: [No Variations]	
Sheet Title: Power			
Size: B	SCH #: 03-00307	Rev: 3.1	Date: 12/15/2021
	PCB #: 04-11423	Rev: 3	Sheet 3 of 10
File: Power.SchDoc			

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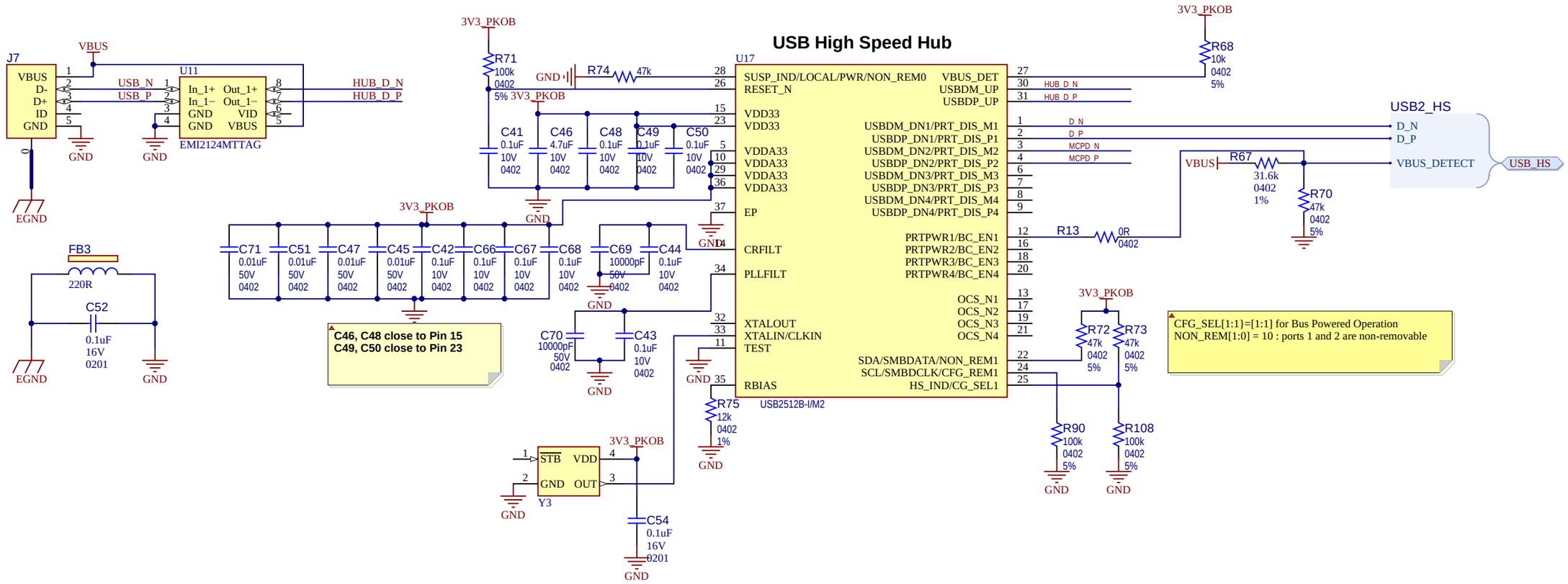
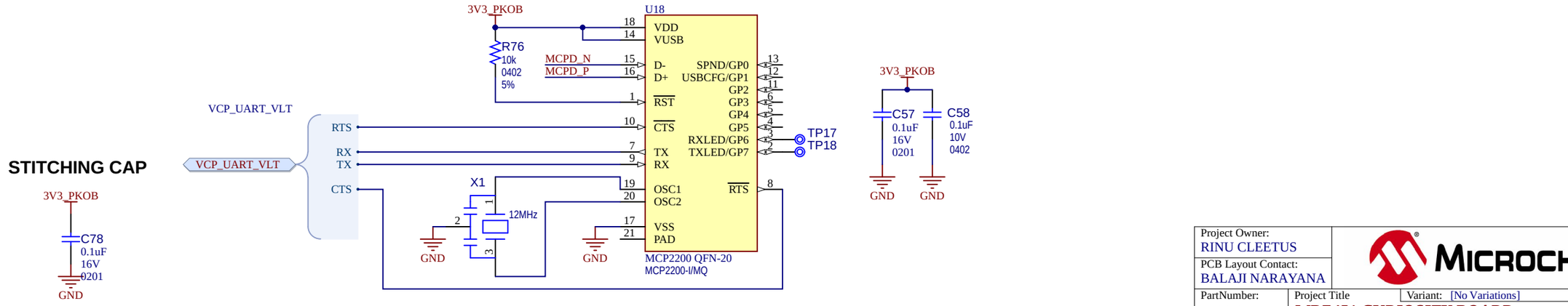
USB High Speed Hub

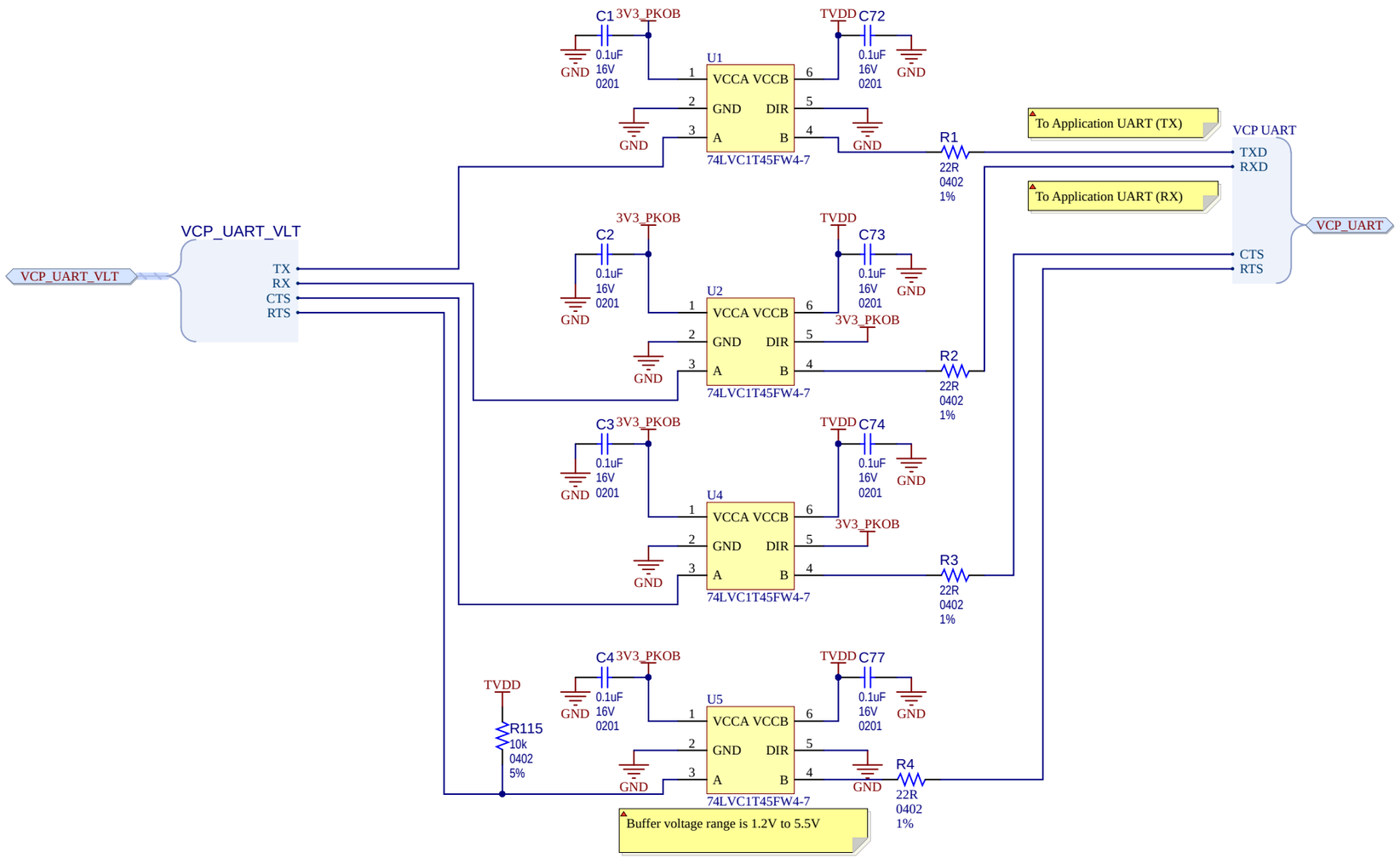


MCP2200 USB UART Converter



Project Owner: RINU CLEETUS			
PCB Layout Contact: BALAJI NARAYANA			
PartNumber: EV96B94A	Project Title: *WBZ451 CURIOSITY BOARD*	Variant: [No Variations]	
Sheet Title: WBZ451_Curiosity_USB			Designed with Altium — Altium.com
Size: B	SCH #: 03-00307	Rev: 3.1	Date: 12/15/2021
	PCB #: 04-11423	Rev: 3	Sheet 4 of 10
File: WBZ451_Curiosity_USB.SchDoc			

Application Virtual Comm Port



Project Owner:	RINU CLEETUS
PCB Layout Contact:	BALAJI NARAYANA
PartNumber:	EV96B94A
Project Title	*WBZ451 CURIOSITY BOARD*
Variant:	[No Variations]
Sheet Title	Application Virtual Comm Port
Size	B
SCH #:	03-00307
Rev:	3.1
Date:	12/15/2021
PCB #:	04-11423
Rev:	3
Sheet	5 of 10
File:	ApplicationVirtualCommPort.SchDoc

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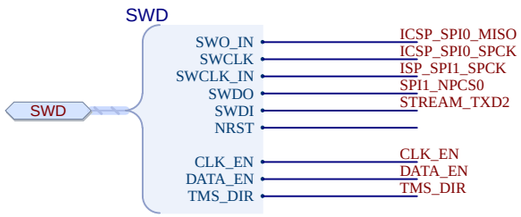
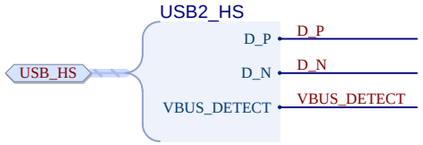
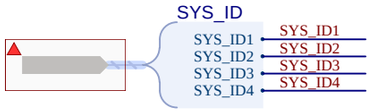
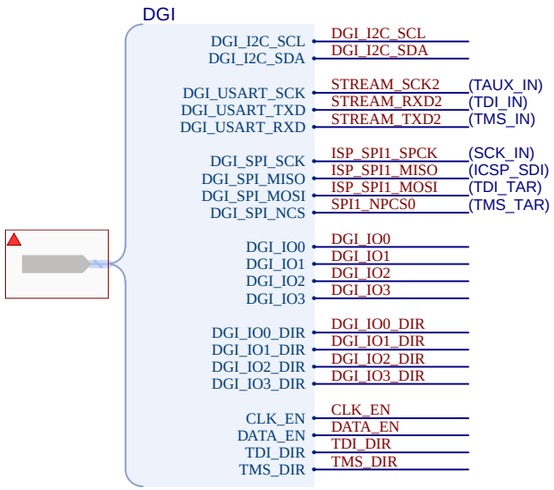
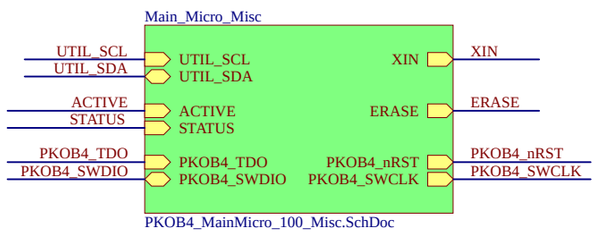
PKoB4 Main Micro

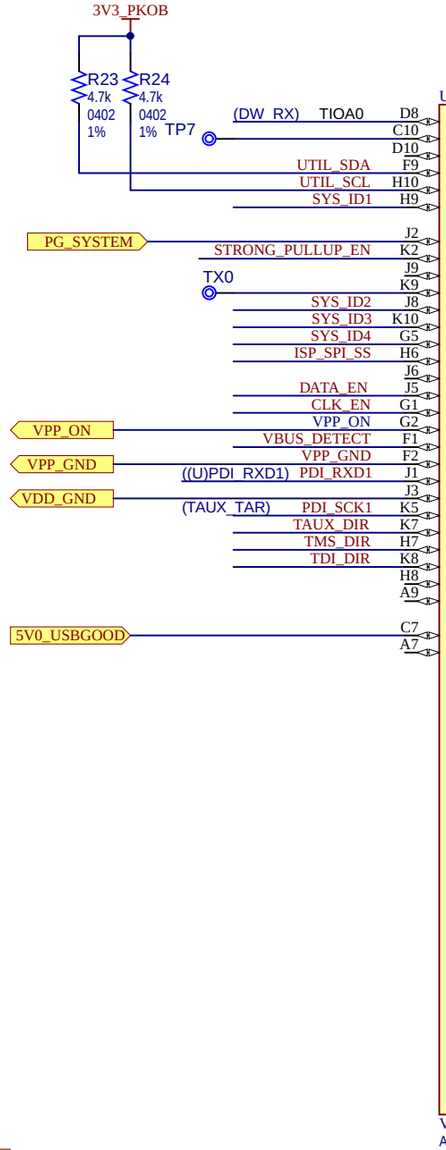


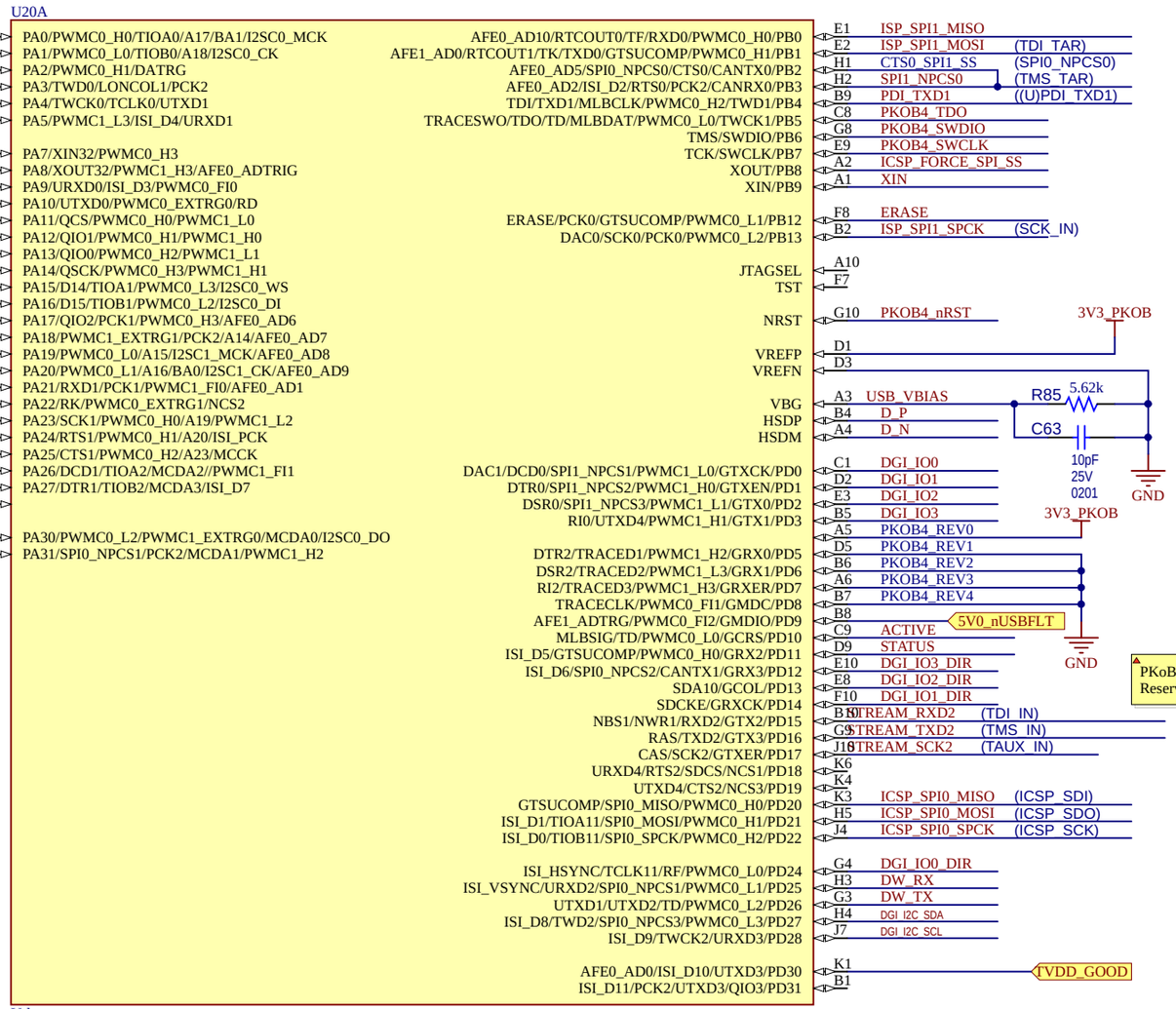


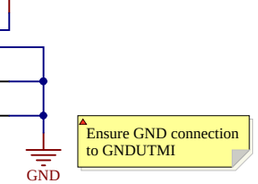


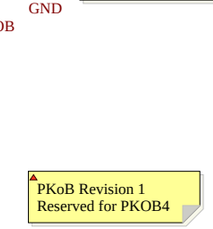








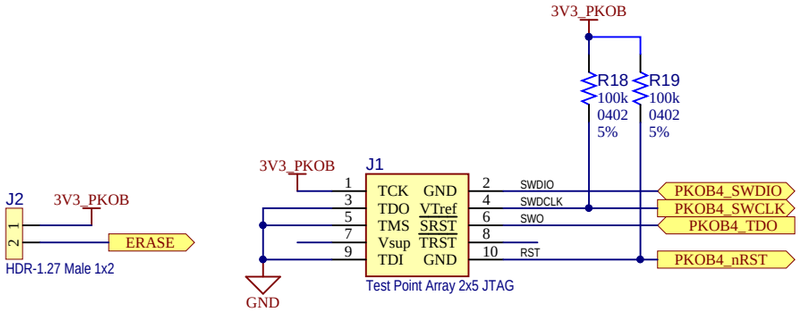


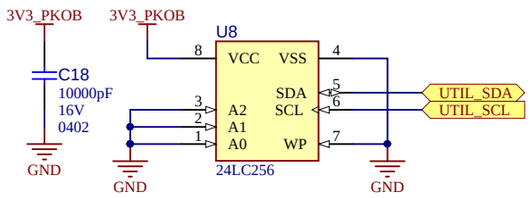


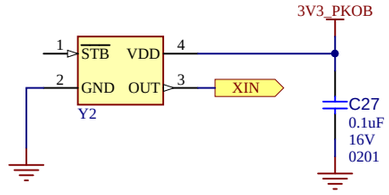
Project Owner: RINU CLEETUS			
PCB Layout Contact: BALAJI NARAYANA			
PartNumber: EV96B94A	Project Title: *WBZ451 CURIOSITY BOARD*	Variant: [No Variations]	
Sheet Title: PKoB4_Main Micro_100_SWD			Designed with Altium — Altium.com
Size: B	SCH #: 03-00307	Rev: 3.1	Date: 12/15/2021
	PCB #: 04-11423	Rev: 3	Sheet 6 of 10
File: PKOB4_MainMicro_100_SWD.SchDoc			

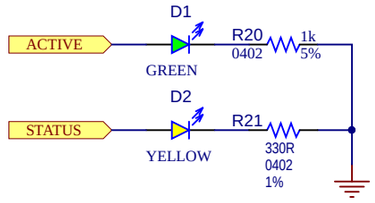
PKOB4 MISC

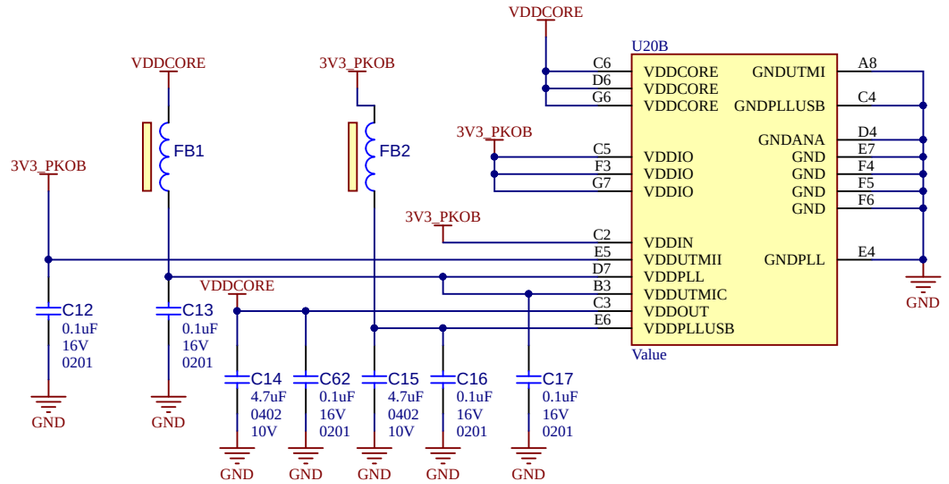
PKoB4 Debug Header



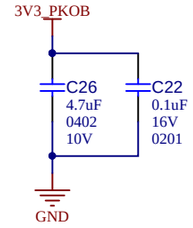




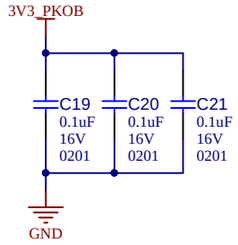




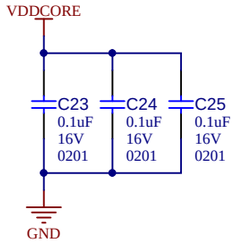
VDDIN Cap



VDDIO Bypass Caps



VDDCORE Bypass Caps



ATSAME70N21B-CNT

Project Owner: RINU CLEETUS			
PCB Layout Contact: BALAJI NARAYANA			
PartNumber: EV96B94A	Project Title: ***WBZ451 CURIOSITY BOARD***	Variant: [No Variations]	
Sheet Title: PKoB4 _Main Micro_100_ Misc.			
Size: B	SCH #: 03-00307	Rev: 3.1	Date: 12/15/2021
	PCB #: 04-11423	Rev: 3	Sheet 7 of 10
File: PKOB4_MainMicro_100_Misc.SchDoc			

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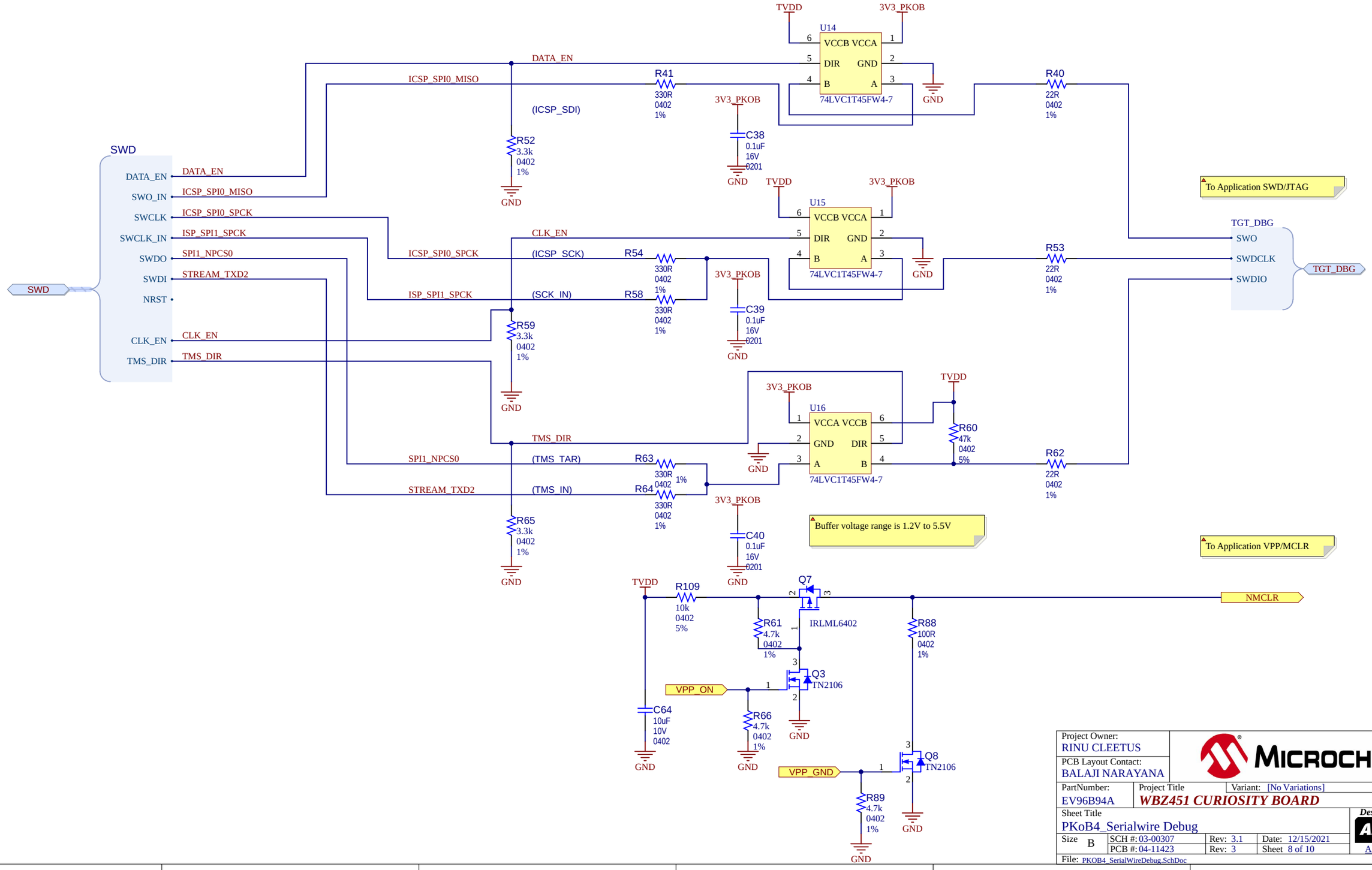
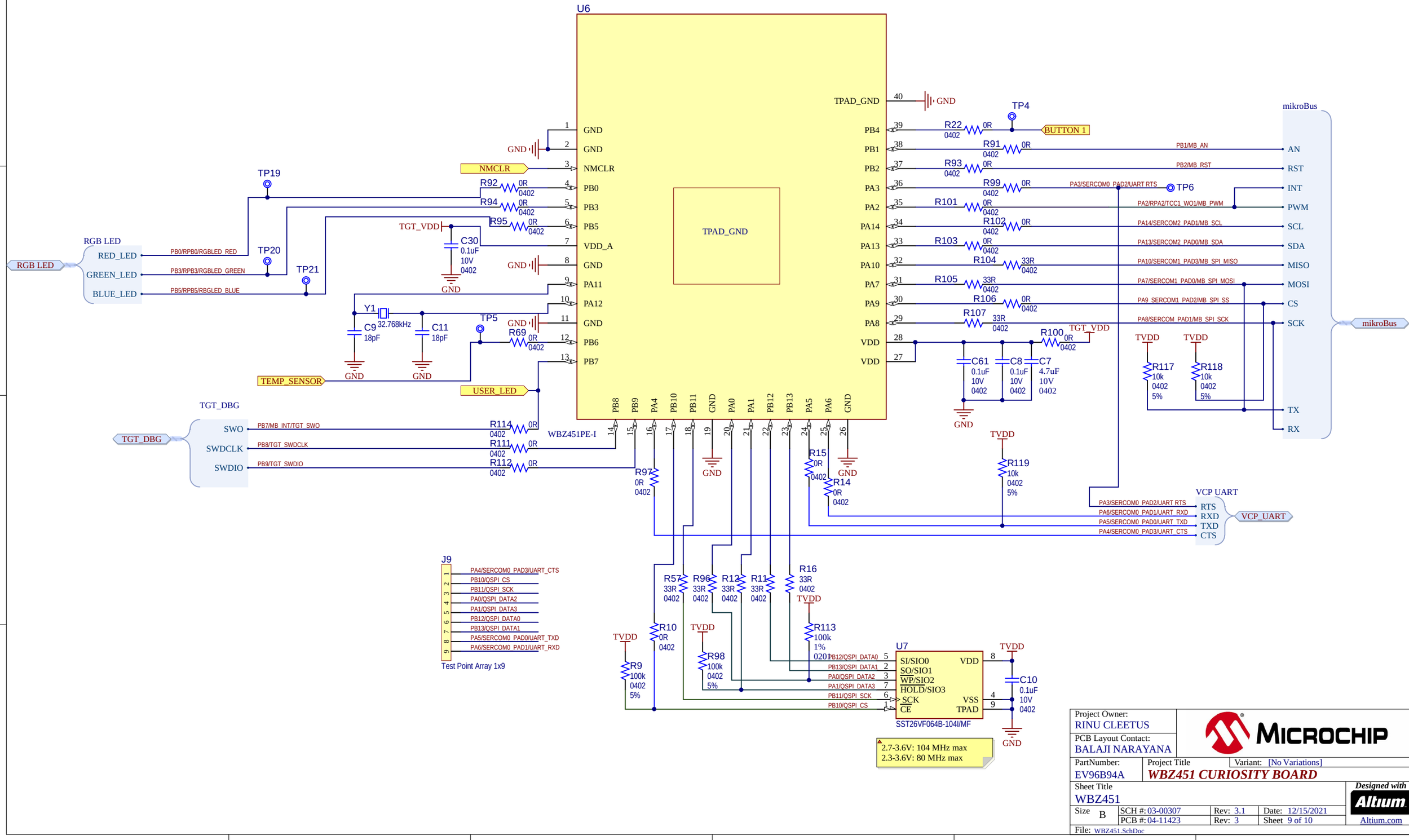
Serial Wire Debug



Project Owner: RINU CLEETUS			
PCB Layout Contact: BALAJI NARAYANA			
PartNumber: EV96B94A	Project Title: *WBZ451 CURIOSITY BOARD*	Variant: [No Variations]	
Sheet Title: PKoB4_Serialwire Debug			Designed with Altium — Altium.com
Size: B	SCH #: 03-00307 Rev: 3.1	Date: 12/15/2021	
	PCB #: 04-11423 Rev: 3	Sheet 8 of 10	
File: PKOB4_SerialWireDebug.SchDoc			

WBZ451



Project Owner:	RINU CLEETUS
PCB Layout Contact:	BALAJI NARAYANA
PartNumber:	EV96B94A
Project Title	*WBZ451 CURIOSITY BOARD*
Variant:	[No Variations]
Sheet Title	WBZ451
Size	B
SCH #:	03-00307
Rev:	3.1
Date:	12/15/2021
PCB #:	04-11423
Rev:	3
Sheet	9 of 10
File:	WBZ451.SchDoc

MICROCHIP

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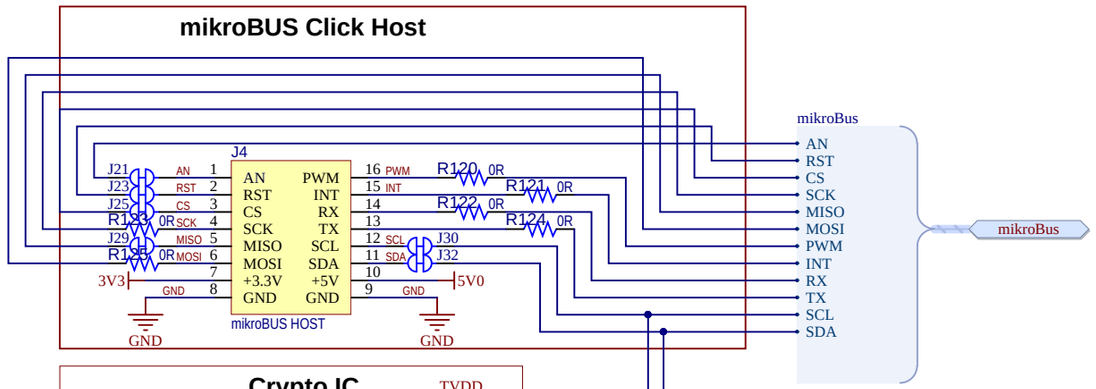
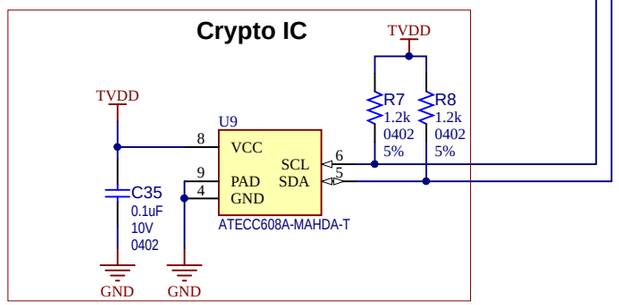
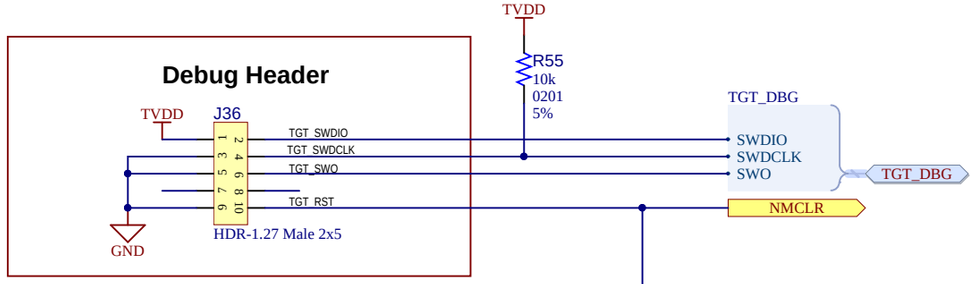
mikroBUS Click Host



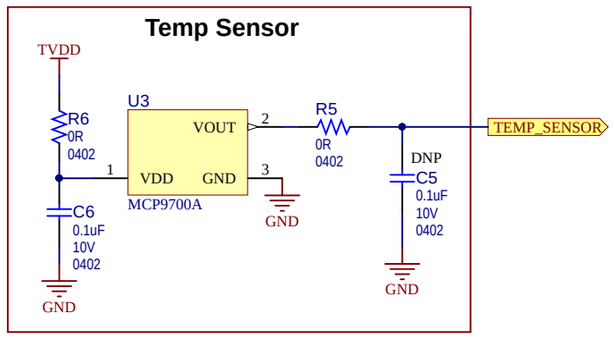
Crypto IC



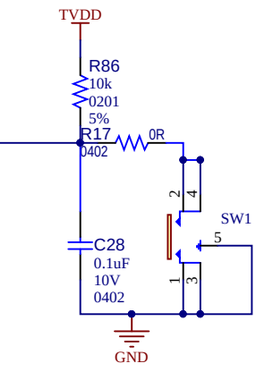
Debug Header



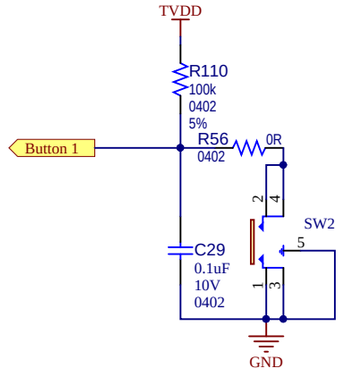
Temp Sensor



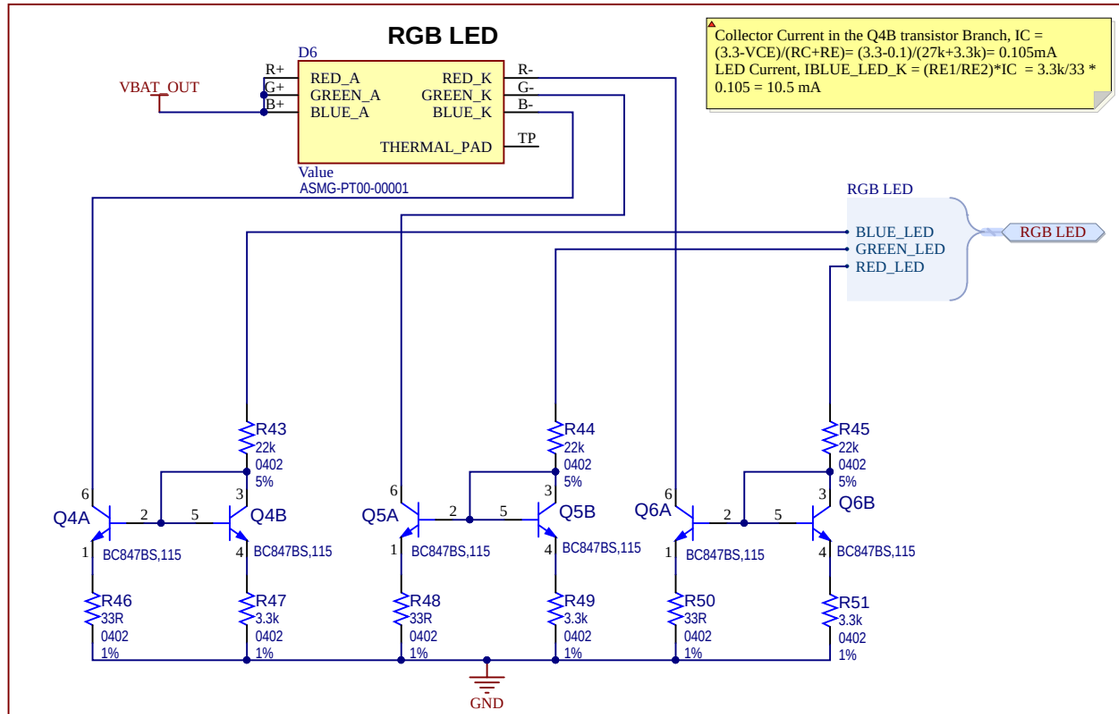
Reset Button



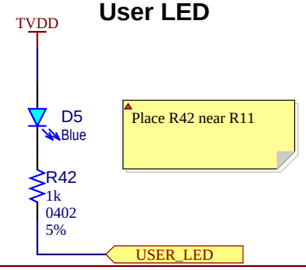
User Button



RGB LED



User LED



Project Owner:	RINU CLEETUS
PCB Layout Contact:	BALAJI NARAYANA
PartNumber:	EV96B94A
Project Title	*WBZ451 CURIOSITY BOARD*
Variant:	[No Variations]
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Size	B
SCH #:	03-00307
Rev:	3.1
Date:	12/15/2021
PCB #:	04-11423
Rev:	3
Sheet	10 of 10
File:	WBZ451_Curiosity_UI_Connectors.SchDoc

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