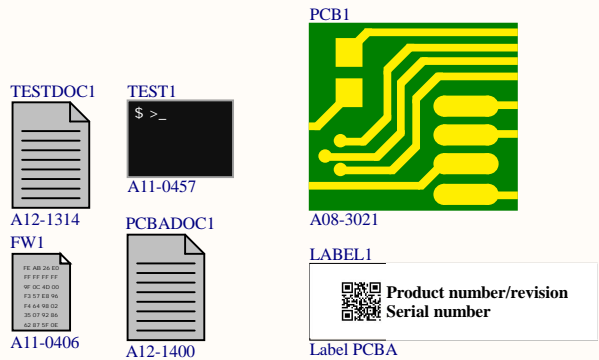
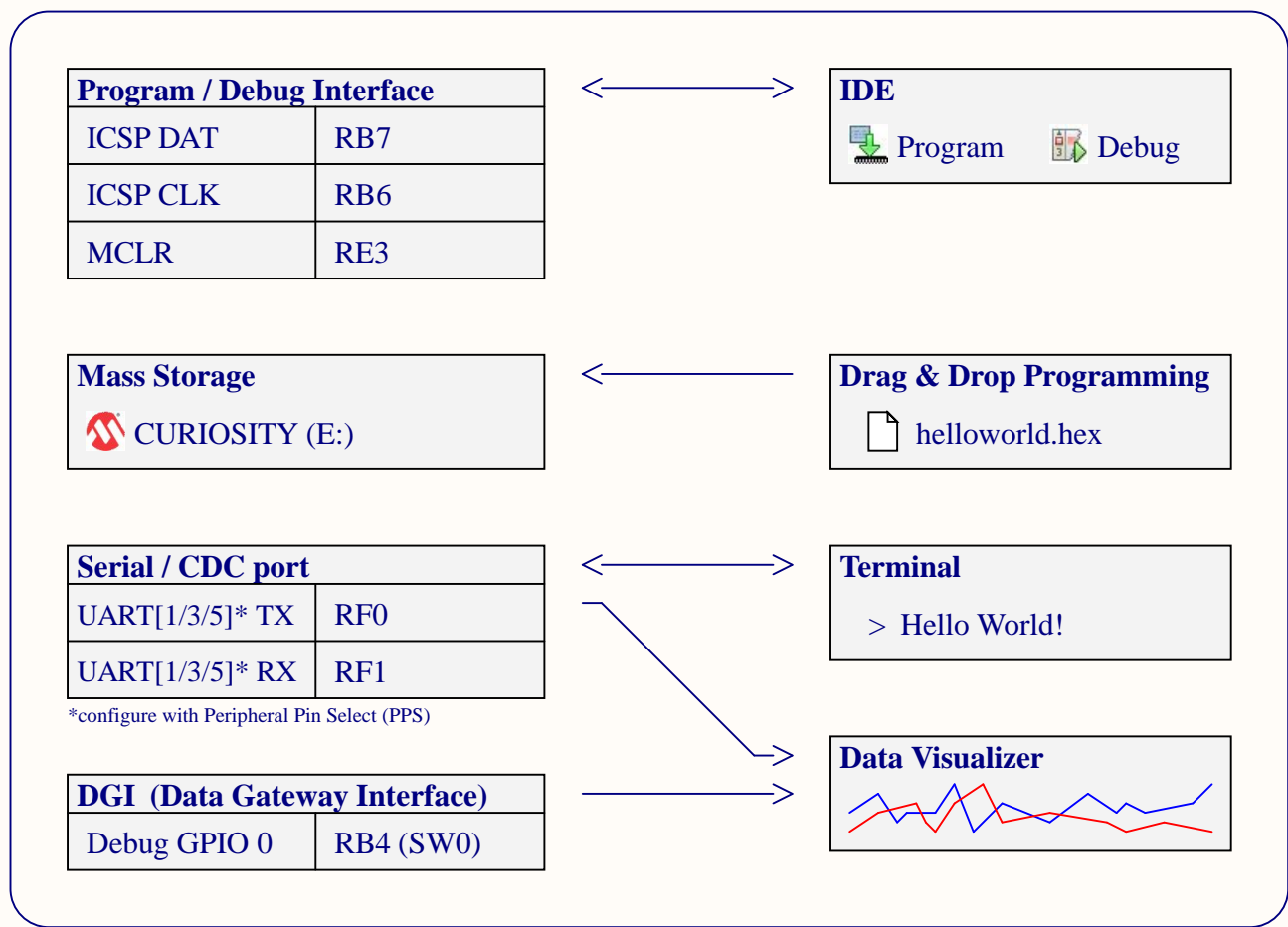
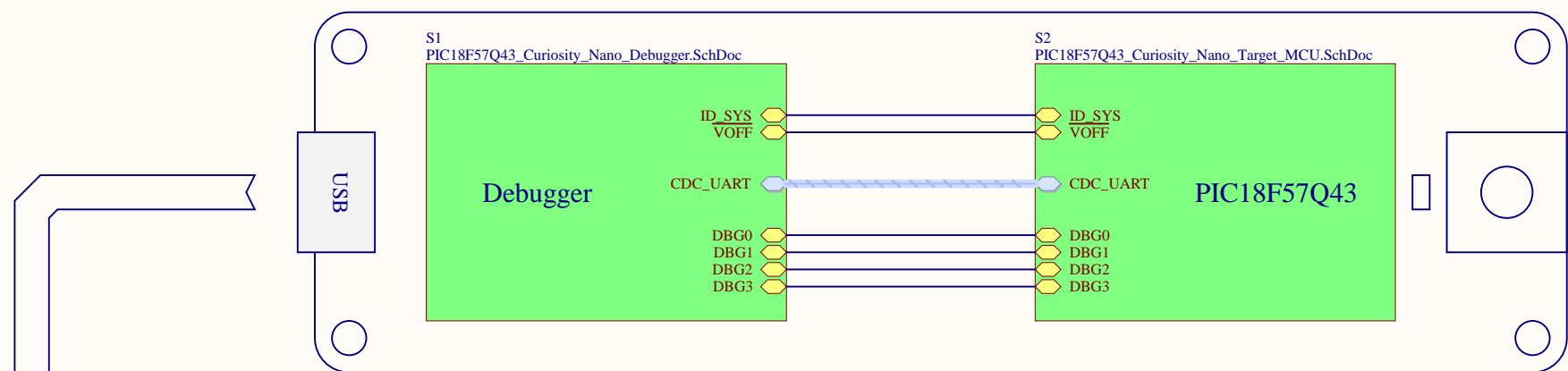


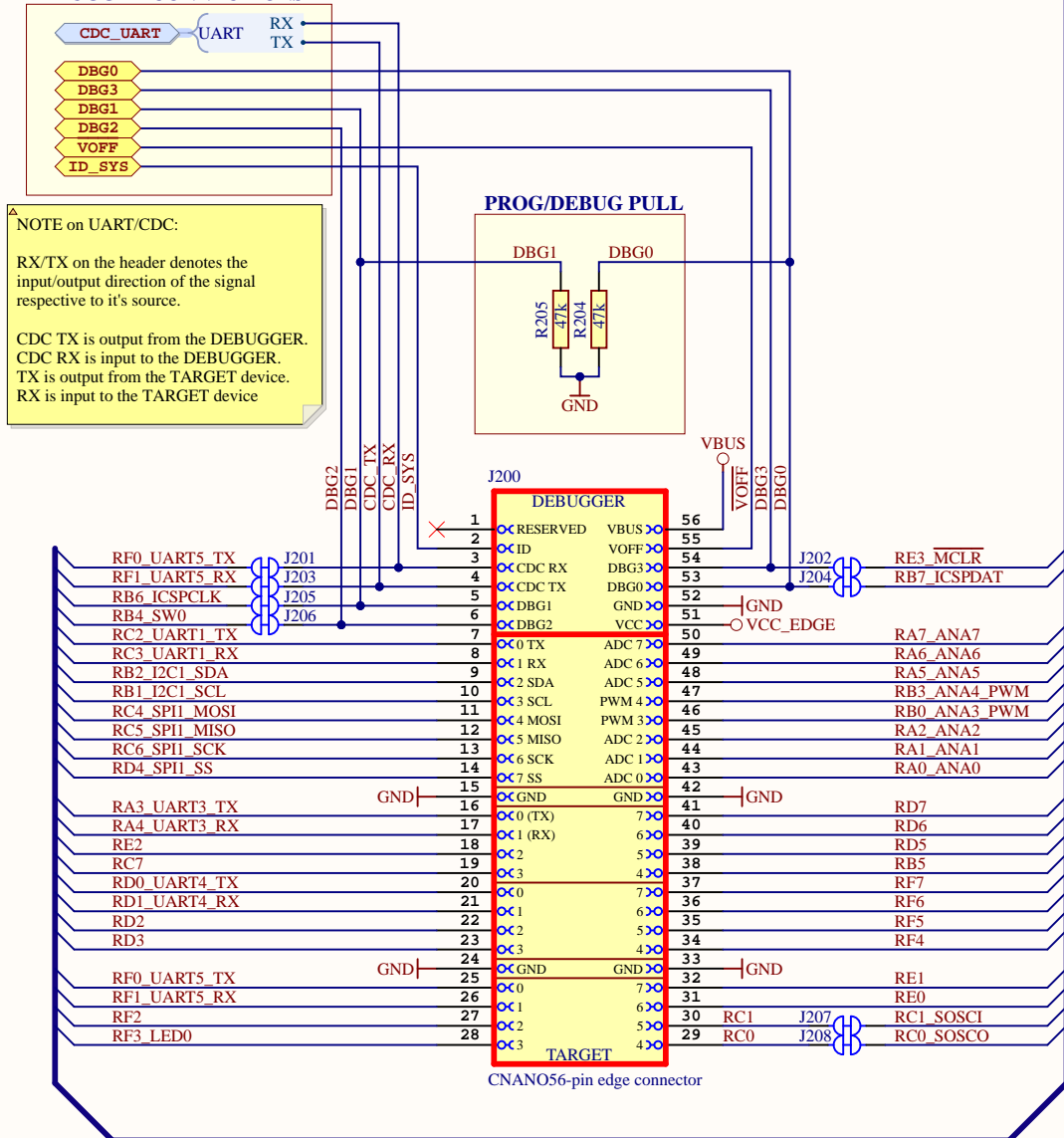
PIC18F57Q43 Curiosity Nano



PIC18F57Q43

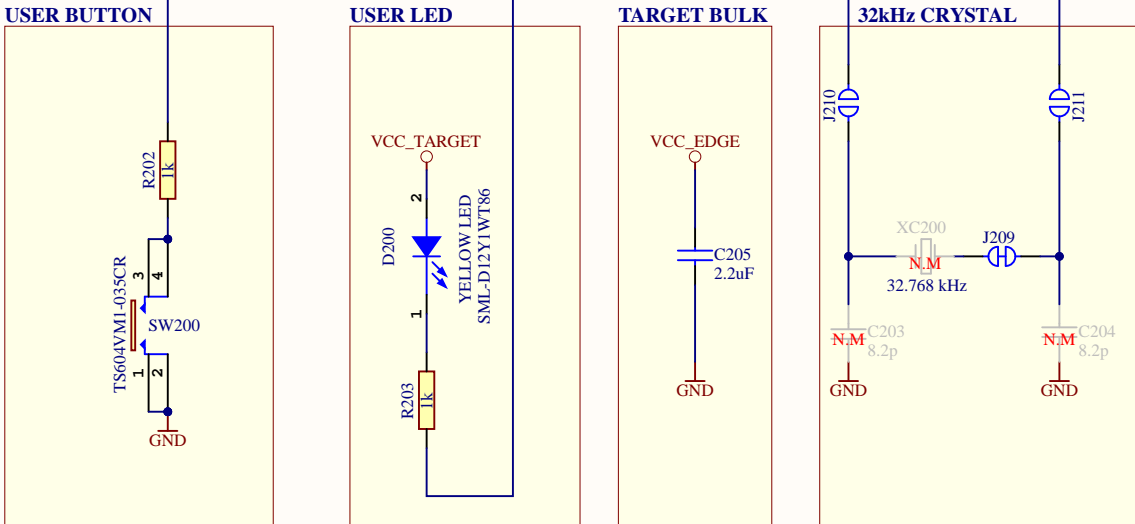
	PIC18F47Q43	
Debugger	Name	Pin
CDC TX	UART RX	RF1
CDC RX	UART TX	RF0
DBG0	ICSPDAT	RB7
DBG1	ICSPCLK	RB6
DBG2	GPIO0	RB4
DBG3	MCLR	RE3
VTG	1.8V - 5.5V	

DEBUGGER CONNECTIONS



NOTE on I2C:

No pull-ups on board. Pull-ups should be mounted close to slave device(s).



Drawn By: TF, PB
Engineer: TF, PB

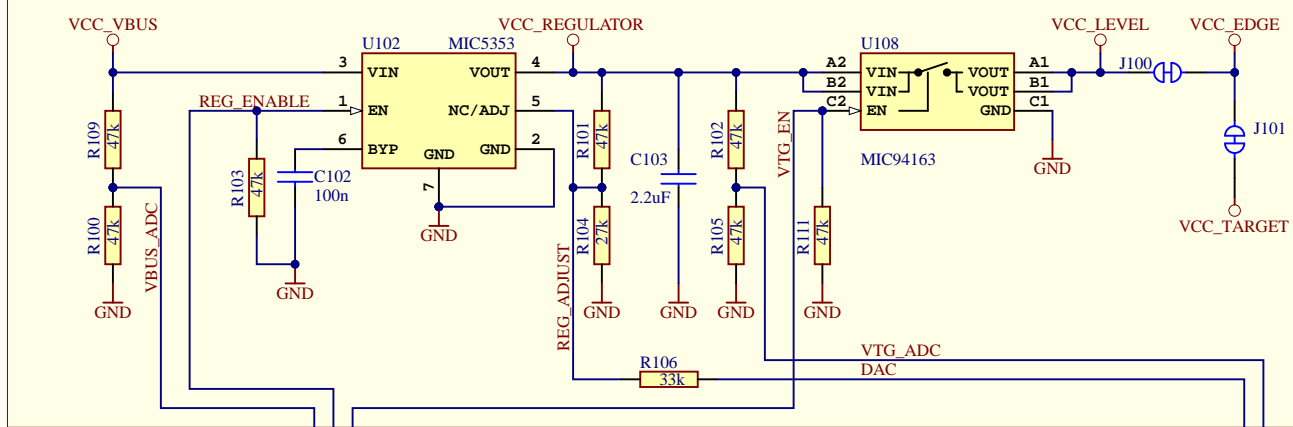


Project Title	PIC18F57Q43 Curiosity Nano
Sheet Title	Target MCU

Designed with
Altium
Altium.com

Size A3	PCB Assembly Number: A09-3290	PCBA Revision: 3	Antium.com
	PCB Number: A08-3021	PCB Revision: 3	Date: 1/16/2020
File: PIC18F57Q43_Curiosity_Nano_Target_MCU.SchDoc			Page: 2 of 4

TARGET ADJUSTABLE REGULATOR



Adjustable output and limitations:

- The DEBUGGER can adjust the output voltage of the regulator between 1.25V and 5.1V to the target.
- The voltage output is limited by the input (USB), which can vary between 4.40V to 5.25V
- The level shifters have a minimal voltage level of 1.65V and will limit the minimum operating voltage allowed for the target to still allow communication.
- The MIC94163 has a minimal volatage level of 1.70V and will limit the minimum voltage delivered to the target.
- Firmware configuration will limit the voltage range to be within the the target specification.

J100:

- Cut-strap used for full separation of target power from the level shifters and on-board regulators.
- For current measurements using the on-board power supply, this strap must be cut and an ammeter connected across.
- For current measurements using an external power supply, this strap could be cut for more accurate measurements. Leakage back through the switch is in the micro ampere range.

MIC5353:

Vin: 2.6V to 6V
Vout: 1.25V to 5.1V
Imax: 500mA
Dropout (typical): 50mV@150mA, 160mV @ 500mA
Accuracy: 2% initial
Thermal shutdown and current limit

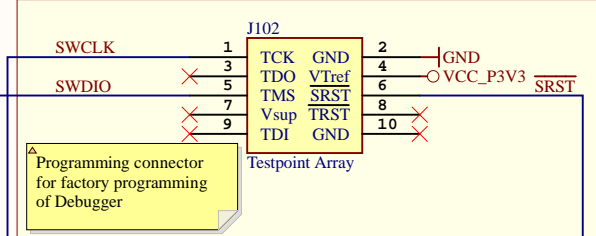
Maximum output voltage is limited by the input voltage and the dropout voltage in the regulator.
(Vmax = Vin - dropout)

Interface	ICSP	UPDI
Signal	TARGET	TARGET
CDC TX	UART RX	UART RX
CDC RX	UART TX	UART TX
DBG0	DAT	UPDI
DBG1	CLK	GPIO
DBG2	GPIO	GPIO
DBG3	MCLR	RESET
VCC	-	-

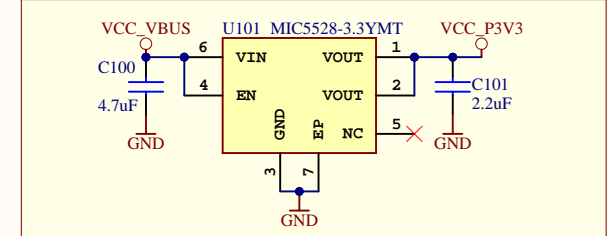
MIC5528:

Vin: 2.5V to 5.5V
Vout: Fixed 3.3V
Imax: 500mA
Dropout: 260mV @ 500mA

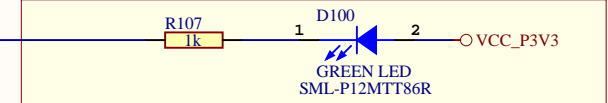
DEBUGGER TESTPOINTS



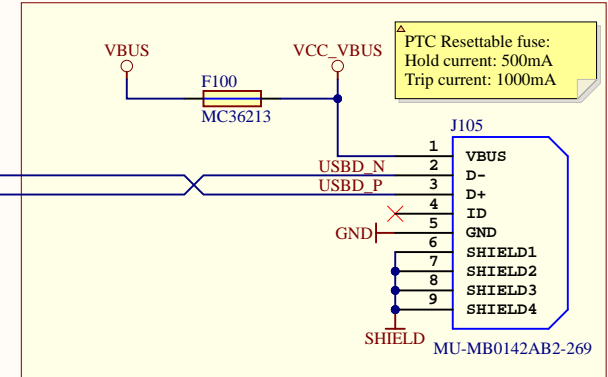
DEBUGGER REGULATOR



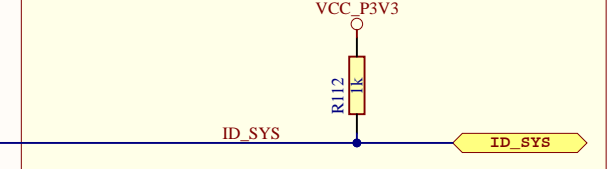
DEBUGGER POWER/STATUS LED



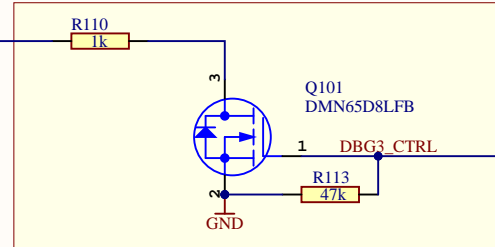
DEBUGGER USB MICRO-B CONNECTOR



ID PIN



DBG3 OPEN DRAIN



R113:

Pull down to prevent DBG3_CTRL from floating when debugger is not powered.

Revision History

PCB Assembly Rev 1:

Design Changes:

Initial Design

PCB:

PCB revision 1

PCB Assembly Rev 2:

Design Changes:

Board edge connector updated to staggered and current measurement footprint added. Added pull-down on gate of reset MOSFET (Q100), and removed decoupling from SAMD21 reset line.Changed Target reset pull-up value from 100k to 47k to ease production.

PCB:

PCB revision 2

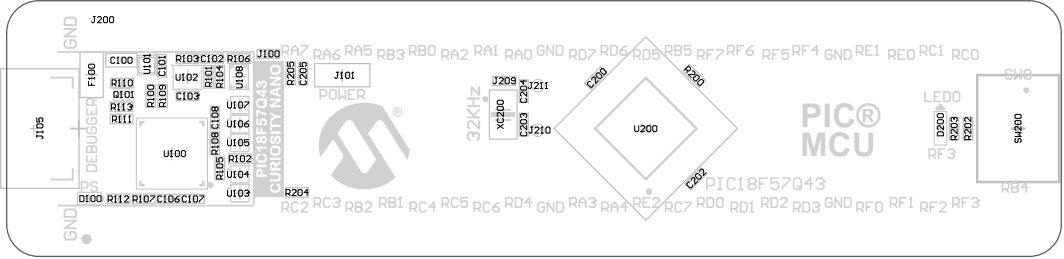
PCB Assembly Rev 3:

Design Changes:

Changed pinout of the edge connector
Changed default crystal (XC200) to available type.

PCB:

PCB revision 3



RC0 RC1 RE0 RE1 GND RF4 RF5 RF6 RF7 RB5 RD5 RD6 RD7 GND RA0 RA1 RA2 RB0 RB3 RA5 RA6 RA7 V_{TTG} GND D0 D3 V_{OFF} VBUS



LABEL1

A08-3021 Rev3
Microchip © 2019



TARGET

RE3	J202	D3
RB4	J206	D2
RB6	J205	D1
RB7	J204	D0
RF0	J201	RX
RF1	J203	TX

DEBUGGER



TP101

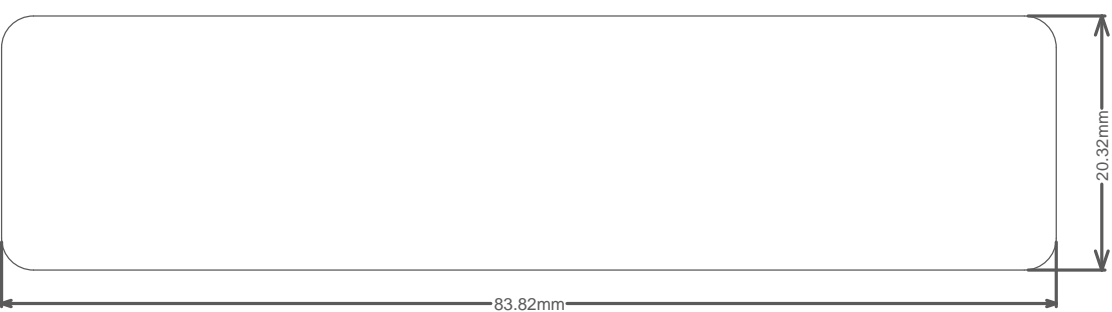
TP100

RF3 RF2 RF1 RF0 GND RD3 RD2 RD1 RD0 RC7 RE2 RA4 RA3 GND RD4 RC6 RC5 RC4 RB1 RB2 RC3 RC2 D2 D1 TX RX ID NC

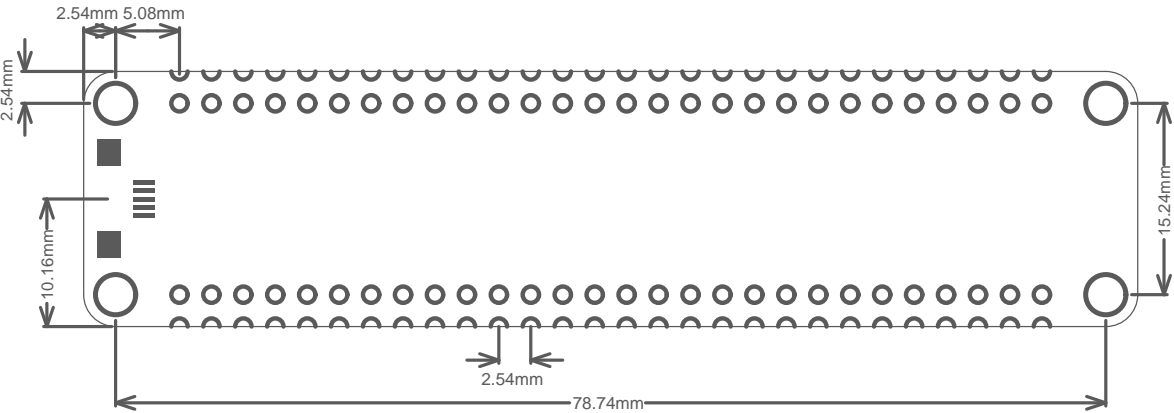
GND

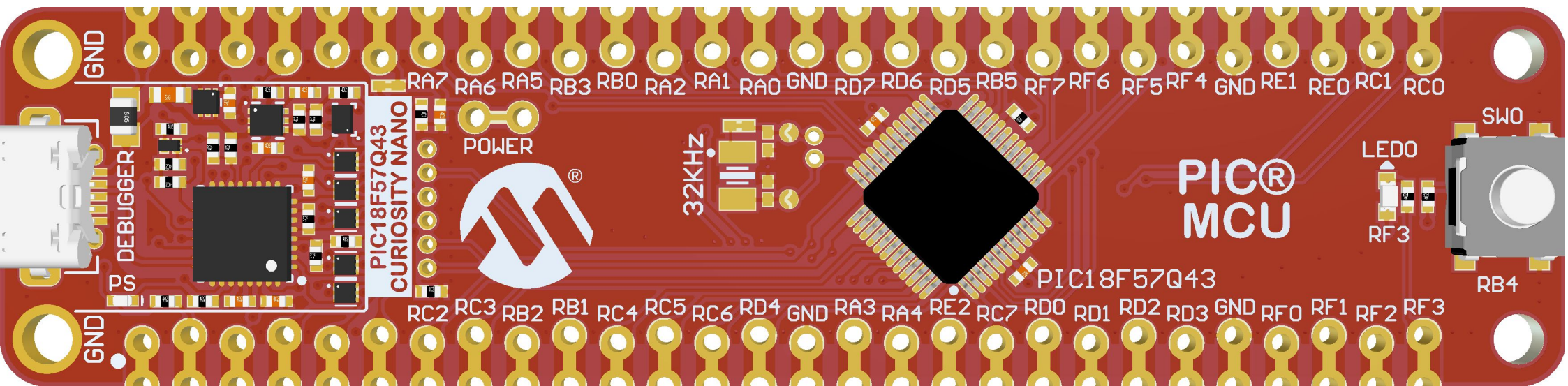
J102

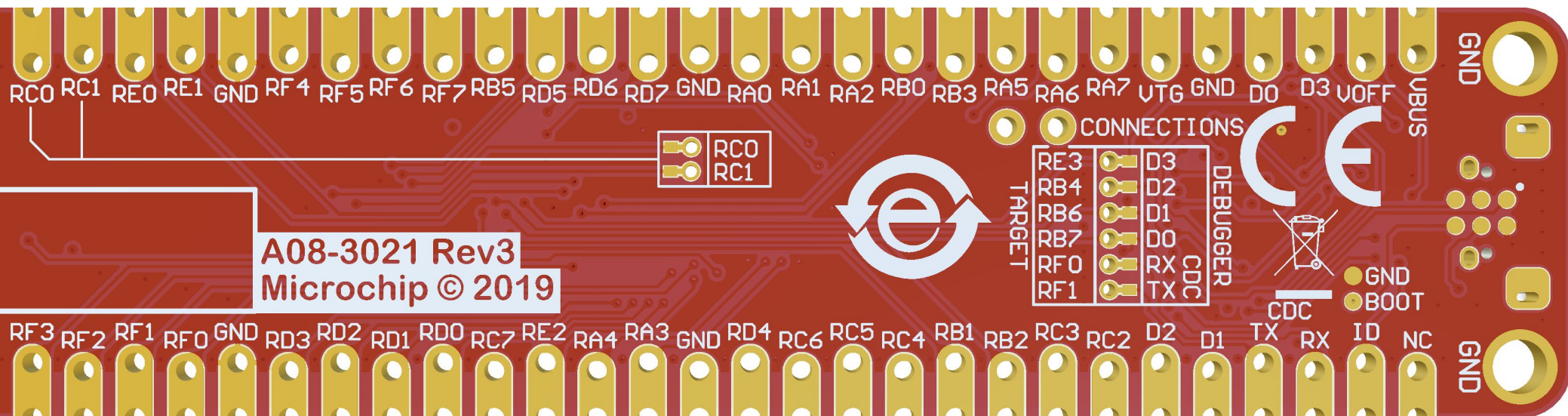
GND

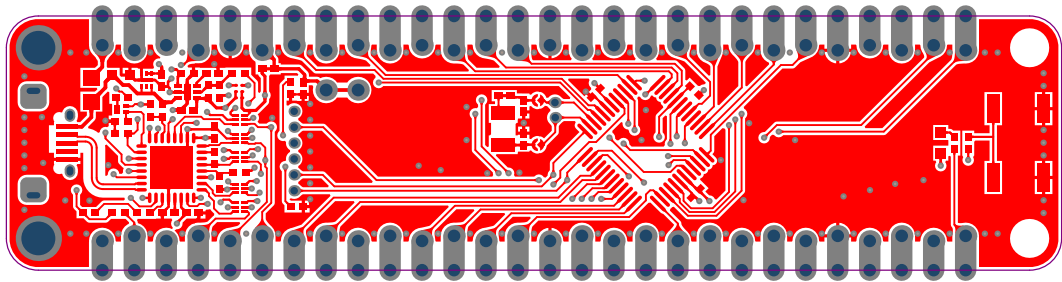


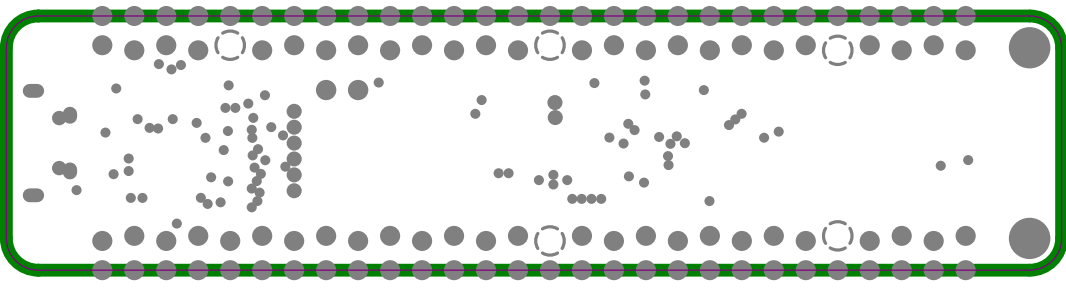
Connector Placement

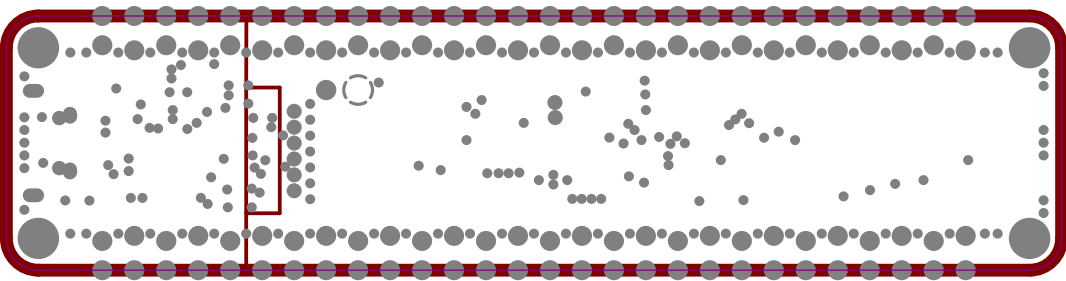


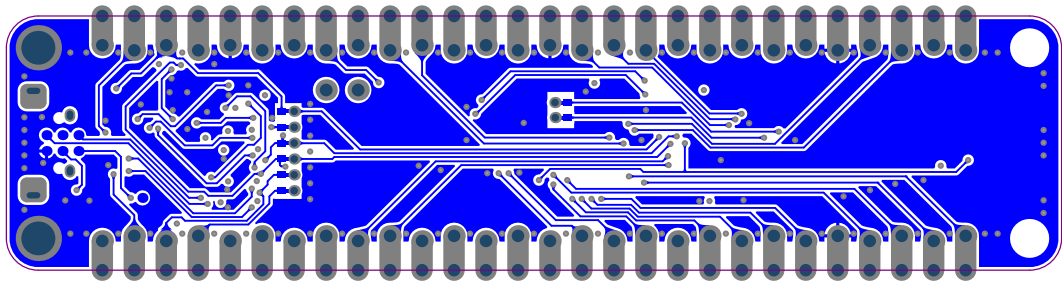












Test Point Placement



Component list

Bill of Materials Fitted for Variant [Default Assembly] of Project [PIC18F57Q43_Curiosity_Nano.PrjPcb] (No PCB Document Selected)

Source Data From:

PIC18F57Q43_Curiosity_Nano.PrjPcb

Project:

PIC18F57Q43_Curiosity_Nano.PrjPcb

Variant:

Default Assembly

Report Date: 1/16/2020 2:47 PM

Print Date:



Fitted	Designator	Quantity	Value	Manufacturer	MPN	Description
Fitted	C100	1	4.7uF	WALSIN Technology Corporation	0603X475K100CT	Ceramic capacitor, SMD 0603, X5R, 10V, 10% (de31036)
Fitted	C101	1	2.2uF	Kemet	C0402C225M9PAC	Ceramic capacitor, SMD 0402, X5R, 6.3V, +/-20%
Fitted	C102, C107, C108, C200, C202	5	100n	Kemet	C0402C104K4RACTU	Ceramic capacitor, SMD 0402, X7R, 16V, +/-10%
Fitted	C103, C205	2	2.2uF	TDK	C1005X5R1A225K	CAP CER 2.2UF 10V 10% X5R 0402
Fitted	C106	1	1u	Kemet	C0402C105K9PAC	Ceramic capacitor, SMD 0402, X5R, 6.3V, +/-10% (de26942)
Fitted	D100	1	GREEN LED	ROHM	SML-P12MTT86R	LED, SMD 0402, Green, Wave length=569nm, 2.1mcd @ (1mA, 1.9Vf) rohm
Fitted	D200	1	YELLOW LED	ROHM	SML-D12Y1WT86	LED, SMD 0603, Yellow, Wave length=590nm, 100mcd @ (20mA, 2.2Vf) rohm
Fitted	F100	1	MC36213	Multicomp	MC36213	Resetable PTC fuse, Ih = 0.5A, It = 1.0A, 0805 package
Fitted	FW1	1	nEDBG firmw are			nEDBG firmw are
Fitted	J105	1	MU-MB0142AB2-269	Allen Creations Corp.	MU-MB0142AB2-269	USB micro AB, Surface mount signals and DIP shield
Fitted	LABEL1	1	Label PCBA	ACT Logimark AS	505462	PCBA identification label PP Top White Gloss
Fitted	PCB1	1	PIC18F57Q43 Curiosity Nano PCB documentation			PIC18F57Q43 Curiosity Nano PCB documentation
Fitted	PCBADOC1	1	A09-3290 PCBA files			PIC18F57Q43 Curiosity Nano PCBA documentation
Fitted	Q101	1	DMN65D8LFB	Diodes Incorporated	DMN65D8LFB-7	N-channel MOSFET, DFN1006-3 (SOT883), 60V, 330mA, 4Ohm
Fitted	R100, R101, R102, R103, R105, R109, R111, R113, R200, R204, R205	11	47k	KOA	RK73H1ETTP4702F	Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	R104	1	27k	Yageo	RC0402FR-0727KL	Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	R106	1	33k	ASJ Holdings	CR10-3302-FK	Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	R107, R108, R110, R112, R202, R203	6	1k	ASJ Holdings	CR10-1001-FK	Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	SW200	1	TS604VM1-035CR	Dailywell Electronics Co.LTD	TS604VM1-035CR-R	SWITCH, SMD, 260gf, 6.4mm X 6.2mm
Fitted	TEST1	1	PIC18F57Q43 Curiosity Nano test			Fixture test for PIC18F57Q43 Curiosity Nano
Fitted	TESTDOC1	1	Curiosity Nano Test Instructions			Generic Test Instructions for Curiosity Nano
Fitted	U100	1	SAMD21E18A-MUT	Microchip	ATSAMD21E18A-MUT	32-bit RISC MCU 32pin
Fitted	U101	1	MIC5528-3.3YMT	Microchip	MIC5528-3.3YMT-T5	LDO 3.3V 0.5A 6TDFN
Fitted	U102	1	MIC5353	Microchip	MIC5353YMT-TR	500mA Ultra Low Dropout LDO regulator, 2% accuracy, 1.6x1.6mm MLF
Fitted	U103, U104, U105, U106, U107	5	74LVC1T45FW4-7	Diodes Incorporated	74LVC1T45FW4-7	Single-Bit Dual-Supply Transceiver, 1.65-5.5 Translation and 3-State Outputs
Fitted	U108	1	MIC94163	Microchip	MIC94163YCS-TR	Loadswitch, Rds(on) = 14.5mohm, 1.0mm x 1.5mm WLCSP, reverse blocking
Fitted	U200	1	PIC18F57Q43T-IPT	Microchip	PIC18F57Q43T-IPT	PIC18F57Q43 microcontroller, 48-pin TQFP 7mm x 7mm x 1.0mm
Not Fitted	C203, C204	0	8.2p	Yageo	CC0402CRNPO9BN8R2	Ceramic capacitor, SMD 0402, NP0, 50V, +/-5%
Not Fitted	XC200	0	32.768kHz	Abracon	ABS07-32.768kHz-7-T	Crystal, 32.768kHz, CL=7.0pF, ESR=70kOhm, SMD LxW=3.2 x 1.5mm, 20ppm

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Approved

Notes