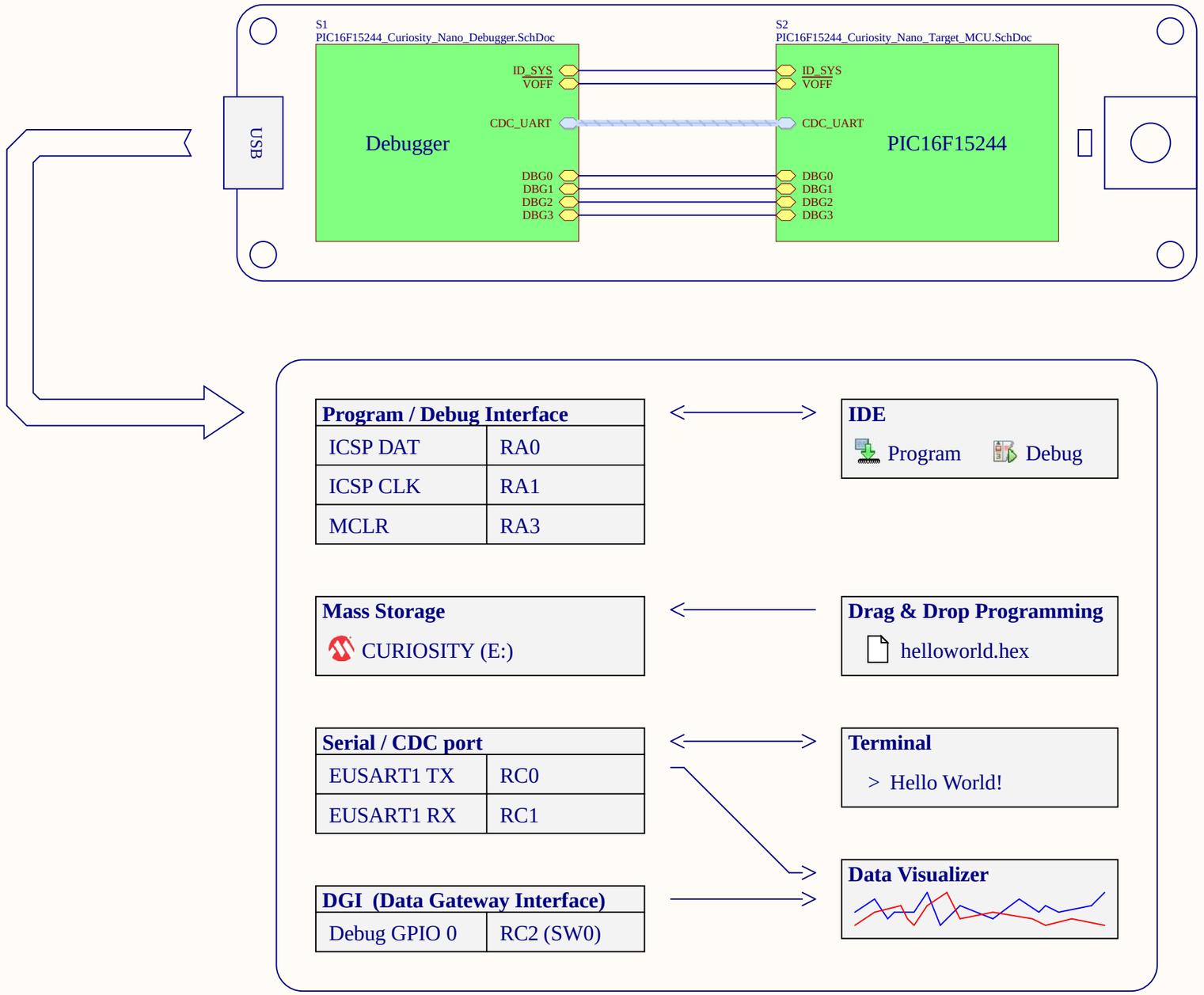
PIC16F15244 Curiosity Nano



TESTDOC1
A12-1314

TEST1
A11-0468

FW1
A11-0406

PCBADOC1
A12-1416

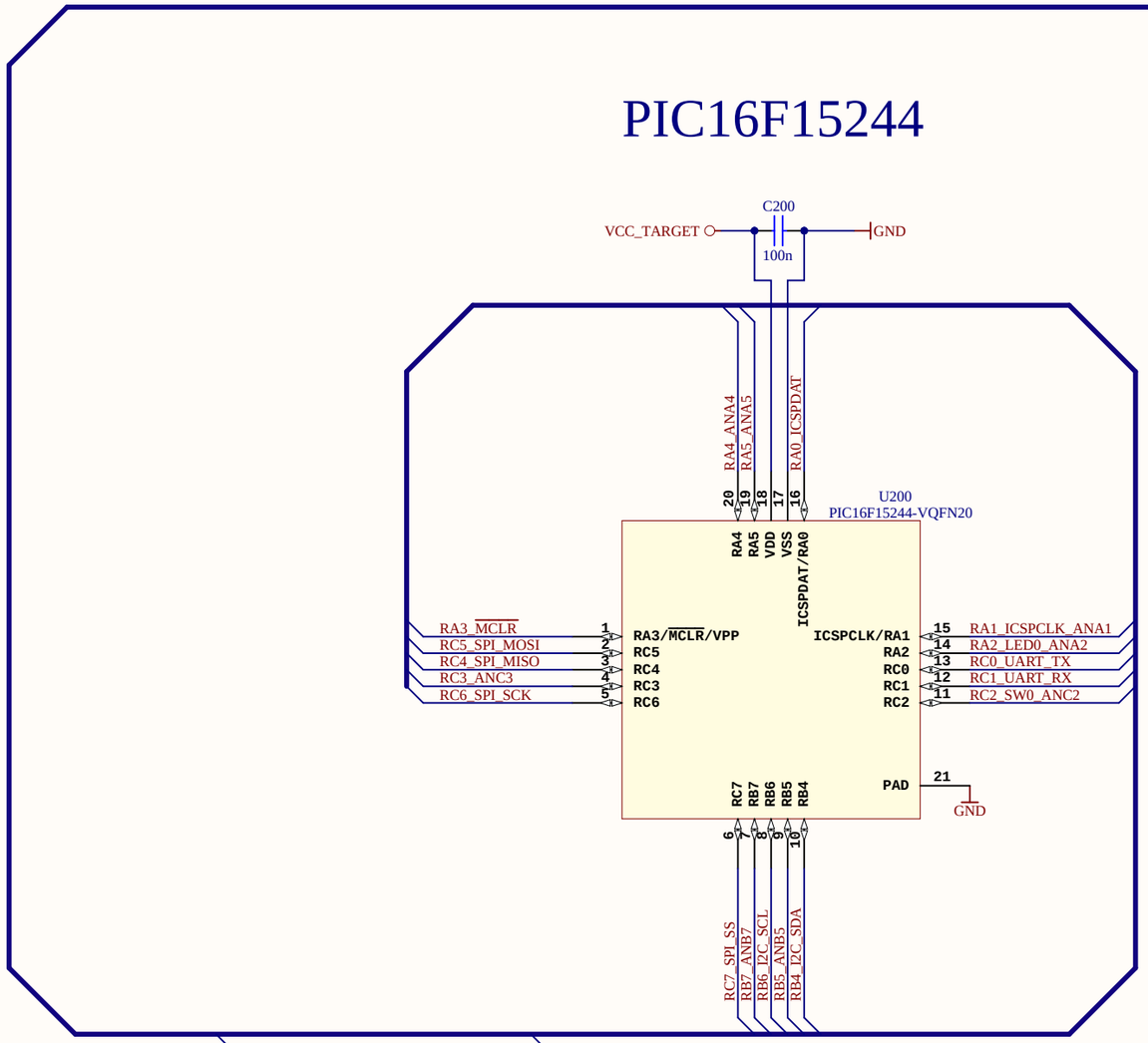
PCB1
A08-3041

LABEL1
Product number/revision
Serial number
Label PCBA

S3
PIC16F15244_Curiosity_Nano_Revision_History.SchDoc

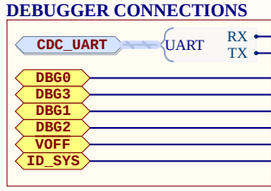
Drawn By: PB	MICROCHIP
Engineer: PB	
Project Title: *PIC16F15244 Curiosity Nano*	Designed with Altium — Altium.com
Sheet Title: Top Level	
Size A3	PCB Assembly Number: A09-3317 — PCBA Revision: 1
	PCB Number: A08-3041 — PCB Revision: 1
File: PIC16F15244_Curiosity_Nano_TopLevel.SchDoc	Date: 8/7/2020 — Page: 1 of 4

PIC16F15244

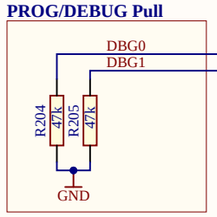


PIC16F15244		
Debugger	*Name*	*Pin*
CDC TX	UART RX	RC1
CDC RX	UART TX	RC0
DBG0	ICSPDAT	RA0
DBG1	ICSPCLK	RA1
DBG2	GPIO0	RC2
DBG3	$\overline{\text{MCLR}}$	RA3
VTG	1.8V - 5.5V	

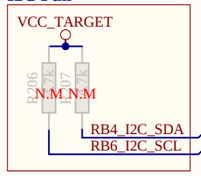
DEBUGGER CONNECTIONS



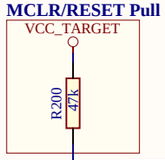
PROG/DEBUG Pull



I2C Pull

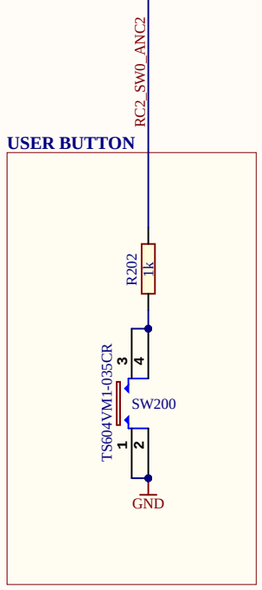


MCLR/RESET Pull

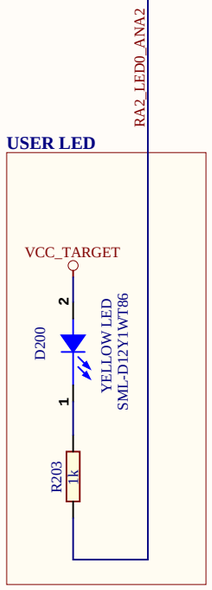


CNANO30-pin edge connector

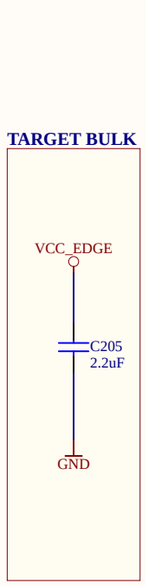
USER BUTTON



USER LED



TARGET BULK



NOTE on UART/CDC:

RX/TX on the header denotes the input/output direction of the signal respective to it's source.

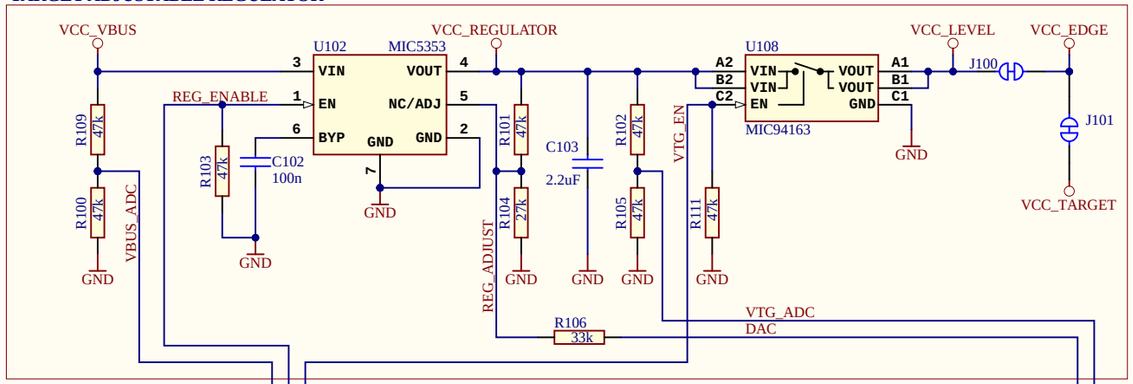
CDC TX is output from the DEBUGGER.
CDC RX is input to the DEBUGGER.
UART TX is output from the TARGET device.
UART RX is input to the TARGET device.

NOTE on I2C:

No pull-ups mounted on board, but footprint is available.

Drawn By: PB	MICROCHIP
Engineer: PB	
Project Title: *PIC16F15244 Curiosity Nano*	Designed with Altium — Altium.com
Sheet Title: Target MCU	
Size A3	PCB Assembly Number: A09-3317 — PCBA Revision: 1
	PCB Number: A08-3041 — PCB Revision: 1
File: PIC16F15244_Curiosity_Nano_Target_MCU.SchDoc	Date: 8/7/2020
	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 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 output switch has a minimal volatege 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.
- Firmware feedback loop will adjust the output voltage accuracy to within 0.5%.

J100:
- Cut-strap used for full separation of target power from the level shifters and on-board regulators.
- 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.

J101:
- For current measurements using the on-board power supply, this strap must be cut and an ammeter connected across.

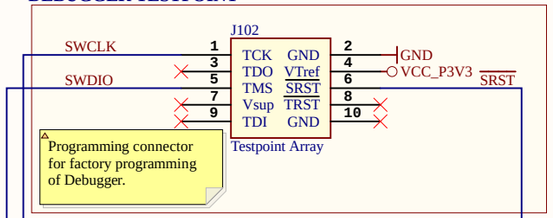
MIC5353:
Vin: 2.6V to 6V
Vout: 1.25V to 5.1V
Imax: 500mA
Dropout (typical): 50mV@150mA, 160mV @ 500mA
Accuracy: 2% initial
Thermal shutdown and current limit

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

Interface / Signal	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	SWDAT
DBG1	CLK	GPIO	SWCLK
DBG2	GPIO	GPIO	SWO/GPIO
DBG3	$\overline{MCLR}$	$\overline{RESET}$	$\overline{RESET}$
VCC	-	-	-

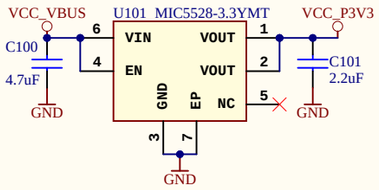
MIC5528:
Vin: 2.5V to 5.5V
Vout: Fixed 3.3V
Imax: 500mA
Dropout: 260mV @ 500mA

DEBUGGER TESTPOINT

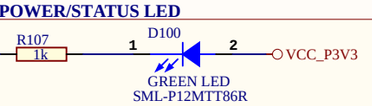


Programming connector for factory programming of Debugger.

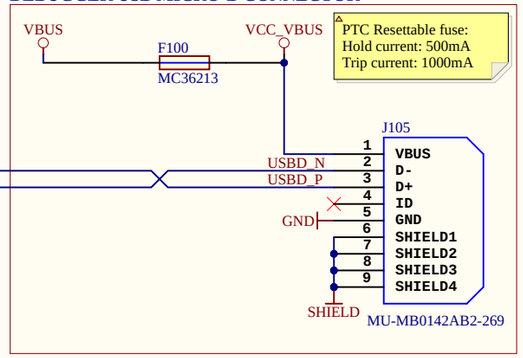
DEBUGGER REGULATOR



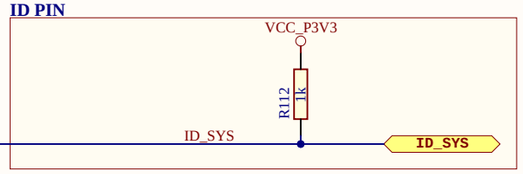
DEBUGGER POWER/STATUS LED

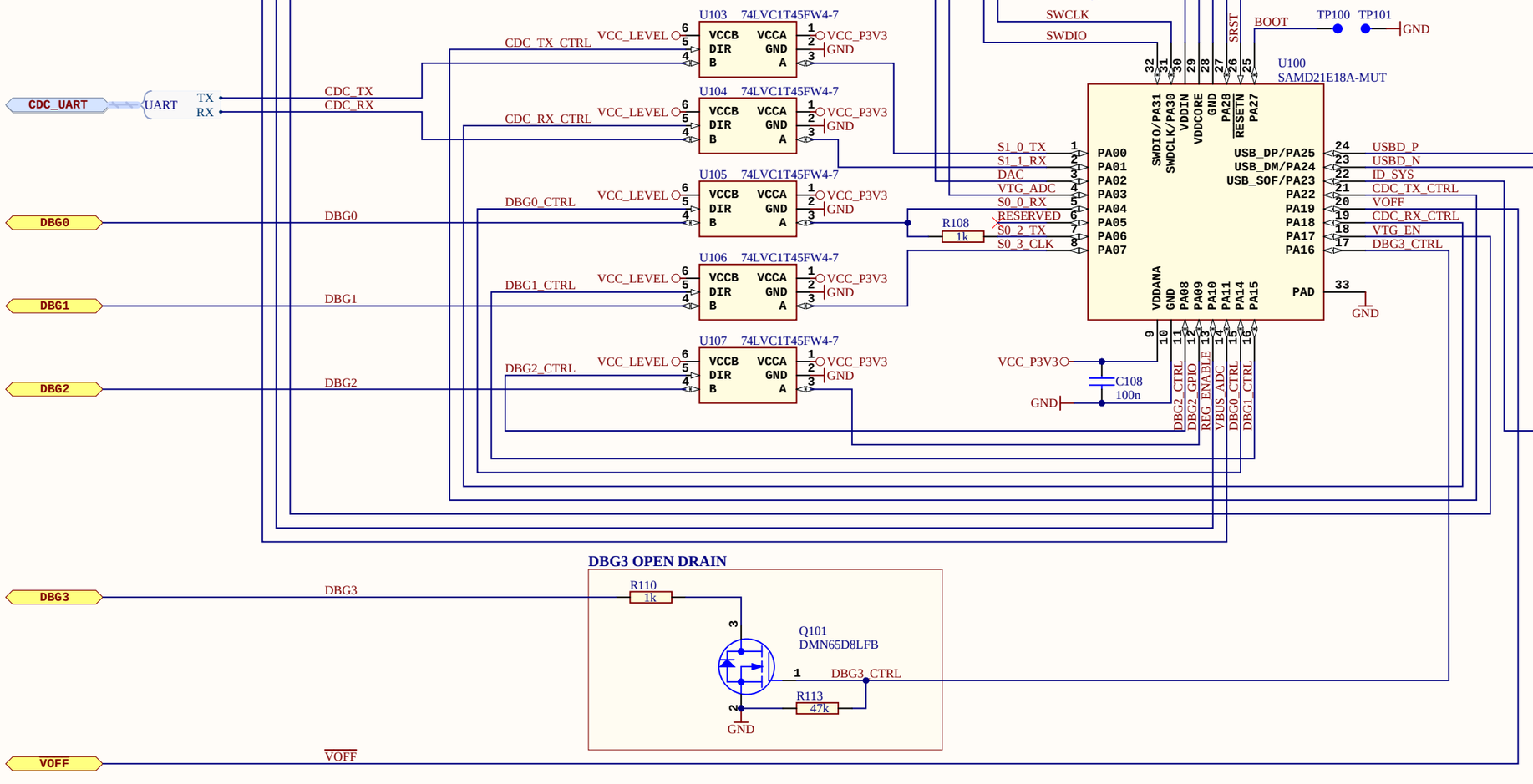


DEBUGGER USB MICRO-B CONNECTOR



ID PIN





DBG3 OPEN DRAIN

Drawn By: PB	MICROCHIP
Engineer: PB	
Project Title: *PIC16F15244 Curiosity Nano*	Designed with Altium — Altium.com
Sheet Title: Debugger	
Size A3 — PCB Assembly Number: A09-3317 — PCBA Revision: 1	Date: 8/7/2020
PCB Number: A08-3041 — PCB Revision: 1	Page: 3 of 4
File: PIC16F15244_Curiosity_Nano_Debugger.SchDoc	

Revision History

PCB Assembly Rev 1:

Design Changes:

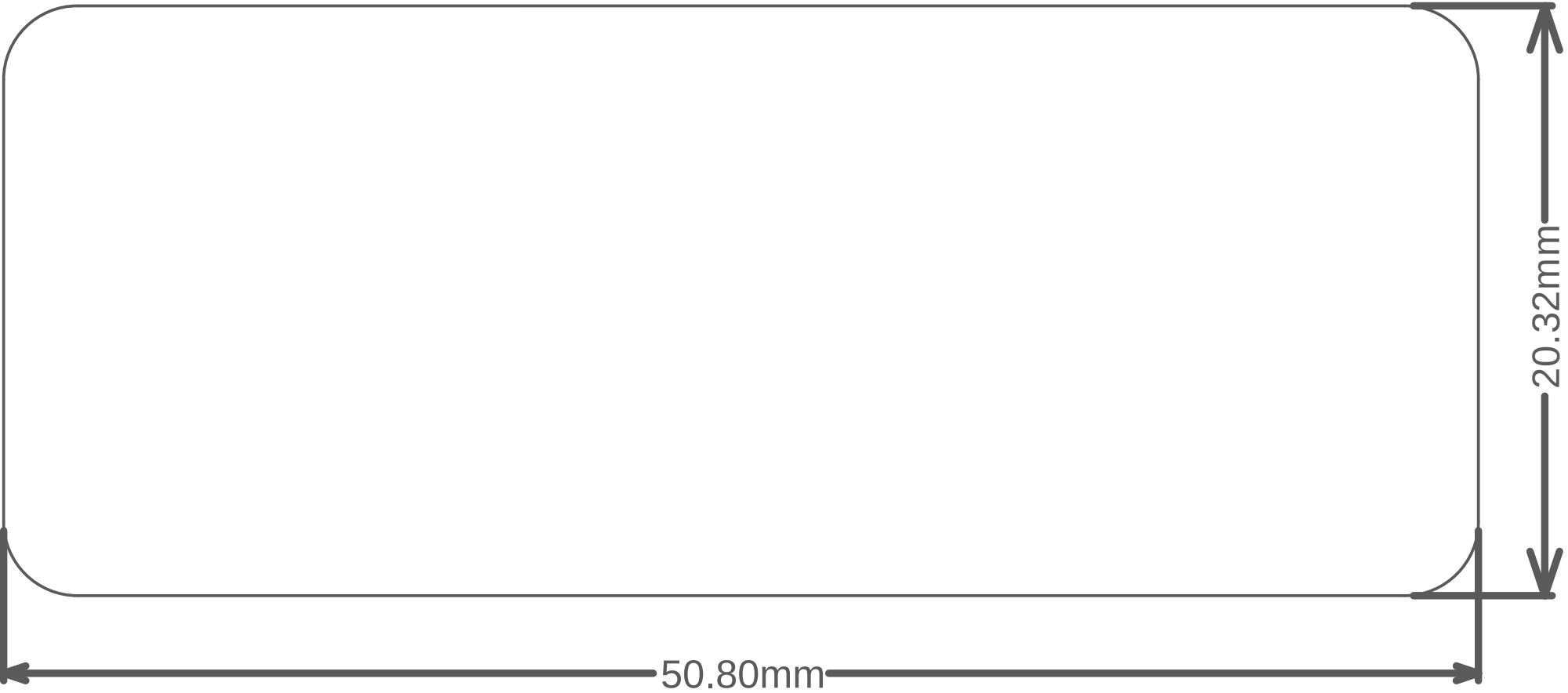
Initial Design

PCB:

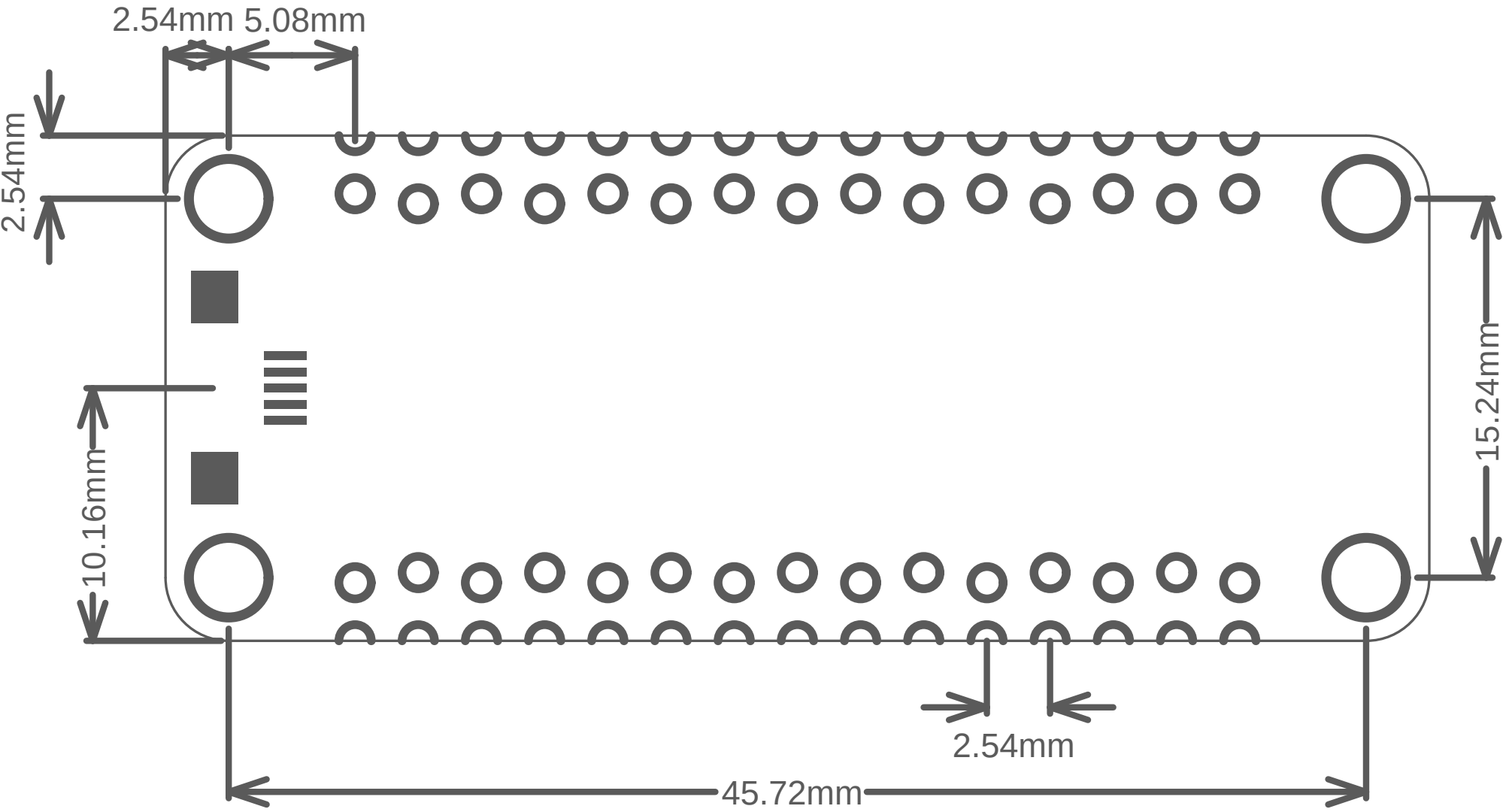
PCB revision 1

Drawn By: PB			
Engineer: PB			
Project Title: *PIC16F15244 Curiosity Nano*			Designed with Altium — Altium.com
Sheet Title: Revision History			
Size: A3	PCB Assembly Number: A09-3317	PCBA Revision: 1	Date: 8/7/2020
	PCB Number: A08-3041	PCB Revision: 1	Page: 4 of 4
File: PIC16F15244_Curiosity_Nano_Revision_History.SchDoc			

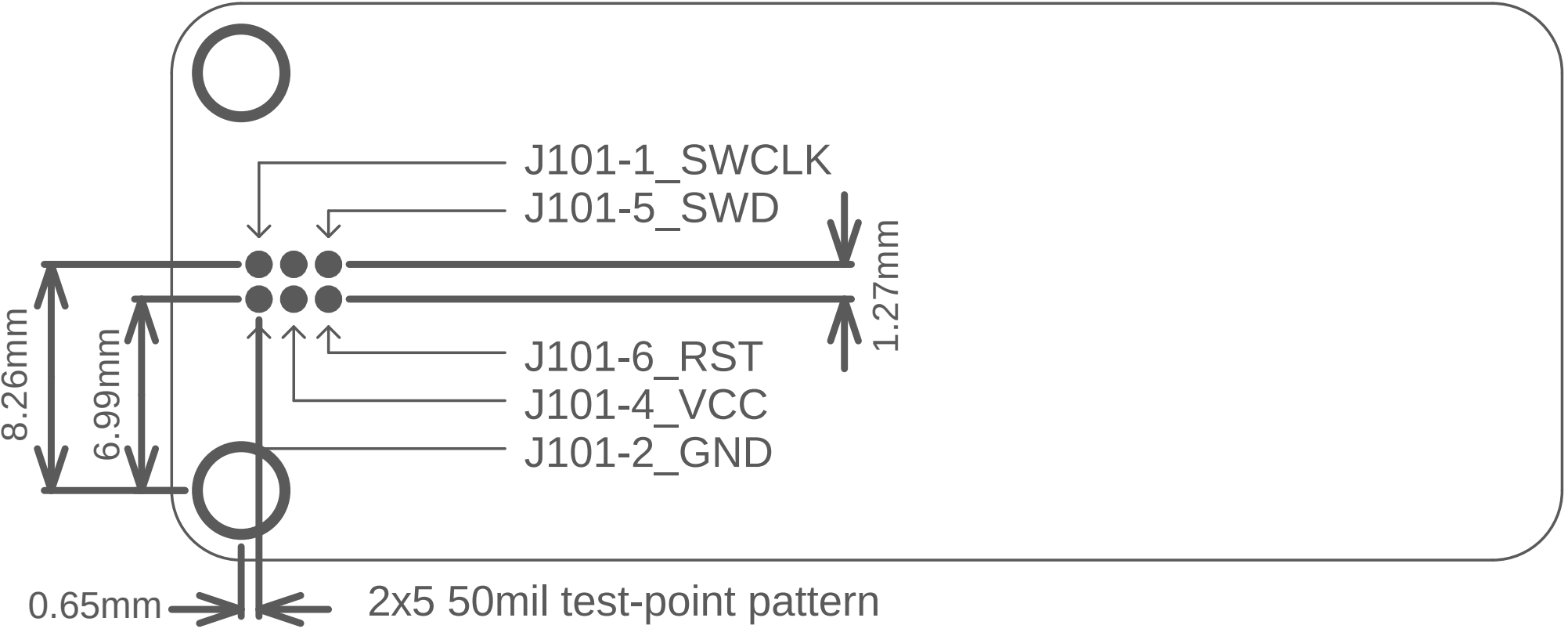
Dimentions

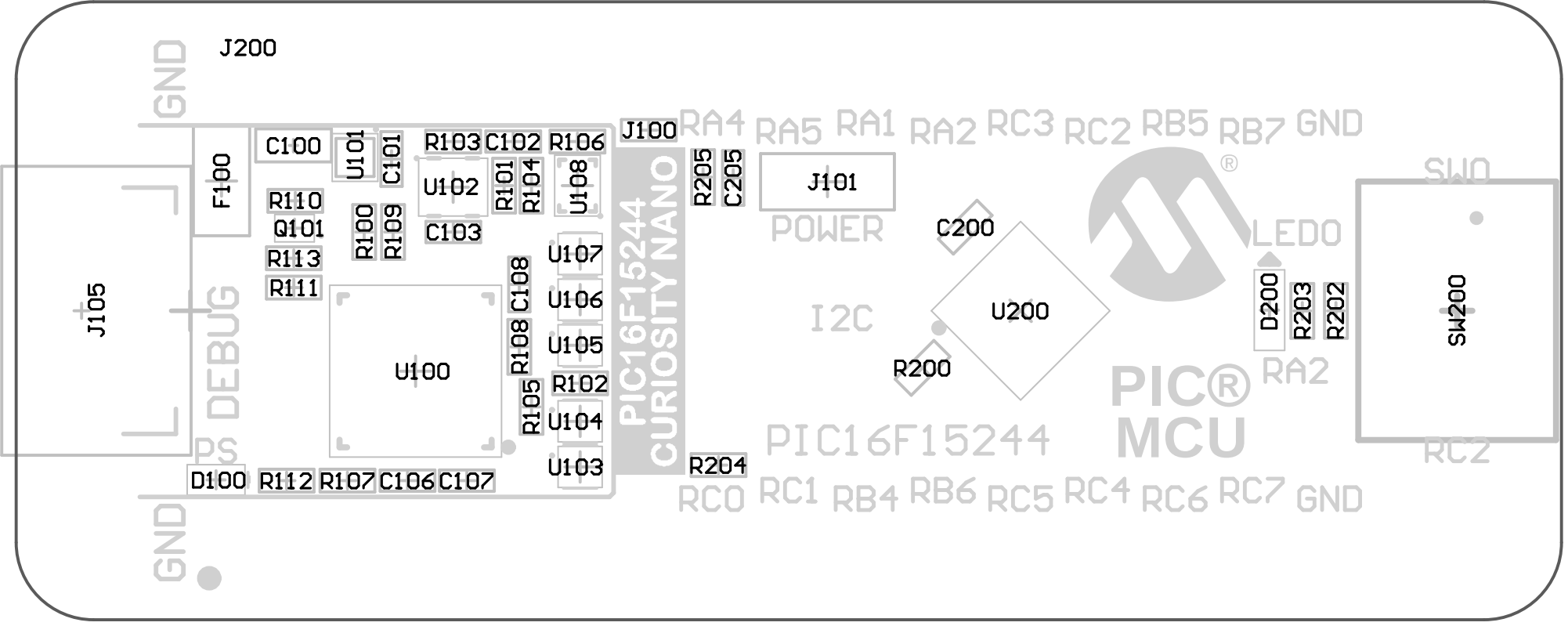


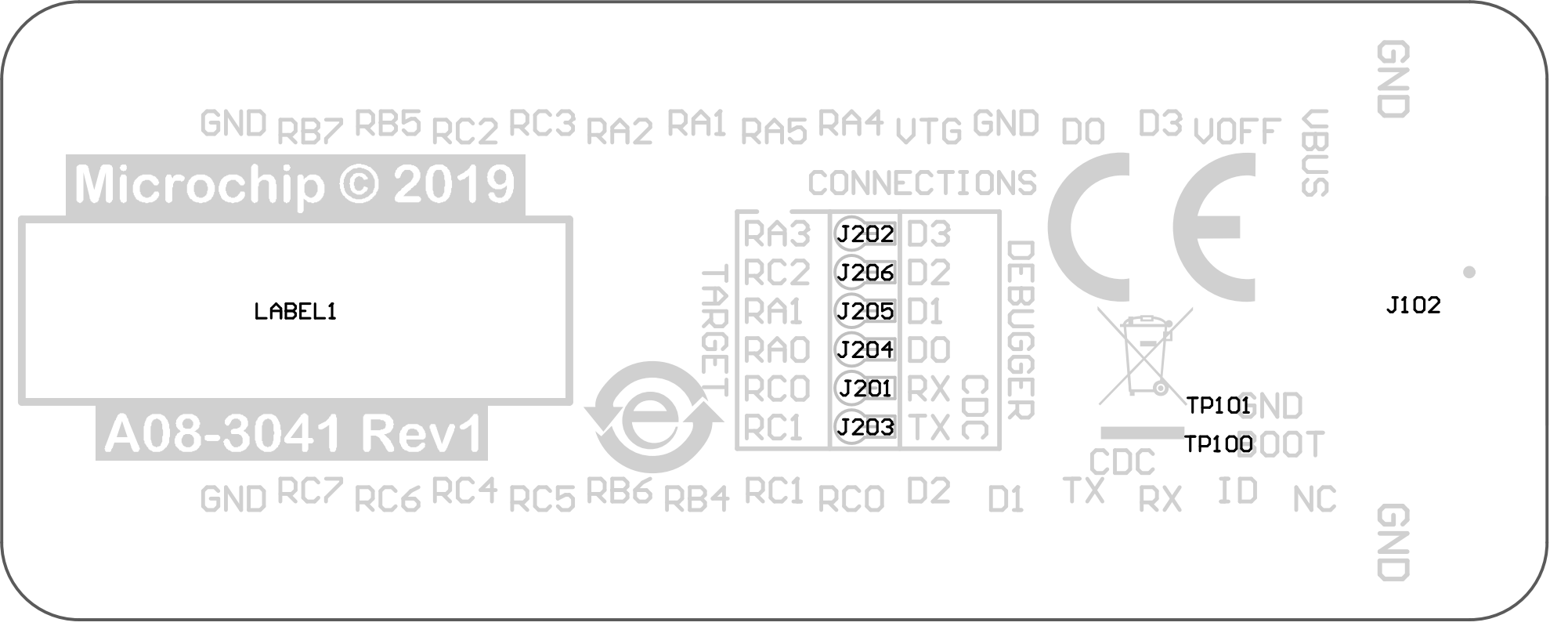
Connector Placement

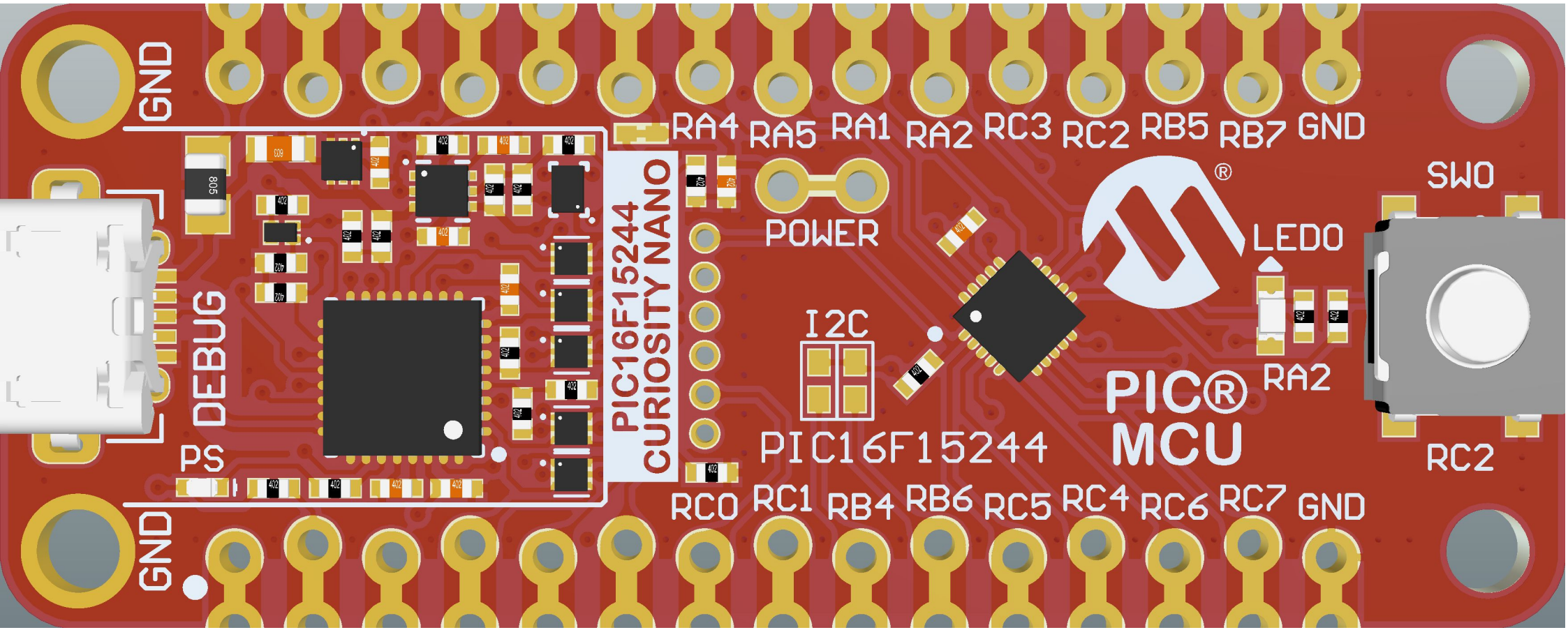


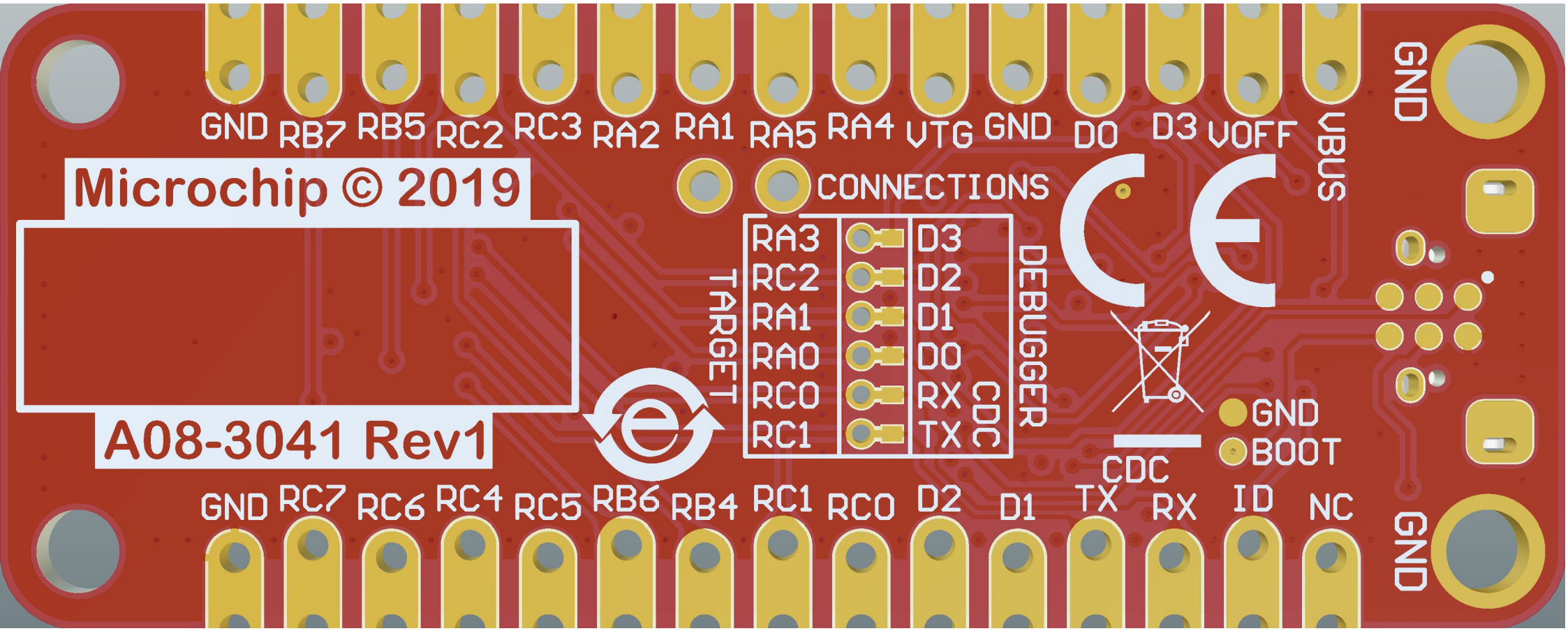
Test Point Placement

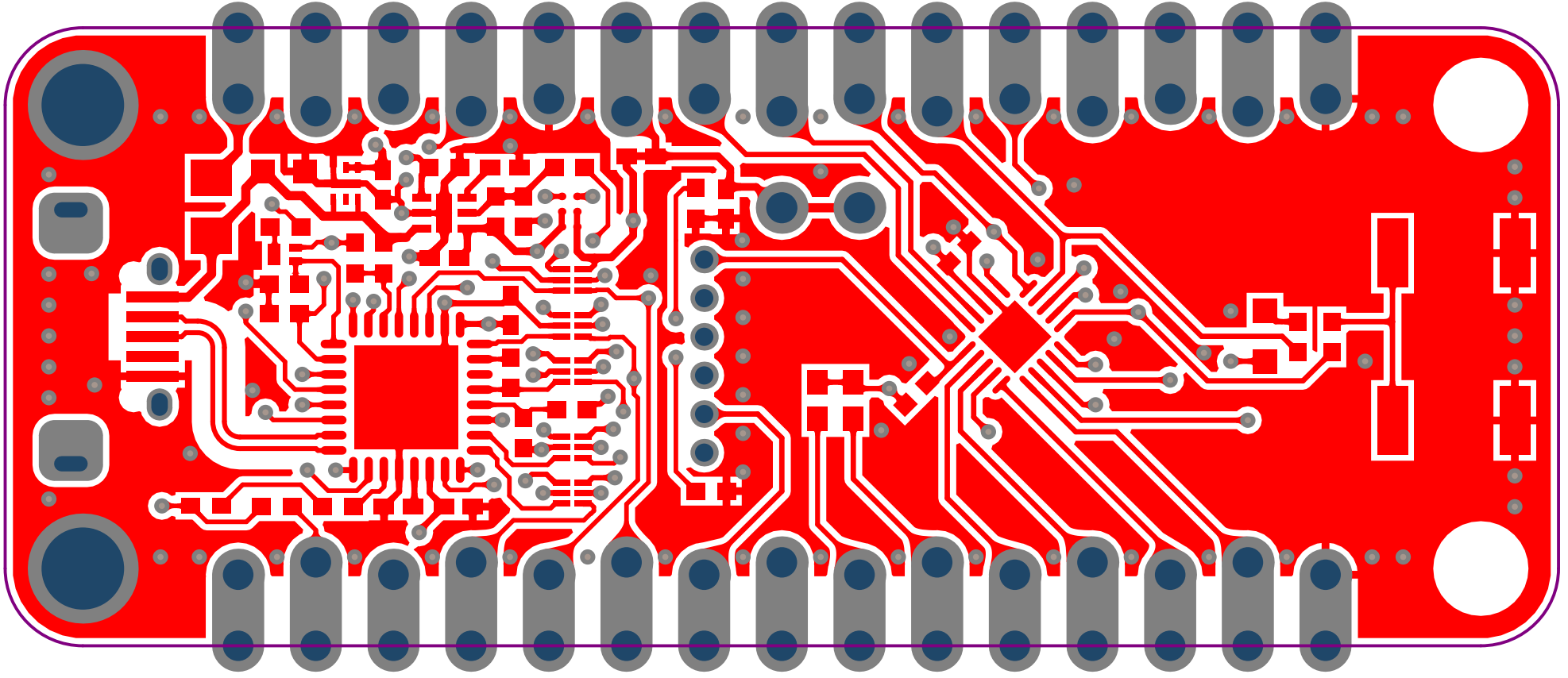


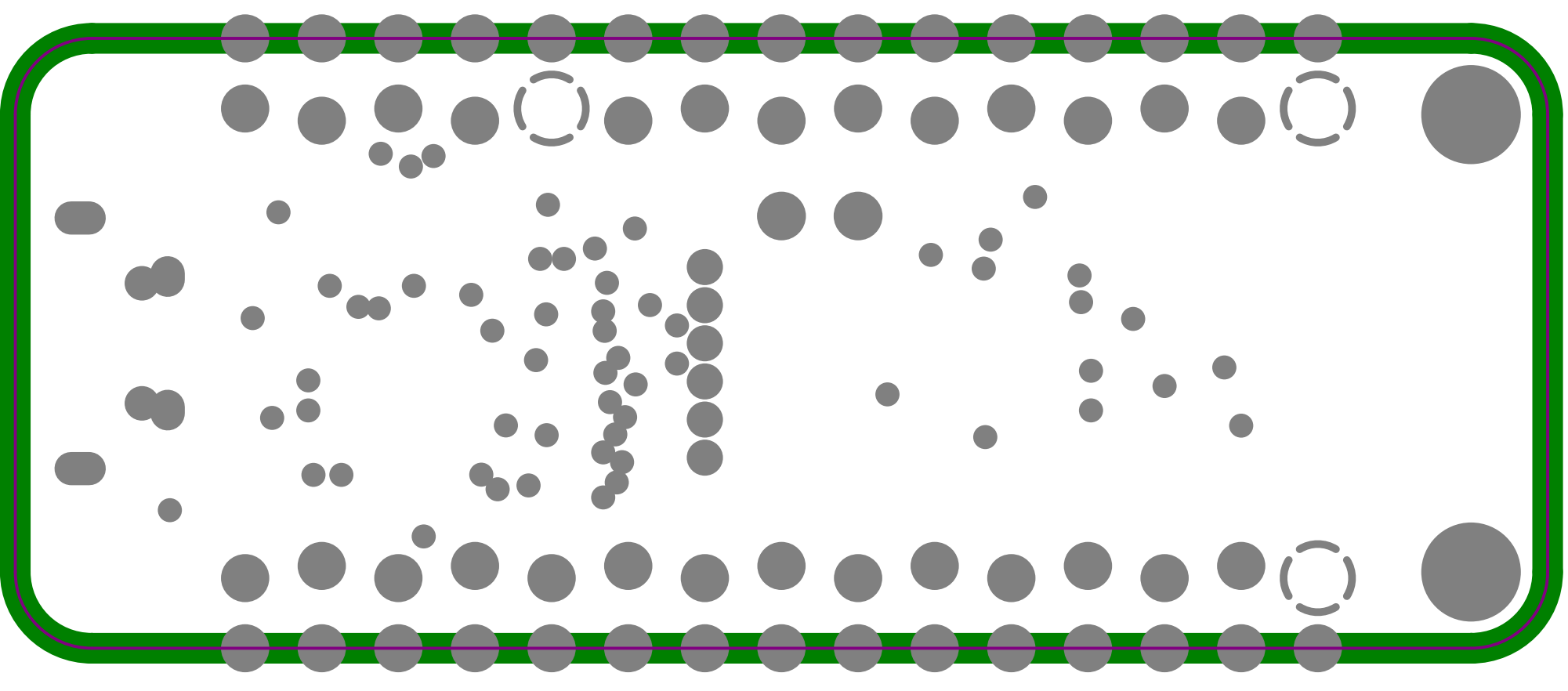

J200
GND
J100
RA4
RA5
RA1
RA2
RC3
RC2
RB5
RB7
GND
C100
U101
C101
R103
C102
R106
F100
U102
R101
R104
U108
R205
C205
J101
POWER
SWO
R110
Q101
R100
R109
C103
C200
LED0
R113
U107
R111
U106
J105
DEBUG
U100
C108
U105
U200
D200
R203
R202
SW200
I2C
R108
R200
R105
R102
PIC®
MCU
RA2
PIC16F15244
CURIOSITY NANO
U104
PIC16F15244
PS
U103
R204
RC2
D100
R112
R107
C106
C107
RC0
RC1
RB4
RB6
RC5
RC4
RC6
RC7
GND
GND

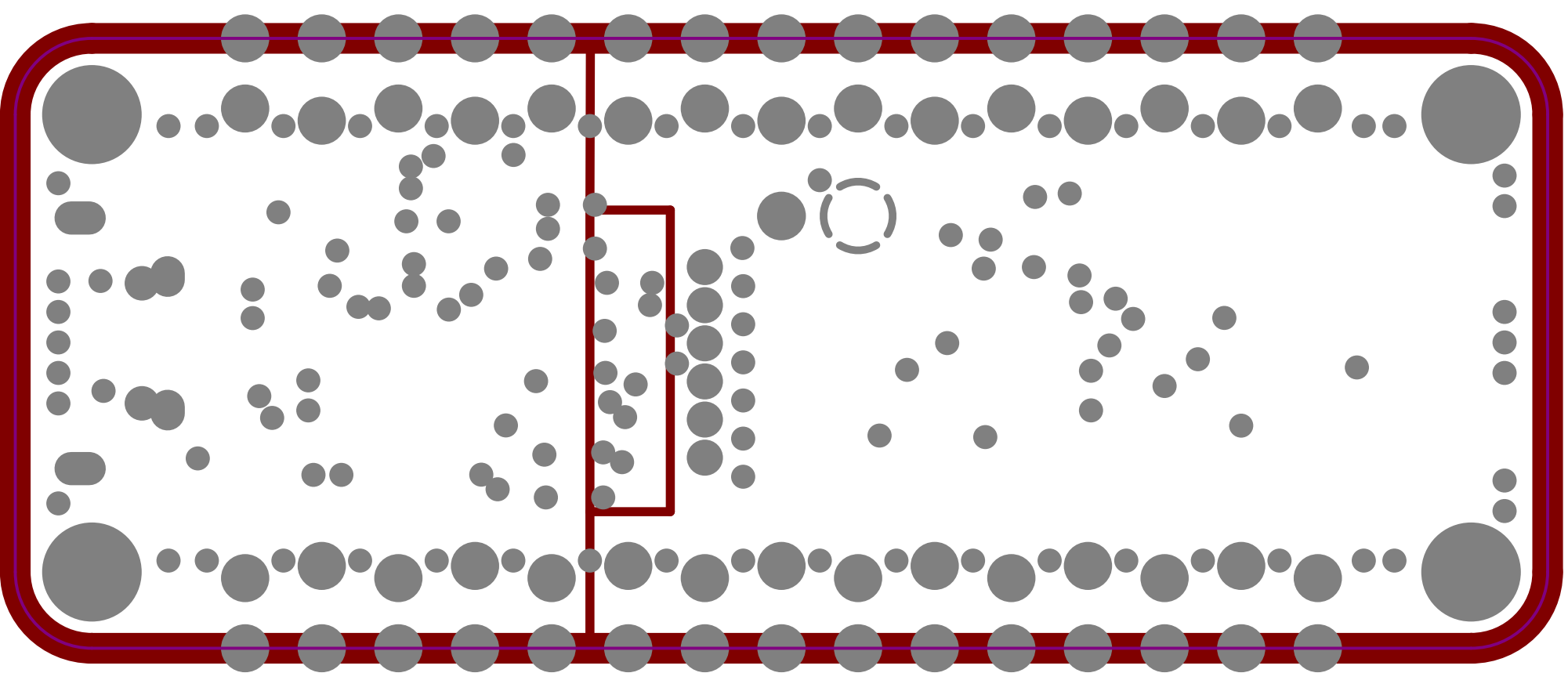

GND RB7 RB5 RC2 RC3 RA2 RA1 RA5 RA4 VTG GND D0 D3 VOFF VBUS
GND
Microchip © 2019
CONNECTIONS
LABEL1
A08-3041 Rev1
TARGET
RA3 J202 D3
RC2 J206 D2
RA1 J205 D1
RA0 J204 D0
RC0 J201 RX CDC
RC1 J203 TX
DEBUGGER
J102
TP101
TP100
GND
BOOT
CDC TX RX ID NC
GND RC7 RC6 RC4 RC5 RB6 RB4 RC1 RC0 D2 D1
GND

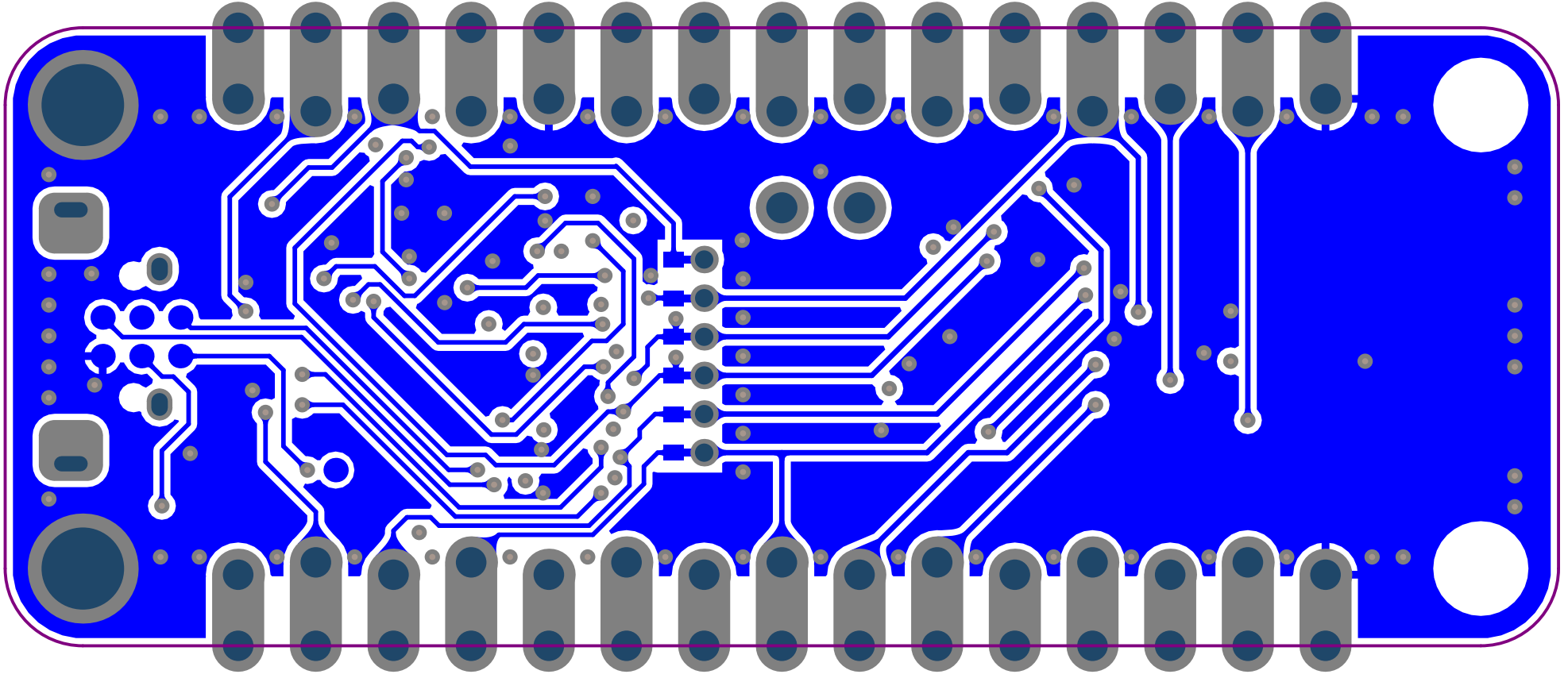

GND
RA4
RA5
RA1
RA2
RC3
RC2
RB5
RB7
GND
SW0
POWER
LED0
I2C
PIC16F15244
CURIOSITY NANO
DEBUG
PS
PIC®
MCU
RA2
PIC16F15244
RC2
GND
RC0
RC1
RB4
RB6
RC5
RC4
RC6
RC7
GND


GND RB7 RB5 RC2 RC3 RA2 RA1 RA5 RA4 VTG GND D0 D3 VOFF VBUS
GND
Microchip © 2019
A08-3041 Rev1
CONNECTIONS
TARGET
RA3 RC2 RA1 RA0 RC0 RC1
D3 D2 D1 D0 RX TX
CDC
DEBUGGER
CDC
GND
BOOT
GND RC7 RC6 RC4 RC5 RB6 RB4 RC1 RC0 D2 D1 TX RX ID NC
GND









Component list

Bill of Materials Fitted for Variant [Default Assembly] of Project [PIC16F15244_Curiosity_Nano.PrjPcb] (No PCB Document Selected)

Source Data From: PIC16F15244_Curiosity_Nano.PrjPcb
Project: PIC16F15244_Curiosity_Nano.PrjPcb
Variant: Default Assembly

Report Date: 8/7/2020 12:04 PM
Print Date: 8/7/2020 12:02:31 PM

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	4	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 firmware			nEDBG firmware
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	PIC16F15244 Curiosity Nano PCB documentation			PIC16F15244 Curiosity Nano PCB documentation
Fitted	PCBADOC1	1	A09-3317 PCBA files			PIC16F15244 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	PIC16F15244 Curiosity Nano test			Fixture test for PIC16F15244 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 Transceive, 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	PIC16F15244-VQFN20	Microchip	PIC16F15244-I/REB	PIC 8-bit RISC MCU, VQFN-20, 3mm x 3mm
Not Fitted	R206, R207	0	4.7k	Yageo	RC0402FR-074K7L	Thick film resistror, SMD 0402, 1/16W, 1%
		50				

Approved	Notes