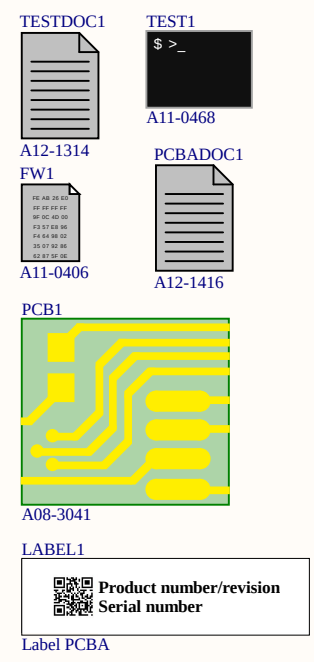
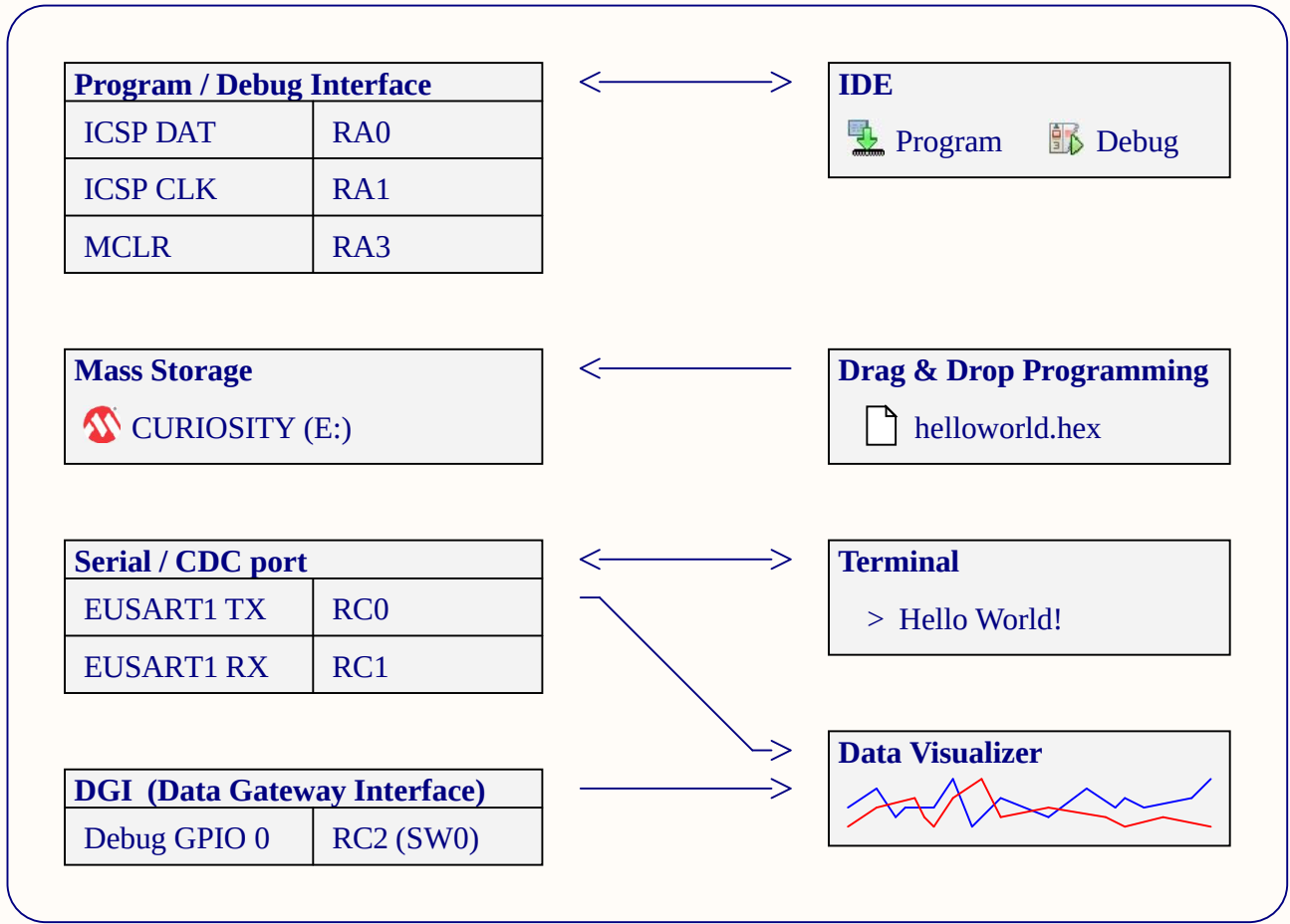
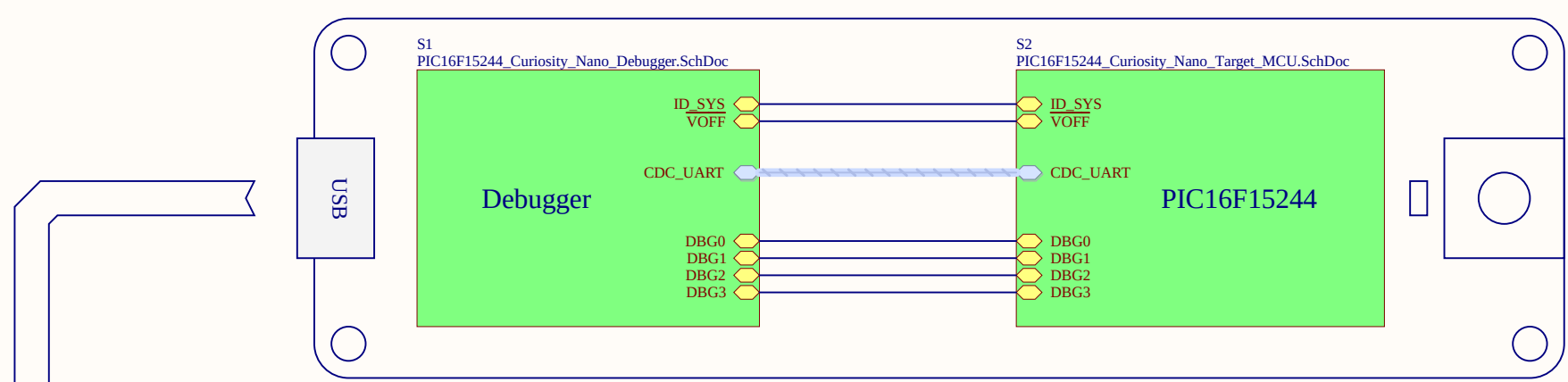


PIC16F15244 Curiosity Nano



S3
PIC16F15244_Curiosity_Nano_Revision_History.SchDoc

--	--

CC_TARGET

C200

100n

GND

U200
PIC16F15244-VQFN20

RA4 ANA4
RA5 ANA5
VDD
VSS
ICSPDAT/RA0

RA3/MCLR/VPP
RC5
RC4
RC3
RC2
PAD

RB7 ANB7
RB6 I2C_SCL
RB5 ANB5
RB4 I2C_SDA

RC1
RC0
RA2
RA1
RA0

21
GND

I2C Pull

VCC_TARGET

R06 7k R07 7k

RB4_I2C_SDA
RB6_I2C_SCL

VCC_TARGET

R06 7k

R07 7k

N.M.N.M

RB4_I2C_SDA

RB6_I2C_SCL

RESERVED	VBUS
ID	VOFF
CDC RX	DBG3
CDC TX	DBG0
DBG1	GND
DBG2	VCC
0 TX	ADC 7
1 RX	ADC 6
2 SDA	ADC 5
3 SCL	PWM 4
4 MOSI	PWM 3
5 MISO	ADC 2
6 SCK	ADC 1
7 SS	ADC 0
GND	GND

TARGET

VCC_TARGET

2

1

D200

YELLOW LED
SML-D121Y1W1R6

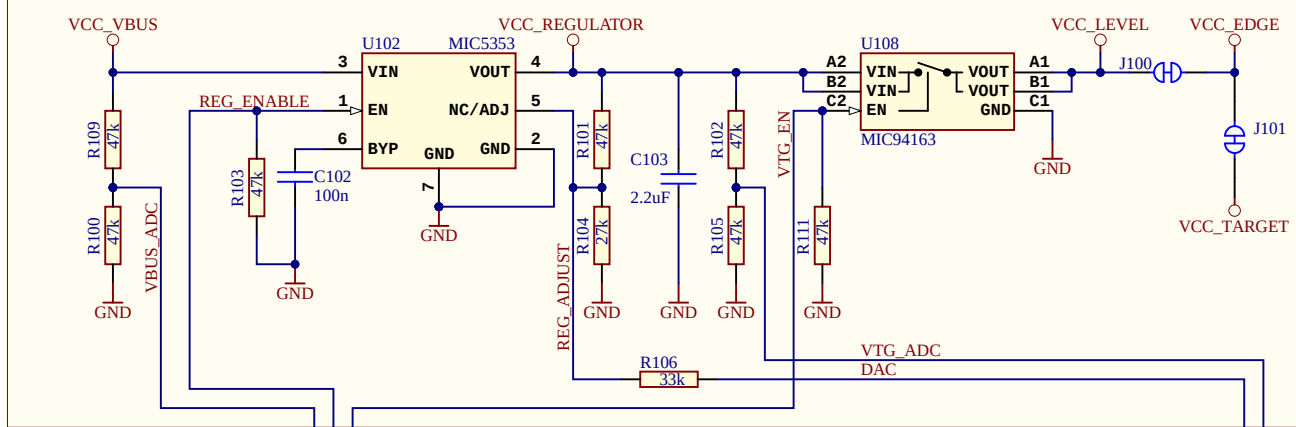
R203
1k

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

NOTE on I2C:

Drawn By: PB	 MICROCHIP		
Engineer: PB			
Project Title <i>PIC16F15244 Curiosity Nano</i>			Designed with  Altium.com
Sheet Title <i>Target MCU</i>			
Size A3	PCB Assembly Number: A09-3317 PCB Number: A08-3041	PCBA Revision: 1 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 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 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

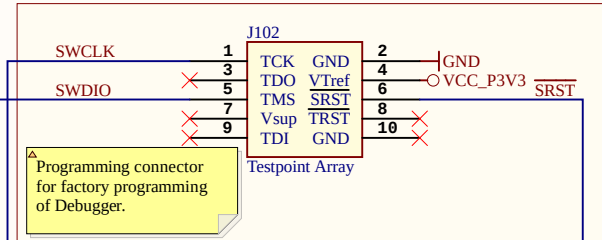
Maximum output voltage is limited by the input voltage and the dropout voltage in the regulator.
(Vmax = Vin - dropout)

Interface	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	MCLR	RESET	RESET
VCC	-	-	-

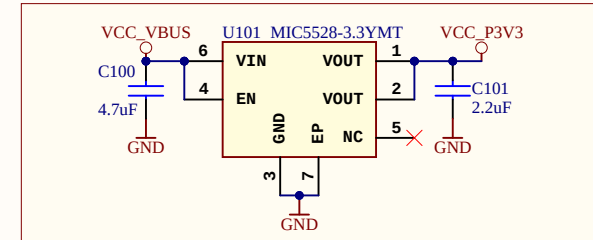
MIC5528:

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

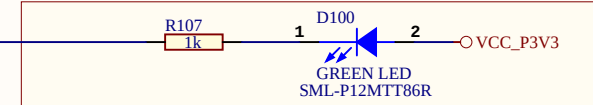
DEBUGGER TESTPOINT



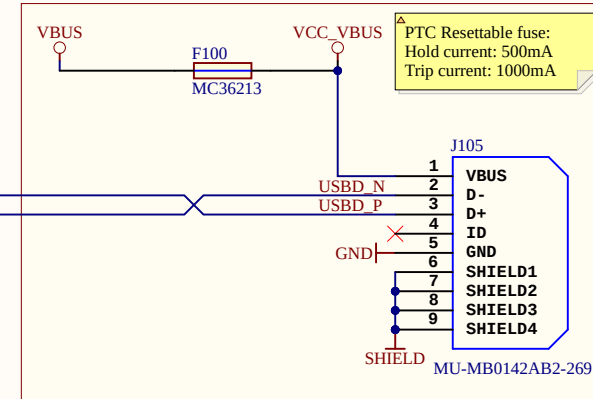
DEBUGGER REGULATOR



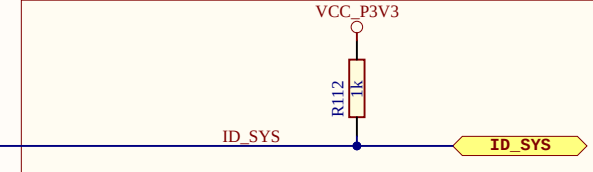
DEBUGGER POWER/STATUS LED



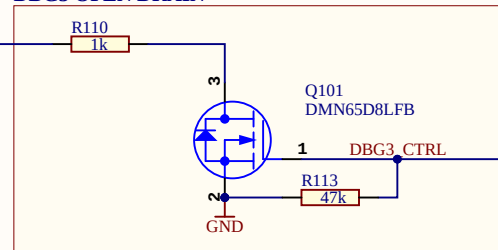
DEBUGGER USB MICRO-B CONNECTOR



ID PIN



DBG3 OPEN DRAIN



1	2	3	4	5	6	7	8	
A	Revision History PCB Assembly Rev 1: Design Changes: Initial Design PCB: PCB revision 1							A
B								B
C								C
D								D
1	2	3	4	5	6	7	8	

PCB Assembly Rev 1:

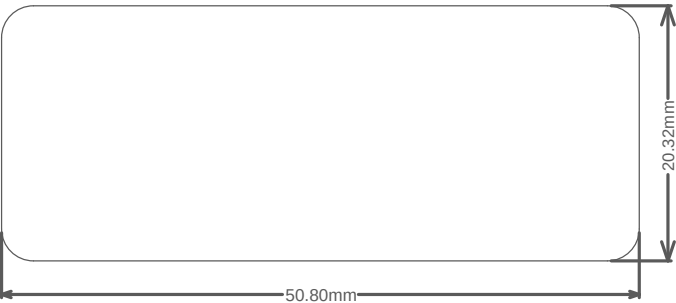
Design Changes:

Initial Design

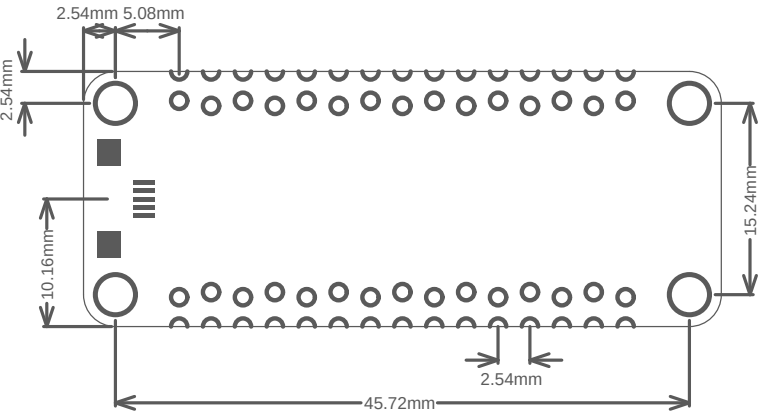
PCB:

PCB revision 1

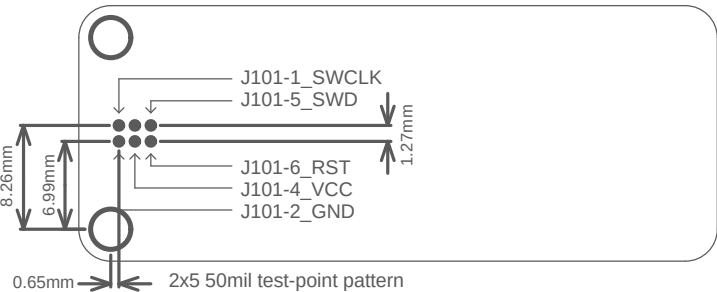
Dimensions

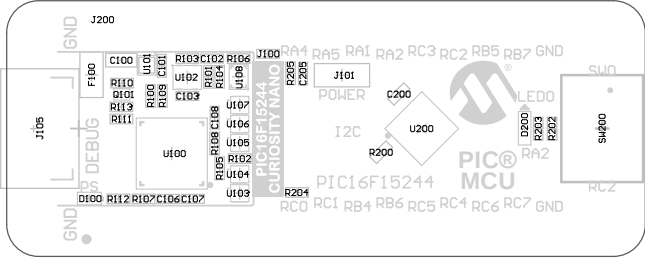


Connector Placement



Test Point Placement





GND RB7 RB5 RC2 RC3 RA2 RA1 RA5 RA4 V_{TTG} GND D0 D3 V_{OFF} VBUS

Microchip © 2019

LABEL1

A08-3041 Rev1

CONNECTIONS

RA3	J202	D3
RC2	J206	D2
RA1	J205	D1
RA0	J204	D0
RC0	J201	RX CDC
RC1	J203	TX

DEBUGGER

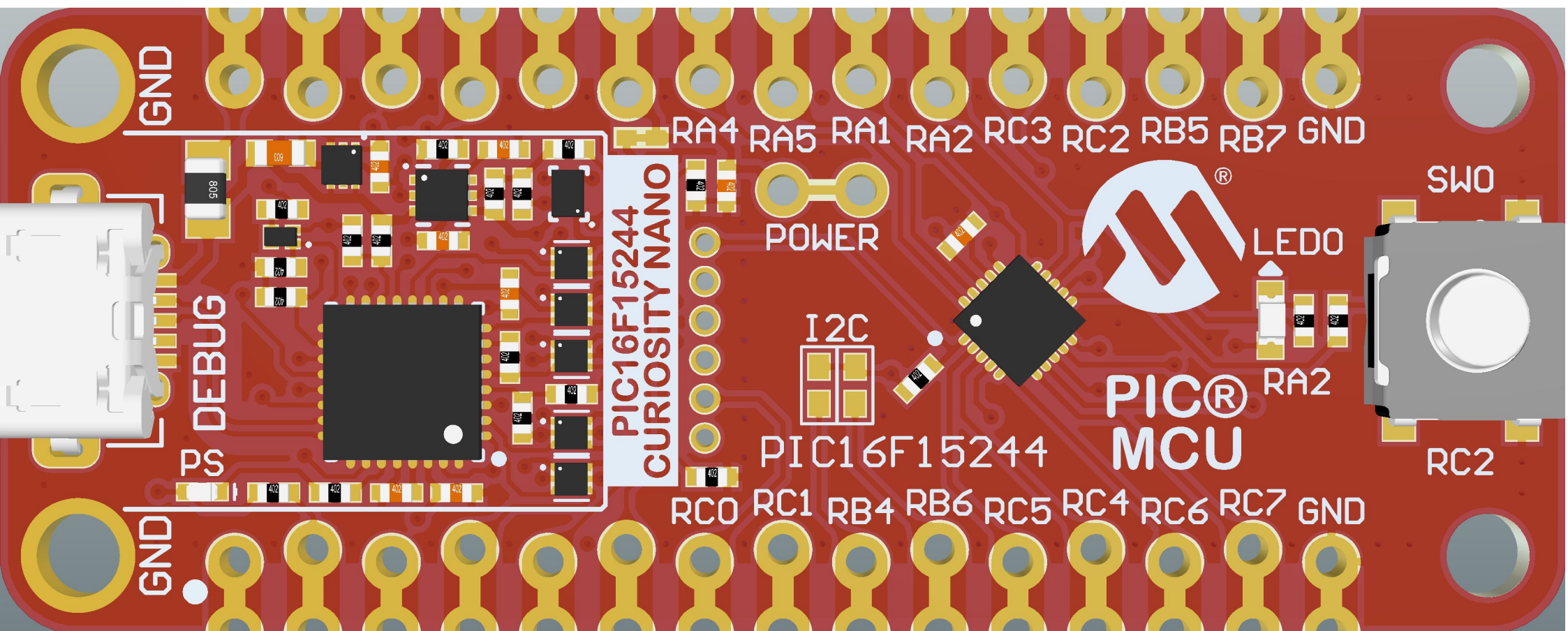


J102

TP101 GND
TP100 BOOT

GND RC7 RC6 RC4 RC5 RB6 RB4 RC1 RC0 D2 D1 TX RX ID NC

GND



GND

RA4 RA5 RA1 RA2 RC3 RC2 RB5 RB7 GND

POWER



LED0

SW0

RA2

RC2

PIC16F15244
CURIOSITY NANO



PIC16F15244

PIC®
MCU

RC0 RC1 RB4 RB6 RC5 RC4 RC6 RC7 GND

GND

PS
DEBUG

Microchip © 2019

A08-3041 Rev1

GND RB7 RB5 RC2 RC3 RA2 RA1 RA5 RA4 V_{TT} GND D0 D3 V_{OFF} UBUS

TARGET

RA3		D3	
RC2		D2	
RA1		D1	
RA0		D0	
RC0		RX	CDC
RC1		TX	

DEBUGGER

CDC

TX

RX

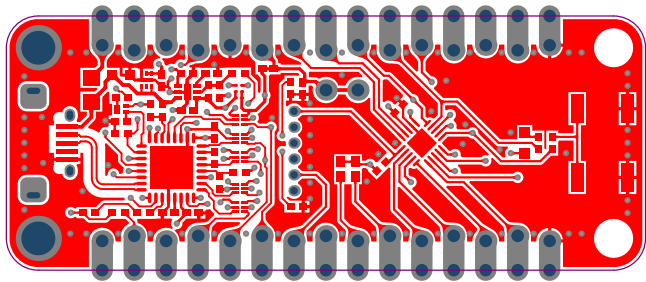
GND
BOOT

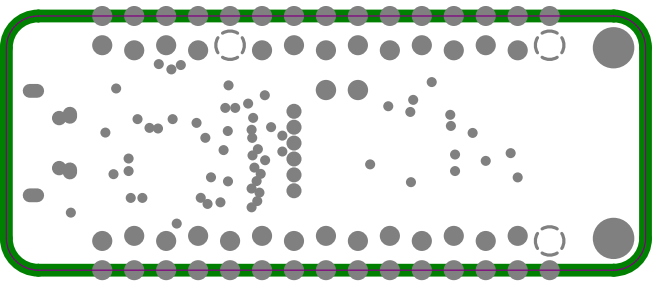
ID

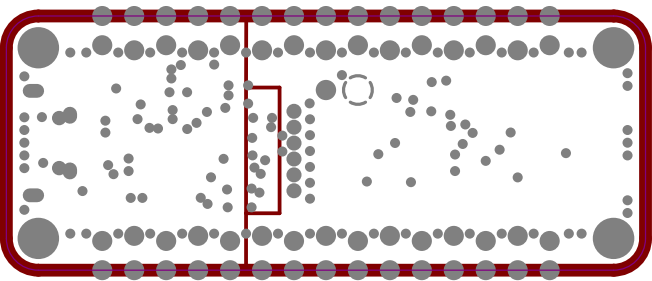
NC

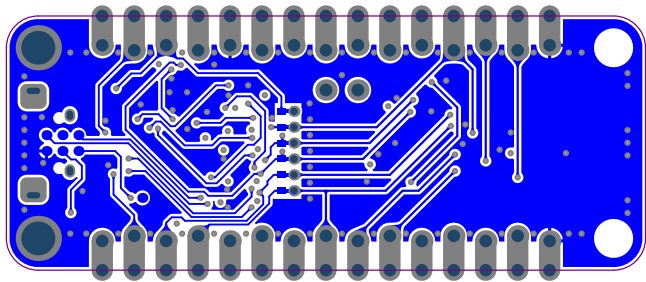
GND

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 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	PIC16F15244 Curiosity Nano PCB documentation			PIC16F15244 Curiosity Nano PCB documentation
Fitted	PCBDOC1	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-T5	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	PIC16F15244-VQFN20	Microchip	PIC16F15244-VREB	PIC 8-bit RISC MCU, VQFN-20, 3mm x 3mm
Not Fitted	R206, R207	0	4.7k	Yageo	RC0402FR-074K7L	Thick film resistor, SMD 0402, 1/16W, 1%

Approved	50	Notes