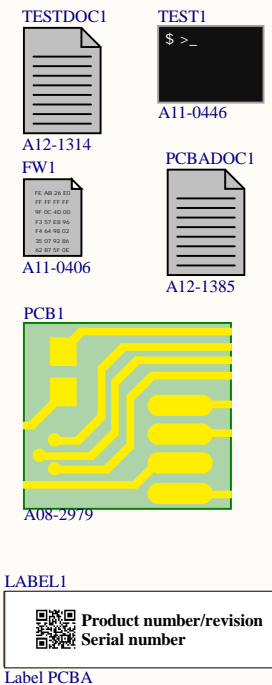
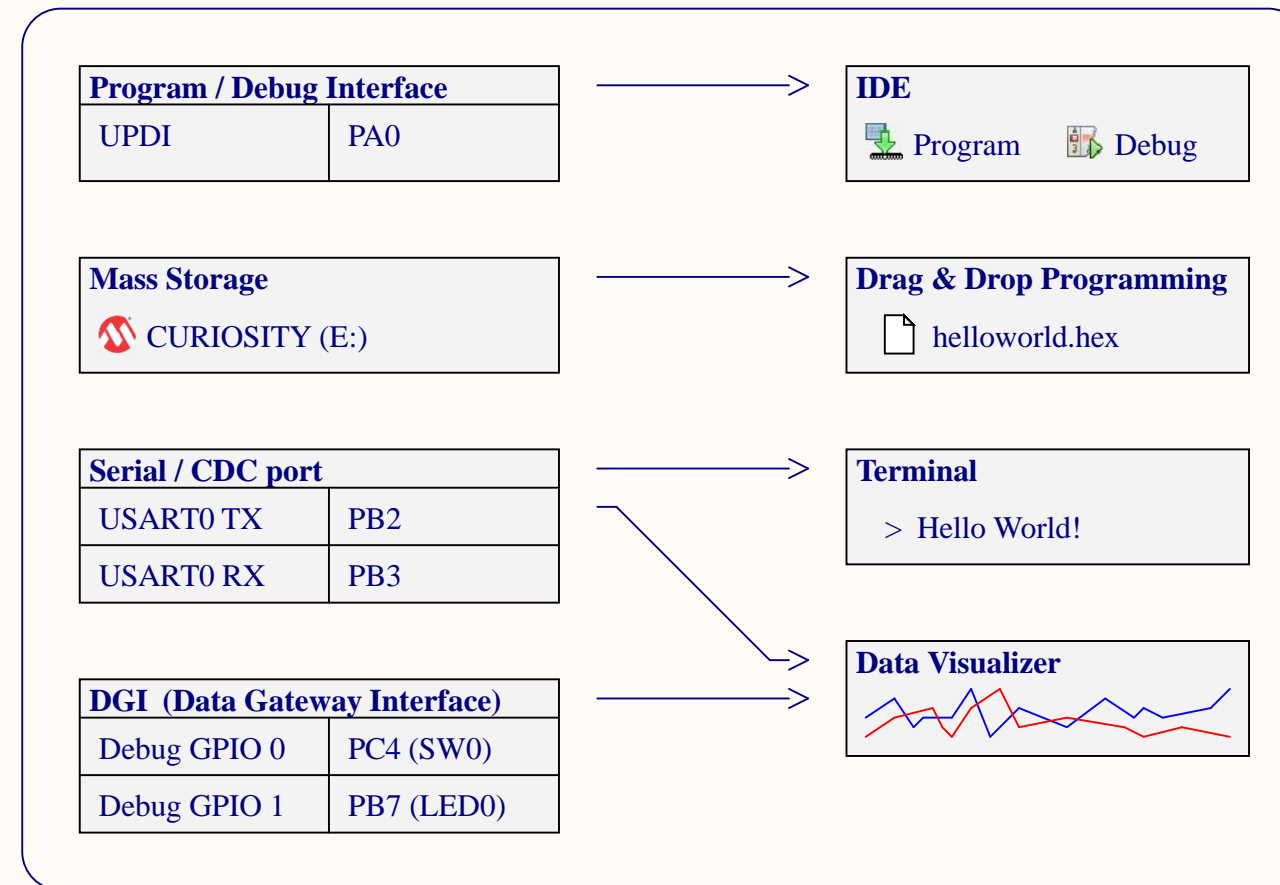
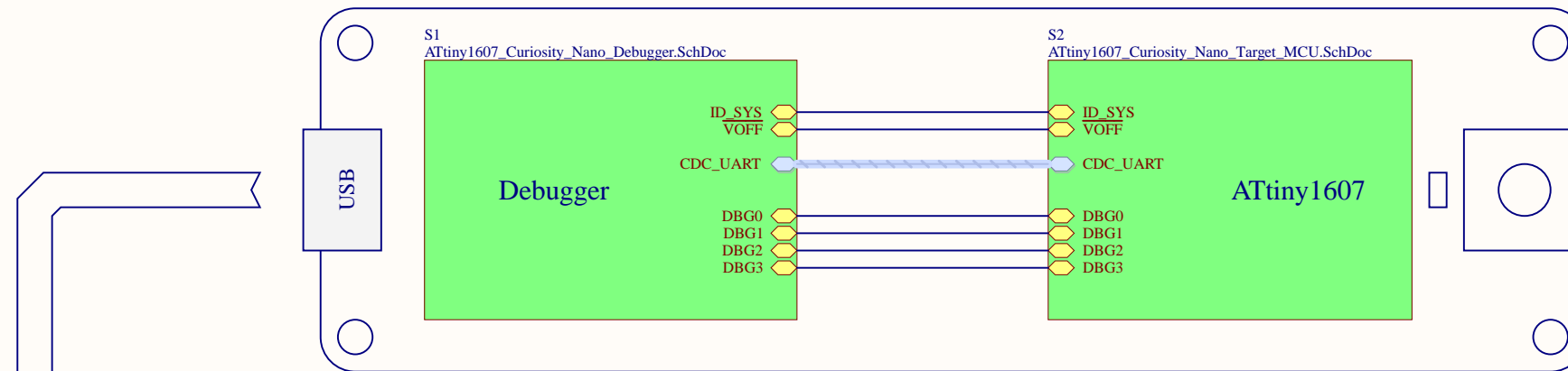




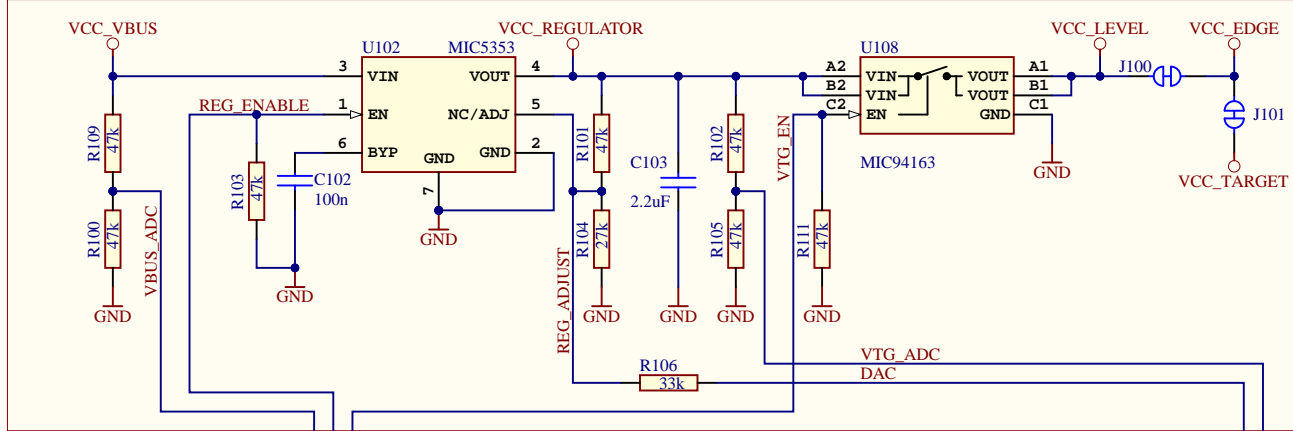
ATtiny1607 Curiosity Nano



S3
ATtiny1607_Curiosity_Nano_Revision_History.SchDoc

Drawn By: Microchip Norway		
Engineer: ML, TF		
Project Title ATtiny1607 Curiosity Nano	Designed with  Altium.com	
Sheet Title Top Level		
Size A3	PCB Assembly Number: A09-3252	PCBA Revision: 2
	PCB Number: A08-2979	PCB Revision: 2
File: ATtiny1607_Curiosity_Nano_TopLevel.SchDoc		Date: 23.10.2020 Page: 1 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 voltage 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.

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.

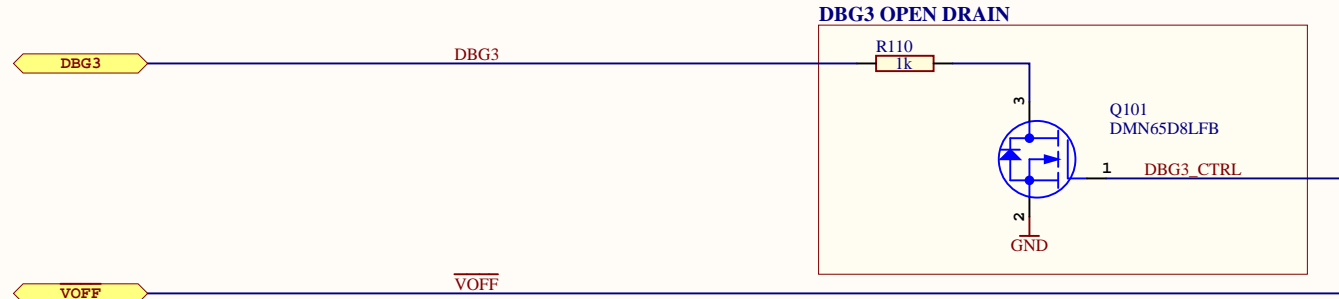
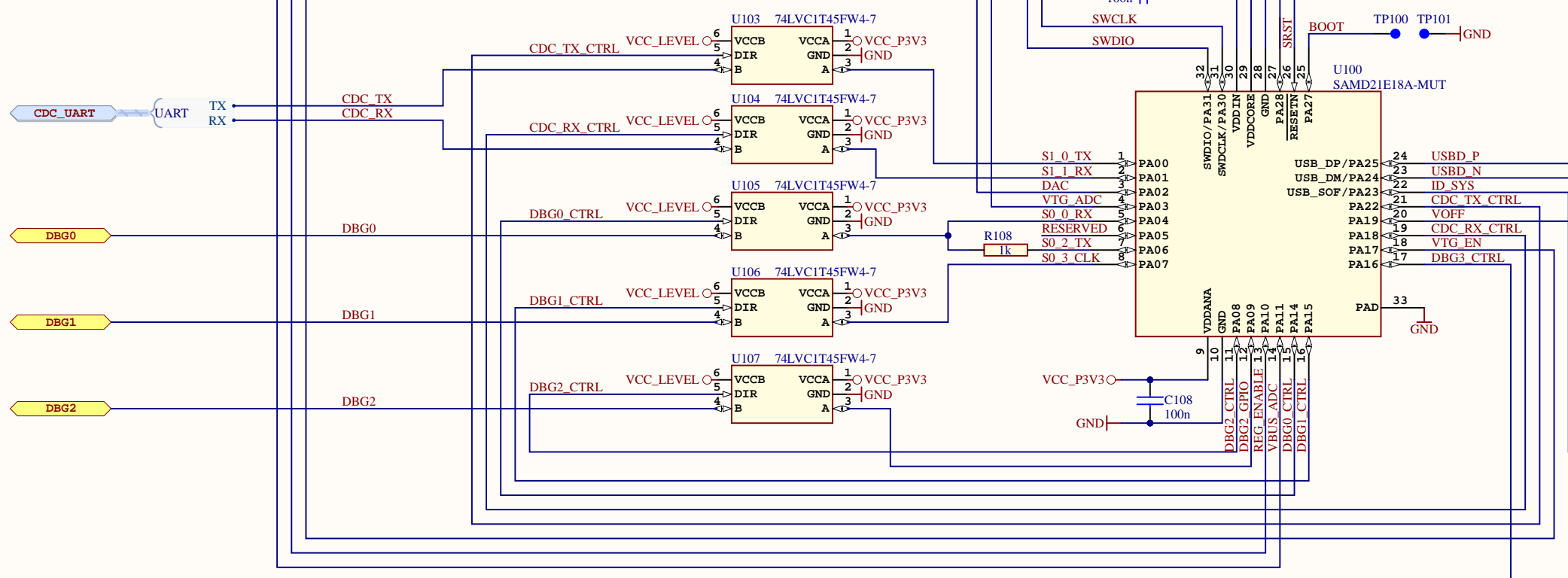
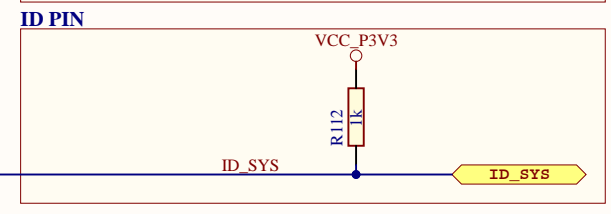
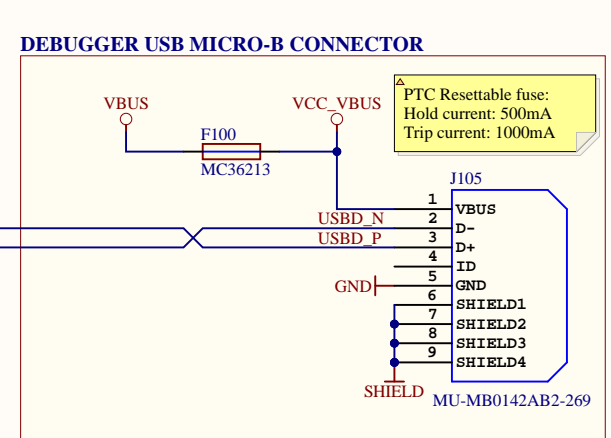
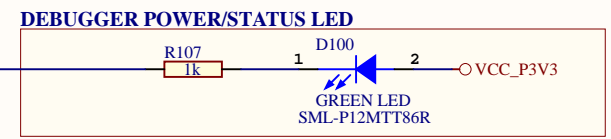
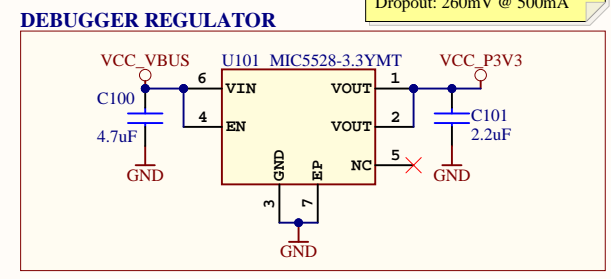
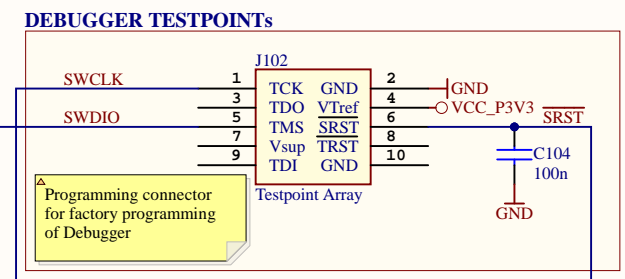
J101:
This is footprint for a 1x2 100mil pitch pin-header that can be used for easy current measurement to the target microcontroller and the LED / Button. To use the footprint:
- Cut the track between the holes, and mount a pin-header

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
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



Drawn By: Microchip Norway		Altium Altium.com
Engineer: TF, HN		
Project Title ATtiny1607 Curiosity Nano	Designed with	
Sheet Title Debugger	Altium.com	
Size A3	PCB Assembly Number: A09-3252	PCBA Revision: 2
	PCB Number: A08-2979	PCB Revision: 2
File: ATtiny1607_Curiosity_Nano_Debugger.SchDoc	Date: 23.10.2020	Page: 3 of 4

Revision History

PCB Assembly Rev 1:



Design Changes:
Initial Design

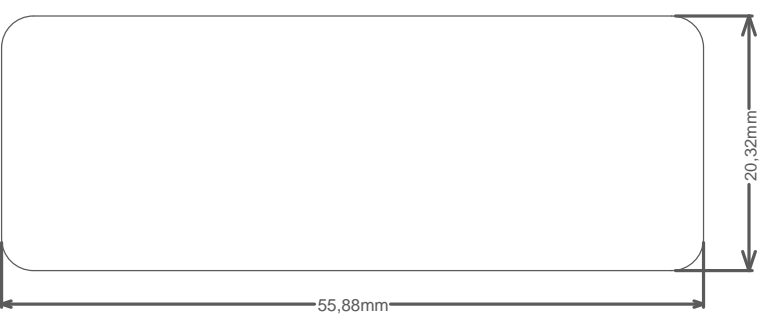
PCB:
PCB revision 1

PCB Assembly Rev 2:

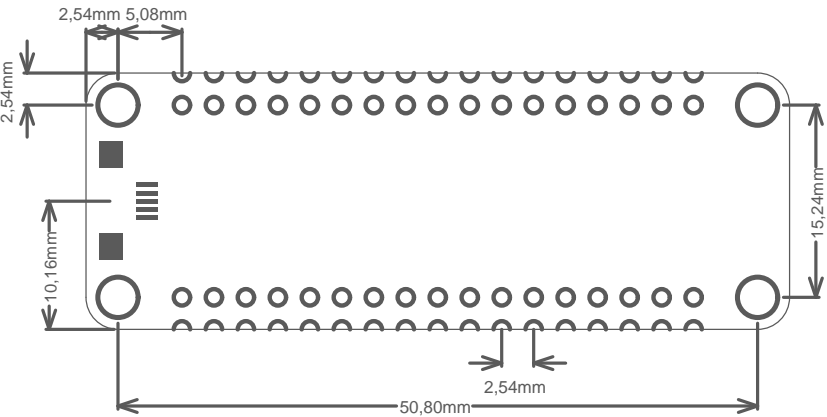
Design Changes:
Added solderstrap jumper with holes between edge connector power (VCC) and VCC_TARGET.

PCB:
PCB Revision 2
Updated J200 (edge pin header connector) with staggered footprint, and adjusted traks, polygons, teardrops, and text accordingly.

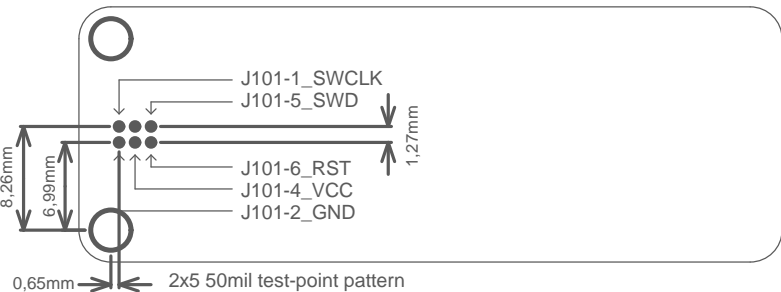
Drawn By: Microchip Norway			
Engineer: ML, TF			
Project Title ATiny1607 Curiosity Nano	 Designed with Altium Altium.com		
Sheet Title Revision History			
Size A3	PCB Assembly Number: A09-3252	PCBA Revision: 2	Date: 23.10.2020 Page: 4 of 4
	PCB Number: A08-2979	PCB Revision: 2	
File: ATiny1607_Curiosity_Nano_Revision_History.SchDoc			

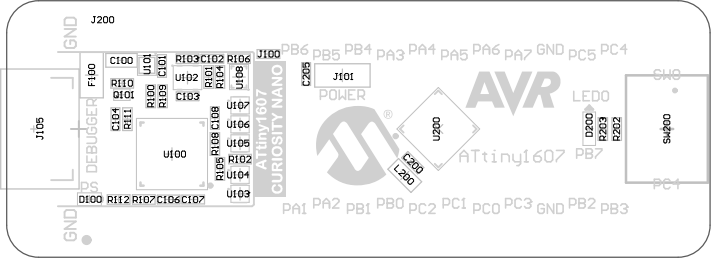


Connector Placement



Test Point Placement





J105

GND

J200

F100

PS/2 DEBUGGER

C100

R110

R101

C104

R111

U101

C101

R100

R109

R103

U102

C103

R108

C108

U103

C107

R112

R107

C106

C102

R101

R104

U107

U106

U105

R105

R102

U104

U108

R106

U108

U107

U106

U105

R102

U104

U103

J100

Attiny1607
CURIOSITY NANO

PB6

PB5

PB4

PA3

PA4

PA5

PA6

PA7

GND

PC5

PC4

C205

J101

POWER



C200
L200



U200

AVR

Attiny1607

LEDO

D200

R203

R202

PB7



SW200

PA1

PA2

PB1

PB0

PC2

PC1

PC0

PC3

GND

PB2

PB3

PC4 PC5 GND PA7 PA6 PA5 PA4 PA3 PB4 PB5 PB6 UTG GND DO D3 UOFF UBUS

A08-2979 Rev2
Microchip © 2019

LABEL1

PB3 PB2 GND PC3 PC0 PC1 PC2 PB0 PB1 PA2 PA1 D2 D1 TX CDC RX ID NC



TARGET

PA0	J202	D3	DEB BUGGER
PC4	J206	D2	
PB7	J205	D1	
PA0	J204	DO	
PB2	J201	RX	
PB3	J203	TX	

CDC



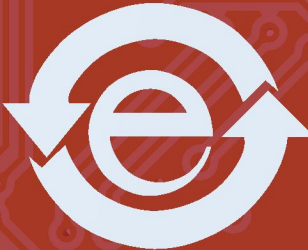
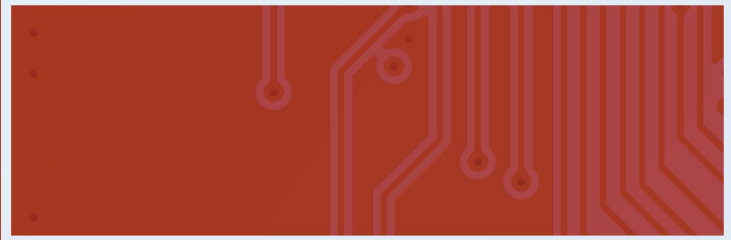
TP101 GND
TP100 BOOT

GND

J102

GND

A08-2979 Rev2
Microchip © 2019



TARGET

PA0	○	D3
PC4	○	D2
PB7	○	D1
PA0	○	D0
PB2	○	RX
PB3	○	TX

DEBUGGER

CDC



CDC

- GND
- BOOT

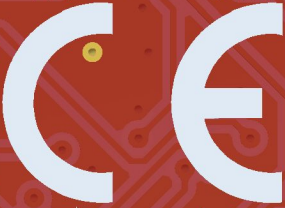
PC4 PC5 GND PA7 PA6 PA5 PA4 PA3 PB4 PB5 PB6 V_{TTG} GND D0 D3 V_{OFF} UBUS

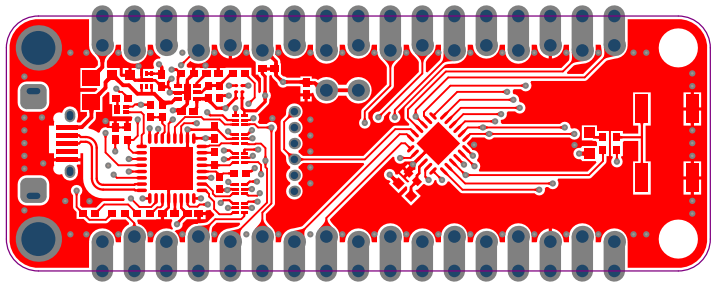
PB3 PB2 GND PC3 PC0 PC1 PC2 PB0 PB1 PA2 PA1 D2 D1 TX RX ID NC

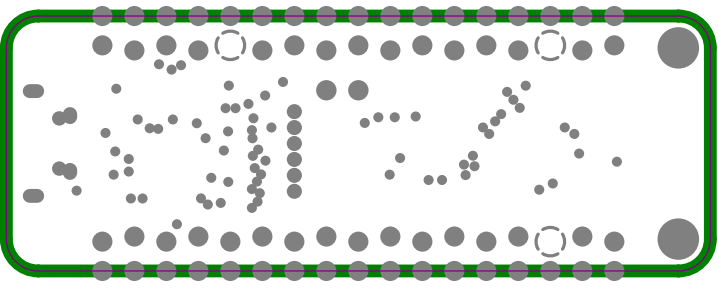
GND

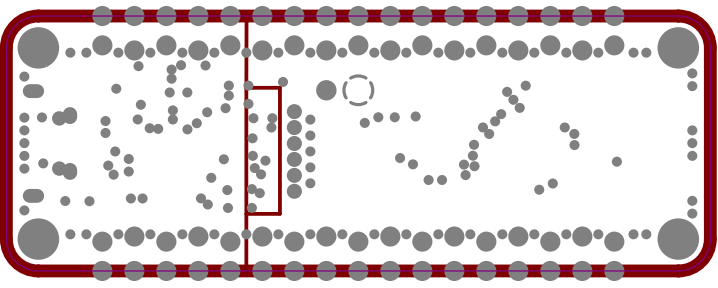
GND

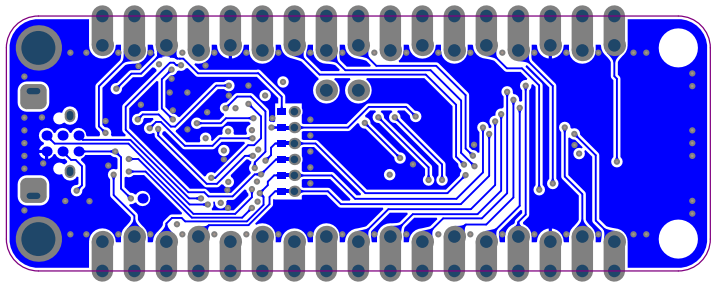
CONNECTIONS











Component list

Bill of Materials Fitted for Variant [Default Assembly] of Project [ATtiny1607_Curiosity_Nano.PrjPcb] (No PCB Document Selected)

Source Data From: ATtiny1607_Curiosity_Nano.PrjPcb
 Project: ATtiny1607_Curiosity_Nano.PrjPcb
 Variant: Default Assembly



Report Date: 23.10.2020 12:18
 Print Date: 23.10.2020 12:18:17

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, C104, C107, C108, C200	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	Resettable 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	L200	1	BLM18PG471SN1	Murata	BLM18PG471SN1	SMD RF inductor 0603. Z=470Ohm (@100MHz), Max R(dc)=0.65Ohm, Max current=1A
Fitted	LABEL1	1	Label PCBA	ACT Logimark AS	505462	PCBA identification label PP Top White Gloss
Fitted	PCB1	1	ATtiny1607 Curiosity Nano PCB documentation			ATtiny1607 Curiosity Nano PCB documentation
Fitted	PCBADOC1	1	A09-3252 PCBA Files			ATtiny1607 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	7	47k	KOA	RK73H1ETT4702F	Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	R104	1	27k	YAGEO CORP	RC0402FR-0727KL	Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	R106	1	33k	ASJ	CR10-3302-FK	Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	R107, R108, R110, R112, R202, R203	6	1k	ASJ	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	ATtiny1607 Curiosity Nano Test			Fixture Test for ATtiny1607 Curiosity Nano
Fitted	TESTDOC1	1	Curiosity Nano Test Instructions			Generic Test Instructions for Curiosity Nano
Fitted	U100	1	SAMD21E18A-MUT	Microchip	ATSAMD21E18A-MUT	Atmel 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, 1.6x1.6mmMLF
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 Technology Inc	MIC94163YCS-TR	Loadswitch, Rds(on) = 14.5mohm, 1.0mm x 1.5mm WLCSP, reverse blocking
Fitted	U200	1	ATtiny1607-MNR	MICROCHIP	ATtiny1607-MNR	ATtiny1607, VQFN24 package with exposed pad, 4mm x 4mm, 0.5mm pitch
		48				

Approved

Notes