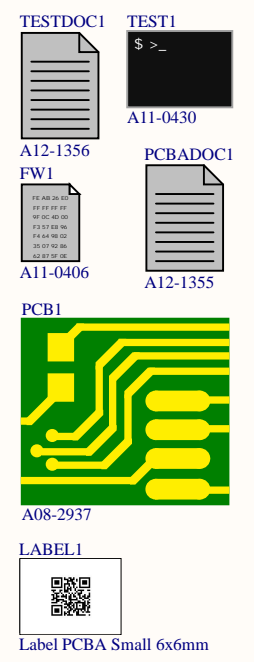
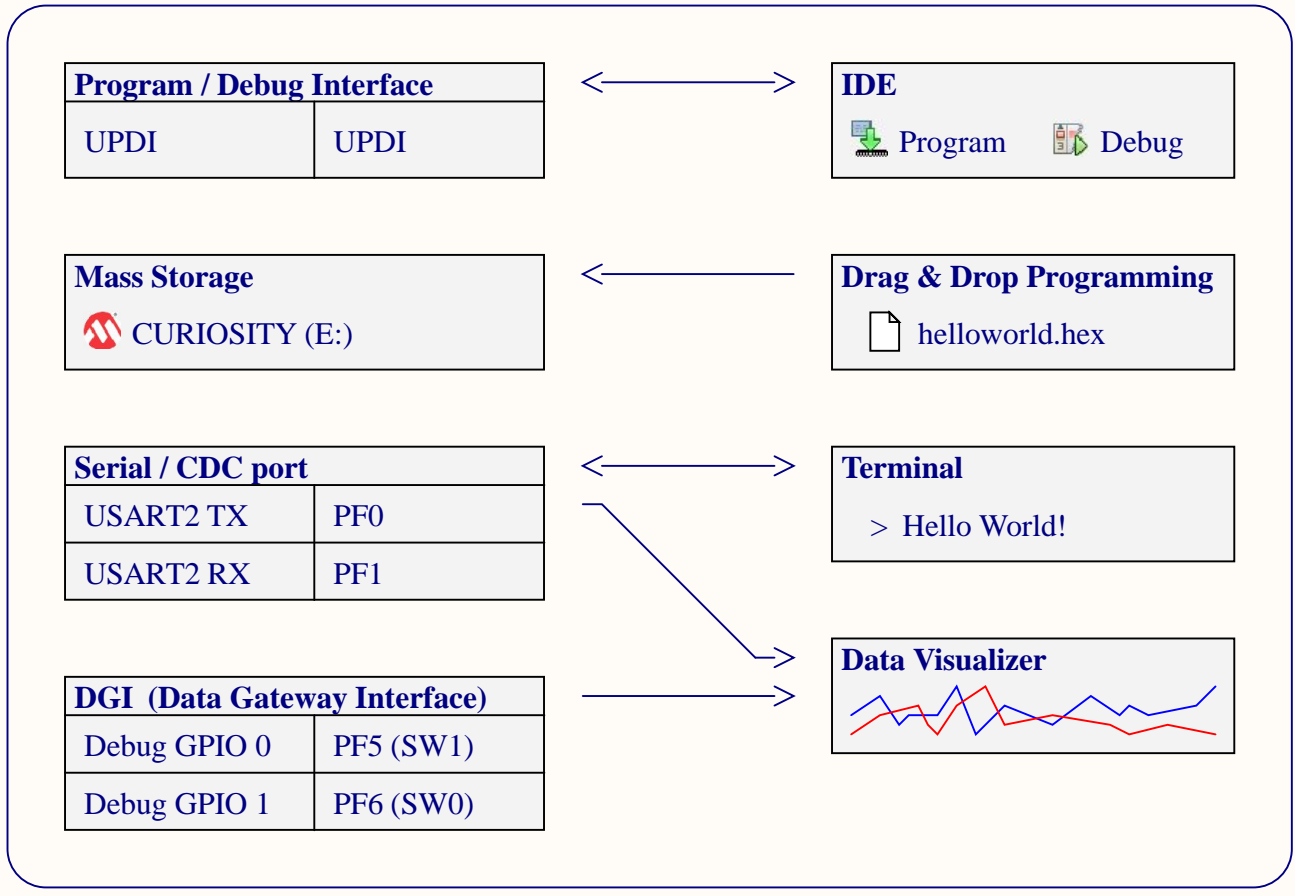
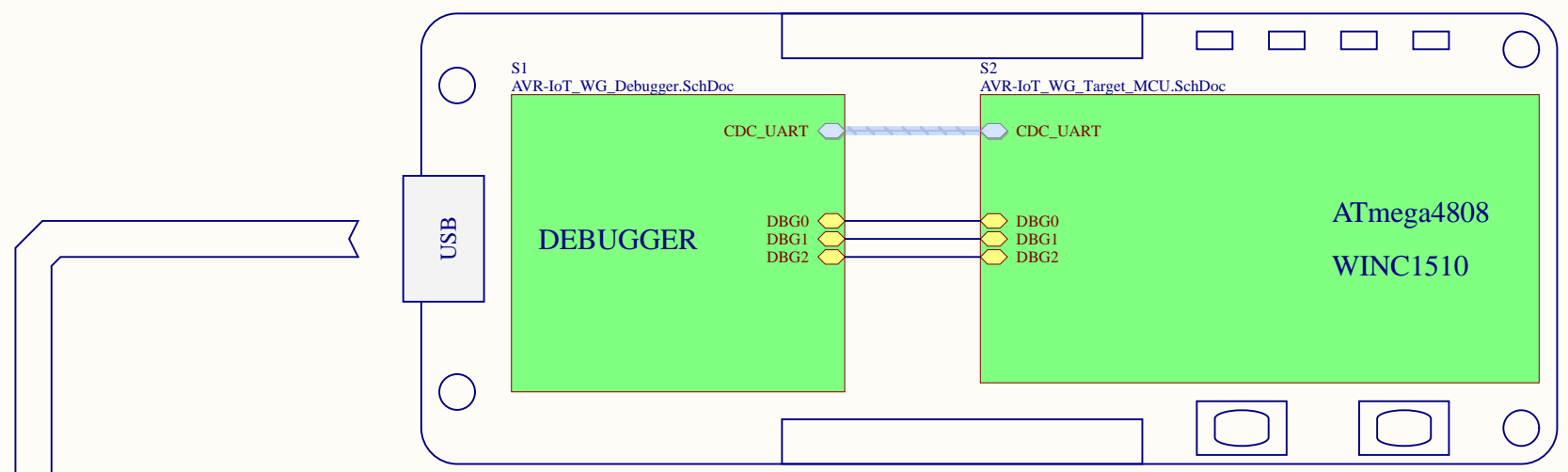
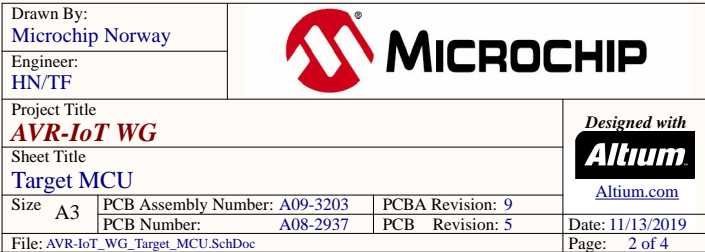


AVR-IoT WG



S3
AVR-IoT_WG_Revision_History.SchDoc



The schematic shows a custom PCB layout with the following components and connections:

- U101: MCP73871**
 - IN (18) connected to VBUS.
 - VPCC (2) connected to VBUS.
 - PG (6) connected to VBUS.
 - STAT2 (7) connected to VBUS.
 - STAT1/LBO (8) connected to VBUS.
 - SEL (3) connected to GND.
 - PROG2 (4) connected to VBUS.
 - TE (9) connected to GND.
 - CE (17) connected to VBUS.
 - OUT (1) connected to VCC_MUX.
 - VBAT (16) connected to VCC_BAT.
 - VBAT (15) connected to VCC_BAT.
 - VBAT (14) connected to VCC_BAT.
 - THERM (5) connected to GND.
 - PROG1 (13) connected to GND.
 - PROG3 (12) connected to GND.
 - EP (21) connected to GND.
 - VSS (10) connected to GND.
 - VSS (11) connected to GND.
- U102: MIC33050-SYHL**
 - VIN (1) connected to VCC_MUX.
 - EN (9) connected to VCC_MUX.
 - SW (3) connected to GND.
 - SW (4) connected to GND.
 - SW (5) connected to GND.
 - SW (6) connected to GND.
 - FB/CFF (11) connected to GND.
 - PGND (2) connected to GND.
 - EP (13) connected to GND.
 - AGND (12) connected to GND.
 - VOUT (7) connected to VCC_TARGET.
 - VOUT (8) connected to VCC_TARGET.
 - SNS (10) connected to VCC_TARGET.
- Other Components**
 - C100:** 4.7uF capacitor on VBUS.
 - C101:** 4.7uF capacitor on VCC_MUX.
 - C102:** 560pF capacitor on the feedback network of U102.
 - C103:** 10uF capacitor on VCC_TARGET.
 - C104:** 4.7uF capacitor on the Li-Po/Li-Ion Battery (J101).
 - R100:** 100k resistor on VCC_MUX.
 - R101:** 1k resistor on VBUS.
 - R102:** 1k resistor on VBUS.
 - R103:** 10k resistor on VCC_BAT.
 - R104:** 10k resistor on VCC_BAT.
 - R105:** 100k resistor on VCC_BAT.
 - J100:** VCC_TARGET connector.
 - J104:** VCC_DEBUGGER connector.
 - J101:** Li-Po/Li-Ion Battery connector.

Notes:

- MIC33050:**
 - Vin: 2.5V to 5.5V
 - Vout: Fixed 3.3V
 - Imax: 600mA

SWCLK

SWDIO

J102

1 TCK

2 GND

3 TDO

4 V_{Tref}

5 TMS

6 SRST

7 V_{sup}

8 TRST

9 TDI

10 GND

Testpoint Array

GND

VCC_DEBUGGER

C105

100n

GND

SWDIO

AVR programming connector for factory programming of Debugger

Pinout diagram for the USB connector of the MU-MB0142AB2-269 module. The diagram shows a 9-pin connector with the following connections:

- Pin 1: VBUS
- Pin 2: USB D-
- Pin 3: USB D+
- Pin 4: USB ID
- Pin 5: GND
- Pin 6: GND
- Pin 7: SHIELD1
- Pin 8: SHIELD2
- Pin 9: SHIELD3
- Pin 9: SHIELD4

The diagram includes a legend for the pin numbers and a note indicating that the module is a USB 2.0 device.

<i>Interface</i> <i>Signal</i>	UPDI TARGET
CDC TX	UART RX
CDC RX	UART TX
DBG0	UPDI
DBG1	GPIO
DBG2	GPIO
DBG3	-
VCC	-

Revision History

PCB Assembly Rev 5:

Design Changes:

Initial Design

PCB:

PCB revision 3

PCB Assembly Rev 6:

Design Changes:

Not mount charger circuit.

PCB:

PCB revision 3

PCB Assembly Rev 7:

Design Changes:

Change input limit to 500mA on MCP73871 (U101)

PCB:

PCB revision 4

PCB Assembly Rev 8:

Design Changes:

Changed U200 (new firmware):
from ATWINC1510-MR210PB1954
to ATWINC1510-MR210PB1961

PCB:

PCB revision 4

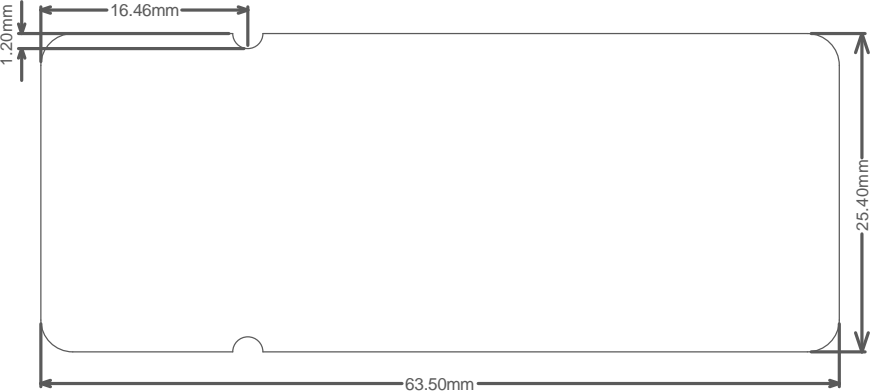
PCB Assembly Rev 9:

Design Changes:

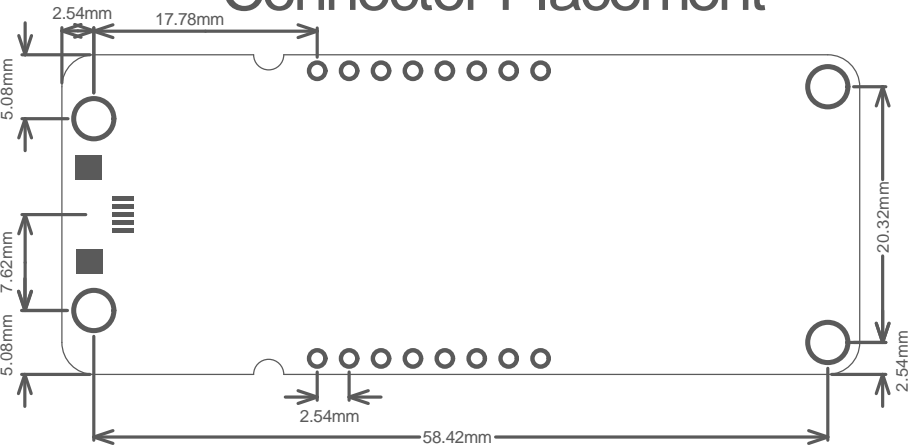
Renamed nEDBG to Debugger in schematics
Mounted R204 to connect +5V to mikroBUS connector
Mounted sockets J201 and J202 (mikroBUS connector)

PCB:

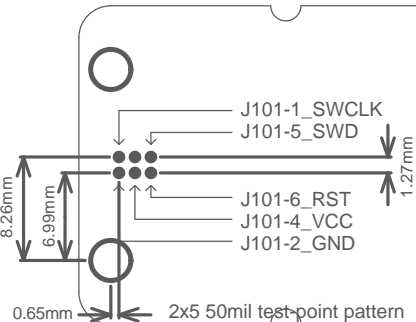
PCB revision 5

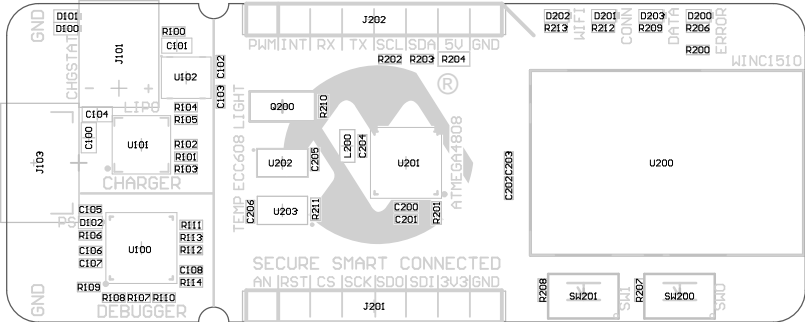


Connector Placement



Test Point Placement





GND

BOOT

GND

TP100

J102

LIPO
BATT



UCC
TARGET NEDBG

001r 401r

PCBA
LABEL



PD4 / PWM
PD6 / INT
PC1 / RX
PC0 / TX
PA3 / SCL
PA2 / SDA

AN / PD7
RST / PA0
CS / PC3
SCK / PA6
MISO / PA5
MOSI / PA4

+5V

+3.3V

GND

GND

mikro
BUS

AVR-101

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A08-2937 Rev5

TP209 TP207 TP208

⊖RX
⊖TX
⊖GND

TP200 TP201 TP202 TP206 TP205 TP204 TP203

⊖SDA

⊖SCL

⊖GP6

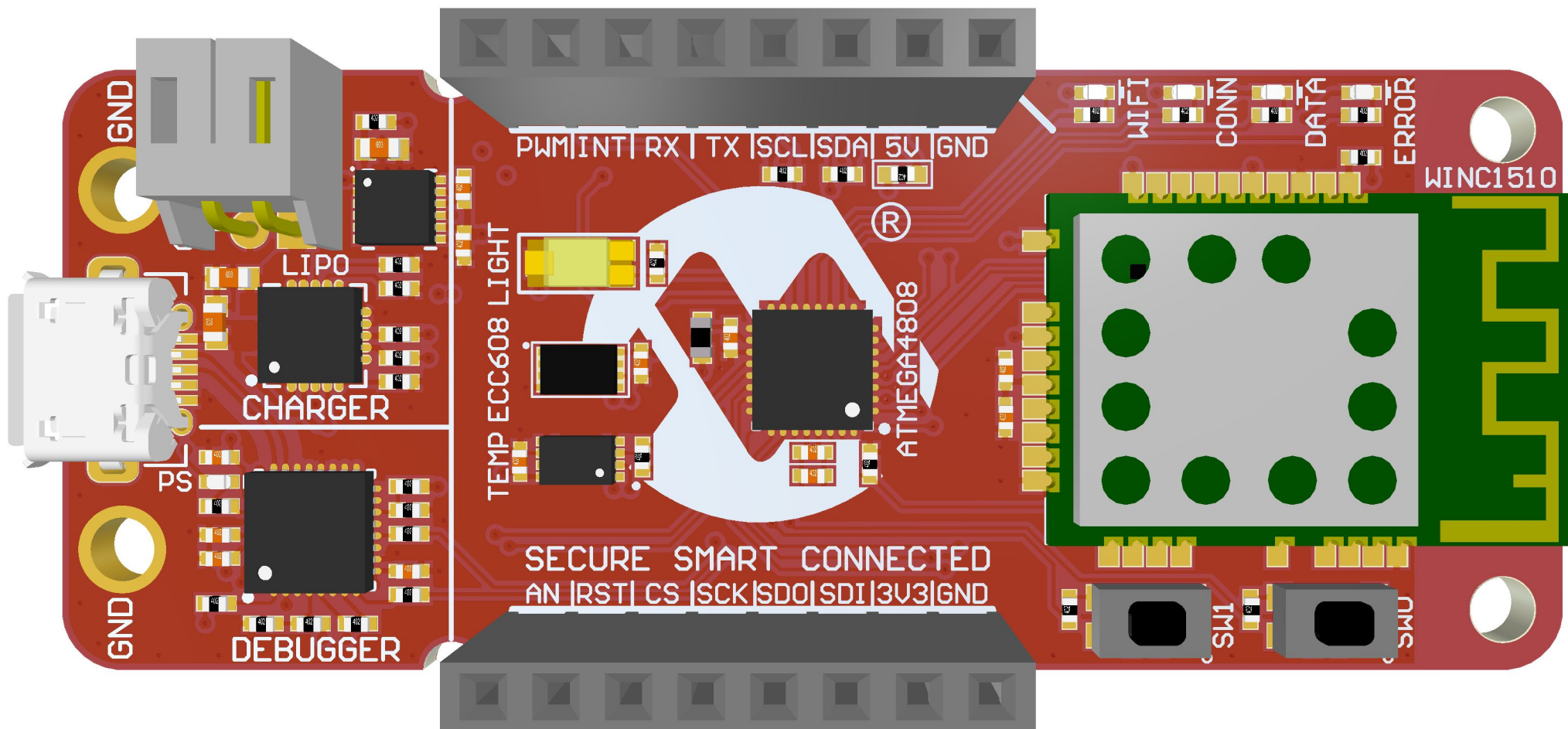
⊖GP5

⊖GP4

⊖GP3

⊖GP1





GND

BOOT

GND

L1P0
BATT



UCC

TARGET neDBG



PCBA
LABEL



PD4 / PWM

AN / PD7

PD6 / INT

RST / PA0

PC1 / RX

CS / PC3

PC0 / TX

SCK / PA6

PA3 / SCL

MISO / PA5

PA2 / SDA

MOSI / PA4

+5V

+3.3V

GND



mikro
BUS

GND

Microchip © 2019

A08-2937 Rev5



RX

GP1

TX

GP3

GND

GP4

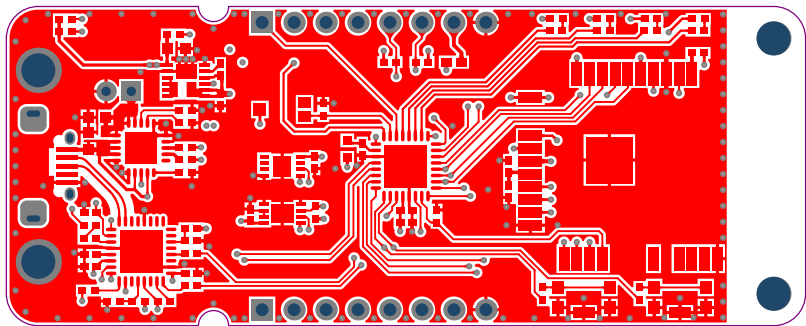
GP5

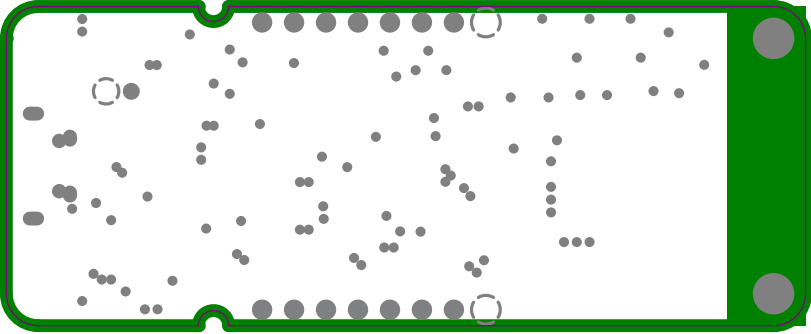
GP6

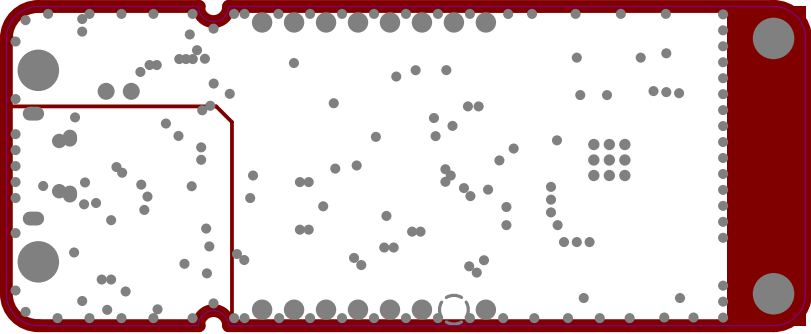
SCL

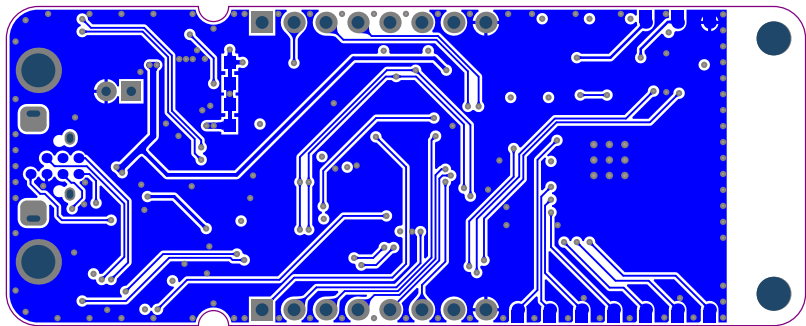
SDA











Component list

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

Source Data From: AVR-IoT_WG.PrjPcb
 Project: AVR-IoT_WG.PrjPcb
 Variant: Default Assembly



Report Date: 11/13/2019 12:14 PM
 Print Date: 11/13/2019 12:13:25 PM

Fitted	Designator	Quantity	Value	Manufacturer	MPN	Description
Fitted	C100, C101, C104	3	4.7uF	WALSIN Technology Corporation	0603X475K100CT	Ceramic capacitor, SMD 0603, X5R, 10V, 10% (de31036)
Fitted	C102	1	560p			Ceramic capacitor, SMD 0402, X7R, 50V, +/-10%
Fitted	C103, C203	2	10uF	Murata	GRM155R60J106ME15	Ceramic capacitor, SMD 0402, X5R, 6.3V, 20%
Fitted	C105, C107, C108, C200, C204, C205, C206	7	100n	Kemet	C0402C104K4RACTU	Ceramic capacitor, SMD 0402, X7R, 16V, +/-10%
Fitted	C106	1	1u	Kemet	C0402C105K9PAC	Ceramic capacitor, SMD 0402, X5R, 6.3V, +/-10% (de26942)
Fitted	C201	1	2.2uF	TDK	C1005X5R1A225K	CAP CER 2.2UF 10V 10% X5R 0402
Fitted	C202	1	10nF	Murata	GRM155R71E103KA01D	Ceramic capacitor, SMD 0402, X7R, 25V, 10%
Fitted	D100, D102, D201	3	GREEN LED	ROHM	SML-P12MTT86R	LED, SMD 0402, Green, Wave length=569nm, 2.1mcd @ (1mA, 1.9Vf)rohm
Fitted	D101, D200	2	RED LED	ROHM	SML-P12VTT86R	LED, SMD 0402, Red, Wave length=630nm, 2.1mcd @ (1mA, 1.7Vf)rohm
Fitted	D202	1	BLUE LED	ROHM	SMLP13BC8TT86	LED, SMD 0402, Blue, Wave length=470nm, 25mcd @ (5mA, 2.9Vf)rohm
Fitted	D203	1	YELLOW LED	ROHM	SML-P12YTT86R	LED, SMD 0402, Yellow, Wave length=586nm, 7.6mcd @ (1mA, 1.9Vf)
Fitted	FW1	1	nEDBG firmware			nEDBG firmware
Fitted	J101	1	S2B-PH-K-S	J.S.T. Mfg. Co. Ltd.	S2B-PH-K-S	Pin Header 1x2, 2mm THM, right entry, 100V AC/DC, 2A AC/DC (AWG #24) (Element14:9491902)
Fitted	J103	1	MU-MB0142AB2-269	Allen Creations Corp.	MU-MB0142AB2-269	USB micro AB, Surface mount signals and DIP shield
Fitted	J201, J202	2	2185-108SS0CYNP1	WCON	2185-108SS0CYNP1	1x8 receptacle pin header, 2.54mm pitch THM, PIP
Fitted	L200	1	BLM18PG471SN1	Murata	BLM18PG471SN1	SMD RF inductor 0603. Z=470Ohm (@ 100MHz), Max R(dc)=0.20Ohm, Max current=1A
Fitted	LABEL1	1	Label PCBA Small 6x6mm	ACT Logimark AS	505462	PCBA identification label PP Top White Gloss
Fitted	PCB1	1	AVR-IoT WG PCB documentation			AVR-IoT WG PCB documentation
Fitted	PCBADOC1	1	A09-3203 AVR-IoT WG PCBA documentation			AVR-IoT WG PCBA documentation
Fitted	Q200	1	TEMT6000	Vishay	TEMT6000X01	light sensor
Fitted	R100, R105, R107, R108, R111, R113, R200, R201, R211	9	100k	ASJ Holdings	CR10-1003-FK	Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	R101, R102, R106, R110, R206, R209, R212, R213	8	1k	ASJ Holdings	CR10-1001-FK	Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	R103, R104, R210	3	10k	Yageo	RC0402FR-0710KL	Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	R109, R112, R114, R207, R208	5	330R	Yageo	RC0402FR-07330RL	Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	R202, R203	2	4.7k	Yageo	RC0402FR-074K7L	Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	R204	1	0R	(n/a)	RMCF04022TOR00	RES 0.0 OHM 1/16W 0402 SMD
Fitted	SW200, SW201	2	KMR221G	ITT Corporation	KMR221G	Microminiature Tact Switch for SMT
Fitted	TEST1	1	AVR-IoT WG test			Fixture test for AVR-IoT WG
Fitted	TESTDOC1	1	AVR-IoT WG Test Instructions			AVR-IoT WG Test Instructions
Fitted	U100	1	SAMD21E18A-MUT	Microchip	ATSAMD21E18A-MUT	32-bit RISC MCU 32pin
Fitted	U101	1	MCP73871	Microchip	MCP73871T-2CCI/ML	Load Sharing and Li-Ion/Li-Polymer Battery Charge Management Controller
Fitted	U102	1	MIC33050-SYHL	Microchip	MIC33050-SYHL-TR	3.3V Fixed, 4MHz, 600mA, Buck regulator with internal inductor with HyperLight Load
Fitted	U200	1	ATWINC1510-MR210PB1961	Microchip	ATWINC1510-MR210PB1961	IEEE 802.11 b/g/n module, 8Mbit Flash Memory, with FEM, PCB Antenna, with Shield, with MAC, Firmware version 19.6.1
Fitted	U201	1	ATmega4808-MFR	Microchip	ATmega4808-MFR	Atmel 8-bit RISC MCU, 48K Flash, 32pin QFN
Fitted	U202	1	ATECC608A I2C (Google Cloud)	Microchip	ATECC608A-MAH1H-S	ATECC608A with an I2C Interface and a 8 Pin UDFN
Fitted	U203	1	MCP9808	Microchip	MCP9808T-E/MC	±0.5°C Maximum Accuracy Digital Temperature Sensor, I2C/SMBus

Approved

Notes