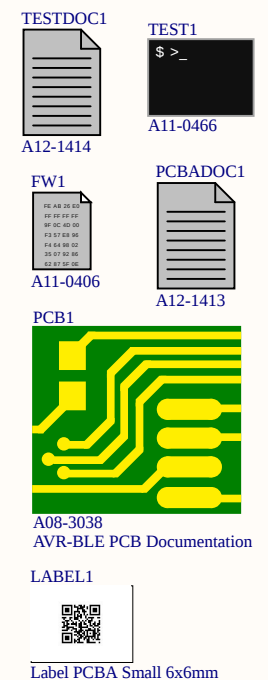
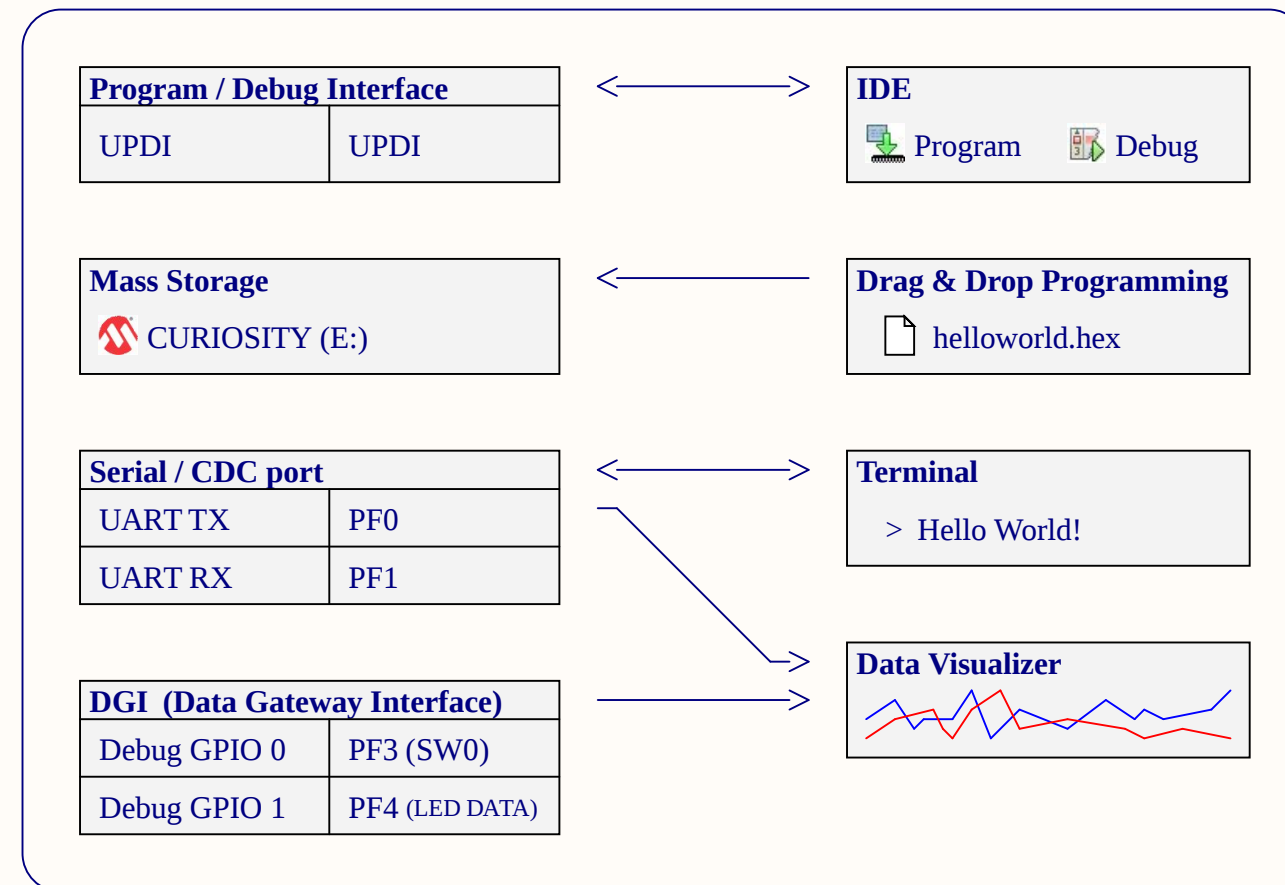
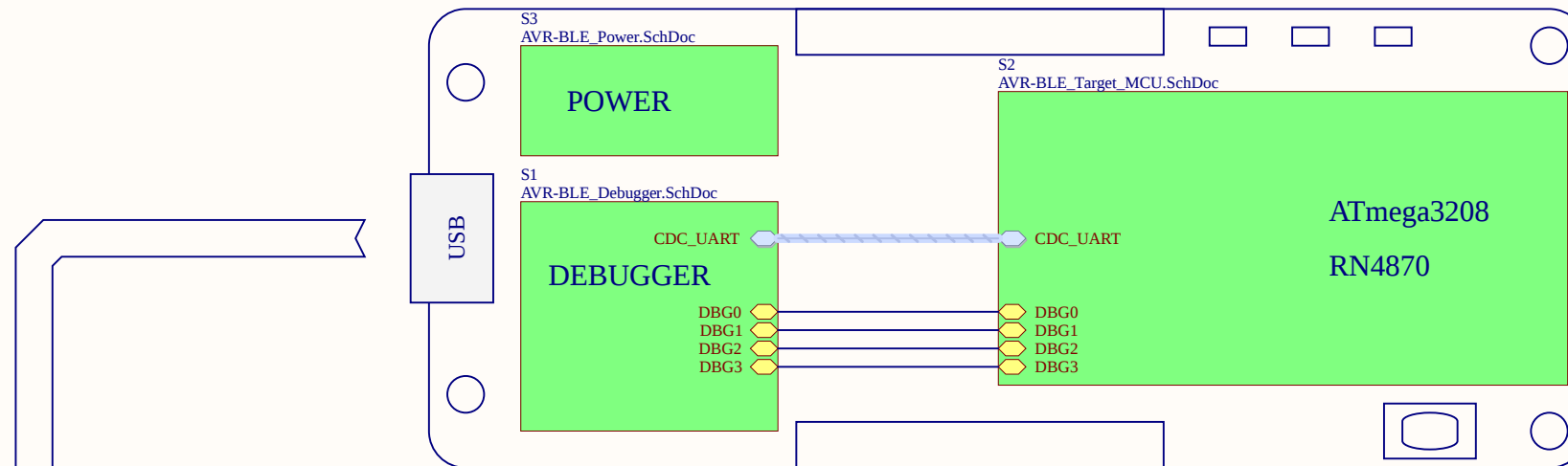
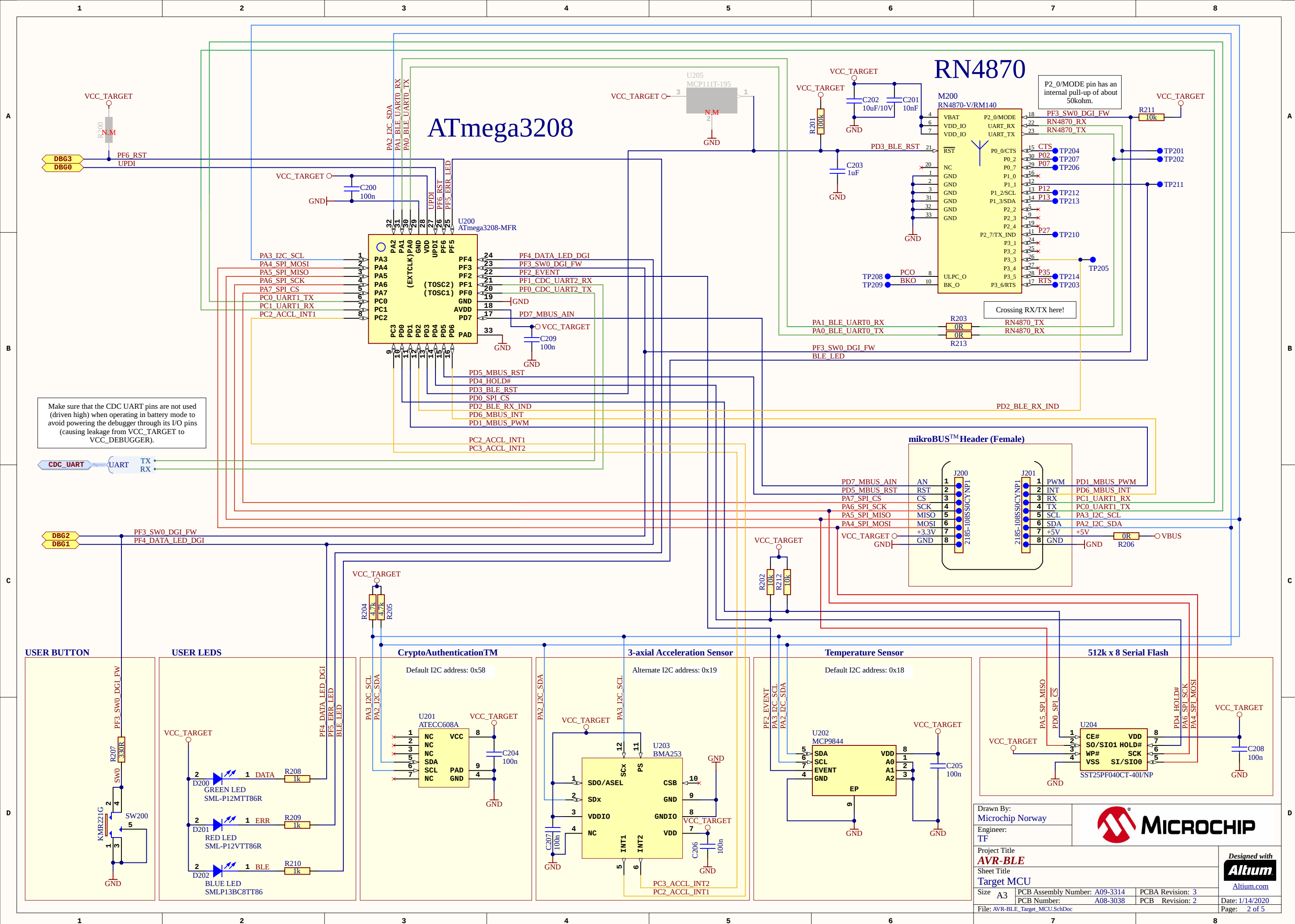
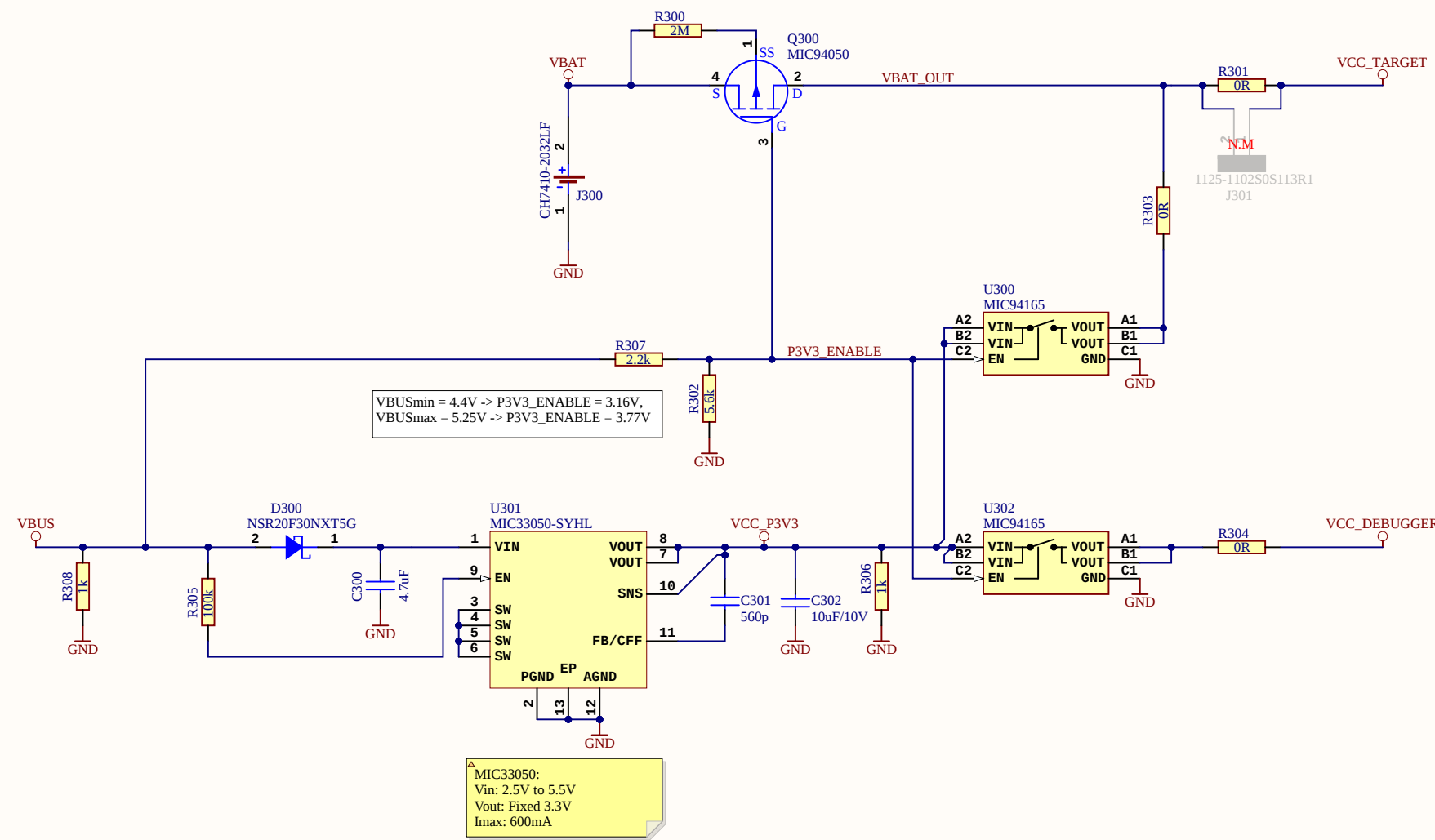


AVR-BLE





POWER



Drawn By:
Microchip Norway
Engineer:
TF



Project Title AVR-BLE			Designed with Altium Altium.com
Sheet Title Power			
Size A3	PCB Assembly Number: A09-3314	PCBA Revision: 3	Date: 1/14/2020 Page: 3 of 5
	PCB Number: A08-3038	PCB Revision: 2	
File: AVR-BLE_Power.SchDoc			

Revision History

PCB Assembly Rev 1:

Design Changes:

Initial Design

PCB:

PCB revision 1

PCB Assembly Rev 2:

Design Changes:

- Removed 100nF cap on RESET for U100: SAMD21

- Added 100k pull-down on gate on Q100

- Added Level-shifter on DBG0 (UPDI) to prevent leakage from VCC_TARGET

- Added Level-shifter on DBG1 (UPDI) to prevent leakage from VCC_TARGET

- Added Level-shifter on DBG2 (UPDI) to prevent leakage from VCC_TARGET

- Added 0-ohm resistors on UART lines to RN4870 module

- Added footprint for MCP111T-195 on reset line to RN4870 module

- Added missing decoupling on AVDD on target MCU.

- Removed vias in center pad in target MCU footprint

PCB:

PCB revision 2

PCB Assembly Rev 3:

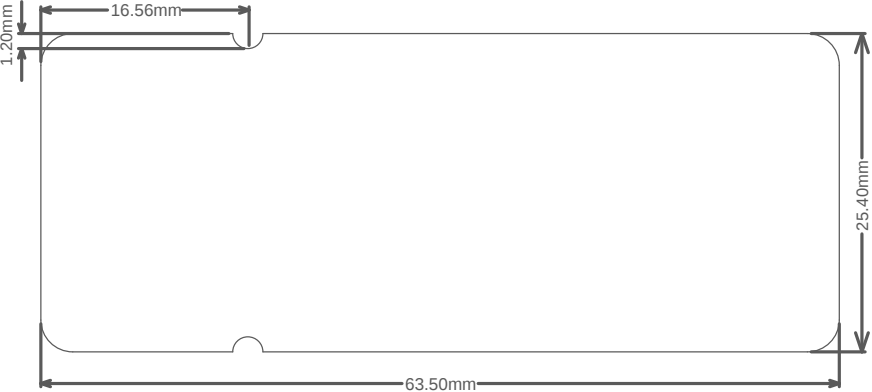
Design Changes:

- Changed RN4870 to rev 1.40

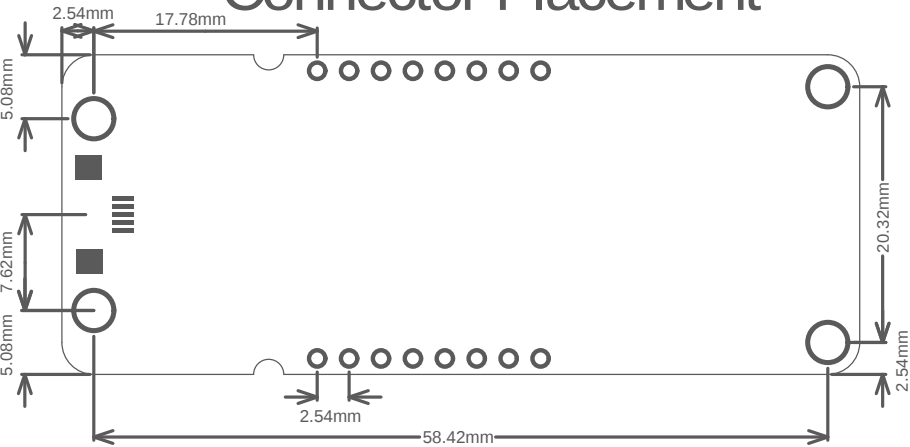
- Renamed PD2_BLE_RX_INT to PD2_BLE_RX_IND

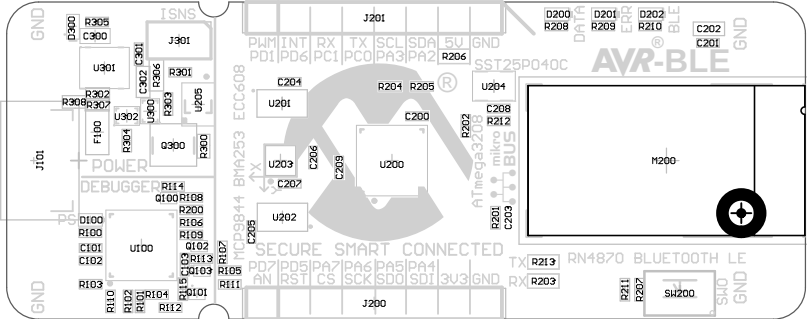
PCB:

PCB revision 2



Connector Placement





GND

BOOT

GND

PCB A
LABEL 1

J100

TP100



J300

CR2032

CR2032

Microchip © 2019

A08-3038 Rev2

®

TP208 TP209 TP210 TP211 TP212 TP213 TP214

GND

PC0

BK0

P27

P11

P12

P13

P35

TP207 TP206 TP205 TP204 TP203 TP202 TP201

GND

P02

P07

P33

CTS

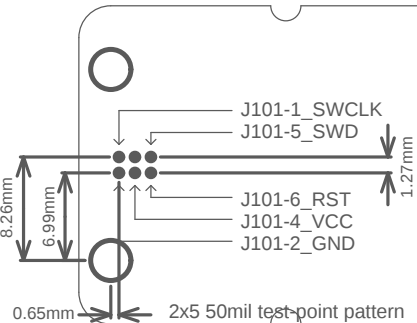
RTS

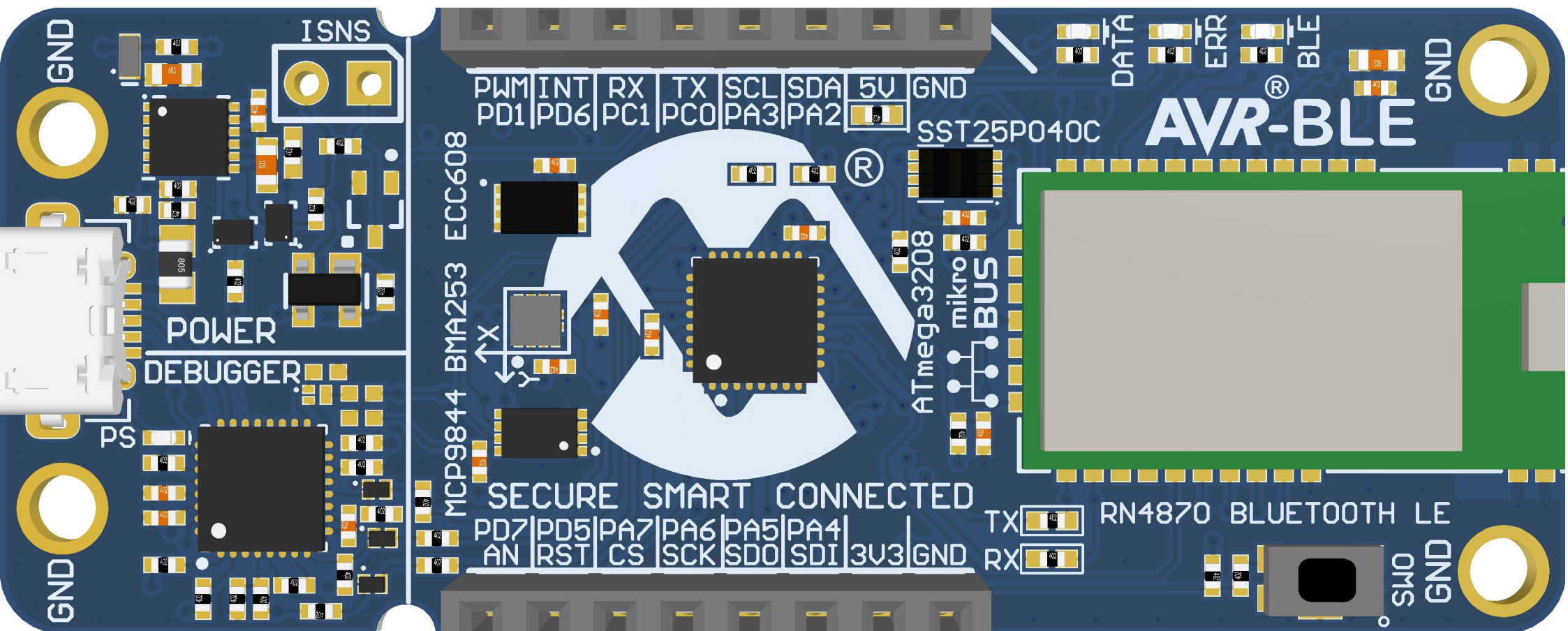
TXD

RXD



Test Point Placement





GND

ISNS

PWM INT RX TX SCL SDA 5V GND
PD1 PD6 PC1 PC0 PA3 PA2

SST25P040C

AVR-BLE®

GND

POWER

DEBUGGER

PS

GND

MCP9844 BMA253 ECC608

SECURE SMART CONNECTED

PD7 PD5 PA7 PA6 PA5 PA4
AN RST CS SCK SD0 SDI 3V3 GND

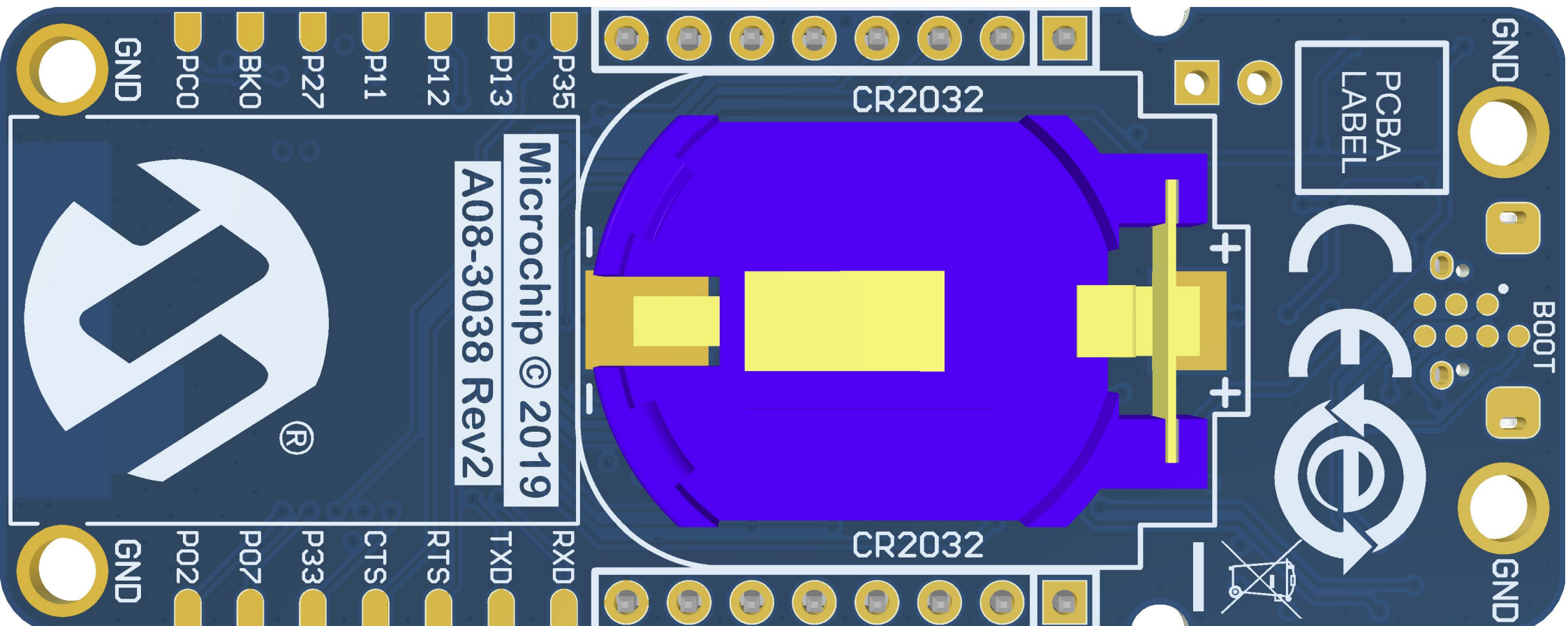
ATmega3208

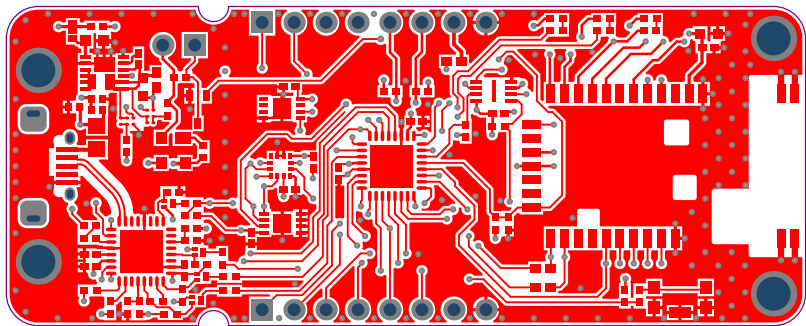
mikro
BUS

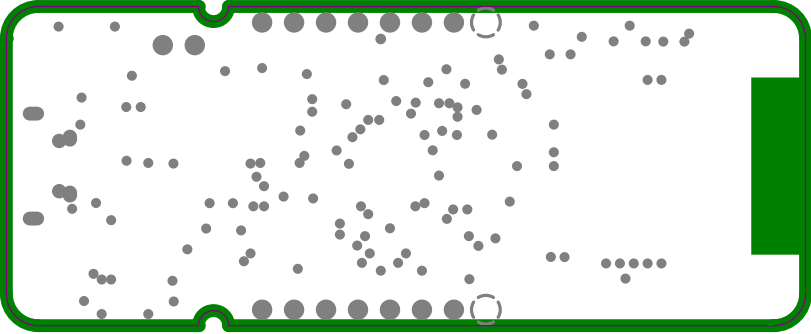
TX RX RN4870 BLUETOOTH LE

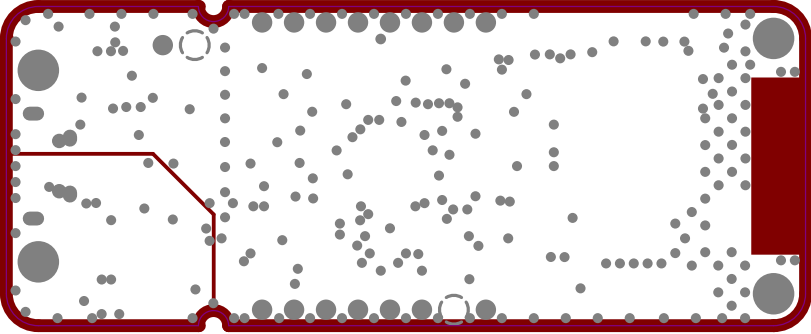
SMD

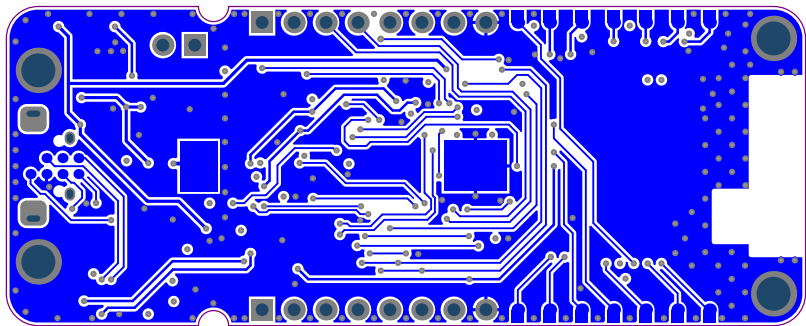
GND











Component list

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

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

Report Date: 1/14/2020 12:27 PM
Print Date:



Fitted	Designator	Quantity	Value	Manufacturer	MPN	Description
Fitted	C101	1	1u	Kemet	C0402C105K9PAC	Ceramic capacitor, SMD 0402, X5R, 6.3V, +/-10% (de26942)
Fitted	C102, C103, C200, C204, C205, C206, C207, C208, C209	9	100n	Kemet	C0402C104K4RACTU	Ceramic capacitor, SMD 0402, X7R, 16V, +/-10%
Fitted	C201	1	10nF	Murata	GRML55R71E103KA01D	Ceramic capacitor, SMD 0402, X7R, 25V, 10%
Fitted	C202, C302	2	10uF10V	AVX	0603ZD106MAT2A	Ceramic capacitor, SMD 0603, X5R, 10V, 10UF A± 20%
Fitted	C203	1	1uF	AVX	0402ZD105KA12A	Ceramic capacitor, SMD 0402, X5R, 10V, ±10 %
Fitted	C300	1	4.7uF	WALSIN Technology Corporation	0603X475K100CT	Ceramic capacitor, SMD 0603, X5R, 10V, 10% (de31036)
Fitted	C301	1	560p			Ceramic capacitor, SMD 0402, X7R, 50V, +/-10%
Fitted	D100, D200	2	GREEN LED	ROHM	SML-P12MTT86R	LED, SMD 0402, Green, Wave length=569nm, 2.1mcd @ (1mA, 1.9Vf)rohm
Fitted	D201	1	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	D300	1	NSR20F30NXT5G	ON Semiconductor	NSR20F30NXT5G	NSR20F30NXT5G Schottky Diode, Icontinuous = 2.0A, Vdrop = 0.48V @ 2A, 0603 package
Fitted	F100	1	MC36213	Multicomp	MC36213	Resetable PTC fuse, Ith = 0.5A, It = 1.0A, 0805 package
Fitted	FW1	1	nEDBG firmware			nEDBG firmware
Fitted	J101	1	MU-MB0142AB2-269	Allen Creations Corp.	MU-MB0142AB2-269	USB micro AB, Surface mount signals and DIP shield
Fitted	J200, J201	2	2185-108SS0CYNP1	WCON	2185-108SS0CYNP1	1x8 receptacle pin header, 2.54mm pitch THM, PIP
Fitted	J300	1	CH7410-2032LF	Multicomp	CH7410-2032LF	Battery Holder, SMT, 20 mm
Fitted	LABEL1	1	Label PCB A Small 6x6mm	ACT Logimark AS	505462	PCBA identification label PP Top White Gloss
Fitted	M200	1	RM4870-V/RML40	Microchip	RM4870-V/RML40	Bluetooth LE Module
Fitted	PCB1	1	AVR-BLE PCB Documentation			AVR-BLE PCB Documentation
Fitted	PCBADOCL	1	AVR-BLEPCBA Documentation			AVR-BLEPCBA Documentation
Fitted	Q101, Q102, Q103	3	DMN65D8LFB	Diodes Incorporated	DMN65D8LFB-7	N channel MOSFET, DFN1006-3 (SOT883), 60V, 330mA, 40hm
Fitted	Q300	1	MC94050	Microchip	MC94050YM4-TR	MIC94050 4-terminal P-channel MOSFET with separate substrate pin
Fitted	R100, R104, R208, R209, R210, R306, R308	7	1k	ASJ Holdings	CR10-1001-FK	Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	R101, R102, R106, R109, R112, R113, R115, R201, R305	9	100k	ASJ Holdings	CR10-1003-FK	Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	R103, R105, R107, R110, R111, R207	6	330R	Yageo	RC0402FR-07330RL	Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	R202, R211, R212	3	10k	Yageo	RC0402FR-0710KL	Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	R203, R206, R213, R301, R303, R304	6	0R	(n/a)	RNCF0402ZTOR00	RES 0.0 OHM 1/16W 0402 SMD
Fitted	R204, R205	2	4.7k	Yageo	RC0402FR-074K7L	Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	R300	1	2M	Yageo	RC0402FR-072ML	Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	R302	1	5.6k	Yageo	RC0402FR-075K6L	Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	R307	1	2.2k	ASJ Holdings	CR10-2201-FK	Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	SW200	1	KMR221G	ITT Corporation	KMR221G	Microminiature Tact Sw Itch for SMT
Fitted	TEST1	1	AVR-BLE TEST			Fixture Test for AVR-BLE
Fitted	TESTDOCL	1	AVR-BLE TEST Instructions			AVR-BLE TEST Instructions
Fitted	U100	1	SAMD21E18A-MUT	Microchip	ATSAMD21E18A-MUT	Atmel 32-bit RISC MCU 32pin
Fitted	U200	1	ATmega3208-MFR	Microchip	ATmega3208-MFR	MCHP MCU 8-Bit 20MHz 32K FLASH VQFN-32
Fitted	U201	1	ATECC608A I2C (Google Cloud)	Microchip	ATECC608A-MAH1H-S	ATECC608A with an I2C Interface and a 8 Pin UDFN
Fitted	U202	1	MCP9844	Microchip	MCP9844T-BEMNY	±1A°C Maximum Accuracy Digital Temperature Sensor, I2C/SMBus, 1.7V - 3.6V, 8TDFN 2x3mm
Fitted	U203	1	BMA253	Bosch Sensortec	BMA253	Digital, triaxial acceleration sensor, LGA12 2x2x1.0mm
Fitted	U204	1	SST25PF040CT-40INP	Microchip	SST25PF040CT-40INP	4mB 512K X 8 SPI Serial Flash 2.3-3.6V USON-8 2X3mm
Fitted	U300, U302	2	MC94165	Microchip	MC94165V-CS-TR	Loadswitch, Rds(on) = 14.5mohm, 1.0mm x 1.5mm WLCSP, reverse blocking, 2.7ms Soft Start
Fitted	U301	1	MC33050-SYHL	Microchip	MC33050-SYHL-TR	3.3V Fixed, 4MHz, 600mA, Buck regulator with internal inductor with HyperLight Load
Not Fitted	J301	0	1125-1102S0S113R1	WCON	1125-1102S0S113R1	1x2 pin header, 2.54mm pitch, Pin-in-Paste THM
Not Fitted	Q100	0	DMN65D8LFB	Diodes Incorporated	DMN65D8LFB-7	N-channel MOSFET, DFN1006-3 (SOT883), 60V, 330mA, 40hm
Not Fitted	R114	0	100k	ASJ Holdings	CR10-1003-FK	Thick film resistor, SMD 0402, 1/16W, 1%
Not Fitted	R200	0	10k	Yageo	RC0402FR-0710KL	Thick film resistor, SMD 0402, 1/16W, 1%
Not Fitted	U205	0	MCP111T-195	Microchip	MCP111T-195/LB	Micropower Voltage Detector/Supervisor, SC-70, 3-pin, Vtrip=1.90V

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Approved

Notes

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