

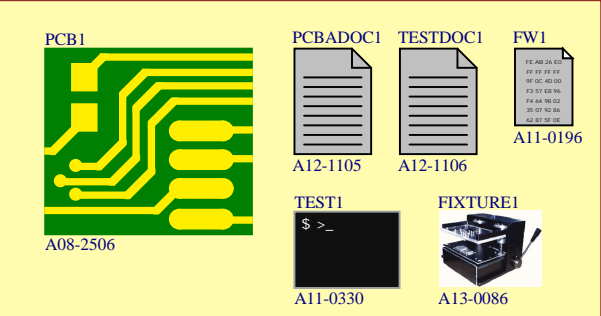




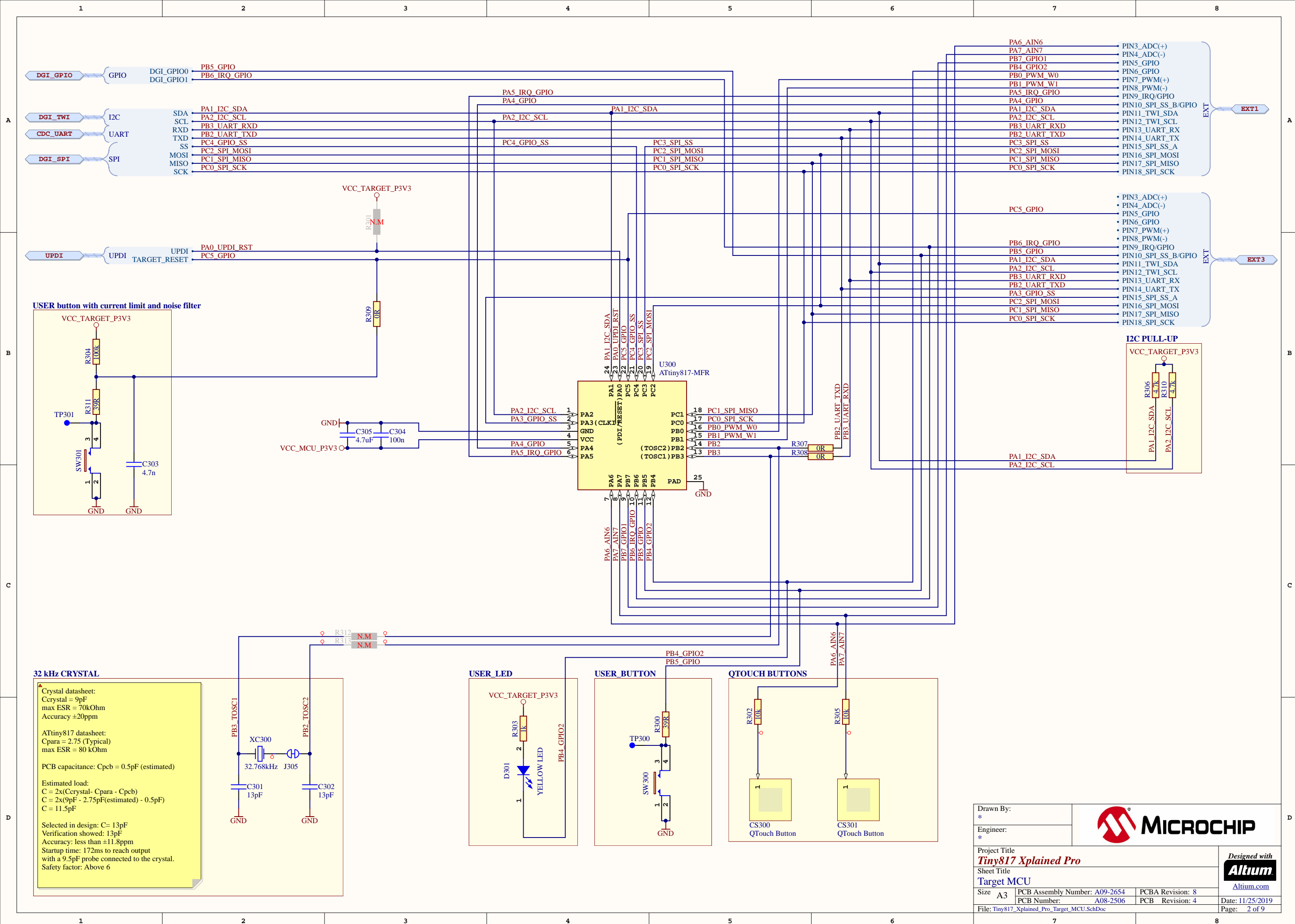
LABEL1

**Product number/revision**
**Serial number**

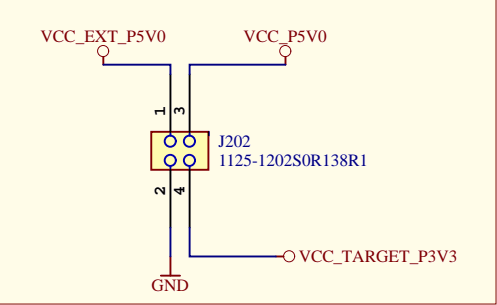
Label PCBA



Drawn By: *		 MICROCHIP	
Engineer: *			
Project Title <i>Tiny817 Xplained Pro</i>			<i>Designed with</i>  Altium.com
Sheet Title Top Level Schematics			
Size A3	PCB Assembly Number: A09-2654	PCBA Revision: 8	
	PCB Number: A08-2506	PCB Revision: 4	Date: 11/25/2019
File: Tiny817_Xplained_Pro_TopLevel.SchDoc			Page: 1 of 9



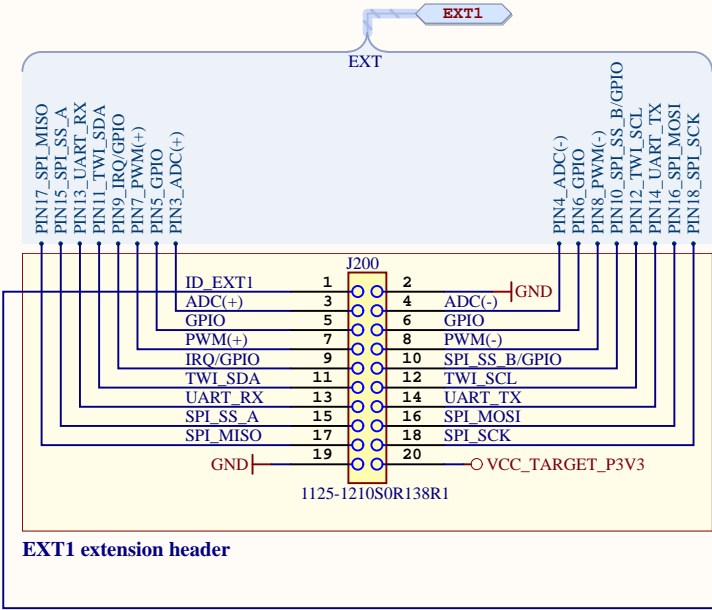
Power Connector



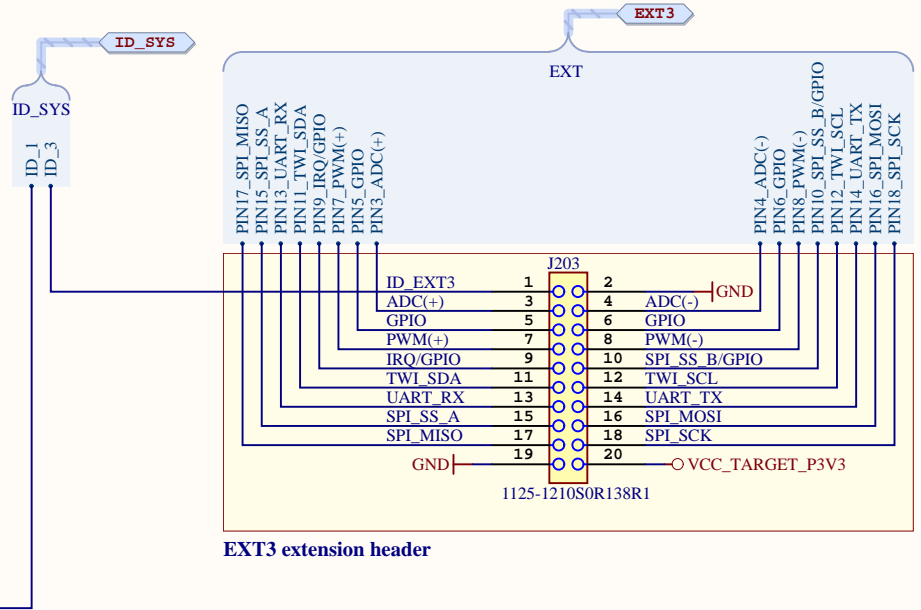
▲ Power inputs/outputs to the Xplained PRO:
VCC_EXT_P5V0 (input)
This power input can be used to power the whole board and it has a higher priority as the USB power input.

VCC_P5V0 (output)
This supply is connected to either VCC_EXT_P5V0 or VCC_EDBG_USB_P5V0, based on the availability and priority of these supplies.

VCC_TARGET_P3V3 (output)
Target supply voltage (target MCU and peripherals)

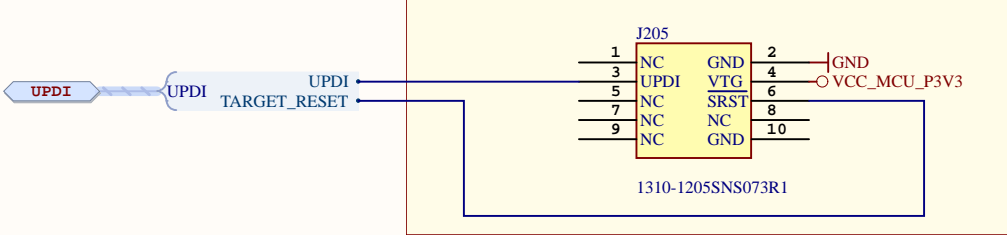


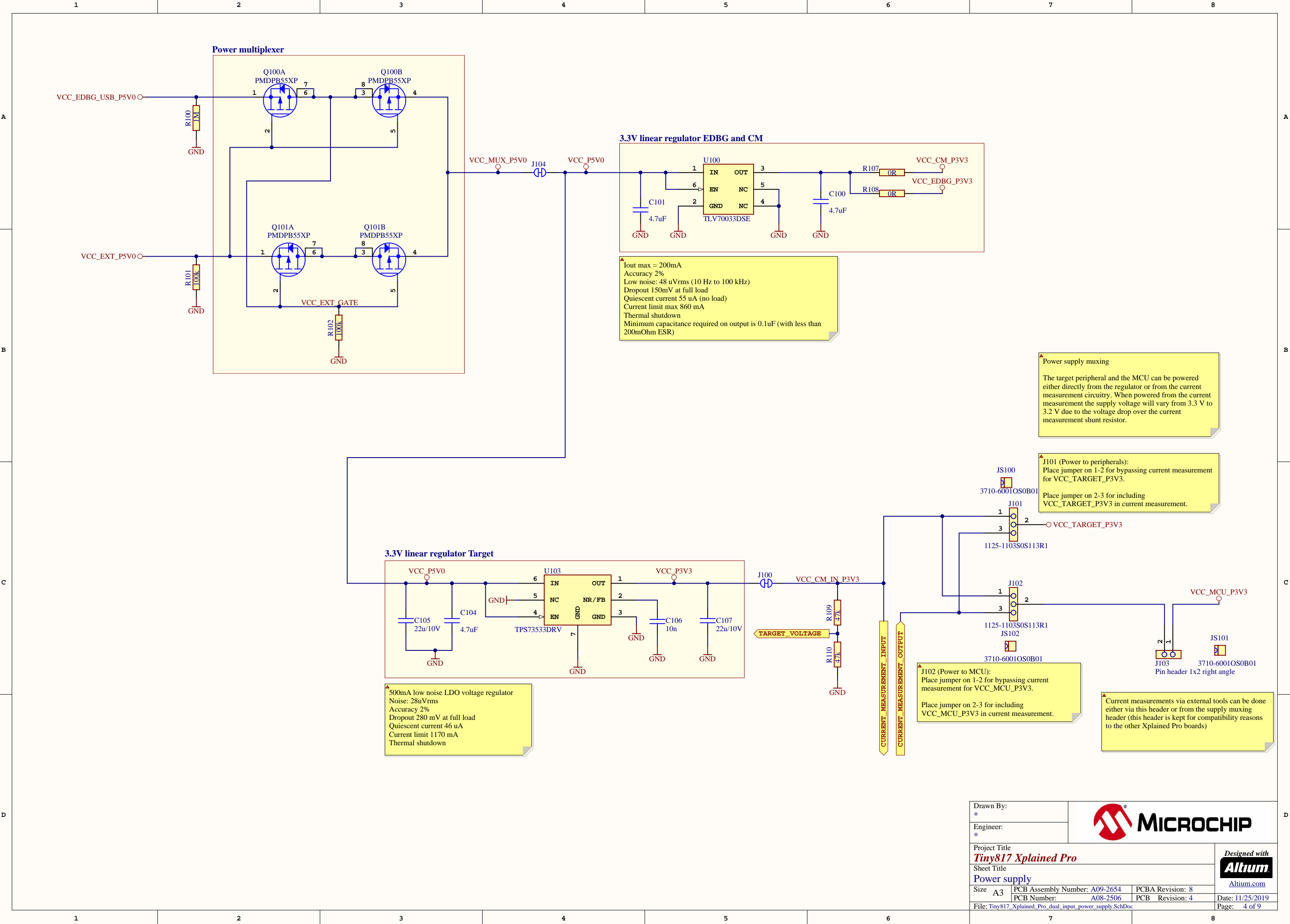
EXT1 extension header

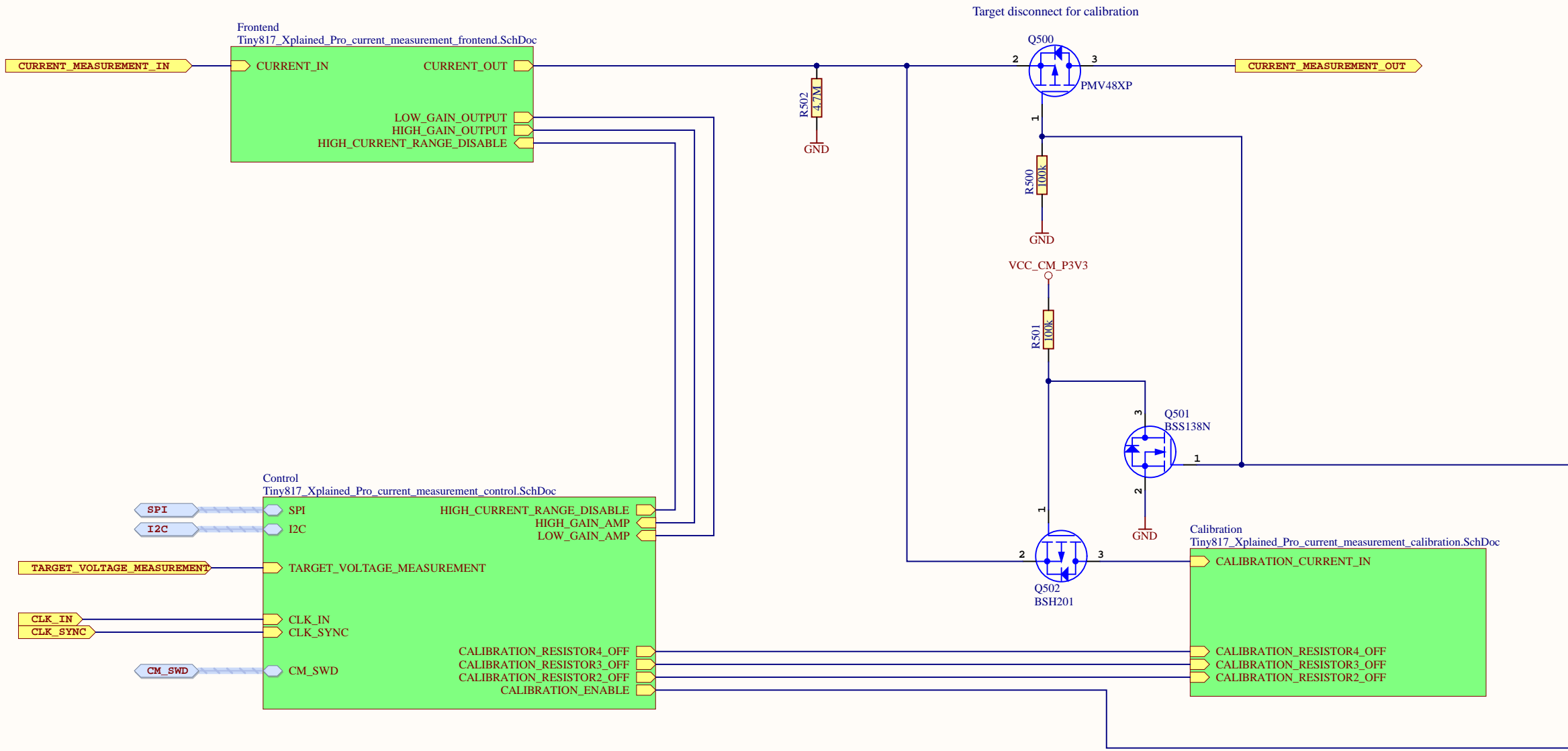


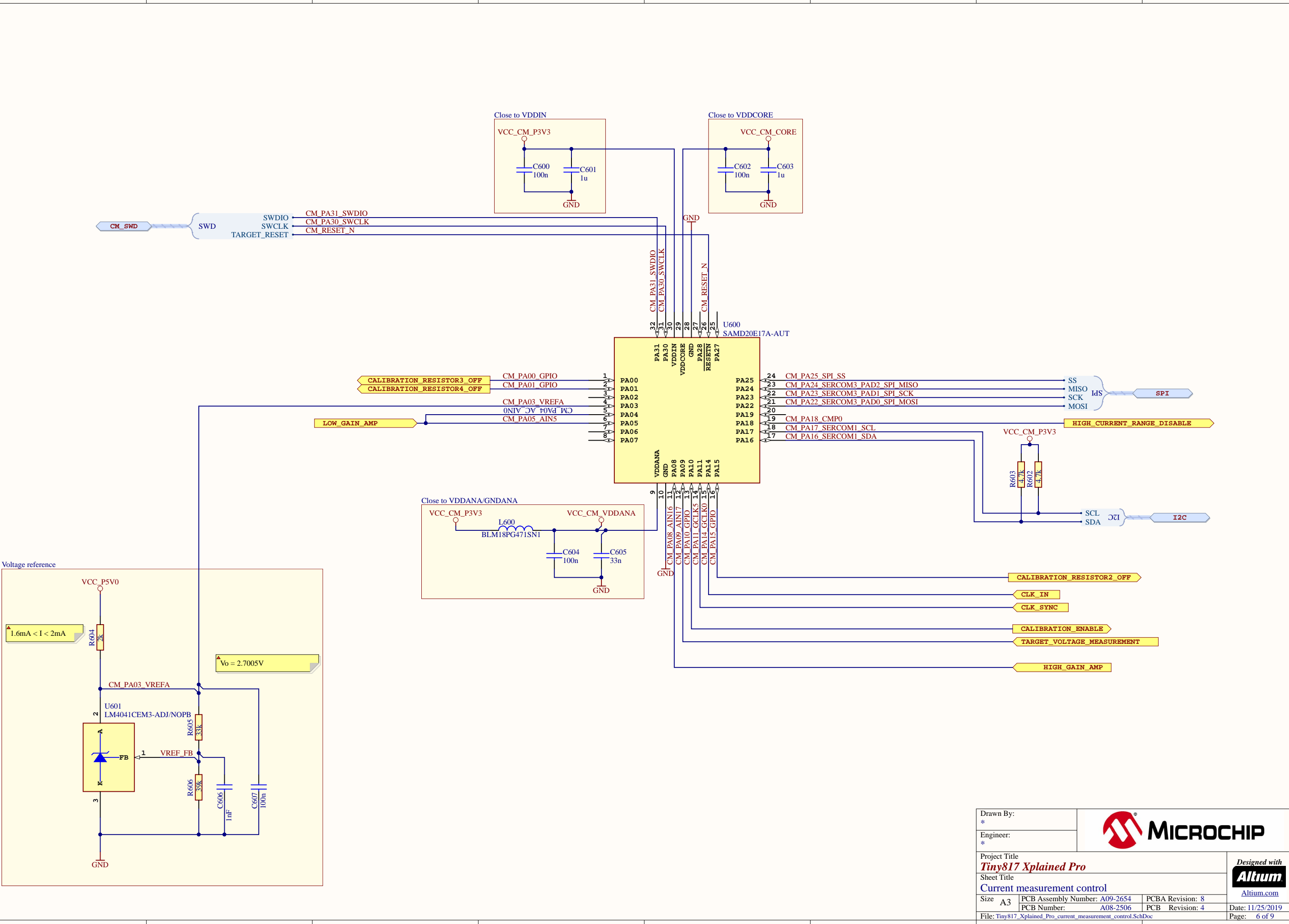
EXT3 extension header

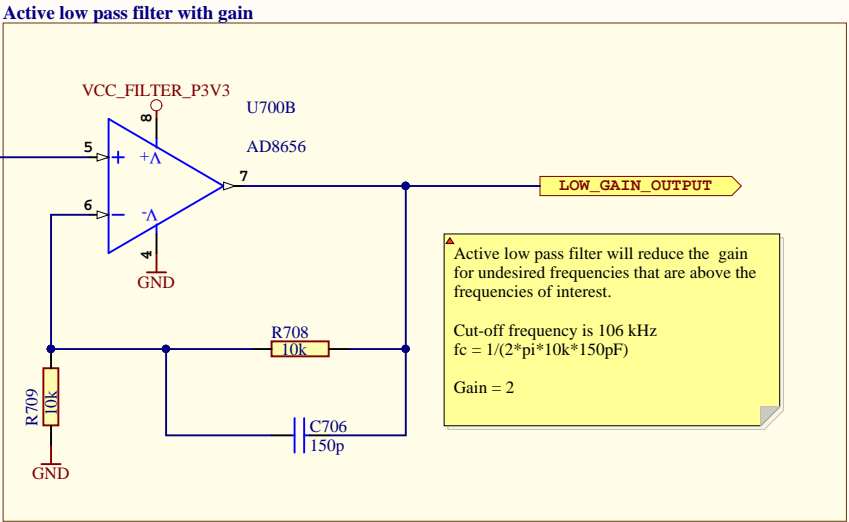
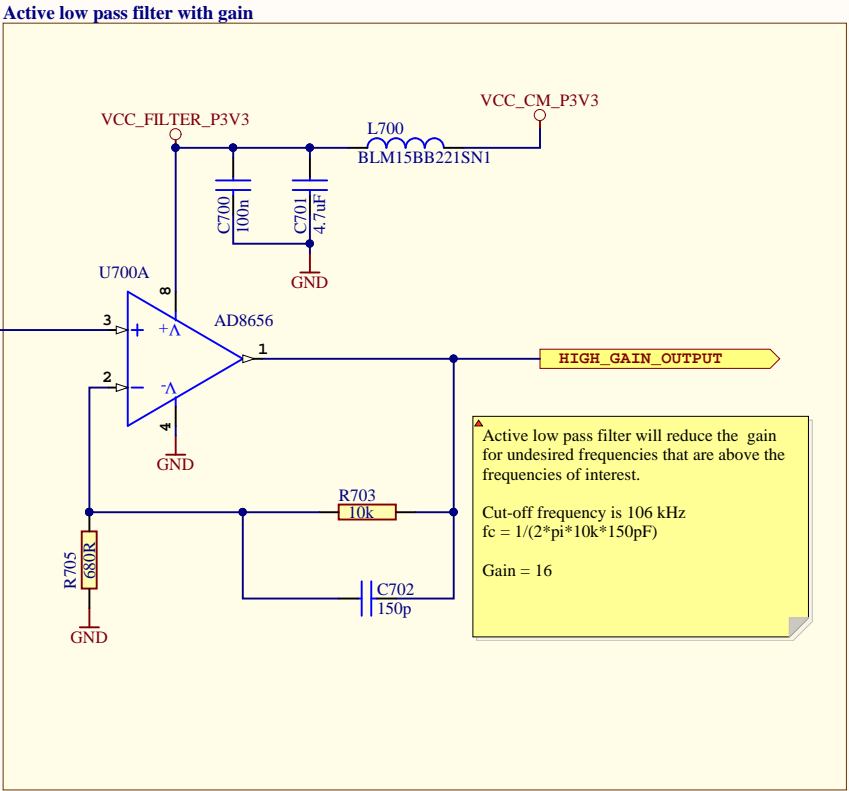
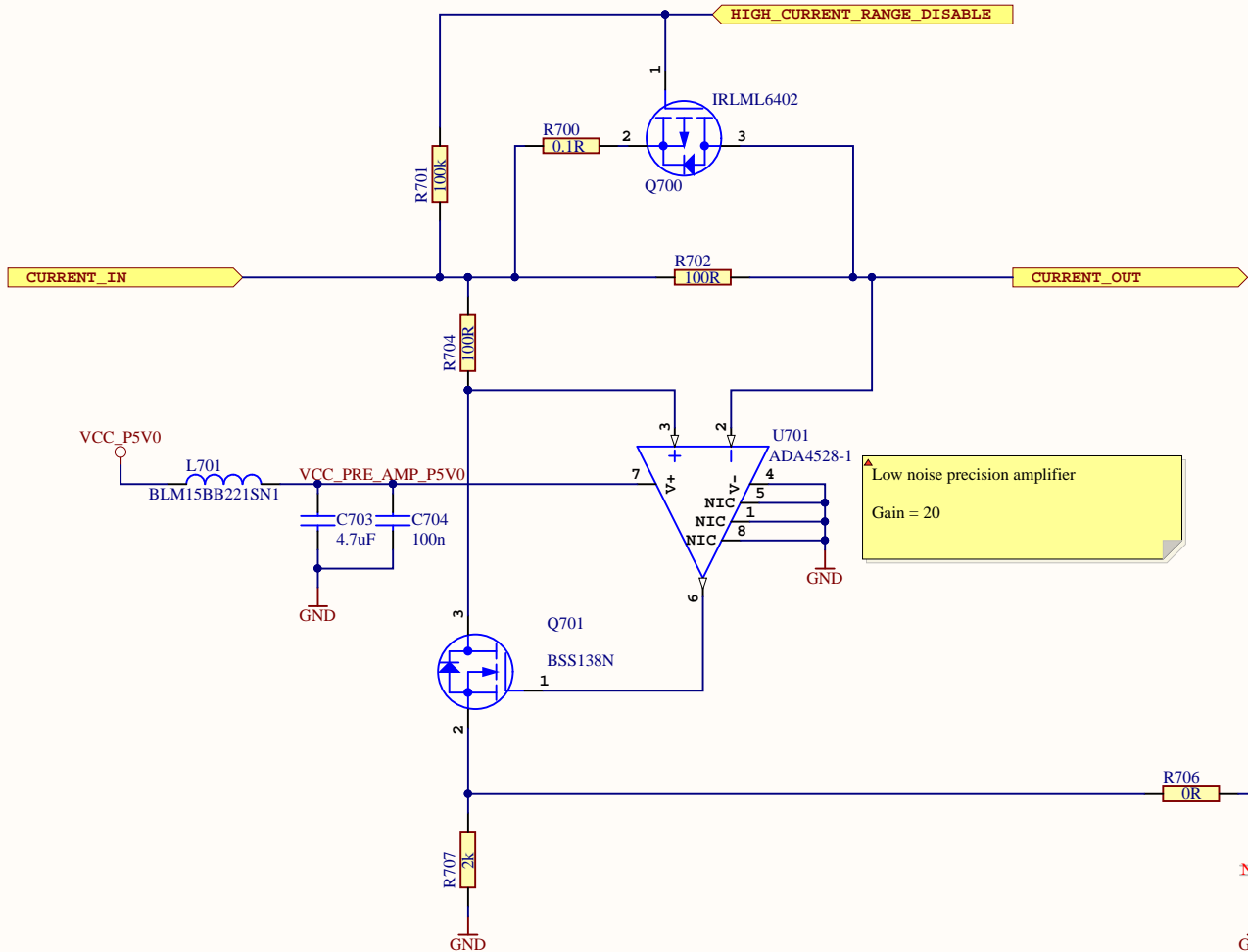
UPDI Debug Connector for connecting an external programmer/debugger

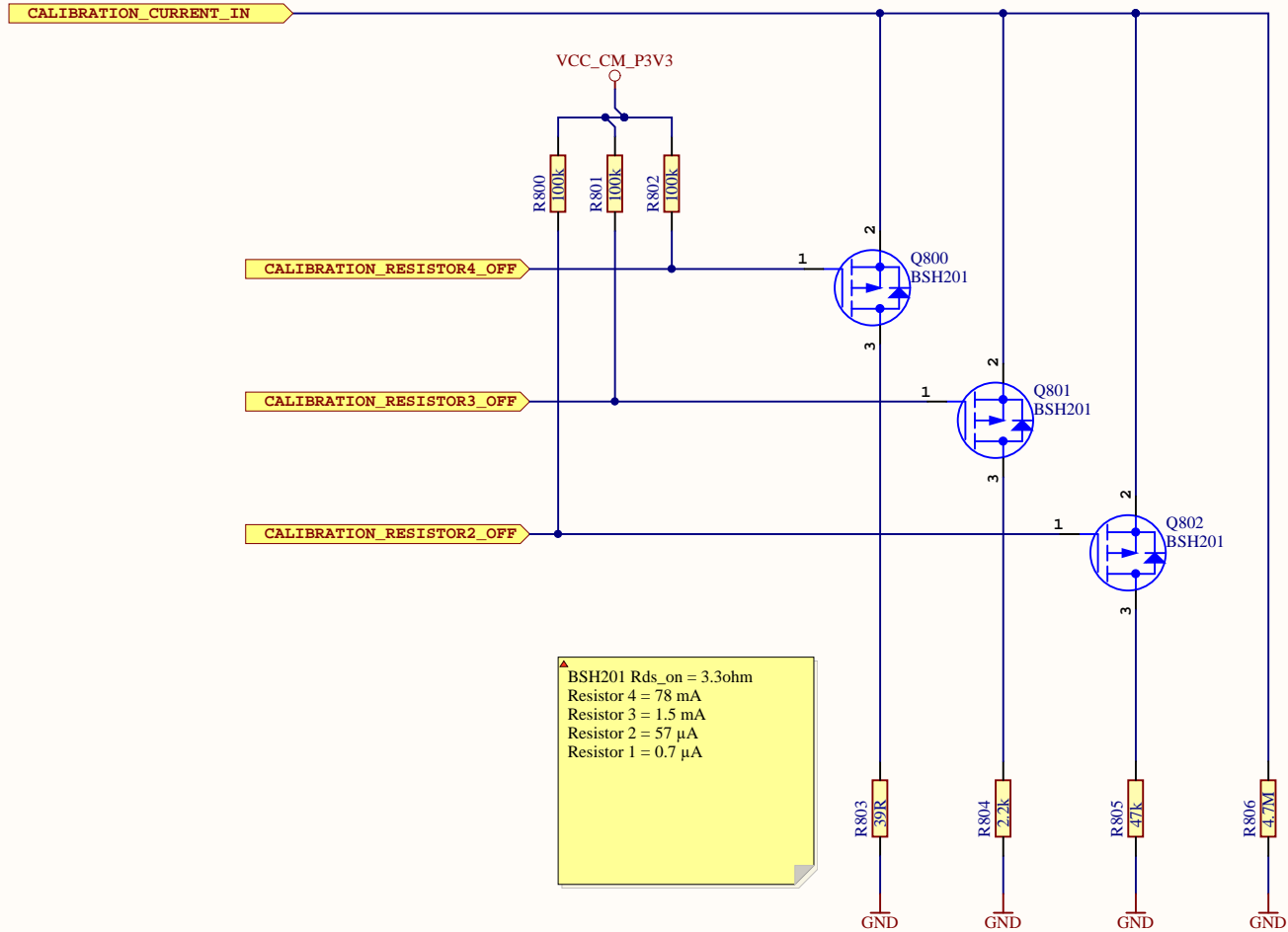


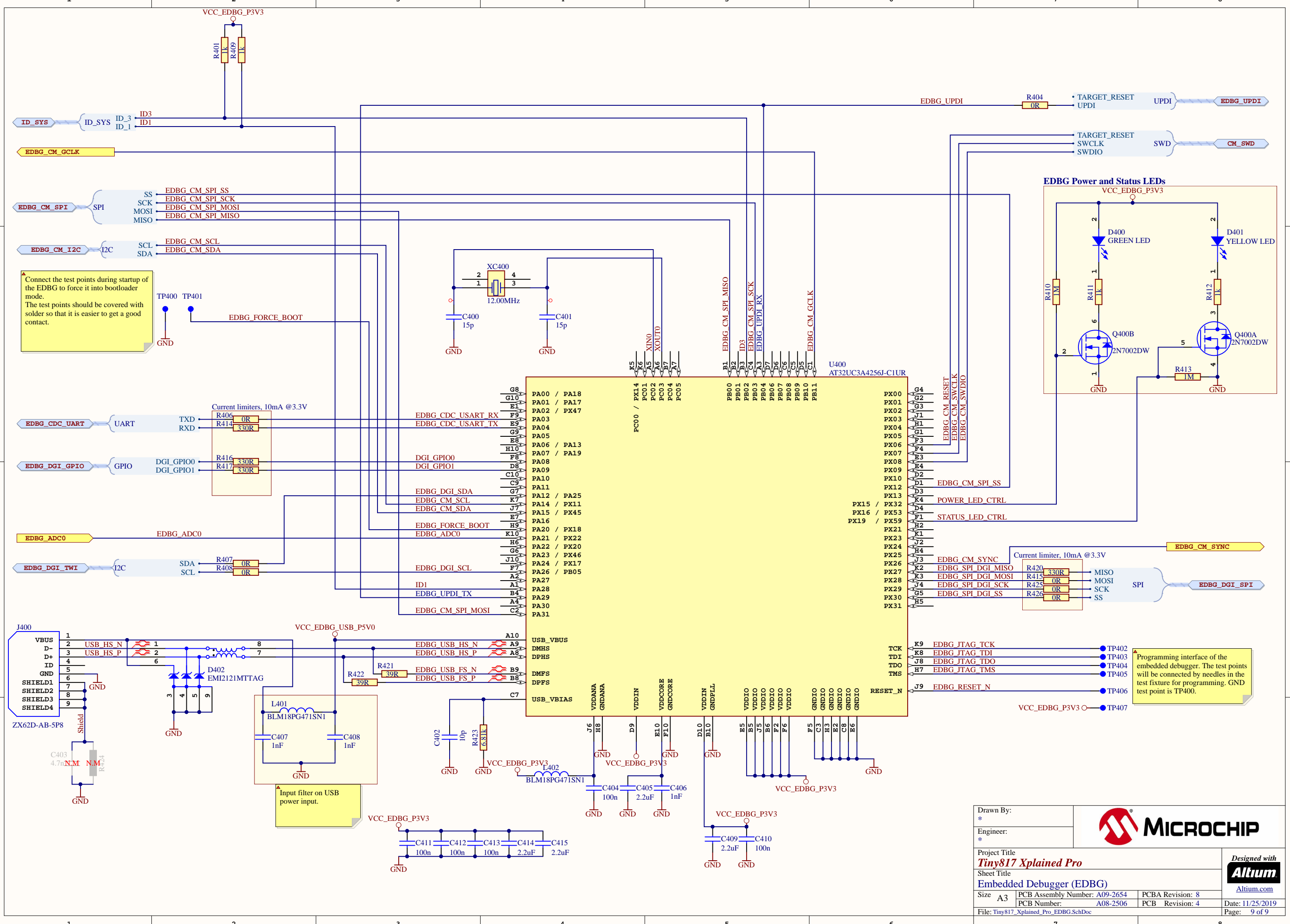




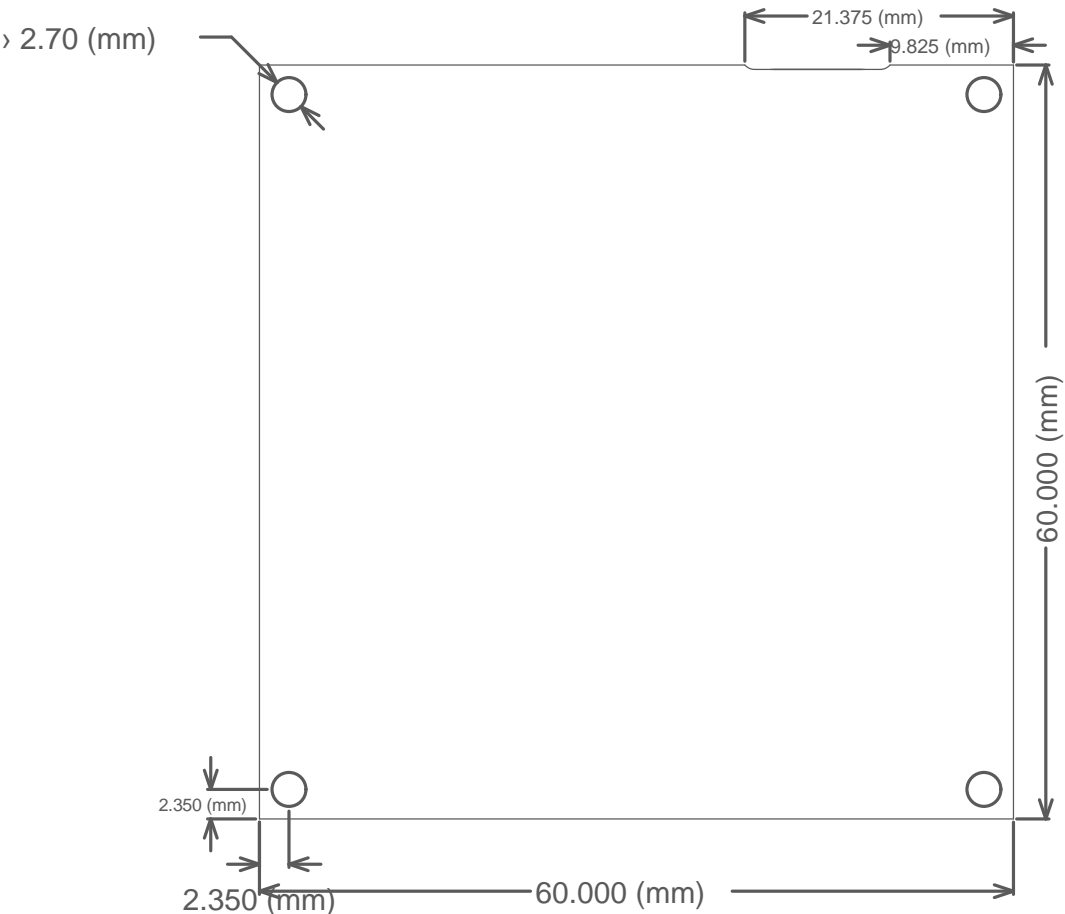




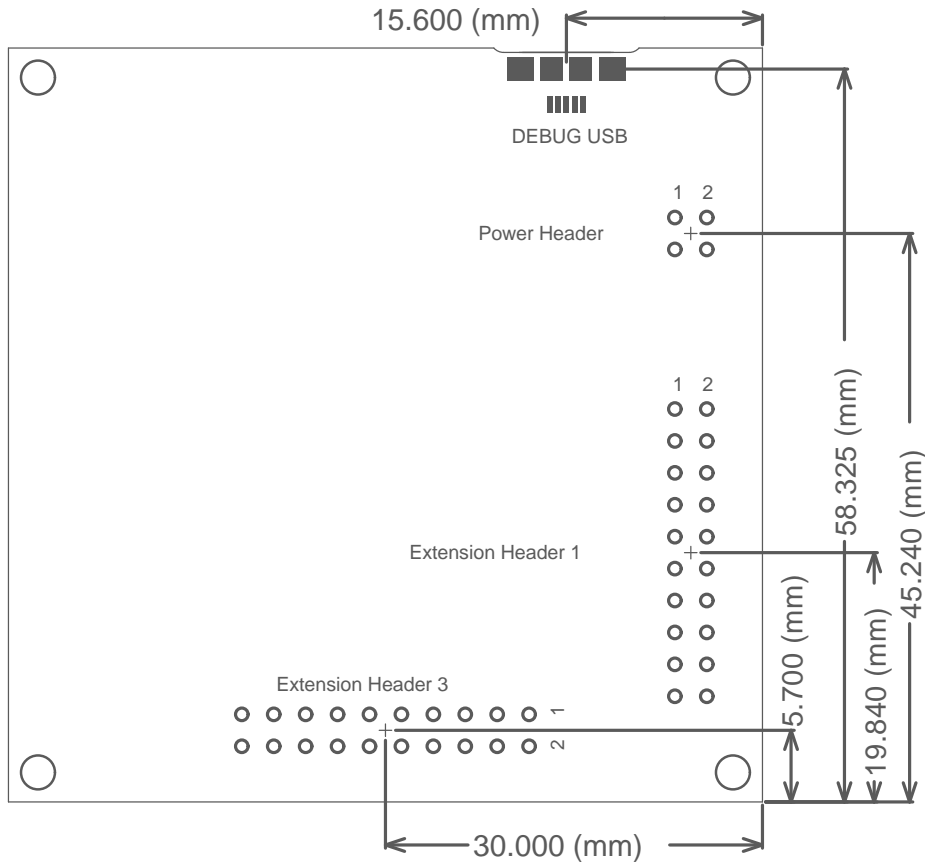




Mechanical Dimensions



Connector Placement



GND **AVR**

VCC MCU
J103
VCC_TARGET

SW0
R303
D301
LED0

SW1/RST
R300
R311
C303
R304

DEBUG USB

J400
R424
C403
D402
L401
C407
C408

POWER D400
STATUS D401

GND

MEASURE
BYPASS

J105102
MCU

J105100
I/O

MEASURE
BYPASS

CURRENT
MEASUREMENT



MICROCHIP

ATTINY817 X PLAINED PRO

ATTINY817

R306
R310

C305
C304

U300

R307
R313
R312

J305
C301
C302

XC300

32kHz
CRYSTAL

VCC GND
PC0 PC1
PC2 PA3
PB2 PB3
PA2 PA1
PB5 PB6
NC NC
NC PC5
NC NC
GND ID

19
20

1
2

J203

ID GND
PA6 PA7
PB7 PB4
PB0 PB1
PA5 PA4
PA1 PA2
PB3 PB2
PC3 PC2
PC1 PC0
GND VCC

1 2 EXT1

+

J200

ATTINY817
UPDI DEBUG

J205

PWR

+

J202

5.0V_IN GND 1
5.0V VCC 3

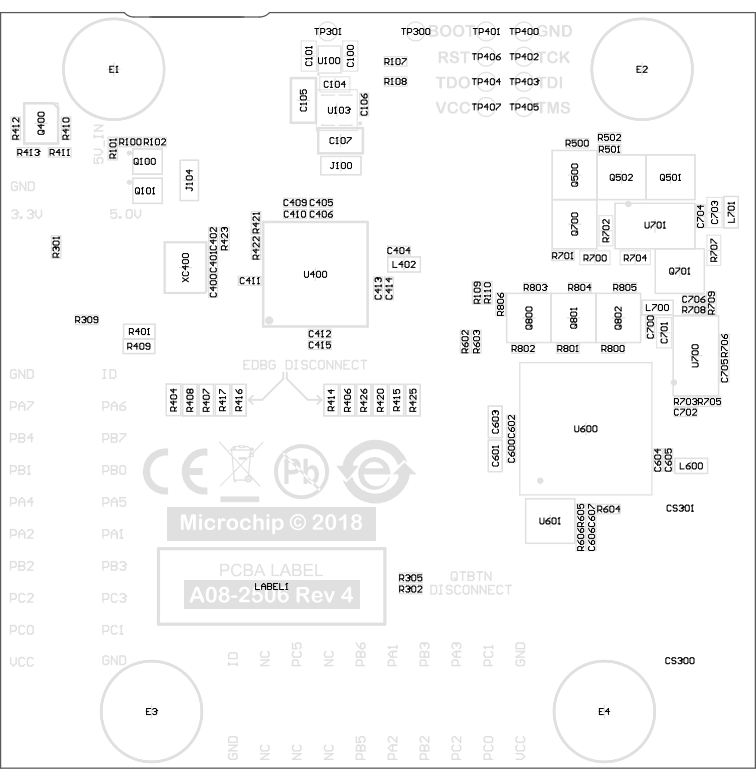
QT BTN 1

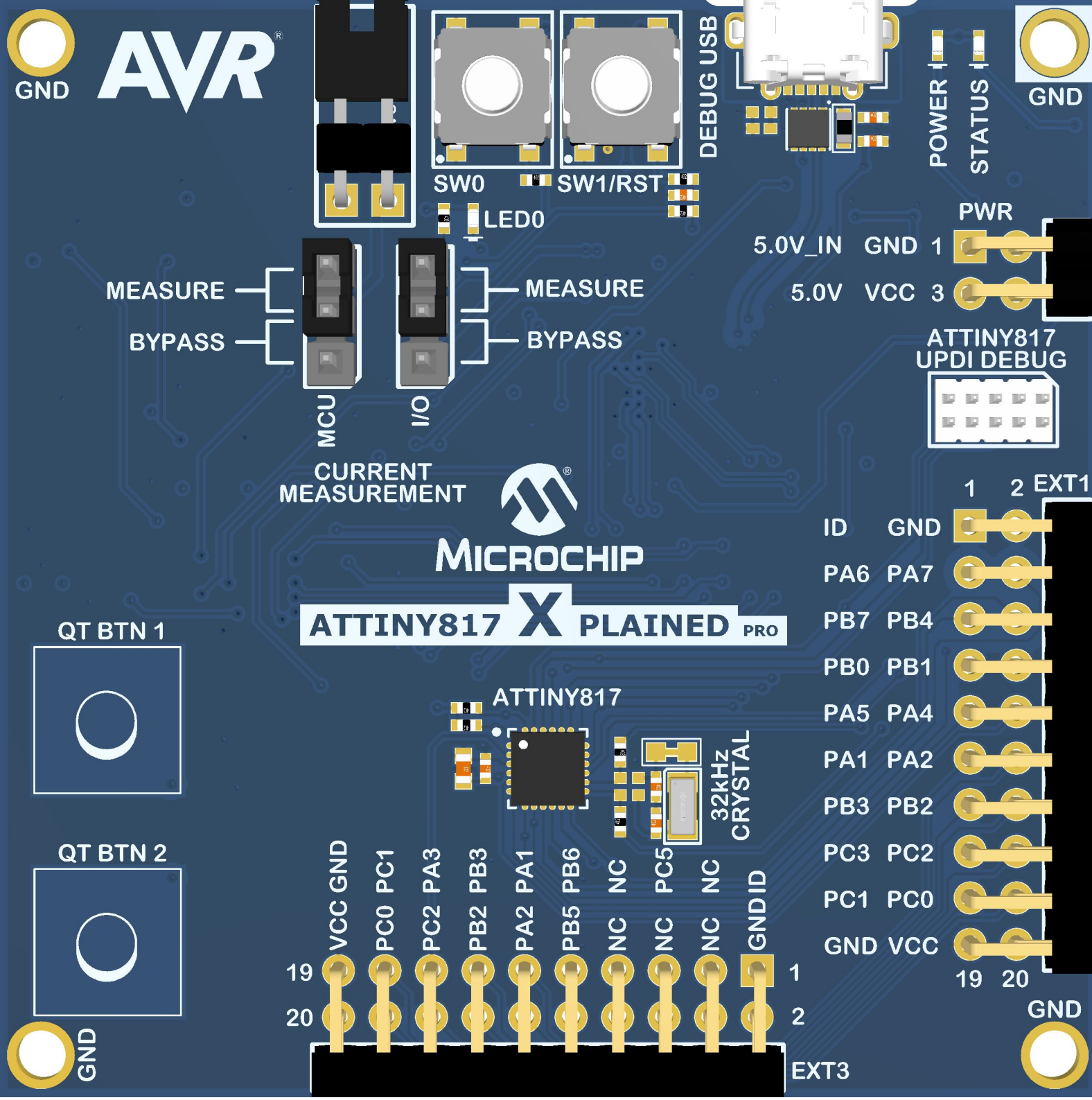
QT BTN 2

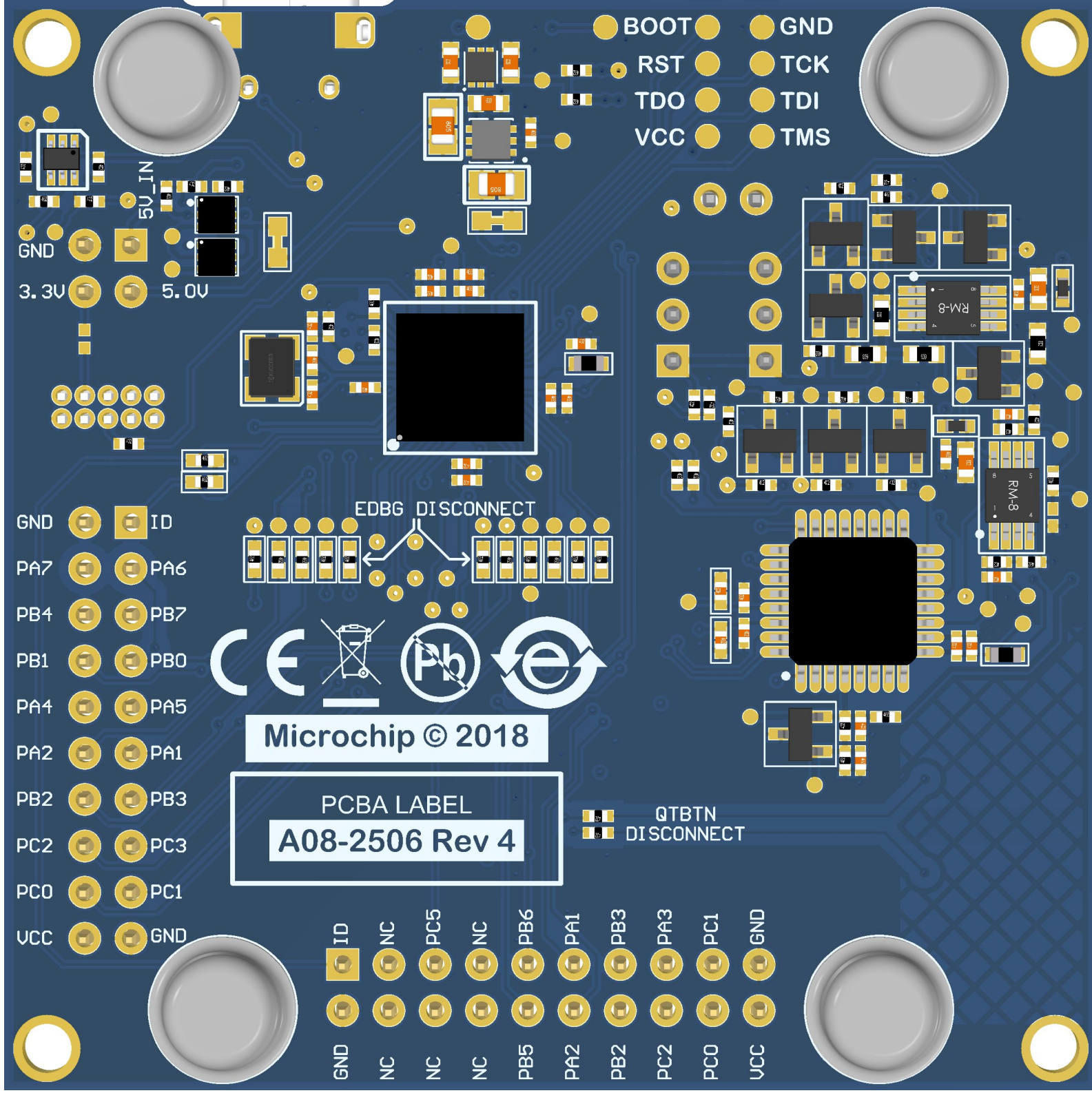
GND

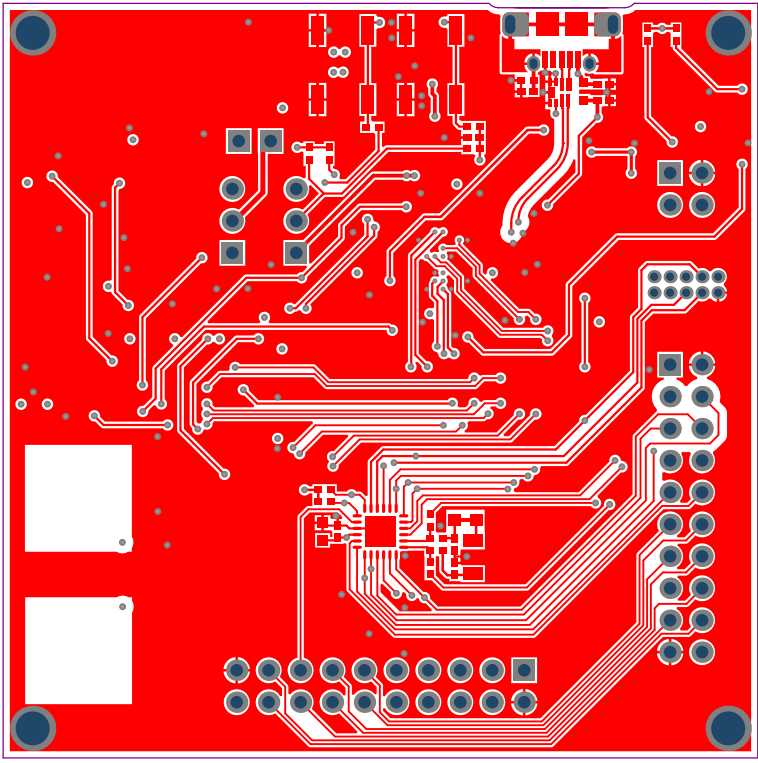
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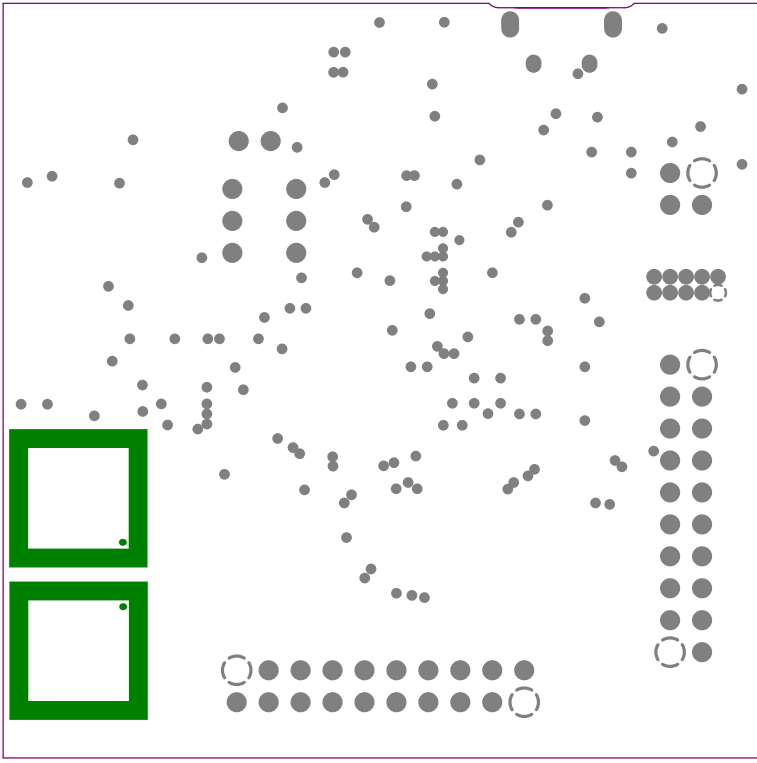
EXT3

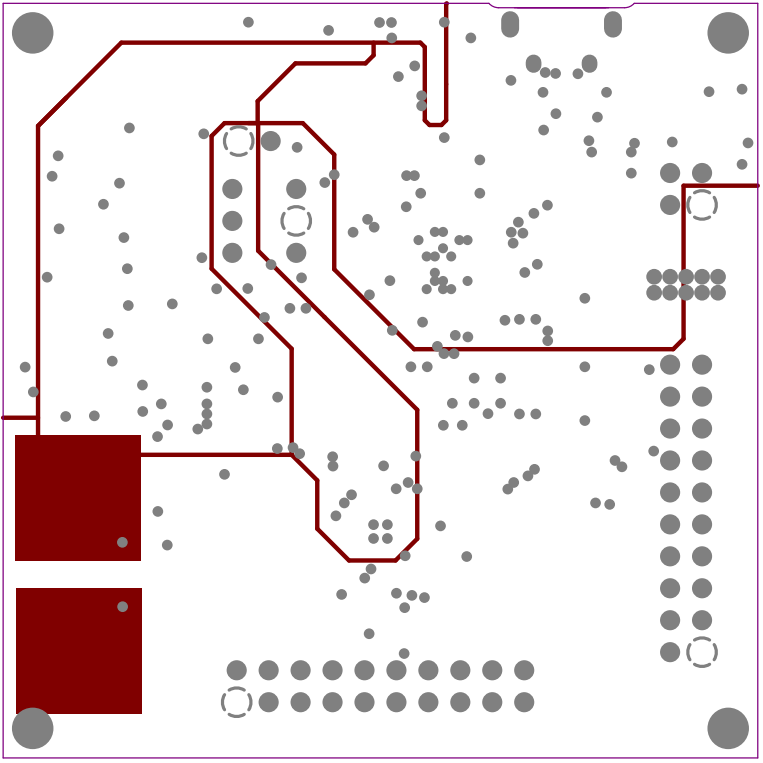


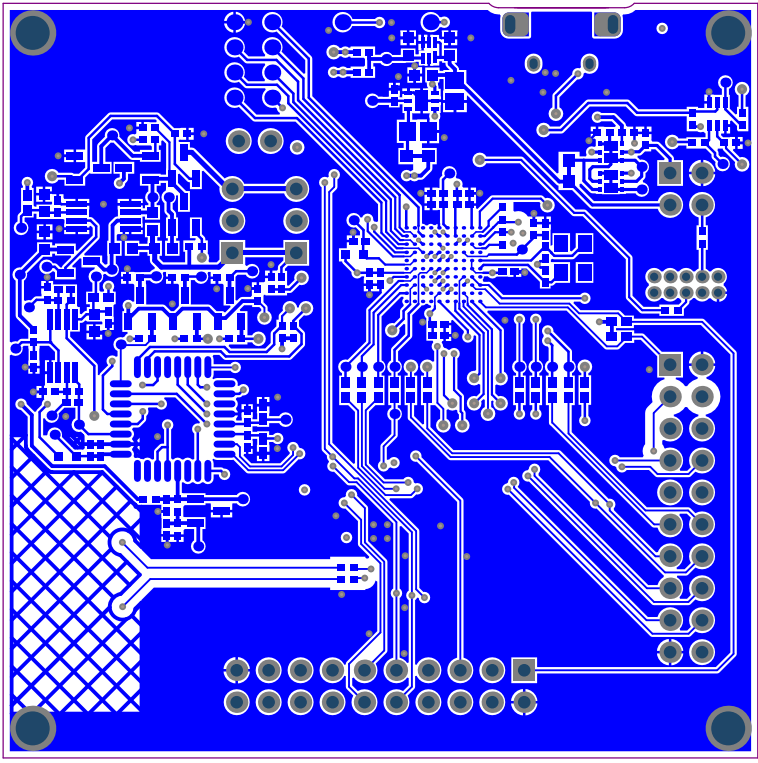












Component list

Bill of Materials Fitted for Variant [Default_assembly] of Project [Tiny817_Xplained_Pro.PrjPCB] (No PCB Document Selected)

Source Data From:

Project:

Variant:

Tiny817_Xplained_Pro.PrjPCB

Tiny817_Xplained_Pro.PrjPCB

Default_assembly



MICROCHIP

Report Date: 11/25/2019

11:28 AM

Print Date:

11/25/2019

10:57:29 AM

Fitted	Designator	Quantity	Value	Manufacturer	MPN	Description
Fitted	C100, C101, C104, C305, C701, C703	6	4.7uF	WALSIN Technology Corporation	0603X475K100CT	Ceramic capacitor, SMD 0603, X5R, 10V, 10% (dc31036)
Fitted	C105, C107	2	22u/10V	TDK	C2012X5R1A226M0.85	Ceramic capacitor, SMD 0805, X5R, 10V, A20%
Fitted	C106	1	10n	Yageo	CC0402KRX7R8BB103	Ceramic capacitor, SMD 0402, X7R, 25V, +/-10%
Fitted	C301, C302	2	13pF	Murata	GRM1555C1H130JA01D	Ceramic capacitor, SMD 0402, NP0, 50V, +/-5%
Fitted	C303	1	4.7n	PHYCOMP	2238 587 15632	Ceramic capacitor, SMD 0402, X7R, 25V, +/-10% (dc35287)
Fitted	C304, C404, C410, C411, C412, C413, C600, C602, C604, C607, C700, C704	12	100n	Kemet	C0402C104K4RACTU	Ceramic capacitor, SMD 0402, X7R, 16V, +/-10%
Fitted	C400, C401	2	15p	AVX	04025A150JAT2A	Ceramic capacitor, SMD 0402, NP0, 50V, +/-5%
Fitted	C402	1	10p	AVX	04025A100JAT2A	Ceramic capacitor, SMD 0402, NP0, 50V, +/-5%
Fitted	C405, C409, C414, C415	4	2.2uF	Kemet	04042C225M9PAC	Ceramic capacitor, SMD 0402, X5R, 6.3V, +/-20%
Fitted	C406, C407, C408, C606	4	1nF	Murata	GRM1555C1H102JA01D	Ceramic capacitor, SMD 0402, C0G, 50V, +/-5%
Fitted	C601, C603	2	1u	Kemet	C0402C105K9PAC	Ceramic capacitor, SMD 0402, X5R, 6.3V, +/-10% (dc26942)
Fitted	C605	1	33n	Murata	GRM155R7E333KA88D	Ceramic capacitor, SMD 0402, X7R, 25V, +/-10%
Fitted	C702, C706	2	150p	Yageo	CC0402KRX7R9BB151	Ceramic capacitor, SMD 0402, X7R, 50V, +/-10%
Fitted	D301, D401	2	YELLOW LED	ROHM	SML-P121T768R	LED, SMD 0402, Yellow, Wave length=595nm, 7.6mcd @ (1mA, 1.9V)
Fitted	D400	1	GREEN LED	ROHM	SML-P12MT768R	LED, SMD 0402, Green, Wave length=569nm, 2.1mcd @ (1mA, 1.9V)(typ)
Fitted	D402	1	EM2121MTTAG	ON Semiconductor	EM2121MTTAG	EM2121, S2EM2121 Single Pair Common Mode Filter with ESD Protection
Fitted	E1, E2, E3, E4	4	SJ-5076	3M	SJ-5076	2.8mm adhesive test,diam 8.0mm
Fitted	FIXTURE1	1	Xplained PRO MCU board Jupiter Test Fixture	ESCATEC	Xplained PRO MCU board Jupiter Test Fixture	Xplained PRO MCU board Jupiter Test Fixture
Fitted	FW1	1	EDBG secured firmware	Microchip		EDBG secured firmware
Fitted	J101, J102	2	1125-1103S0S113R1	WCON	1125-1103S0S113R1	1x3 pin header, 2.54mm pitch, Pin-in-Paste THM
Fitted	J103	1	Pin header 142 right angle	WCON	1125-1102S0R138R1	1x2 pin header, right angle, 2.54 mm pitch, through-hole
Fitted	J200, J203	2	1125-1210S0R138R1	WCON	1125-1210S0R138R1	Pin header, 2x10, Right Angle, 2.54mm, THM, Pin In Paste
Fitted	J202	1	1125-1202S0R138R1	WCON	1125-1202S0R138R1	Pin header, 2x2, Right Angle, 2.54mm, THM, Pin In Paste
Fitted	J205	1	1310-1205SNS073R1	WCON	1310-1205SNS073R1	2x5 pin header, 1.27mm pitch, THM
Fitted	J400	1	ZX62D-AB-5P8	Hirose	ZX62D-AB-5P8(30)	Micro USB AB Connector, Standard SMT + DIP
Fitted	JS100, JS101, JS102	3	3710-6001OS0B01	WCON	3710-6001OS0B01	Jumpier cap for 2.54mm pinheader
Fitted	L401, L402, L600	3	BLM18PG471SN1	Murata	BLM18PG471SN1	SMD RF inductor 0603, Z=470Ohm (@100MHz), Max R(dc)=0.20Ohm, Max current=1A
Fitted	L700, L701	2	BLM156B221SN1	Murata	BLM156B221SN1	SMD RF inductor 0402, Z=220Ohm (@100MHz), Max R(dc)=0.80Ohm, Max current=200mA
Fitted	LABEL1	1	Label PCB A	ACT Logimark AS	505462	PCBA identification label PP Top White Gloss
Fitted	PCB1	1	ATiny817 Xplained Pro PCB documentation			ATiny817 Xplained Pro PCB documentation
Fitted	PCBADOCC1	1	A09-2654 PCB A Files			ATiny817 Xplained Pro PCB A documentation
Fitted	Q100, Q101	2	PMPD85XP	NXP	PMPD85XP	Dual P-Channel MOSFET, -20V, RDS(ON) < 55 mOhm @ -3.4A @ -4.5V
Fitted	Q400	1	2N7002D	Fairchild	2N7002D	Dual N-Channel MOSFET, 60V, 115mA cont.RDS(ON) < 7.5 Ohm @50mA@5V, SOT-363
Fitted	Q500	1	PMV48XP	NXP	PMV48XP,215	P-Channel Digital FET, -30V, -3.5A continuous, -14A Peak, RDS(ON)=48mOhm@VGS=-4.5V, RDS(ON)=71mOhm@VGS=-2.5V, VGS(th)<1.25V
Fitted	Q501, Q701	2	BSS138N	Infineon	BSS138N	Low leakage N-Channel MOSFET, 60V, 0.23A continuous, 0.92A Peak, RDS(ON) = 3.50ohm@VGS=4.5V, VGS(th)<1.4V
Fitted	Q502, Q800, Q801, Q802	4	BSH201	NXP	BSH201,215	P-Channel Digital FET, -60V, -0.3A continuous, -1.2A Peak, RDS(ON)=2.5@VGS=-10V, RDS(ON)=5 ohm @VGS=-2.5V, VGS(th)<1.9V
Fitted	Q700	1	IRLML6402	International Rectifier	IRLML6402PBF	P-ch. MOSFET, -30V, -3.7A continuous,RDS(ON)=0.05Ohm@VGS=-4.5V, RDS(ON)=0.08Ohm@VGS=-2.5V
Fitted	R100, R410, R413	3	1M	ASJ Holdings	CR10-1004-FK	Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	R101, R102, R304, R503, R501, R700, R800, R801, R802	9	100k	ASJ Holdings	CR10-1003-FK	Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	R107, R108, R307, R308, R309, R706	6	0R	(n/a)	RMCF0402ZTOR00	RES 0.0 OHM 1/16W 0402 SMD
Fitted	R109, R110, R805	3	47k	KOA	RK73H1ETT1P4702F	Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	R300, R311, R421, R422, R603	5	39k	ASJ Holdings	CR10-390G-FK	Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	R302, R305, R703, R708, R709	5	10k	Vishay	CRW0402010K0PKE	Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	R303, R411, R412	3	1k	ASJ Holdings	CR10-1001-FK	Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	R306, R310, R602, R603	4	4.7k	Panasonic	ERJ2RKF4701X	Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	R401, R409	2	1k	ASJ Holdings	CR10-1001-FK	Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	R404, R406, R407, R408, R415, R425, R426	7	0R	(n/a)	RMCF0402ZTOR00	RES 0.0 OHM 1/16W 0402 SMD
Fitted	R414, R416, R417, R420	4	330R	ASJ Holdings	CR10-3300-FK	Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	R423	1	6.81k	Vishay	CRW0402681FKED	Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	R502, R606	2	4.7M	Yageo	RC0402FR-074MFL	Thick film SMD 0402 1/16W 1%
Fitted	R604	1	2k			Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	R605	1	33k	ASJ Holdings	CR10-3302-FK	Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	R606	1	39k	ASJ Holdings	CR10-3902-FK	Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	R700	1	0.1R	Vishay	WSL0603R1000FEA	WSL0603R1000FEA, metal strip resistor, 0.1 Ohm, +/-1%, 0603 SMD, 1/10 W, TEMP CO = +75 ppm/A°C
Fitted	R702, R704	2	100R	Panasonic	ERA3YEB101V	ERA-3YEB101V, metal film, 100R A±0.1%, resistor in 0603 at 100mW, TEMP CO A±25ppm/A°C, Max V=75V
Fitted	R705	1	680R	ASJ Holdings	CR10-6800-FK	Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	R707	1	2k	Yageo	RC0603FR-072KL	Thick film resistor, SMD 0603, 1/10W, 1%
Fitted	R804	1	2.2k	ASJ Holdings	CR10-2201-FK	Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	SW300, SW301	2	TS604VM1-035CR	Dailywell Electronics Co.LTD	TS604VM1-035CR-R	SWITCH, SMD, 260uf, 6.4mm X 6.2mm
Fitted	TEST1	1	ATiny817 Xplained Pro test			Fixture test for ATiny817 Xplained Pro
Fitted	TESTDOC1	1	ATiny817 Xplained Pro Test Instructions			ATiny817 Xplained Pro Test Instructions
Fitted	U100	1	TLV70033DSE	Texas Instruments	TLV70033DSE	LDO, 200 mA, Iq=31 uA, Vdo=250mV, Vout=3.3V, VIN= 2 V to 5.5V, SON-6 package
Fitted	U103	1	TPS73533DRV	Texas Instruments	TPS73533DRV	Low noise LDO, 500 mA, Vout=3.3V, 2% accuracy, Iq=46uA, noise=28uVrms, VIN= 2.7V to 6.5V, Vdo=280mV,stable with low ESR capacitor
Fitted	U300	1	ATiny817-MFR	Microchip	ATTINY817-MFR	Atmel 8-bit RISC MCU
Fitted	U400	1	AT32UC3A4256J-C1UR	Microchip	AT32UC3A4256J-C1UR	EDBG controller
Fitted	U600	1	SAMD20E17A-AUT	Microchip	ATSAMD20E17A-AUT	Atmel 32bit RISC MCU 32 pin
Fitted	U601	1	LM4041CEMS-ADJNOPB	Texas Instruments	LM4041CEMS-ADJNOPB	Adjustable shunt voltage regulator, 1.24 to 10V out
Fitted	U700	1	AD8656	Analog Devices	AD8656ARMZ	AD8656, dual low noise precision OpAmp, rail-to-rail, low offset 250uV, GBP 28 MHz, 8MSOP
Fitted	U701	1	ADA4528-1	Analog Devices	ADA4528-1ARMZ	Precision OpAmp, Zero-Drift 0.015uV/K, ultra low noise 5.6nV/sqrt(Hz), Vo=2uV, GBW=1MHz, single supply 2.2V to 5.5V or dual supply +/-1V to +/-2.75V, rail to rail, unity gain stable
Fitted	XC300	1	32.768kHz	Abrakon	AB807-32.768Hz-9-T	Crystal, 32.768kHz, CL=9.0pF, ESR=70kOhm, SMD L1W=3.2 x 1.5mm, 20ppm
Fitted	XC400	1	12.00MHz	Kyocera Crystal Device Corporation	CX3225GB12000HKPSC1	Kyocera CX3225GB12000HKPSC1, 12MHz, 12pF, SMD crystal
Not Fitted	C403	0	4.7n	PHYCOMP	2238 587 15632	Ceramic capacitor, SMD 0402, X7R, 25V, +/-10% (dc35287)
Not Fitted	C705	0	1n	Yageo	CC0402KRX7R9BB102	Ceramic capacitor, SMD 0402, X7R, 50V, +/-10%
Not Fitted	R301	0	1k	ASJ Holdings	CR10-1001-FK	Thick film resistor, SMD 0402, 1/16W, 1%
Not Fitted	R312, R313	0	0R	(n/a)	RMCF0402ZTOR00	RES 0.0 OHM 1/16W 0402 SMD
Not Fitted	R424	0	1M	ASJ Holdings	CR10-1004-FK	Thick film resistor, SMD 0402, 1/16W, 1%

Approved

Notes

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