

Drawn By: Microchip India

Engineer: *

Project Title: **ATSAMC21N-XPRO**

Sheet Title: **Top Level Schematics**

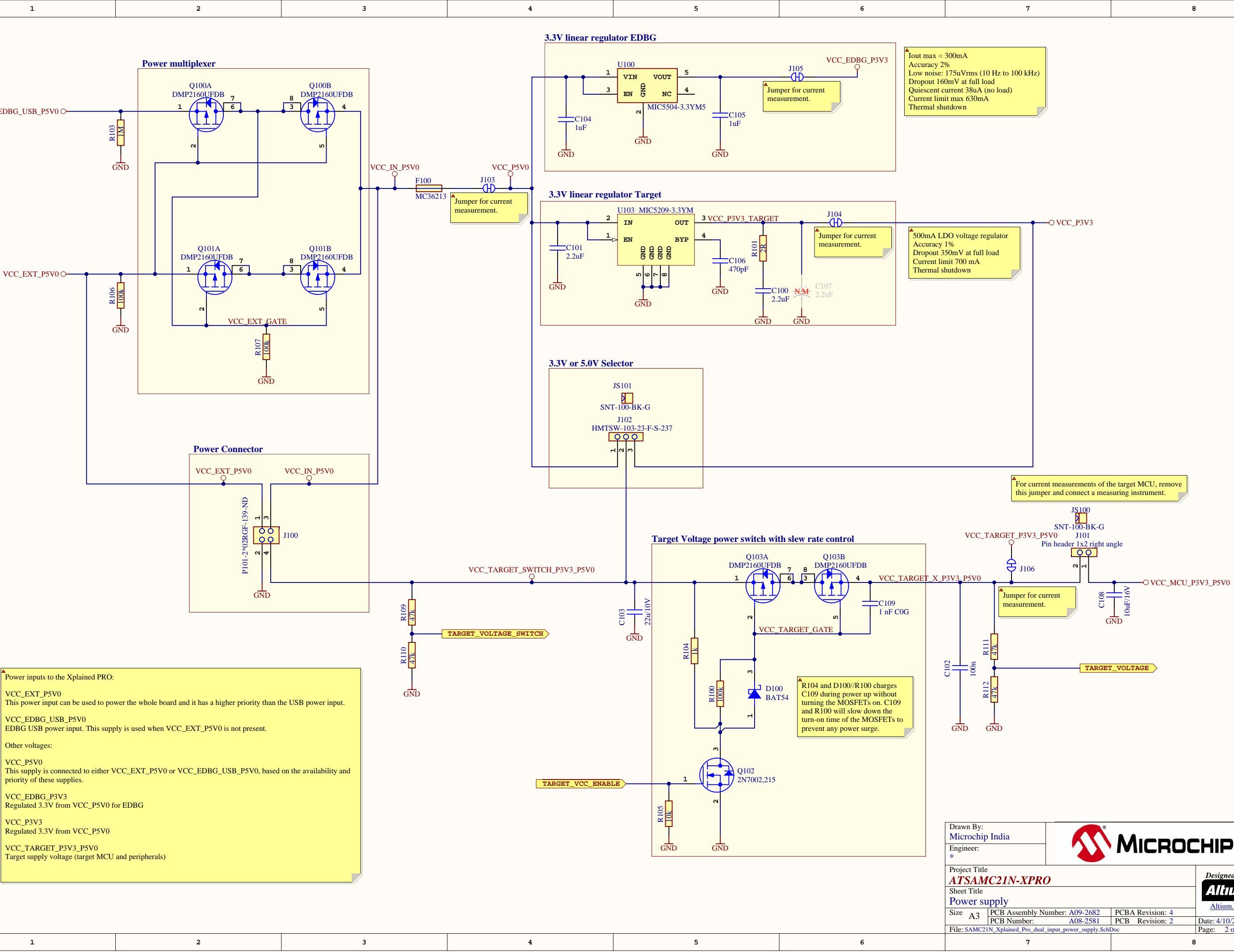
Size A3 | PCB Assembly Number: A09-2682 | PCBA Revision: 4

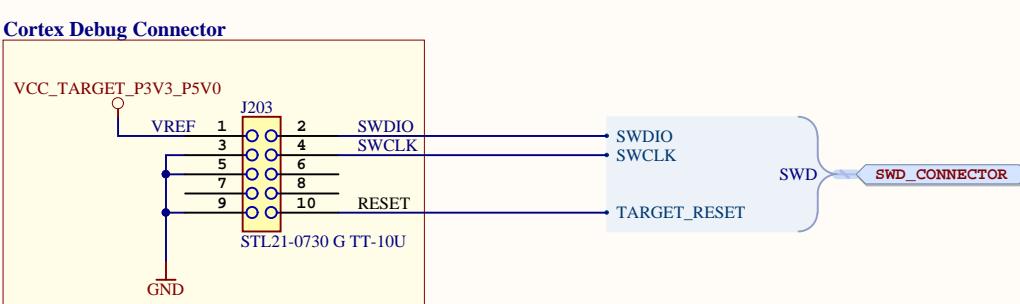
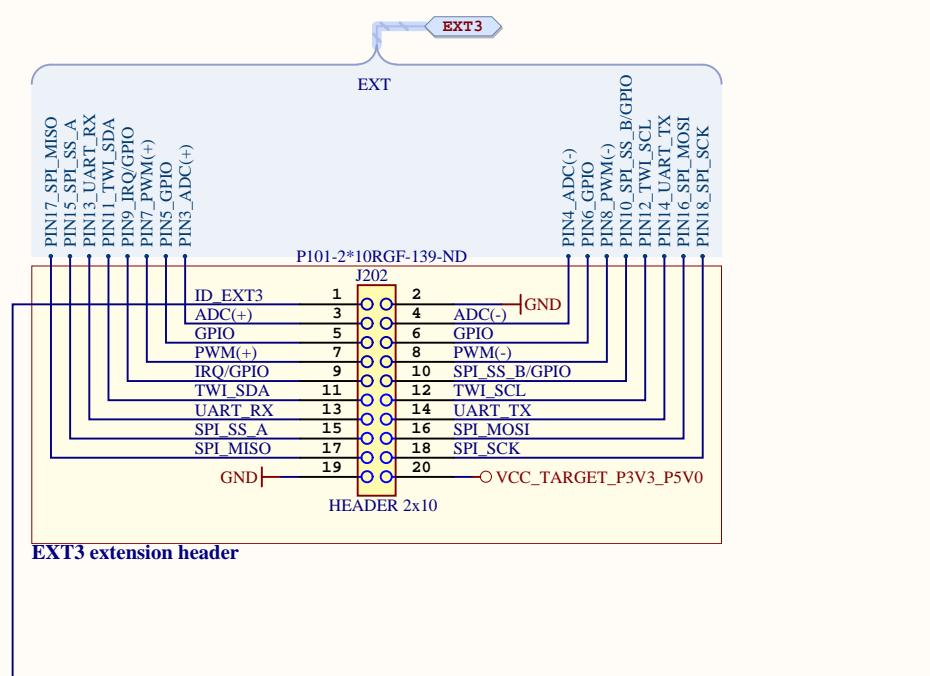
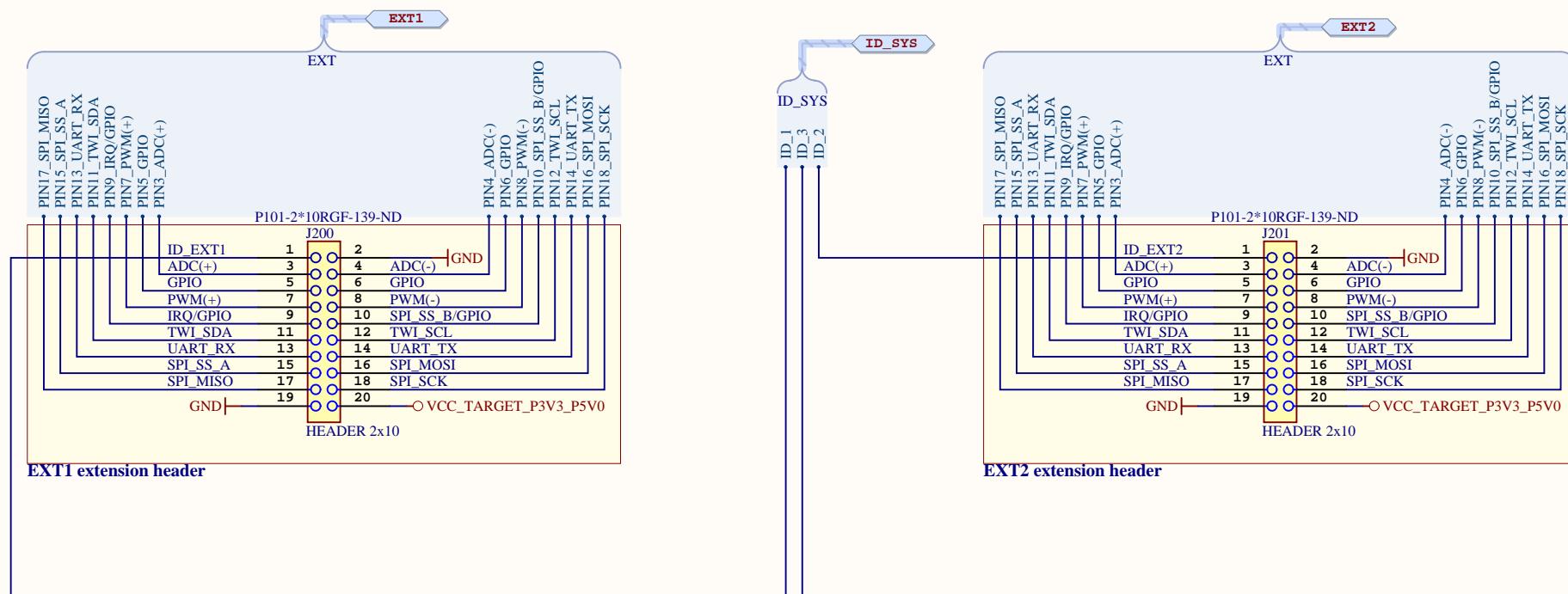
PCB Number: A08-2581 | PCB Revision: 2 | Date: 4/10/2017

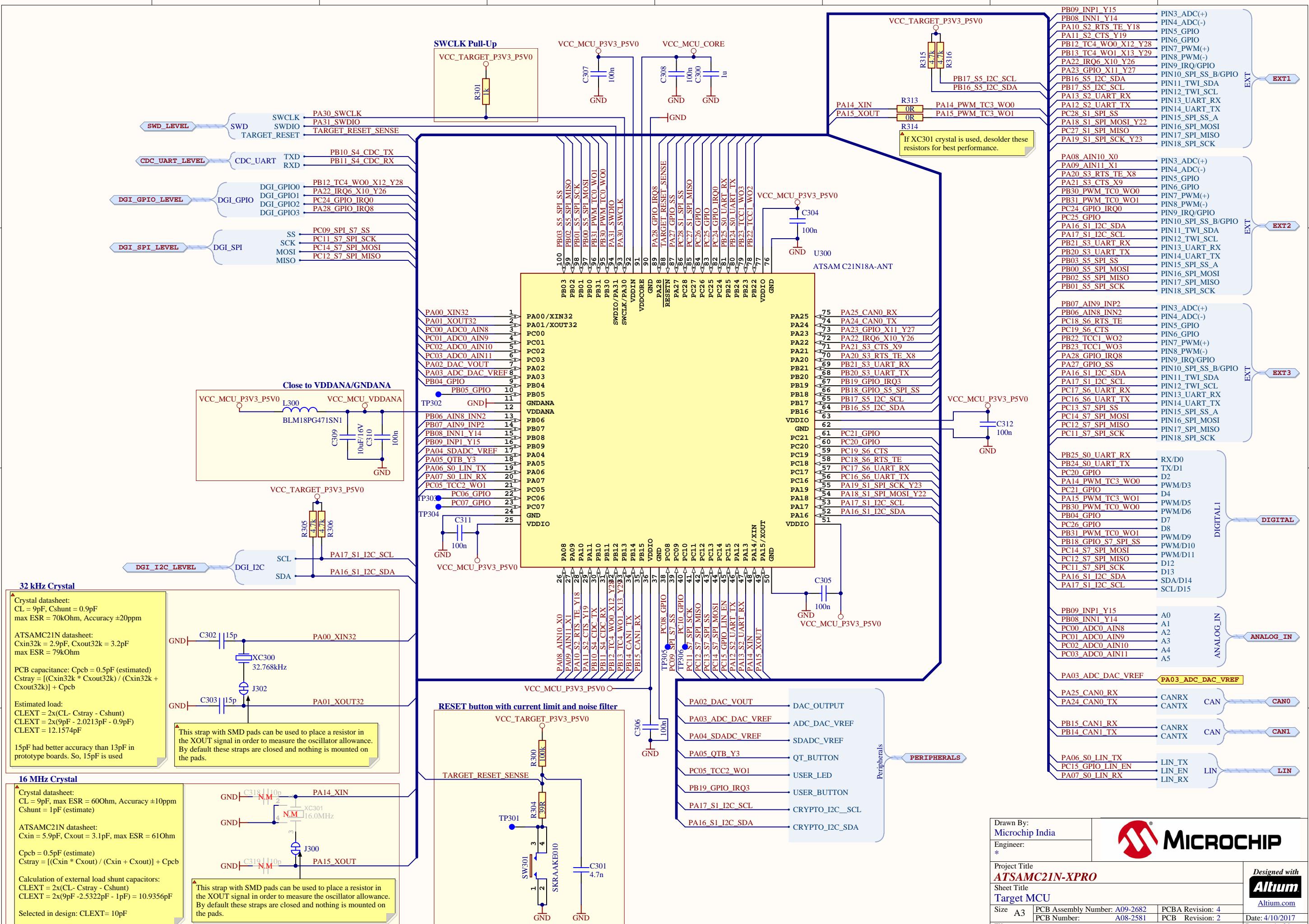
File: SAMC21N_Xplained_Pro_TopLevel.SchDoc | Page: 1 of 9

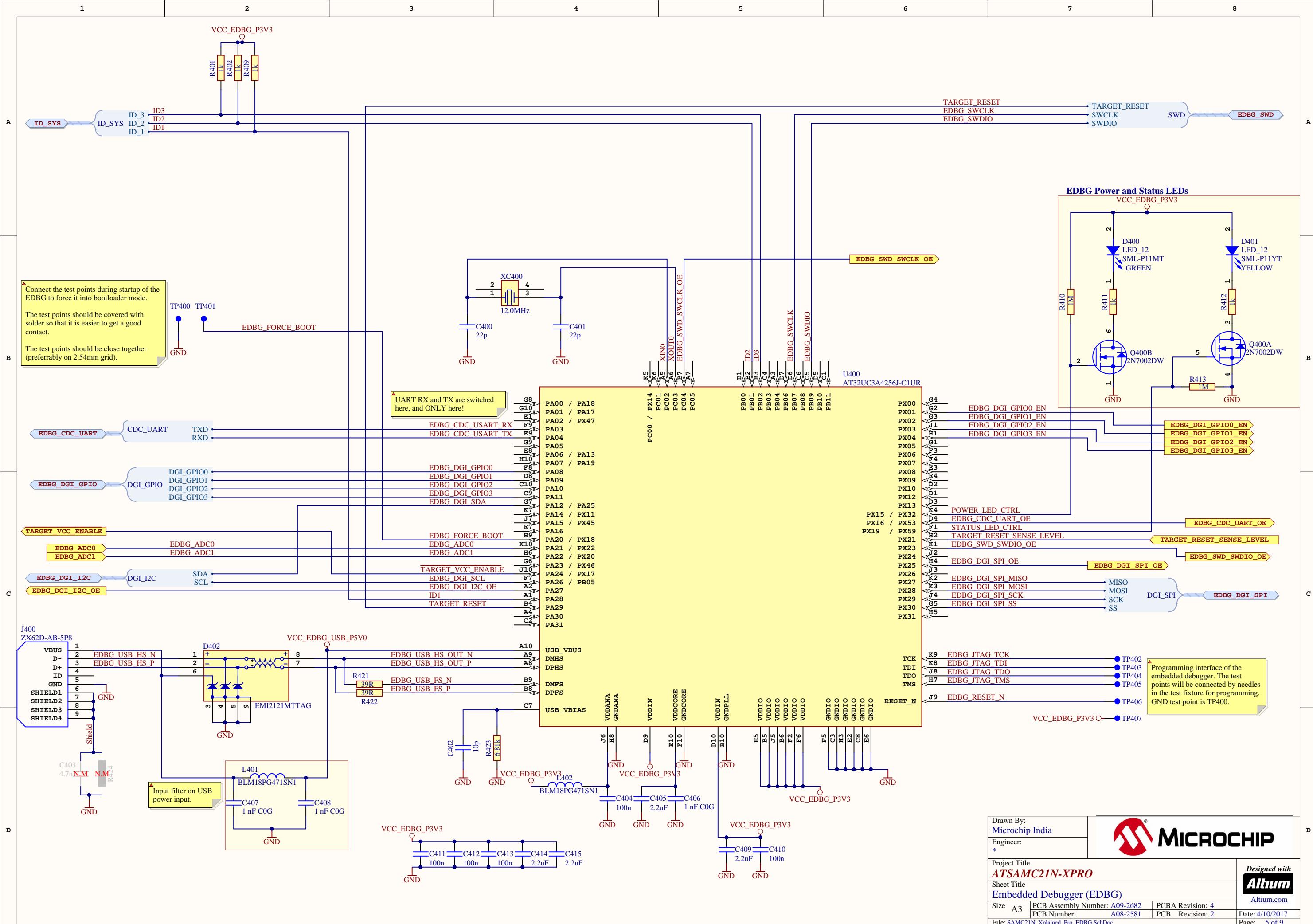
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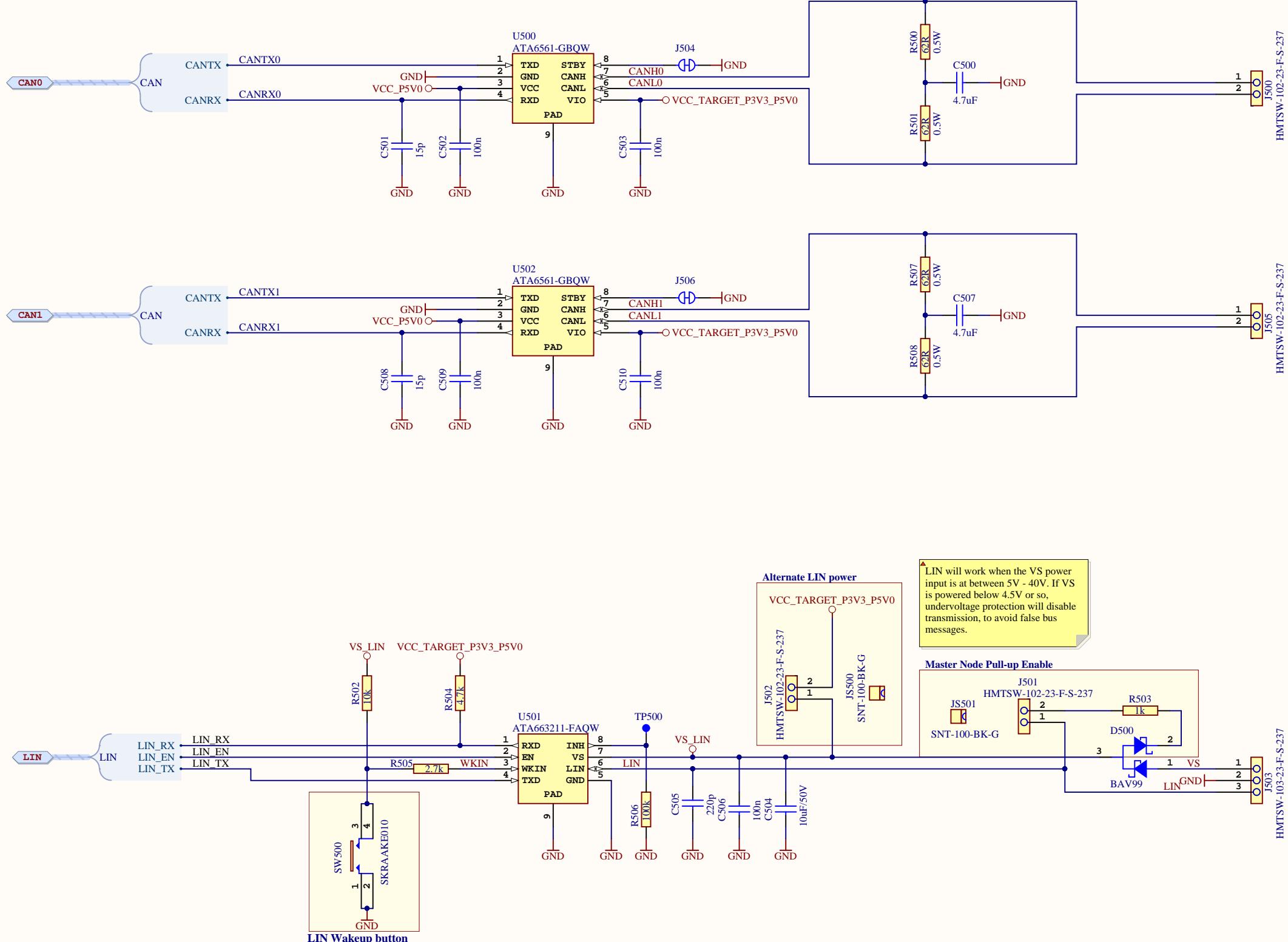
Altium











- ▶ LIN will work when the VS power input is at between 5V - 40V. If VS is powered below 4.5V or so, undervoltage protection will disable transmission, to avoid false bus messages.

Master Node Pull-up Enable

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Project Title

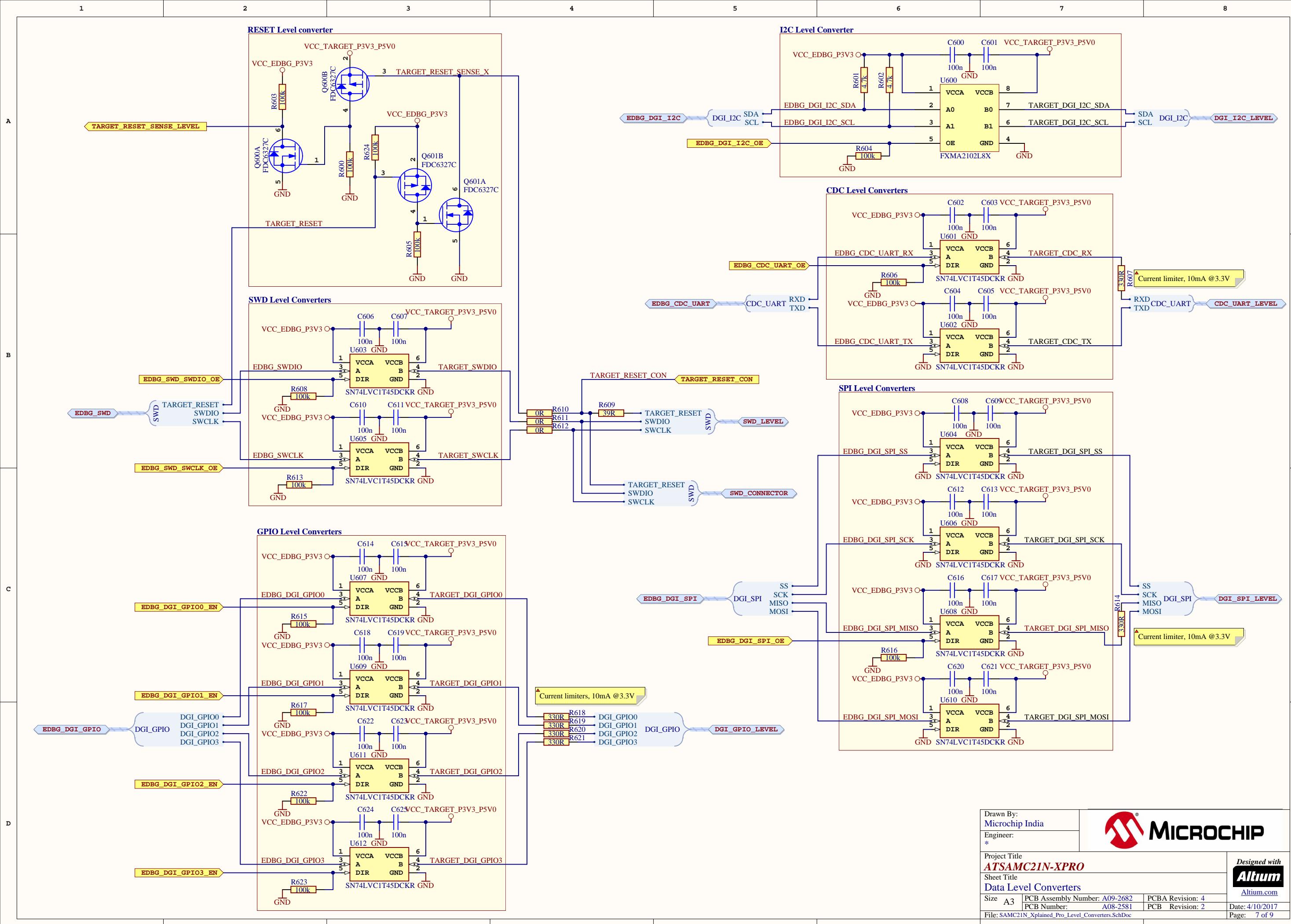
Altium

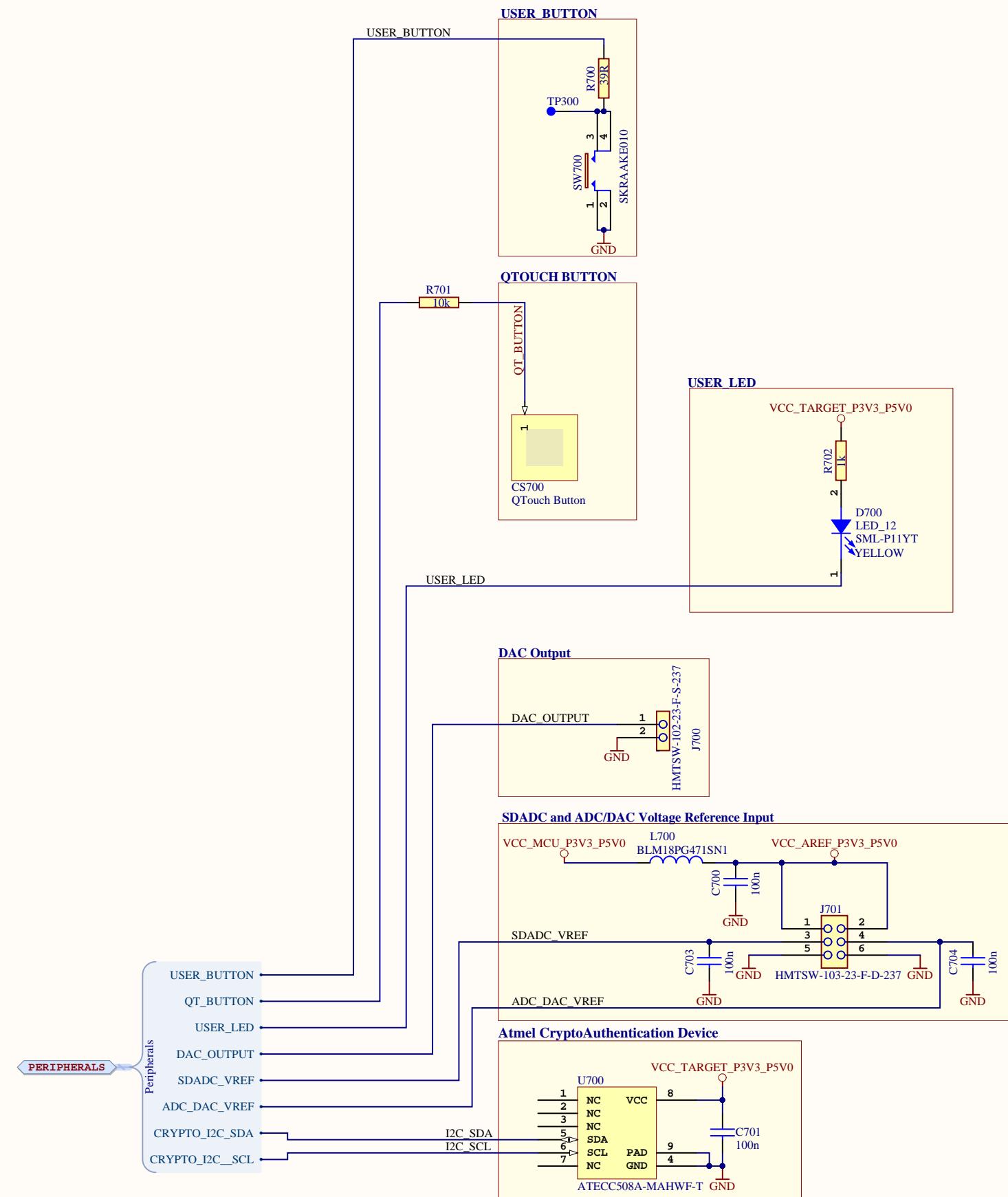
Sheet Title CAN & LIN Interface

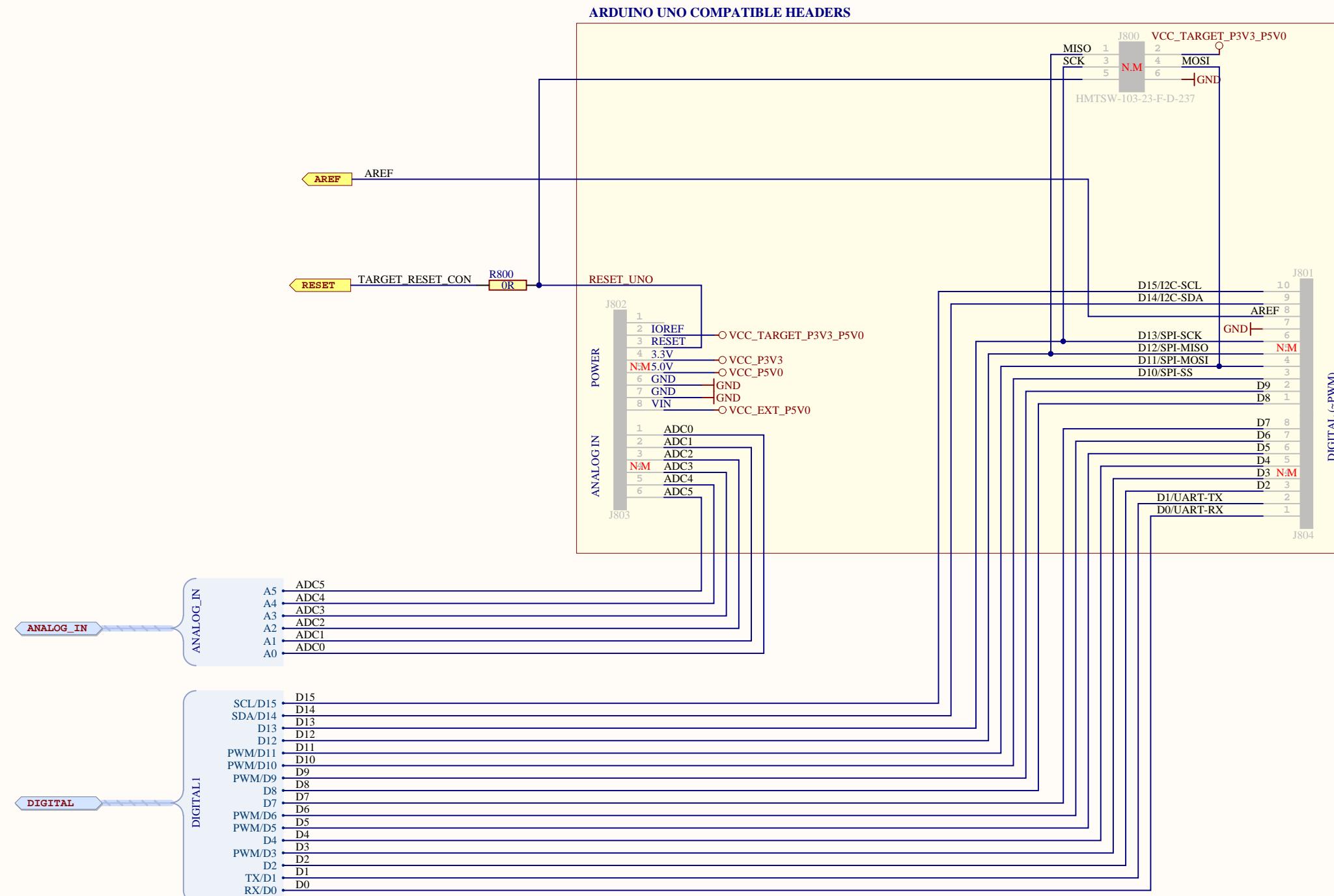
CHIN & LIN Interface Altium.com

AS PCB Number: A08-2581 PCB Revision: 2 Date: 4/10/2017
File: SAMC21N_Yielded_Pcb_GAN_LIN_S1D1.dwg Page: 6 of 9

File: SAMC21N_Xplained_Pro_CAN_LIN.SchDoc Page: 6 of 9

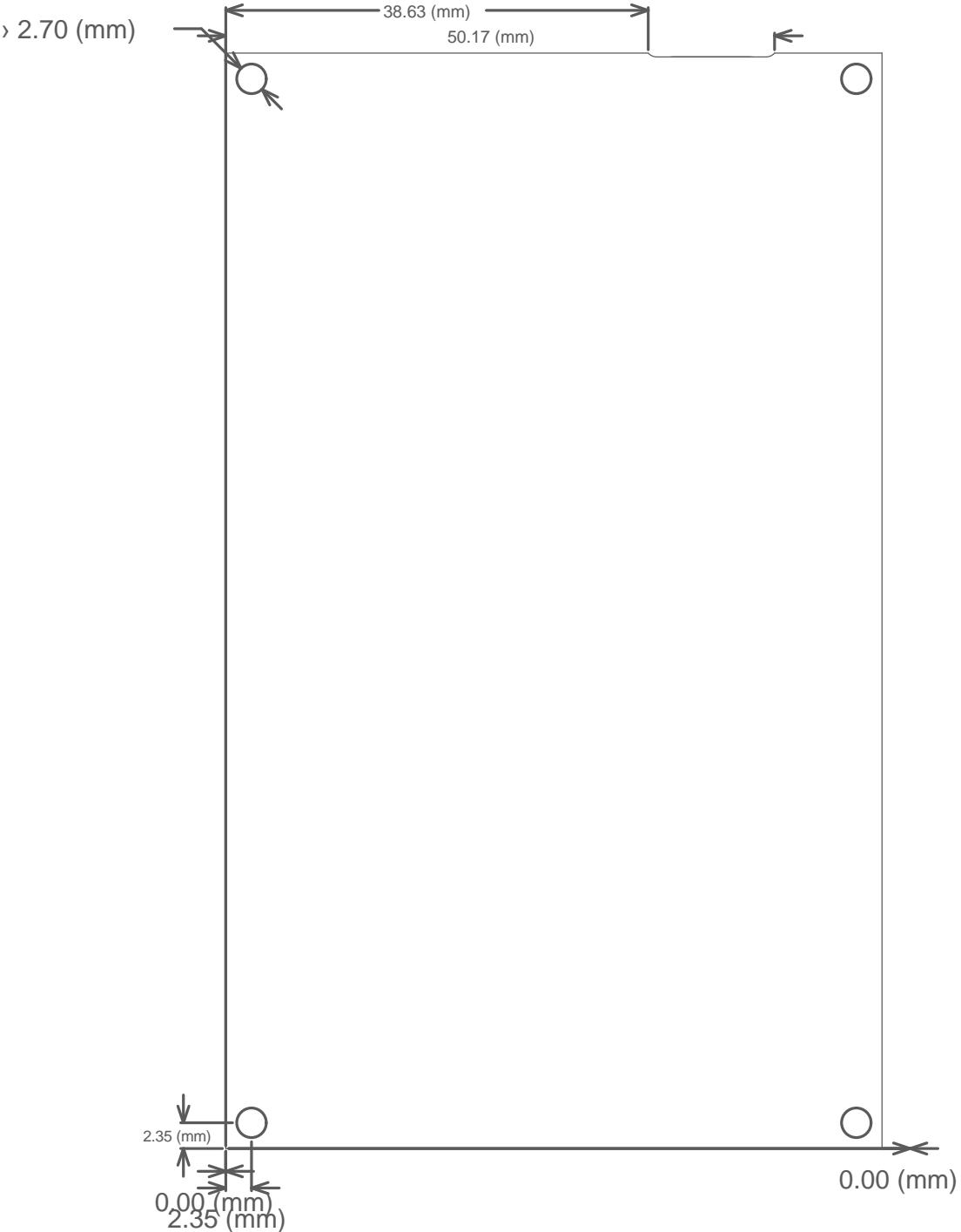


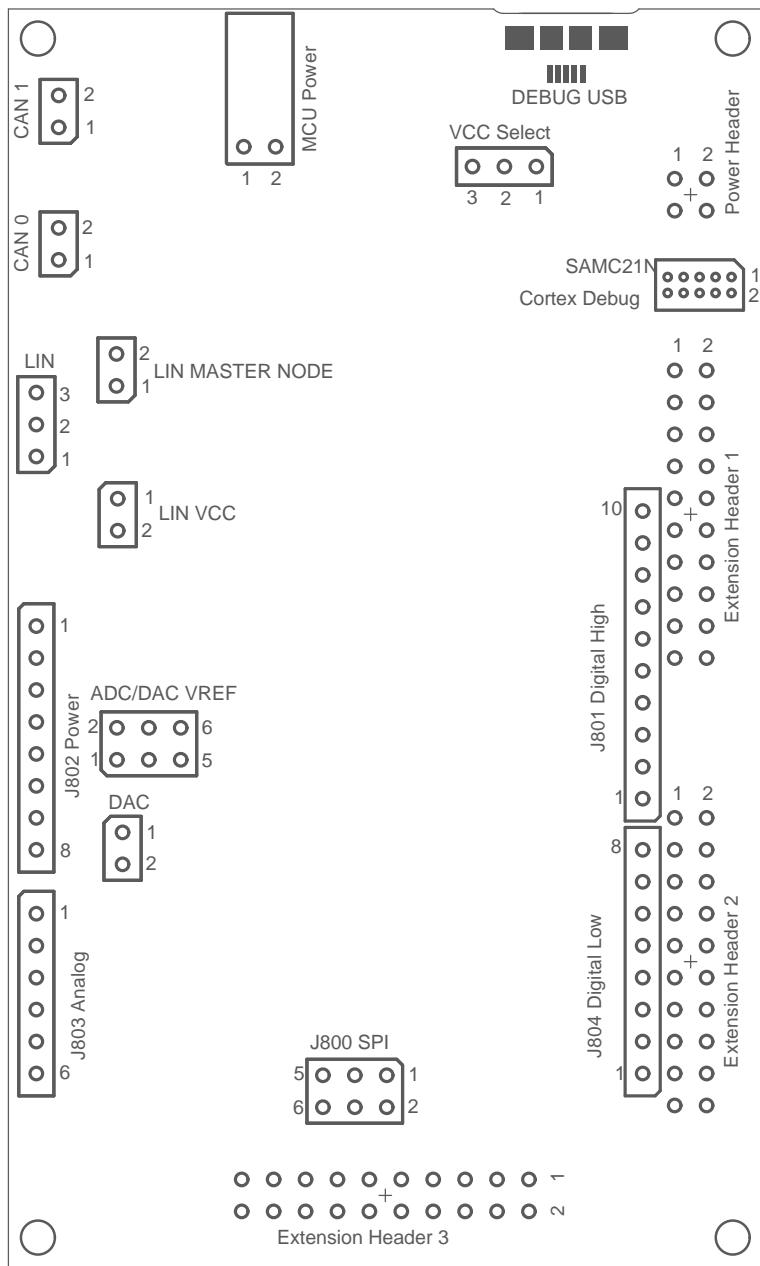


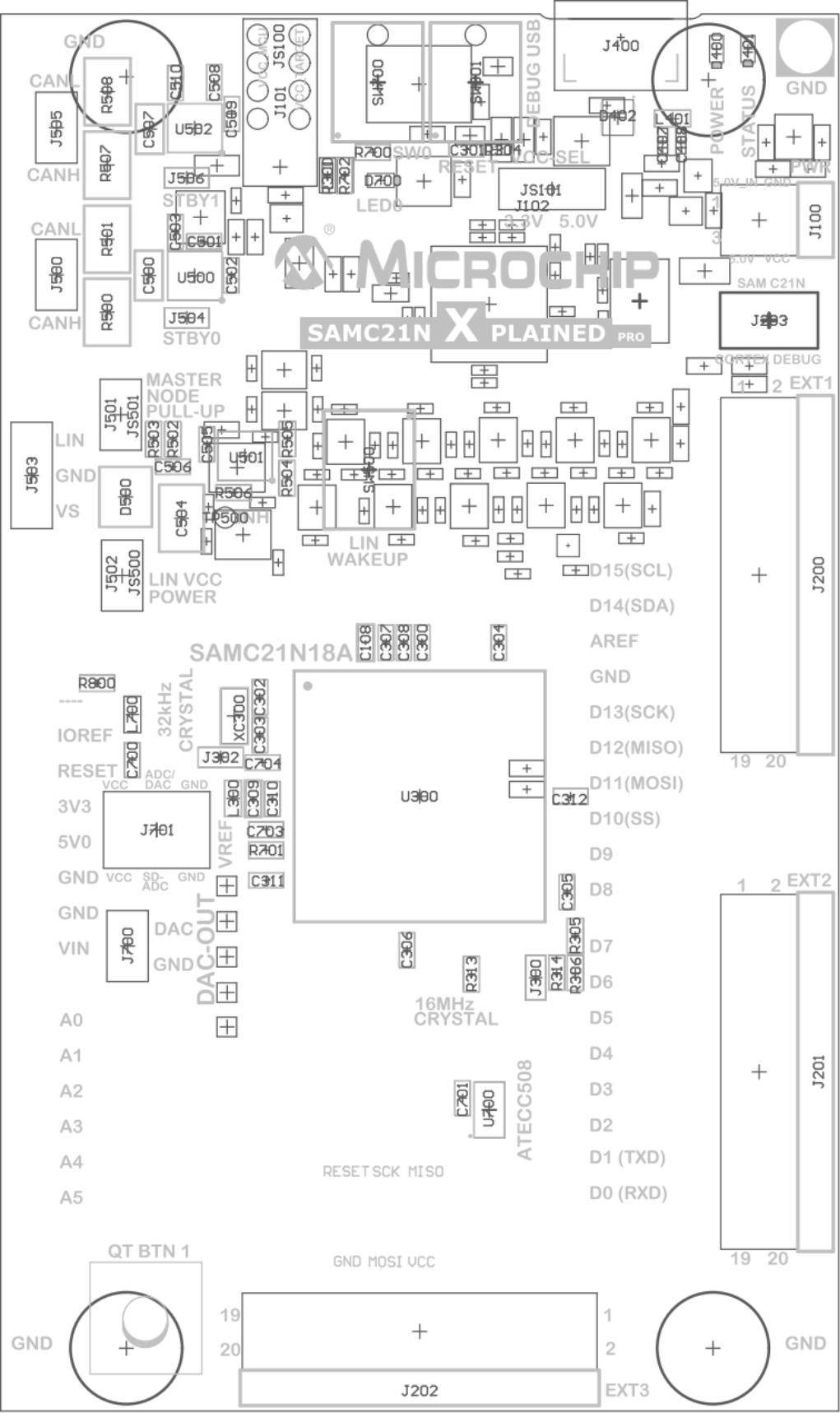


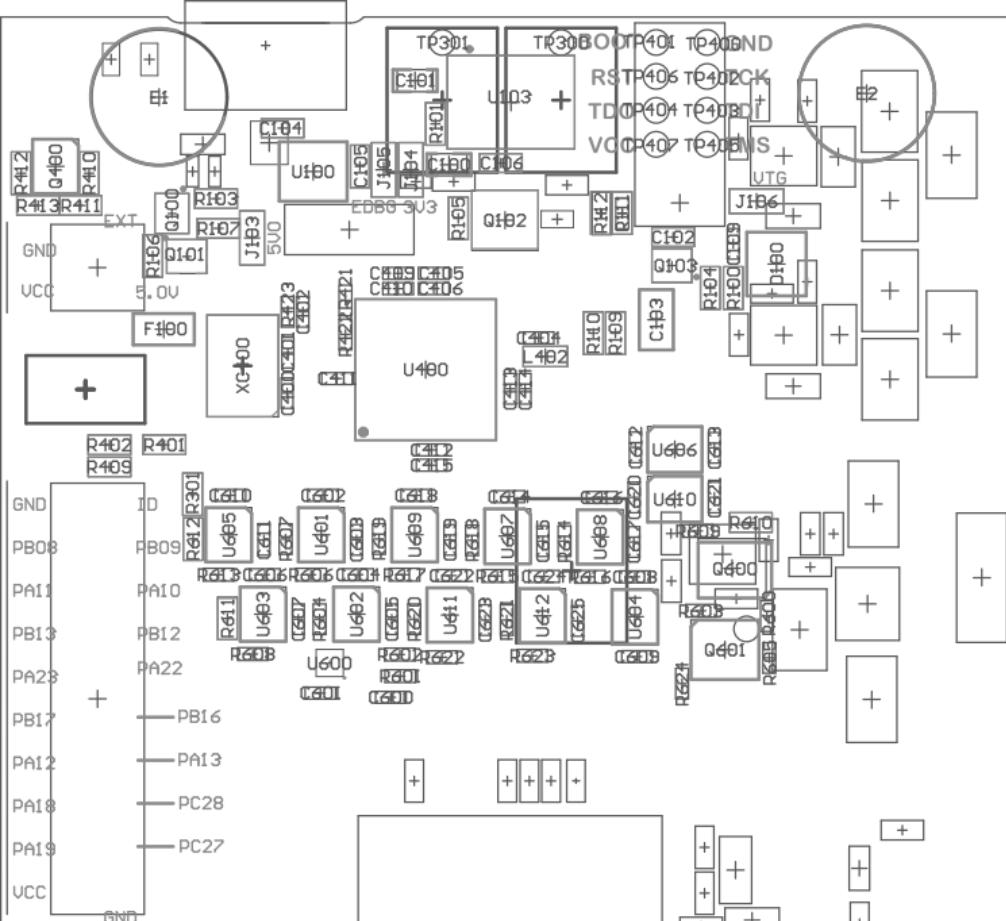
Drawn By: Microchip India	 MICROCHIP	
Engineer: *		
Project Title ATSAMC21N-XPRO		
Sheet Title Arduino Uno interface connectors		
Size A3	PCB Assembly Number: A09-2682	PCBA Revision: 4
	PCB Number: A08-2581	PCB Revision: 2
	Date: 4/10/2017	
	File: SAMC21N_Xplained_Pro_Arduino_Connectors.SchDoc	Page: 9 of 9

Medium MCU Mechanical Dimensions









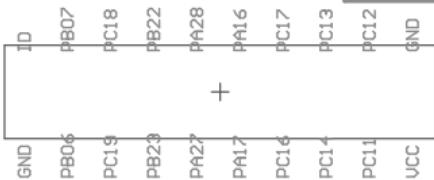
XPLAINED PRO EXTENSION HEADER

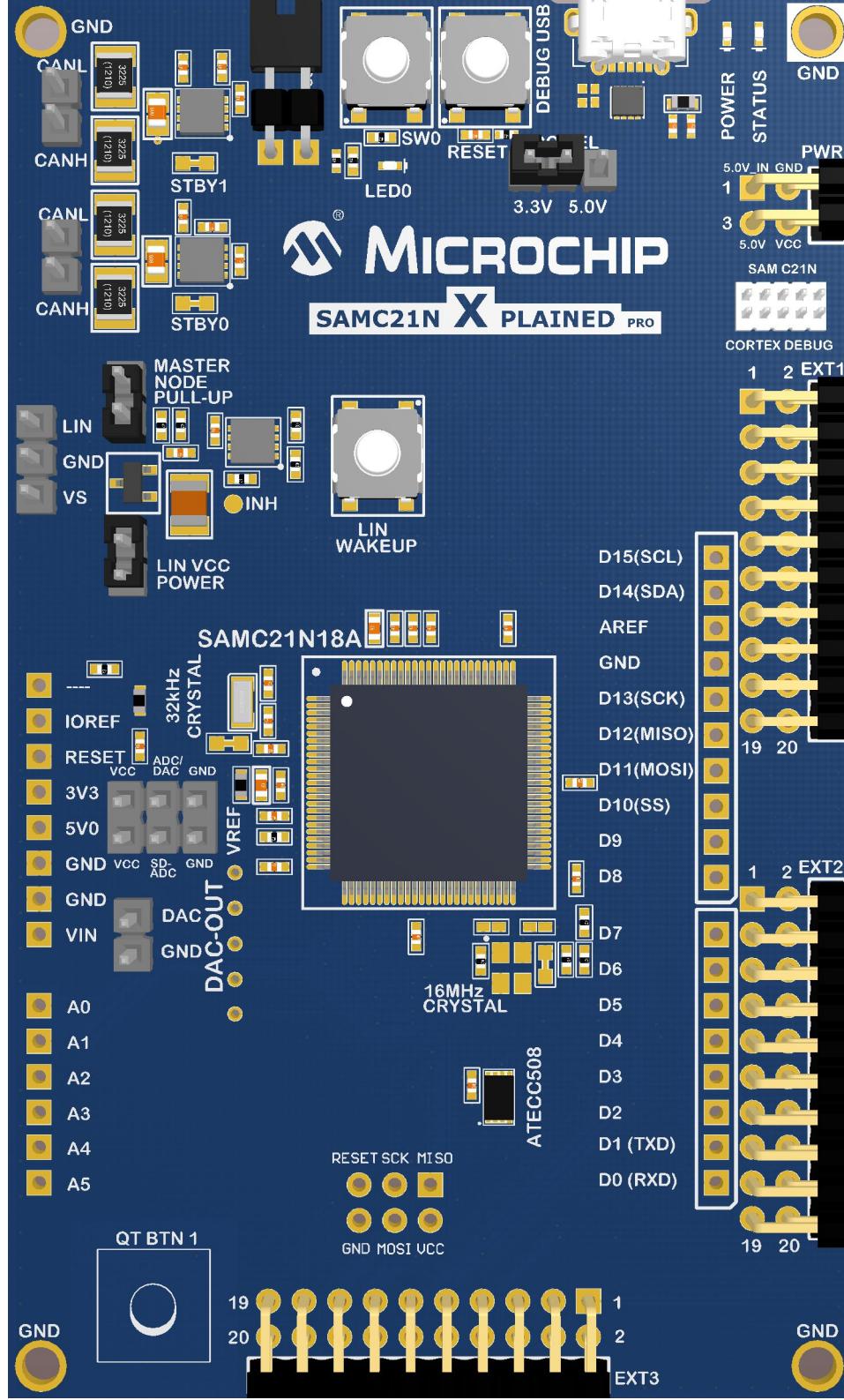
GND	ID
ADC-	ADC+
GPIO1	GPIO0
PWM-	PWM+
SPI_SS_B	IRQ
TWI_SCL	TWI_SDA
UART_TX	UART_RX
SPI_MOSI	SPI_SS_A
SPI_SCK	SPI_MISO
VCC	GND

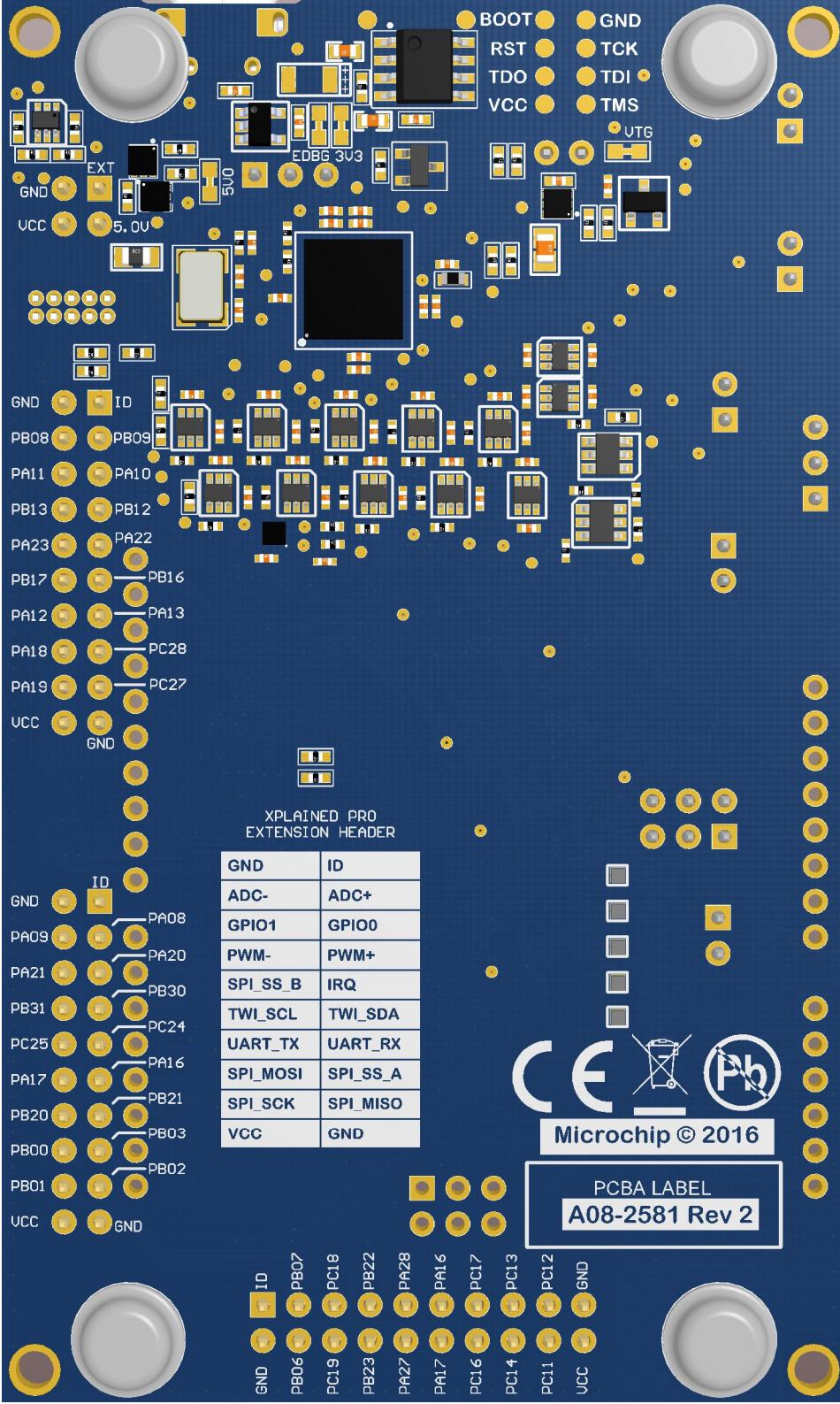


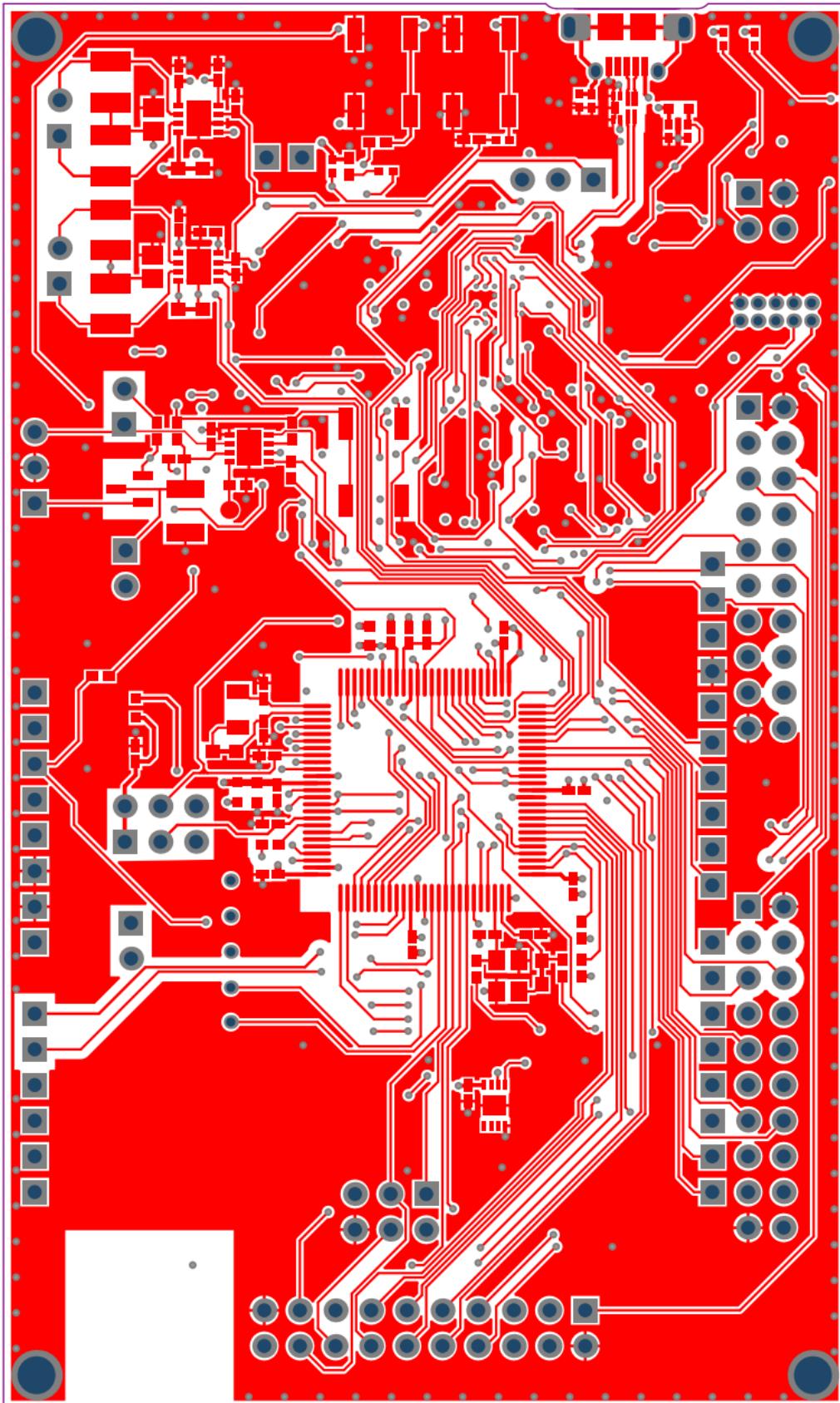
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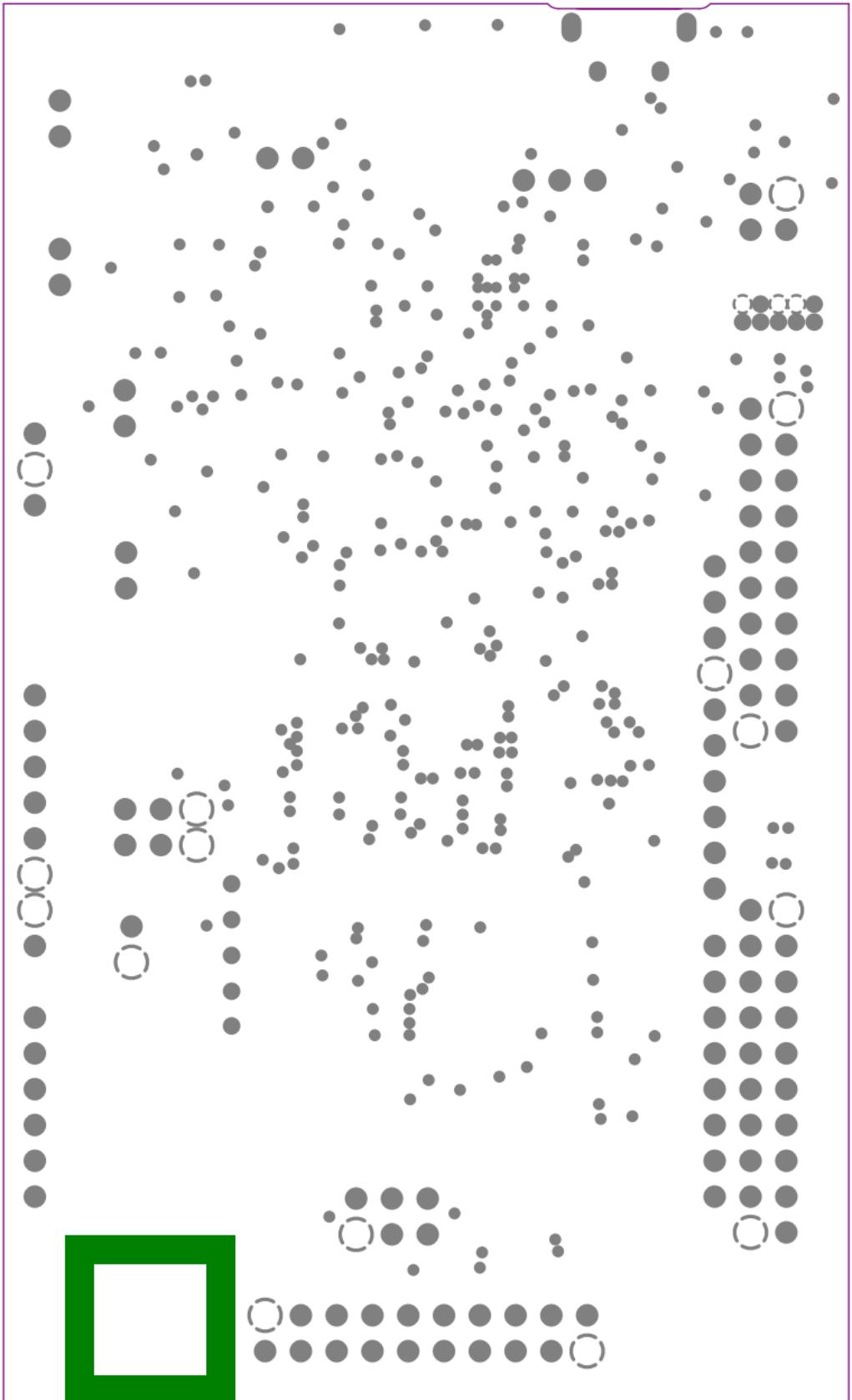
PCBA LABEL
A08-2021 Rev 2

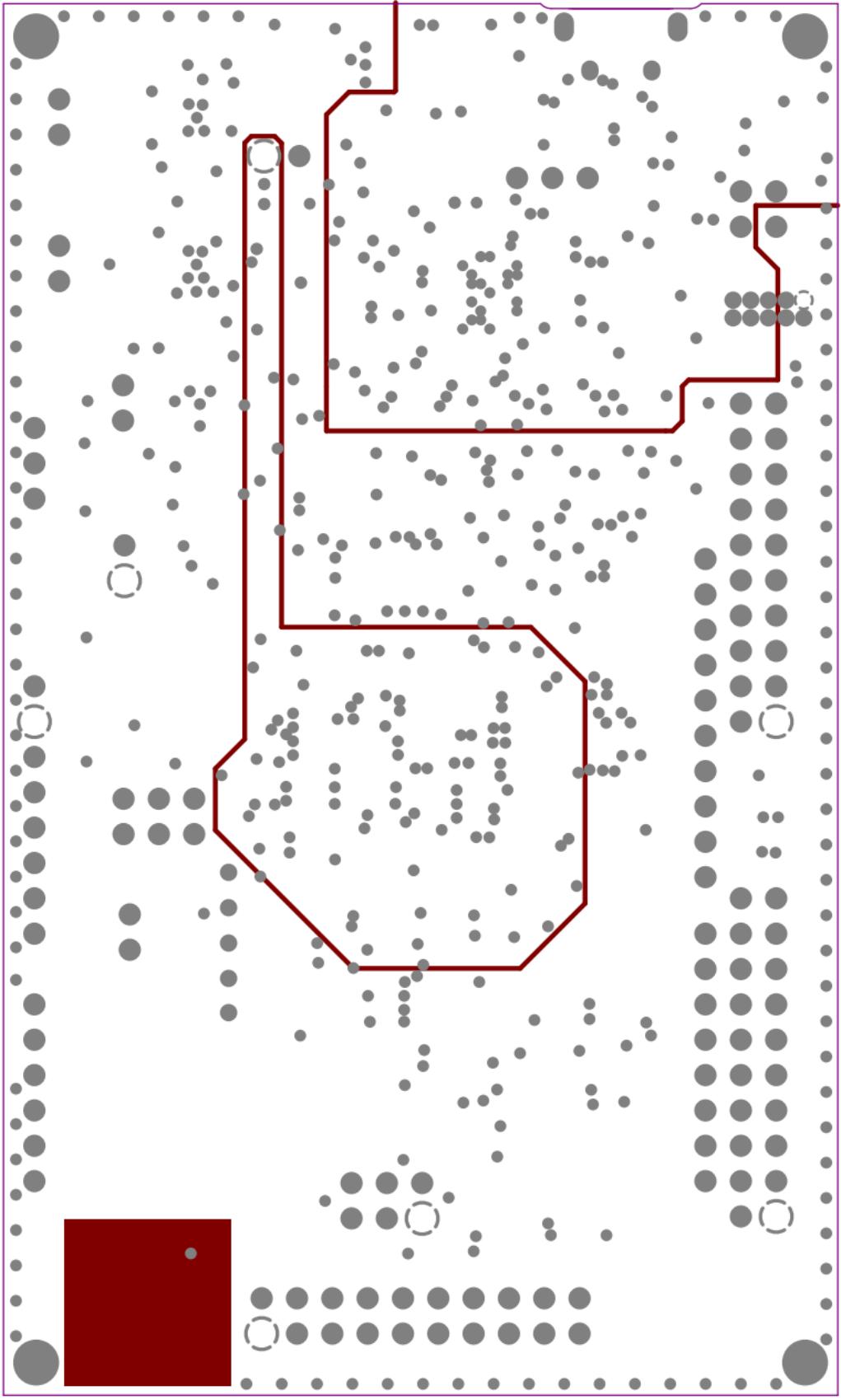


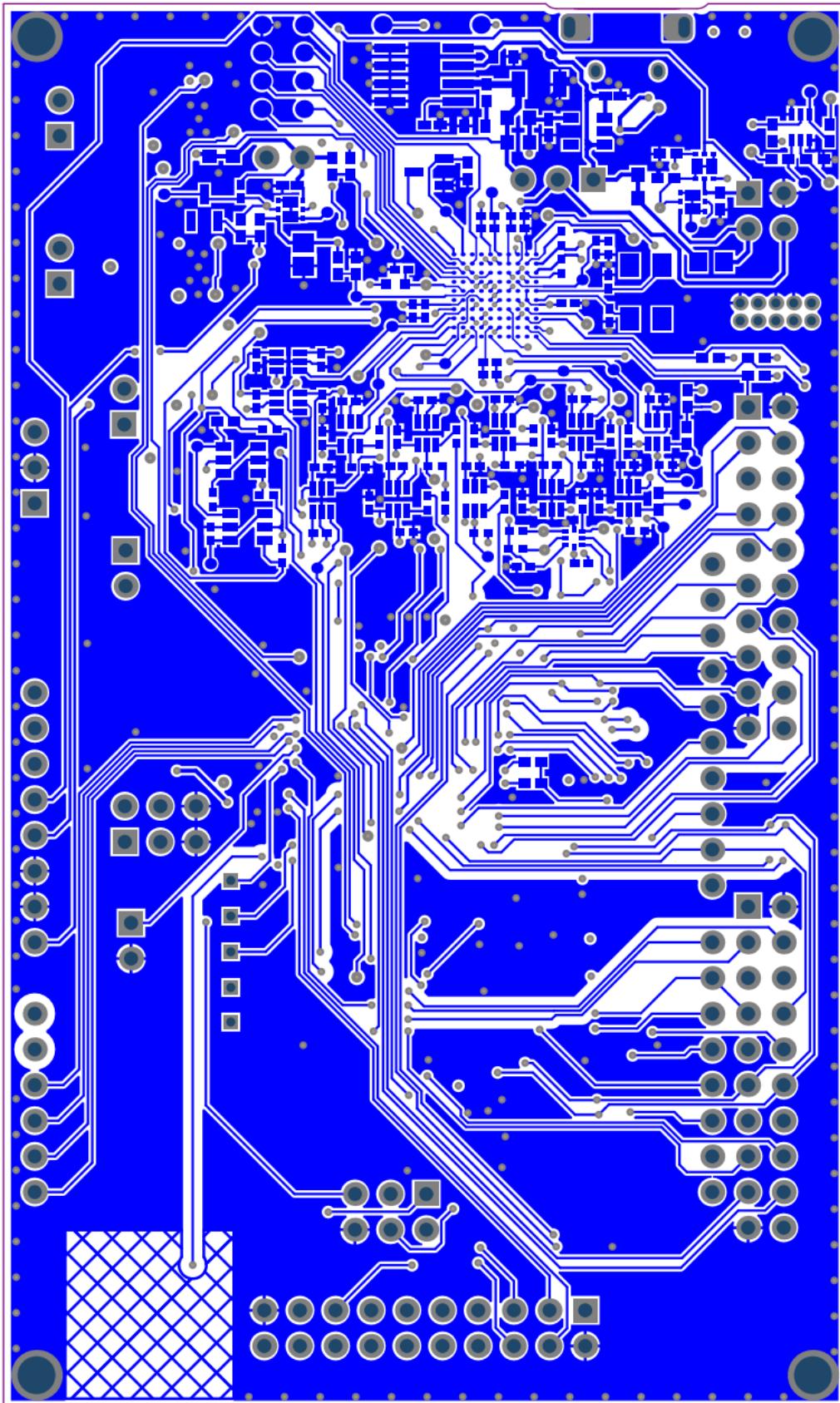












Component list

Bill of Materials Fitted For Variant [Default_assembly] of Project [SAMC21N_Xplained_Pro.PjPCB] (No PCB Document Selected)



MICROCHIP

Source Data From: SAMC21N_Xplained_Pro.PjPCB

Project: SAMC21N_Xplained_Pro.PjPCB

Variant: Default_assembly

Fitted	Designator	Quantity	Value	Manufacturer	MPN	Description
Fitted	C100, C101	2	2.2uF	Murata	GRM188R71A225KE15D	Ceramic capacitor, SMD 0603, X7R, 10V, 10%
Fitted	C102, C304, C305, C306, C307, C308, C310, C311, C312, C502, C503, C505, C509, C510, C700, C701, C703, C704	18	100n	Kemet	C0402C104K4RACTU	Ceramic capacitor, SMD 0402, X7R, 16V, +/-10%
Fitted	C103	1	22uF10V	tdk	C2012X5R1A226M0.85	Ceramic capacitor, SMD 0805, X5R, 10V, A/+20%
Fitted	C104, C105	2	1uF	Murata	GRM155R61A105KE15D	Ceramic capacitor, SMD 0402, X5R, 10V, 10%
Fitted	C106	1	470pF	Murata	GRM155S1C1H471A01D	Ceramic capacitor, SMD 0402, NPO, 50V, +/-5%
Fitted	C108, C309	2	10uF/16V	Taiyo Yuden	EMK107BB1J06MA-T	Ceramic capacitor, SMD 0603, X5R, 16V, 10uF + 20% (High Density)
Fitted	C109, C406, C407, C408	4	1nFC0G	Murata	GRM155S1C1H02A01D	Ceramic capacitor, SMD 0402, COG, 50V, +/-5%
Fitted	C300	1	1u	Kemet	C0402C105K9PAC	Ceramic capacitor, SMD 0402, X5R, 6.3V, +/-10% (de26942)
Fitted	C301	1	4.7n			Ceramic capacitor, SMD 0402, X7R, 25V, +/-10% (de35287)
Fitted	C302, C303, C501, C508	4	15p	AVX	04025A150JAT2A	Ceramic capacitor, SMD 0402, NPO, 50V, +/-5%
Fitted	C400, C401	2	22p			Ceramic capacitor, SMD 0402, NPO, 50V, +/-5%
Fitted	C402	1	10p			Ceramic capacitor, SMD 0402, X7R, 16V, +/-10%
Fitted	C404, C410, C411, C412, C413	5	100n	Kemet	C0402C104K4RACTU	Ceramic capacitor, SMD 0402, X7R, 16V, +/-10%
Fitted	C405, C409, C414, C415	4	2.2uF	Kemet	C0402C225M9PAC	Ceramic capacitor, SMD 0402, X5R, 6.3V, +/-20%
Fitted	C500, C507	2	4.7uF	Murata	GRM21BR51E475KA12L	Ceramic capacitor, SMD 0805, X5R, 25V, +/-10%
Fitted	C504	1	10uF/50V	tdk	CGA9P3X7S1H106K	Ceramic capacitor, SMD 1210, X7S, 50V, A/+10%
Fitted	C505	1	220p			Ceramic capacitor, SMD 0402, X7R, 50V, +/-10%
Fitted	C600, C601, C602, C603, C604, C605, C606, C607, C608, C609, C610, C611, C612, C613, C614, C615, C616, C617, C618, C619, C620, C621, C622, C623, C624, C625	26	100n	Kemet	C0402C104K4RACTU	Ceramic capacitor, SMD 0402, X7R, 16V, +/-10%
Fitted	D100	1	BAT54	Philips	BAT54	Schottky diode, V(rmm)=30V, If(l)=0.1A, V(f)=0.4V (at If = 0.01A), If(r)=0.5uA (at Vrrm), If(rr)=5ns, SMD SOT23
Fitted	D400	1	SML-P11MT	ROHM	SML-P11MT-T86	LED, SMD 0402, Green, Wave length=569nm, 2.1lmcd @ (1mA, 1.9Vf)
Fitted	D401, D700	2	SML-P11YT	ROHM	SML-P11YT-T86	LED, SMD 0402, Yellow, Wave length=586nm, 7.6mcd @ (1mA, 1.9Vf)
Fitted	D402	1	EM2121MTTAG	ON Semiconductor	EM2121MTTAG	EM2121, SZEM2121 Single Pair Common Mode Filter with ESD Protection
Fitted	D500	1	BAV99	Philips	BAV99	High-speed Double Diode
Fitted	E1, E2, E3, E4	4	SJ-5076		SJ-5076	2.8mm adhesive feet diam.8.0mm
Fitted	F100	1	MC36213	Multicomp	MC36213	Resetable PTC fuse, Ih = 0.5A, It = 1.0A, 0805 package
Fitted	Fixture1	1	Xplained PRO MCU board Jupiter Test Fixture	ESCA-TEC	Xplained PRO MCU board Jupiter Test Fixture	Xplained PRO MCU board Jupiter Test Fixture
Fitted	FW1	1	EDBG secured firmw are	ATMEL		EDBG secured firmw are
Fitted	J100	1	P101-2'02RGF-139-ND		P101-2'02RGF-139-ND	Pin header, 2x2, Right Angle, 2.54mm, TH, Pin In Paste
Fitted	J101	1	Pin header 1x2 right angle	Pro-data International Corp	2213R-2G	1x2 pin header, right angle, 2.54 mm pitch, through-hole
Fitted	J102, J503	2	HMTSW-103-23-F-S-237	SAMTEC	HMTSW-103-23-F-S-237	1x3 pin header, 2.54mm pitch, Pin-in-Paste THM, 1mm hole
Fitted	J200, J201, J202	3	P101-2'10RGF-139-ND		P101-2'10RGF-139-ND	Pin header, 2x10, Right Angle, 2.54mm, THM, Pin In Paste
Fitted	J203	1	PIN HEADER 2x5	Garry	STL21-0730 G TT-10U	2x5 pin header, 1.27mm pitch, THM
Fitted	J400	1	ZX62DA-B-5PB			Micro USB AB Connector, Standard SMT + DIP
Fitted	J500, J501, J502, J505, J700	5	HMTSW-102-23-F-S-237	SAMTEC	HMTSW-102-23-F-S-237	1x2 pin header, 2.54mm pitch, Pin-in-Paste THM
Fitted	J701	1	HMTSW-103-23-F-D-237	SAMTEC	HMTSW-103-23-F-D-237	2x3 pin header, 2.54mm pitch, Pin-in-Paste THM
Fitted	JS100, JS101, JS500, JS501	4	SNT-100-BK-G	SAMTEC	SNT-100-BK-G	Juniper cap for 2.54mm pinheader
Fitted	L300, L401, L402, L700	4	BLM18PG471SN1	Murata	BLM18PG471SN1	SMD RF inductor 0603, Z=470Ohm @100MHz, Max R(Dc)=0.650Ohm, Max current=1A
Fitted	LABEL1	1	LabelPCBA	ACT Logimark AS	505462	PCBA identification label PP Top White Gloss
Fitted	PCB1	1	SAMC21N Xplained Pro PCB			SAM C21N Xplained Pro PCB, 4 layer, 60mm x 100mm
Fitted	PCBADC01	1	A09-268Z PCB Files			SAM C21N Xplained Pro PCBA documentation
Fitted	Q100, Q101, Q103	3	DM2160UFDB-7	Diodes Incorporated	DMP2160UFDB-7	MOSFET 3.8A Dual P-CHAN, Rds 70 mOhms, Vgs 12V, Vds -20
Fitted	Q102	1	2N7002.215	NXP	2N7002.215	N-Channel MOSFET, 60V, 0.300A continuous, 1.2A Peak, RDS(ON) = 3.80mΩ@VGS=4.5V, VGS(th)<2.5V
Fitted	Q400	1	2N7002DW	Fairchild	2N7002DW	Dual N-Channel MOSFET, 60V, 115mA cont.RDS(ON) < 7.5 Ohm @50mA @5V, SOT-363
Fitted	Q600, Q601	2	FD06327C	Fairchild	FD06327C	Dual N-p-ch MOSFET, 20V, 2.7A/1.9A cont, 8A/8A pulse, RDS(ON)<0.08/0.170mΩ@VGS=4.5V, VGS(th)<1.5V, SSOT-6
Fitted	R100, R106, R107, R506	4	100k			Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	R101	1	2R			RES SMD 2.0H 1% 1/16W 0402
Fitted	R103, R410, R413	3	1M			Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	R104, R301, R401, R402, R409, R411, R412, R503, R702	9	1k			Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	R105, R107, R701	3	10k	vishay	CRCW040210K0FKED	Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	R109, R110, R111, R112	4	47k			Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	R300, R600, R603, R604, R605, R606, R608, R613, R615, R616, R617, R622, R623, R624	14	100k			Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	R304, R421, R422, R609	4	39R			Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	R305, R306, R315, R316, R504	5	4.7k			Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	R313, R314, R610, R611, R612, R600	6	0R			Thick film resistor, SMD 0402, 1/16W, 1%, Thick film resistor, SMD 0402, 1/16W, 1%, Thick film resistor, SMD 0402, 1/16W, 1%, RES 0.0
Fitted	R423	1	6.81k			Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	R500, R501, R507, R508	4	62R			Thick film resistor, SMD 1210, 0.5W, 1%
Fitted	R505	1	2.7k			Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	R601, R602	2	4.7k			Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	R607, R614, R618, R619, R620, R621	6	330R			Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	R700	1	39R			Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	SW301, SW500, SW700	3	SKRAAKE010	ALPS	SKRAAKE010	6.2x6.2 mm SMD tact switch, same as A08-0091 but less force is needed
Fitted	TEST1	1	SAMC21N Xplained Pro test			Fixture eggTest for SAMC21N Xplained Pro
Fitted	TESTDOC1	1	SAMC21N Xplained Pro Test Instructions			SAMC21N Xplained Pro Test Instructions
Fitted	U100	1	MIC5504-3.3YM5	Microchip	MIC5504-3.3YM5-TR	LDO 3.3V 0.3A SOT-23-5
Fitted	U103	1	MIC5209-3.3YM	Microchip	MIC5209-3.3YM	Fixed 3.3V, 500mA Low -Noise LDO Regulator, SOIC-8
Fitted	U300	1	ATSAMC21N18A-ANT	ATMEL	ATSAMC21N18A-ANT	Atmel 32-bit ARM Cortex-M0+ processor 100pin 256KB Flash 32KB SRAM 48MHz freq
Fitted	U400	1	AT32UC3A42256J-C1UR	ATMEL	AT32UC3A42256J-C1UR	AVR 32-bit RISC MCU
Fitted	U500, U502	2	ATA6561-GBQW	ATMEL	ATA6561-GBQW	5Mbit/s CAN Transceiver, VCC = 5V, IO = 2.8V, 5x 3mm VDFN8
Fitted	U501	1	ATA663211-FAQW	ATMEL	ATA663211-FAQW	LIN Transceiver
Fitted	U600	1	FXMA2102L8X	Fairchild	FXMA2102L8X	Dual supply, 2-bit, voltage translator, buffer, repeater, isolator for I2C applications
Fitted	U601, U602, U603, U604, U605, U606, U607, U608, U609, U610, U611, U612	12	SN74LVC1T45DCKR	Texas Instruments	SN74LVC1T45DCKR	Single-Bit Dual-Supply Bus Transceiver with Configurable Voltage Translation and 3-State Outputs
Fitted	U700	1	ATECC508A-MAHWFT	ATMEL	ATECC508A-MAHWFT	Secure authentication and product validation device, EEPROM, I2C, 2.0 - 5.5V, UDFN8
Fitted	XC300	1	32.768kHz	Kyocera Crystal Device Corporation	ST3215SB32768EOHPWB	Kyocera ST3215SB32768EOHPWB, 32.768kHz, 9pF, SMD tuning fork crystal
Fitted	XC400	1	12.0MHz	Fox Electronics	FOG032B-12-C-C-200-1	Fox FOG032B-12-C-MHz SMD crystal 738B-12
Not	C107	0	2.2uF	Kemet	T494A225K010AT	Capacitor Tantalum 10V 2.2uF 10% ESR = 6 ohm
Not	C318, C319	0	10p			Ceramic capacitor, SMD 0402, NPO, 50V, +/-5%
Not	C403	0	4.7n			Ceramic capacitor, SMD 0402, X7R, 25V, +/-10%
Not	J800	0	HMTSW-103-23-F-D-237	SAMTEC	HMTSW-103-23-F-D-237	2x3 pin header, 2.54mm pitch, Pin-in-Paste THM
Not	J801	0	SSQ-110-21-F-S	SAMTEC	SSQ-110-21-F-S	1x10 receptacle pin header, low insertion force, 2.54mm pitch THM, Pin in Paste
Not	J802, J804	0	SSQ-108-21-F-S	SAMTEC	SSQ-108-21-F-S	1x8 receptacle pin header, low insertion force, 2.54mm pitch THM, Pin in Paste
Not	J803	0	SSQ-106-21-F-S	SAMTEC	SSQ-106-21-F-S	1x6 receptacle pin header, low insertion force, 2.54mm pitch THM
Not	R424	0	1M	KOA	RK73H1ETTP1004F	Thick film resistor, SMD 0402, 1/16W, 1%
Not	XC301	0	16.0MHz	Epson Toyocom	TSX-3225 16.000MHzF092-AC3	16MHz uXtal, 3.2 x 2.5 mm SMD, CL=9pF, 15PPM, ESR=80ohm(Max).