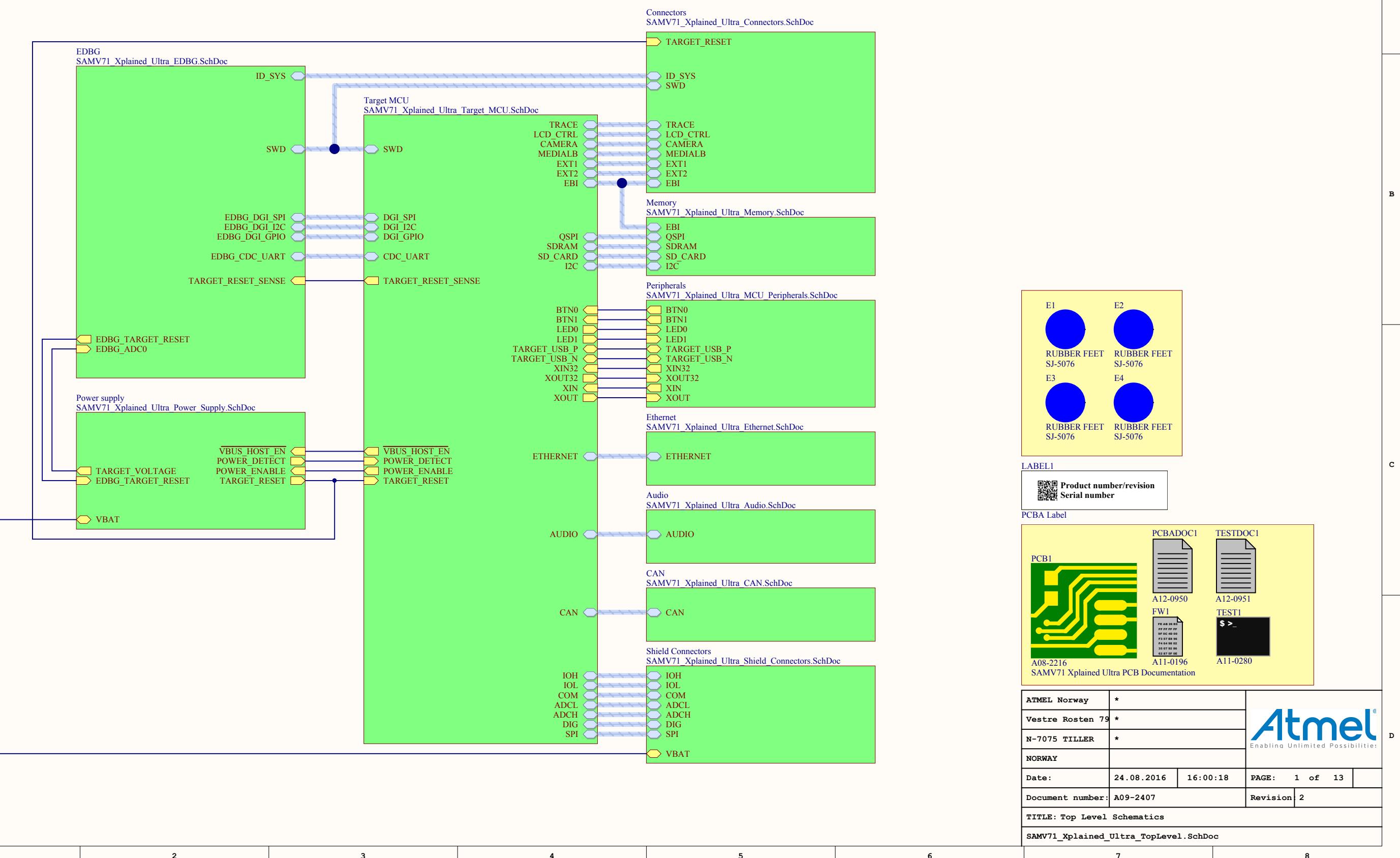
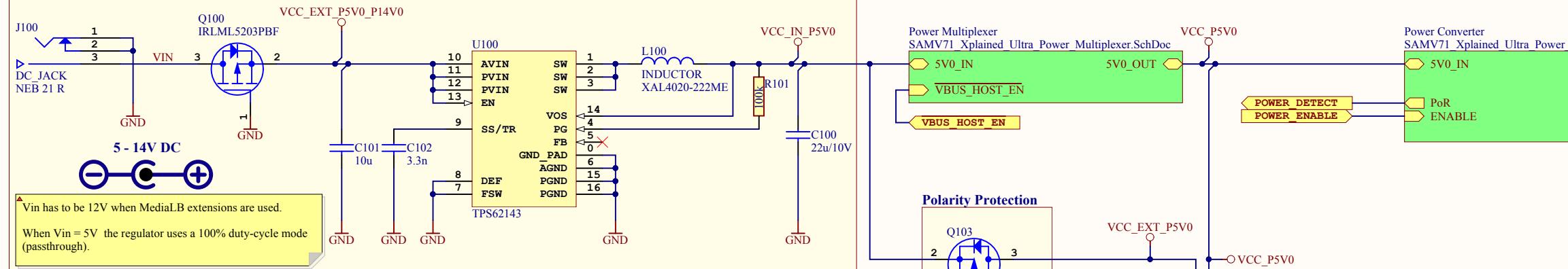


# SAM V71 Xplained ULTRA



**5V to 14V input, 5V out Power Supply**

**VCC\_EXT\_P5V0:**  
Power inputs to SAM V71 Xplained Ultra:  
VCC\_EXT\_P5V0\_P14V0:  
2.1mm power jack with positive center. This voltage is used to generate VCC\_EXT\_P5V0, the regulator supports 5V to 17V input voltage. If MediaLB is not used the input voltage can be a maximum of 17V.

**VCC\_EXT\_P5V0:**  
This power input can be used to power the whole board and it has a higher priority than the USB power inputs.  
Connect a power supply if a target MCU with USB host is present and VCC\_EXT\_P5V0\_P17V0 is not used.  
4.3V to 5.5V is possible but for USB host operation and in case on-board devices use this voltage it should be 5V +2%.

**VCC\_EDBG\_USB\_P5V0:**  
EDBG USB power input. This supply is used when VCC\_EXT\_P5V0 is not present.

**VCC\_TARGET\_USB\_P5V0:**  
Target MCU USB power input. It is used to power the whole board when no other 5V power supply is present.

**Other voltages:**

**VCC\_P5V0:**

This supply is connected to either VCC\_EXT\_P5V0, VCC\_EDBG\_USB\_P5V0 or VCC\_TARGET\_USB\_P5V0, based on the availability and priority of these supplies.

**VCC\_P3V3:** Regulated 3.3V from VCC\_P5V0

**VCC\_P2V0:** Regulated 2.0V from VCC\_P5V0

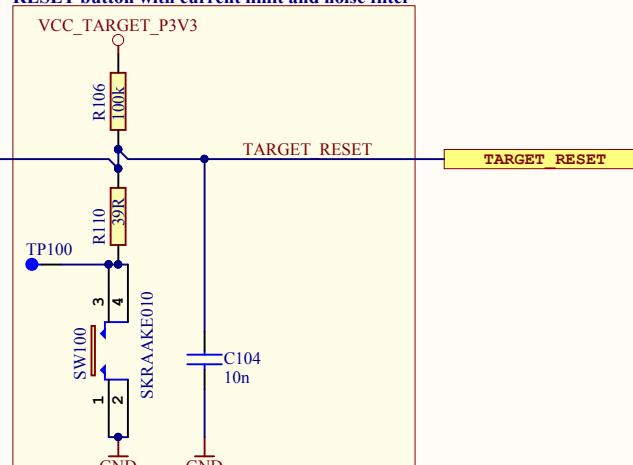
**VCC\_P1V8:** Regulated 1.8V from VCC\_P5V0

**VCC\_P1V2:** Regulated 1.2V from VCC\_P5V0

**VCC\_TARGET\_P3V3:** Target supply voltage (target MCU, peripherals, connectors)

**VCC\_BACKUP\_P3V3:** Powers target MCU, can be supplied from either VCC\_TARGET\_P3V3 or V\_SUPERCAP.

**V\_SUPERCAP:** The SuperCap is charged to 3.52V from VCC\_P5V0 when that voltage is present. V\_SUPERCAP is used to supply target MCU when the voltage regulator for VCC\_P3V3 is turned off, intended for sleepmode and currents below 100µA.

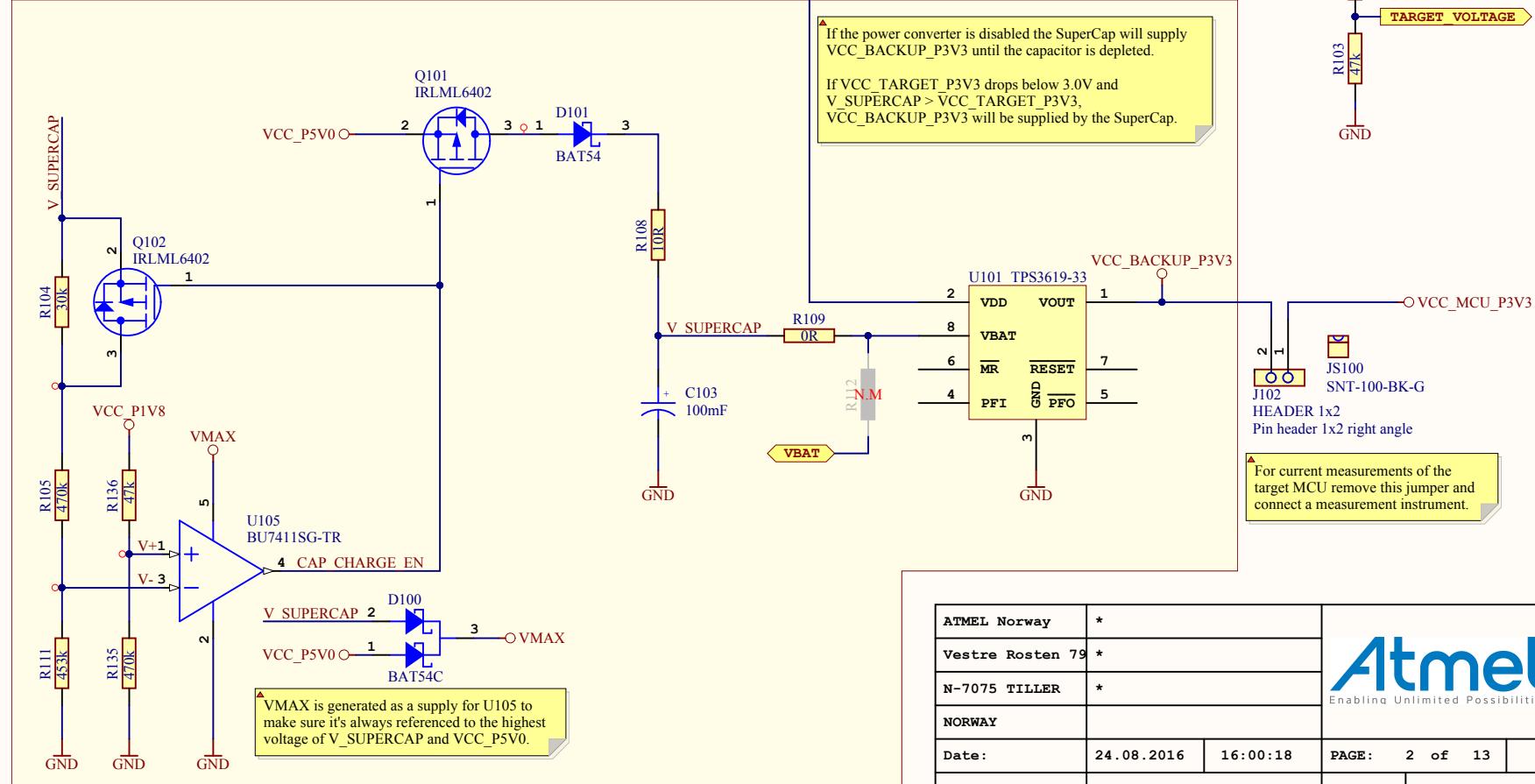
**RESET button with current limit and noise filter**

**U105:** compares V\_SUPERCAP to a known reference, when V\_SUPERCAP is low Q101 and Q102 will open causing V\_SUPERCAP to charge to:  
 $V_{cap}(\max) = (U_{105\_V\_ref} * (R_{111} + R_{105})) / R_{111} = 3.52V$

At  $V_{cap}(\max)$  Q101 and Q102 will close and R104 is no longer short circuited by Q102.

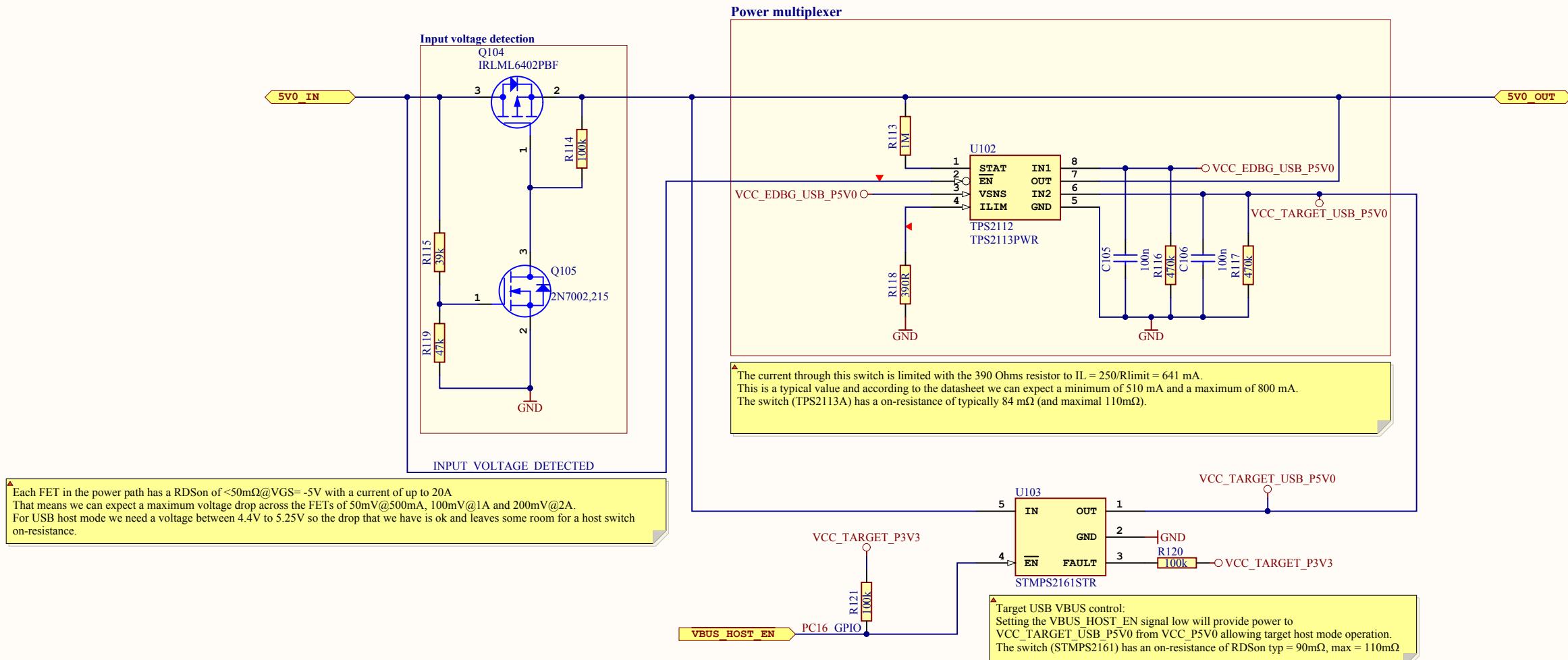
$V_{cap}$  is now given by the following formula:  
 $V_{cap} = (U_{105\_V\_ref} * (R_{111} + R_{105} + R_{104})) / R_{111} = 3.40V$

Q102 and R104 implements a charge hysteresis to prevent oscillation when the capacitor is fully charged.

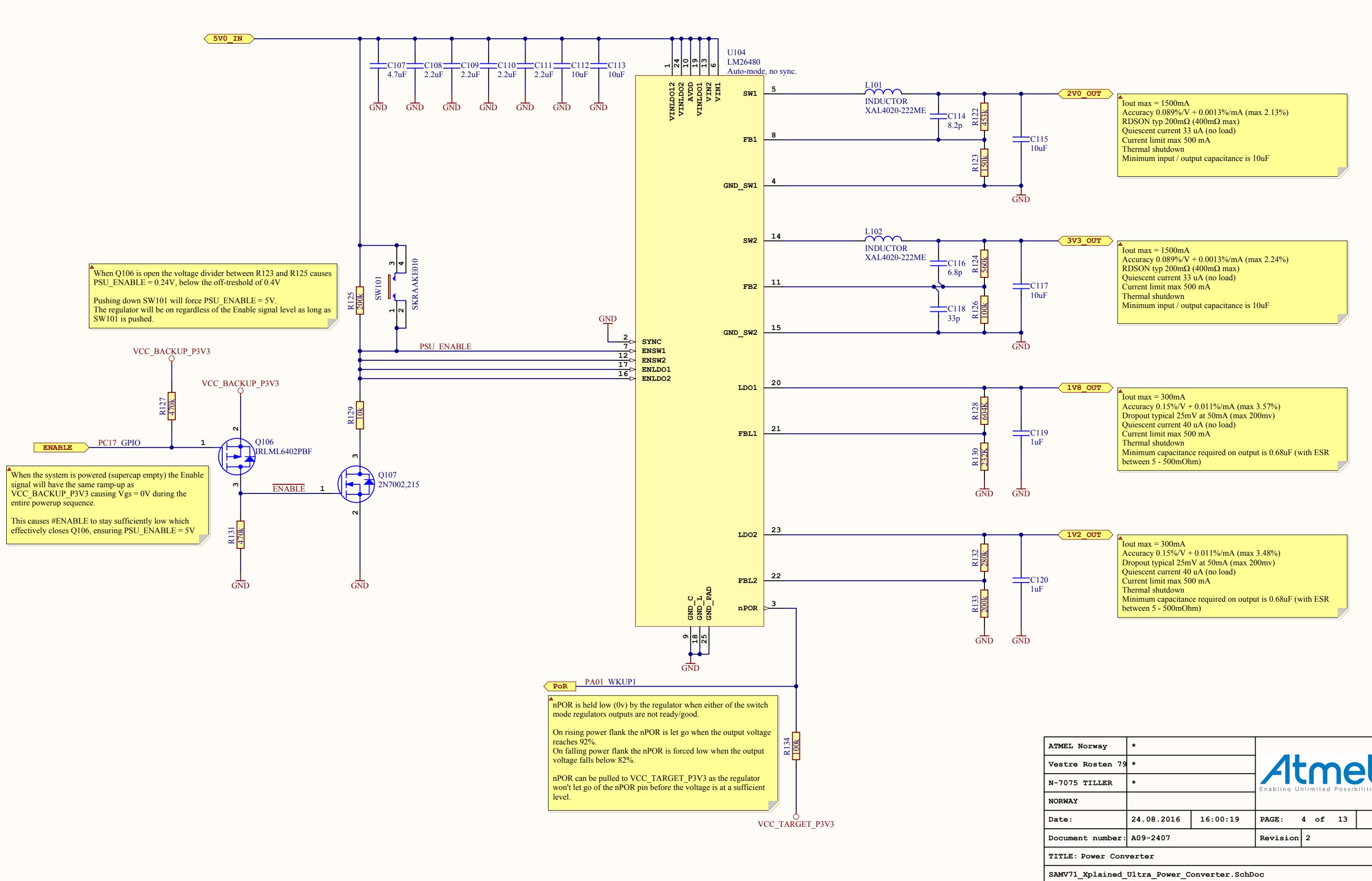
**Electric Double-Layer Capacitor (Supercap) for backup voltage**

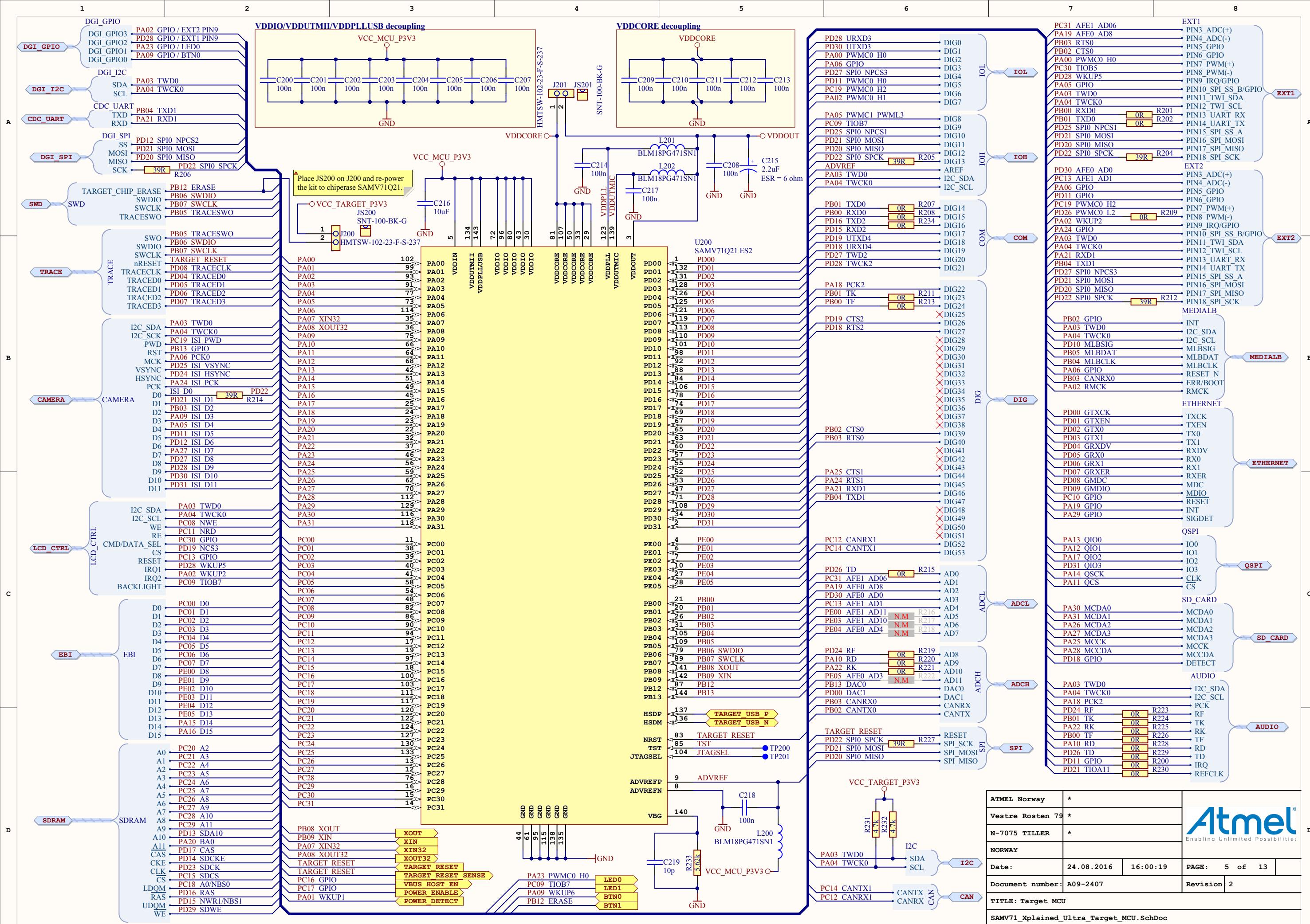
ATMEL Norway	*
Vestre Rosten 79	*
N-7075 TILLER	*
NORWAY	
Date:	24.08.2016 16:00:18
Document number:	A09-2407
Revision	2
TITLE:	Power supply
SAMV71_Xplained_Ultra_Power_Supply.SchDoc	

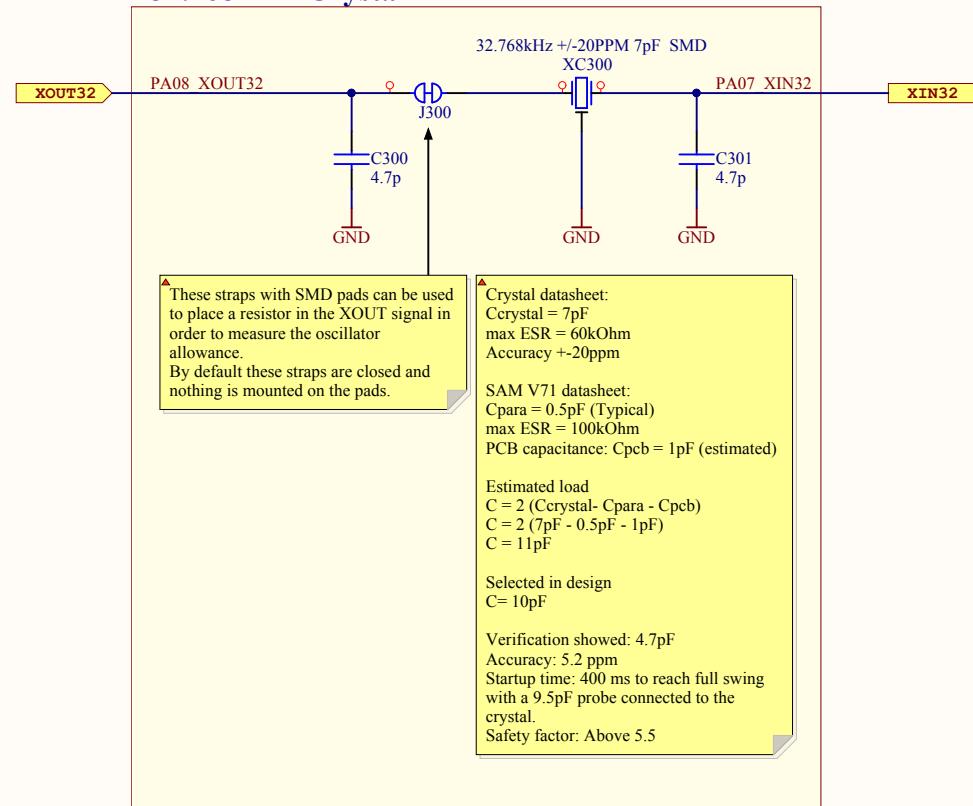
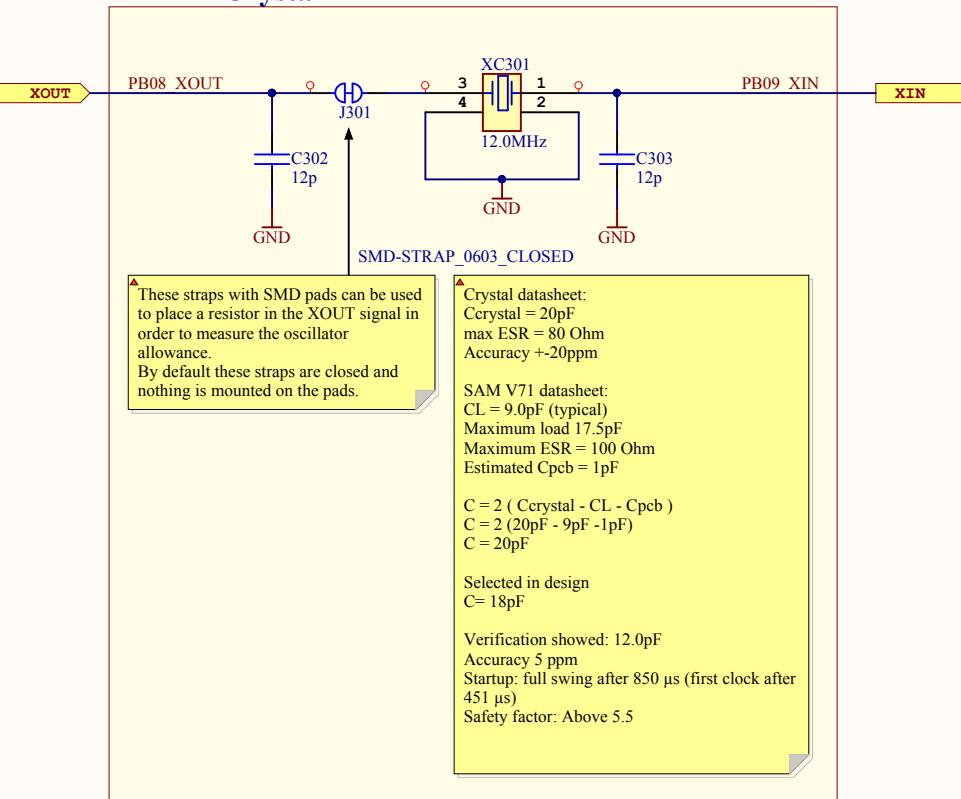
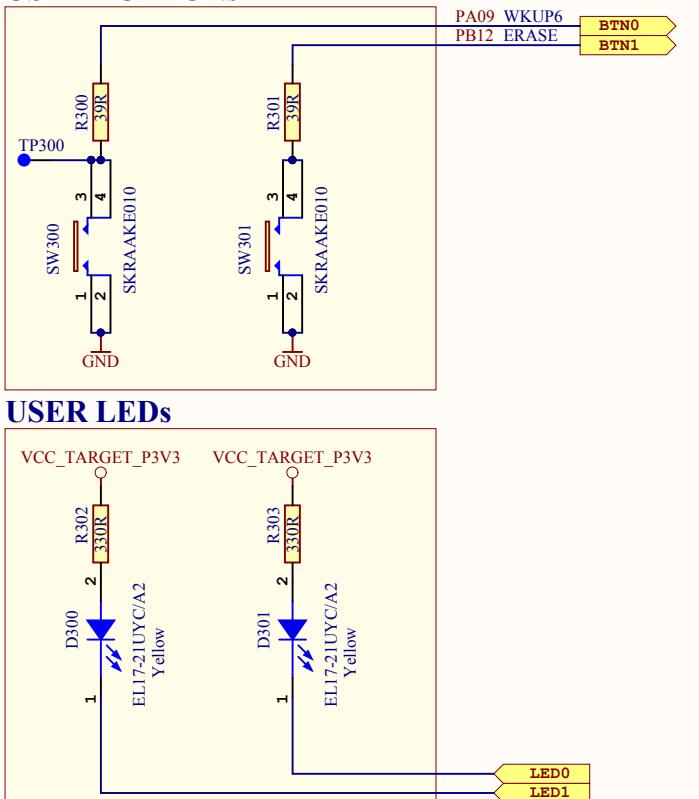
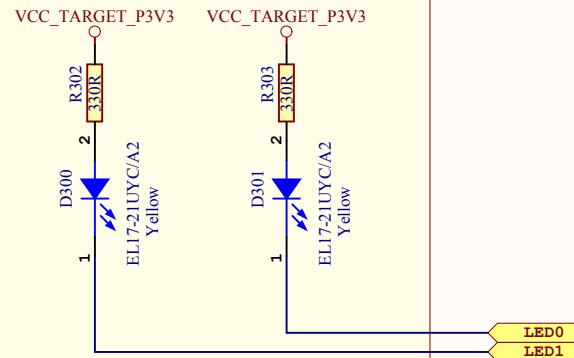
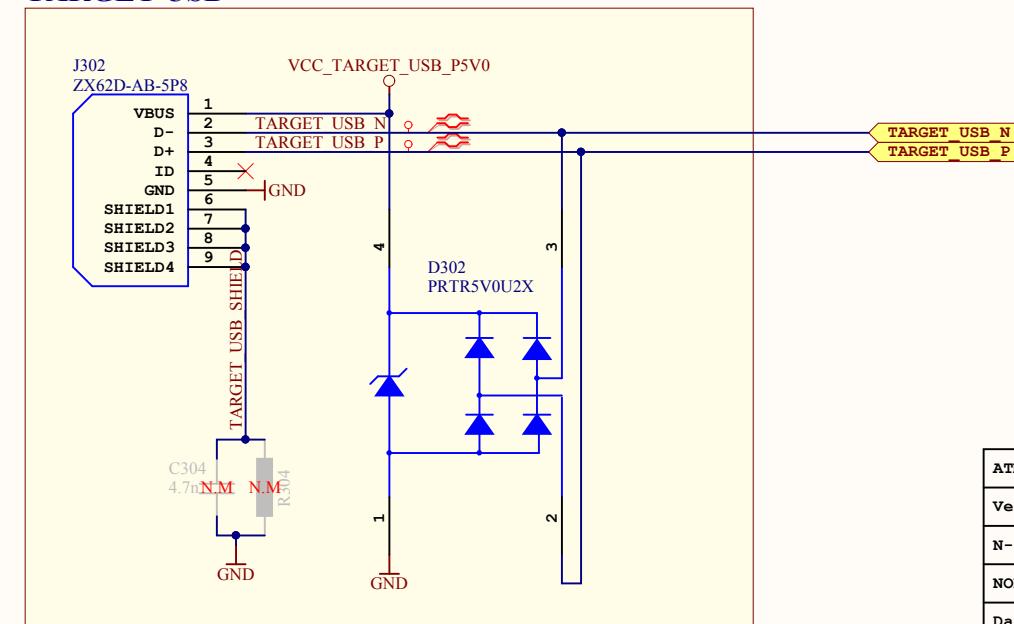
**Atmel**  
Enabling Unlimited Possibilities



ATMEL Norway	*
Vestre Rosten 79	*
N-7075 TILLER	*
NORWAY	
Date:	24.08.2016 16:00:18
Document number:	A09-2407
Revision	2
TITLE: Power Multiplexer	
SAMV71_Xplained_Ultra_Power_Multiplexer.SchDoc	

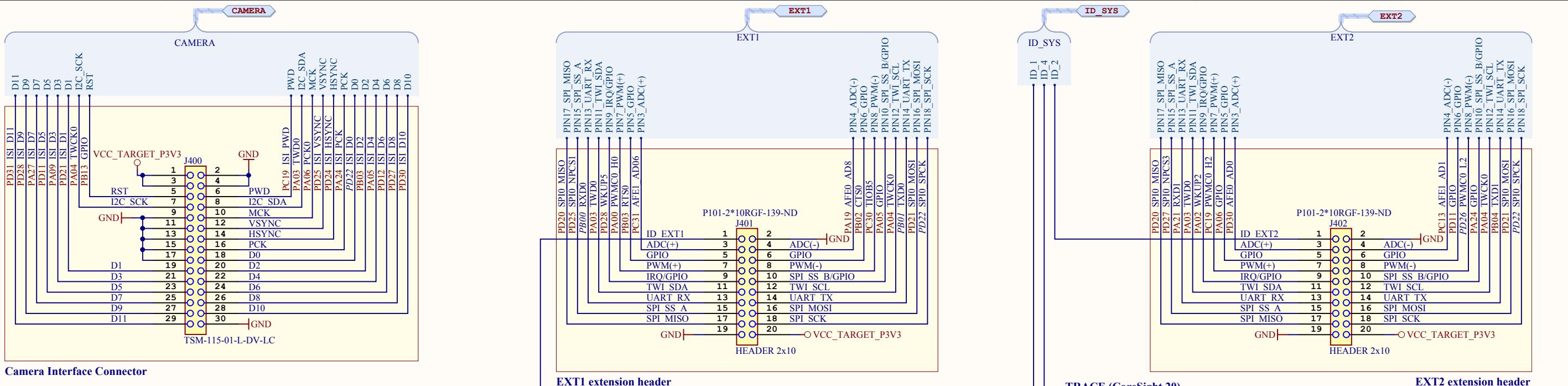




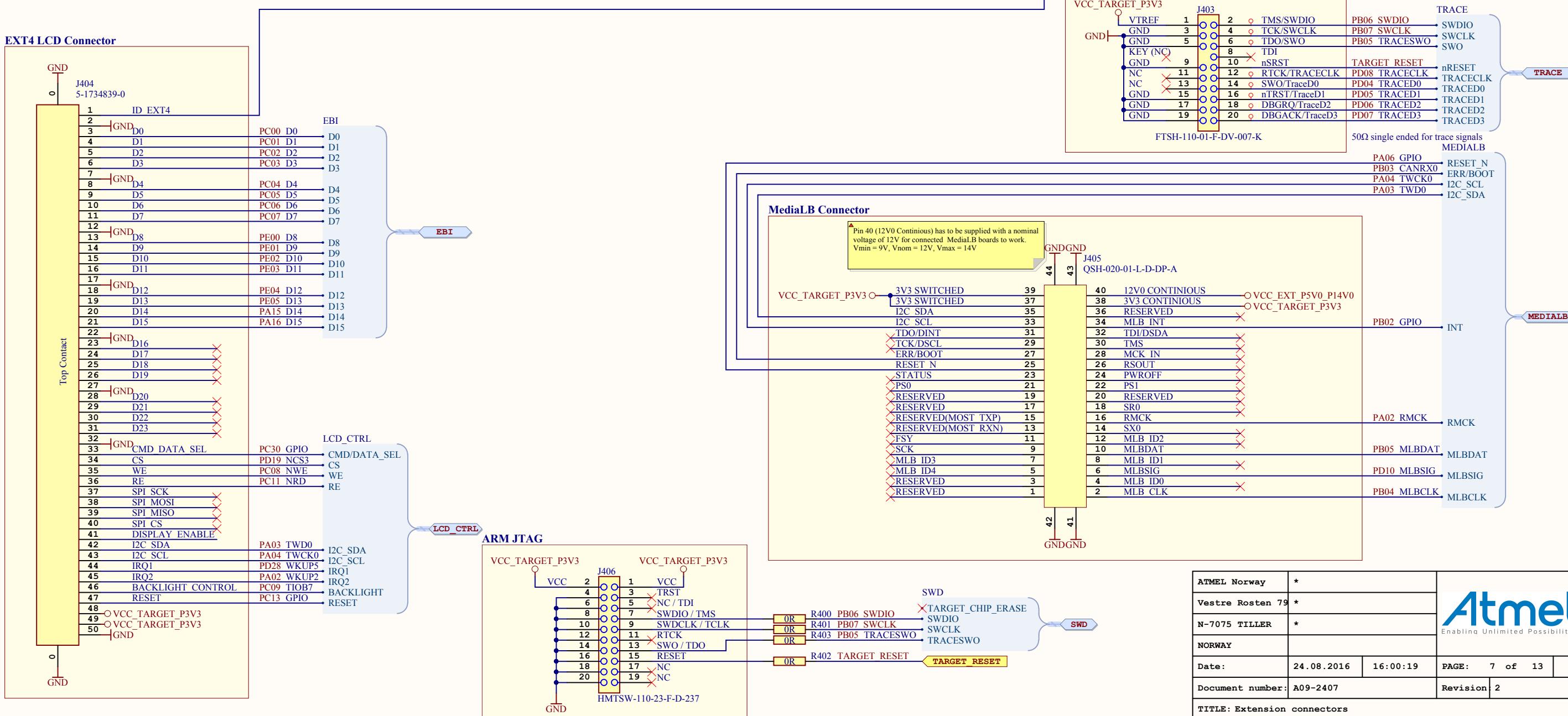
**32.768 kHz Crystal****12 MHz Crystal****USER BUTTONS****USER LEDs****TARGET USB**

ATMEL Norway	*
Vestre Rosten 79	*
N-7075 TILLER	*
NORWAY	
Date:	24.08.2016
Document number:	A09-2407
Title:	Target MCU Peripherals
SAMV71_Xplained_Ultra_MCU_Peripherals.SchDoc	

**Atmel**  
Enabling Unlimited Possibilities



## **Camera Interface Connector**



Atmel

 TCS  
Enabling Unlimited Possibilities

PAGE: 7 of 13

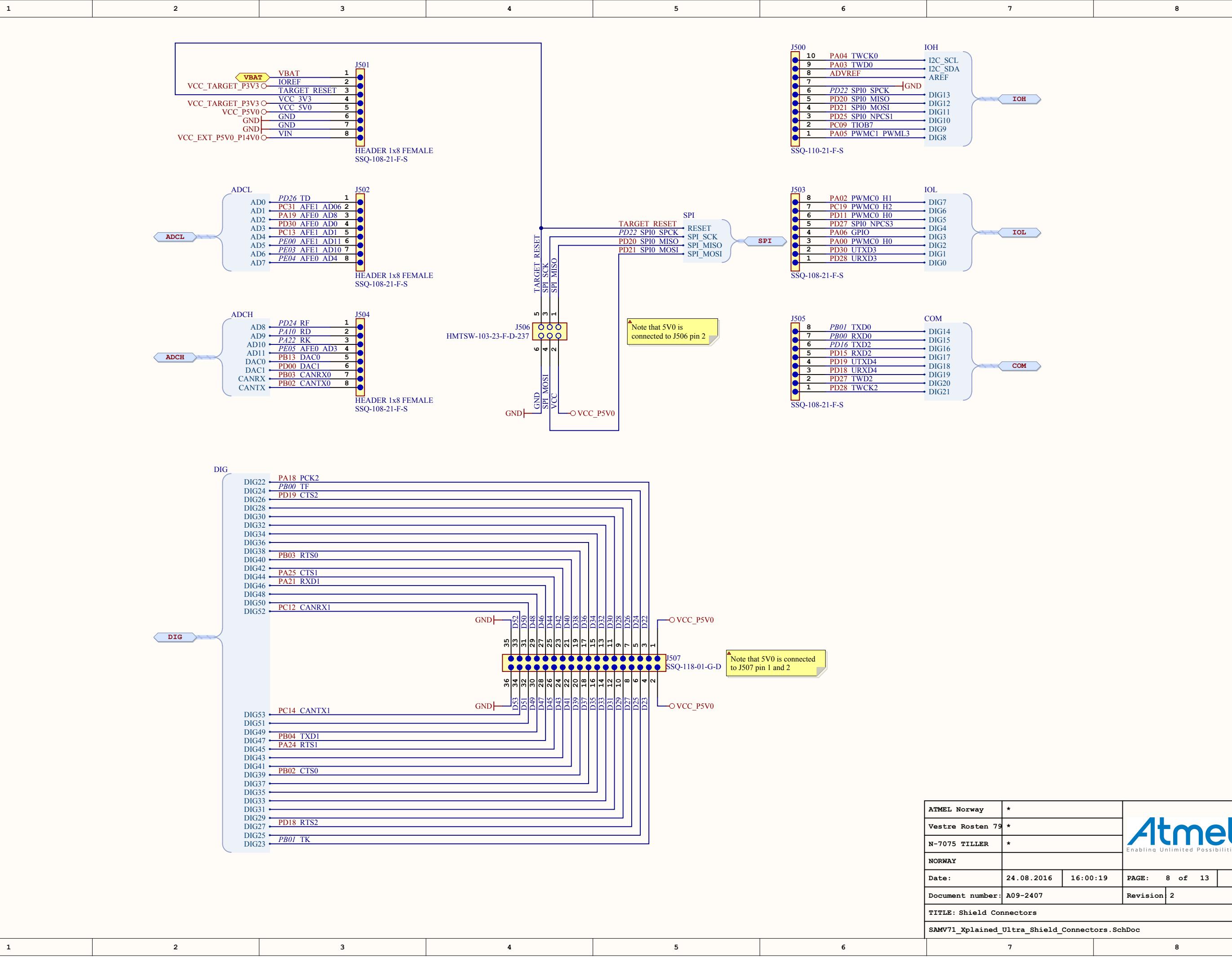
• [View Details](#)

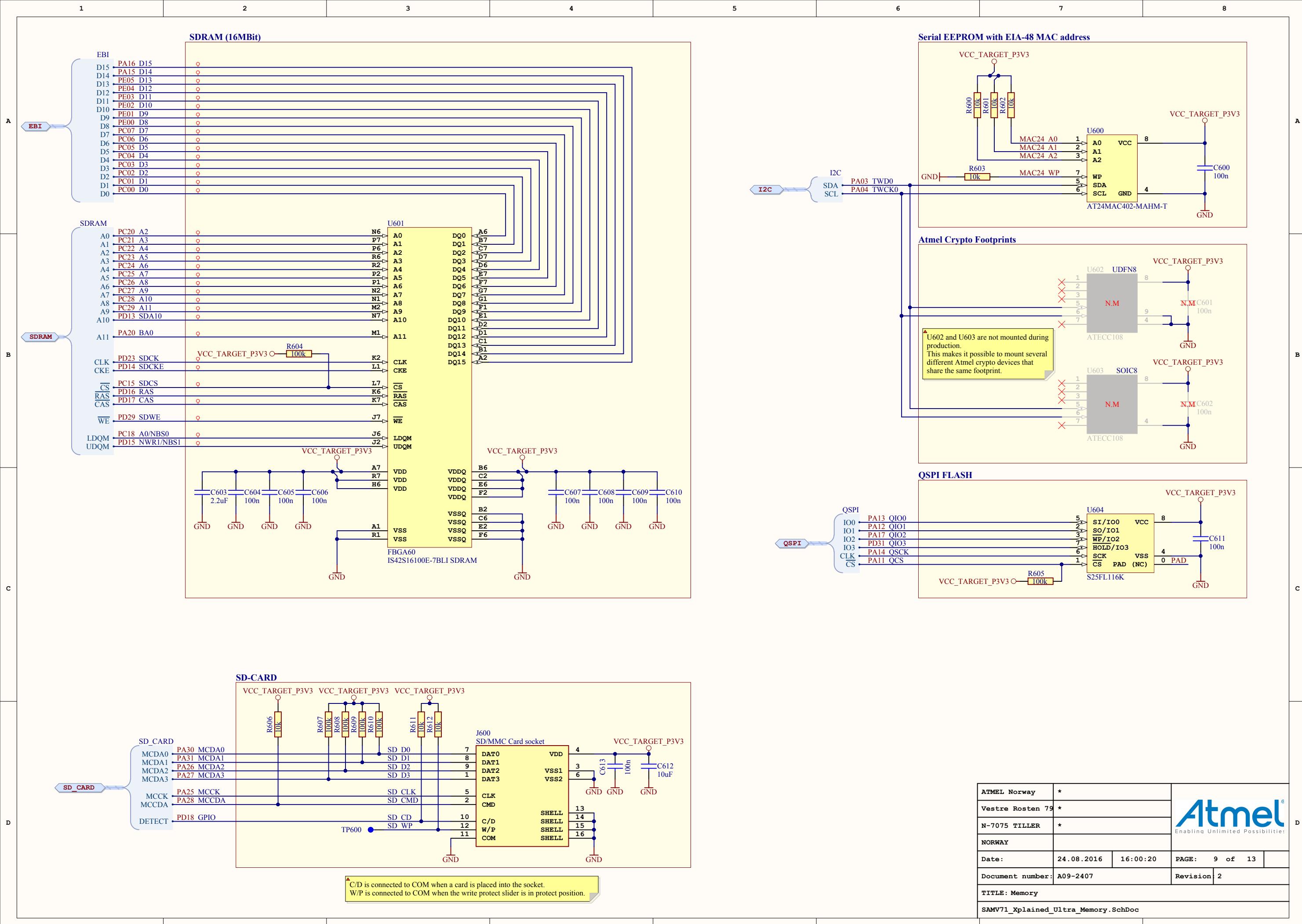
Revision: 2

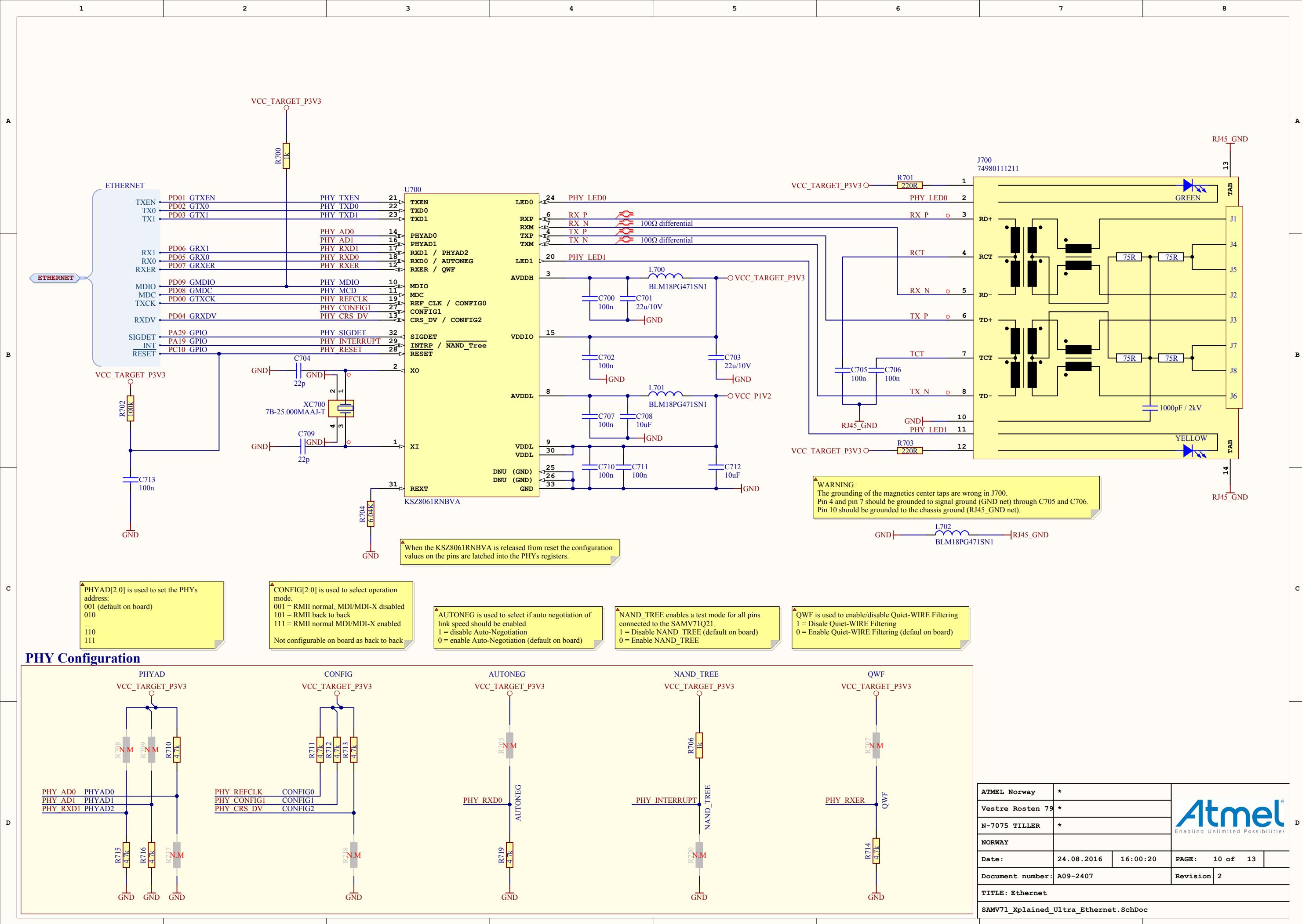
---

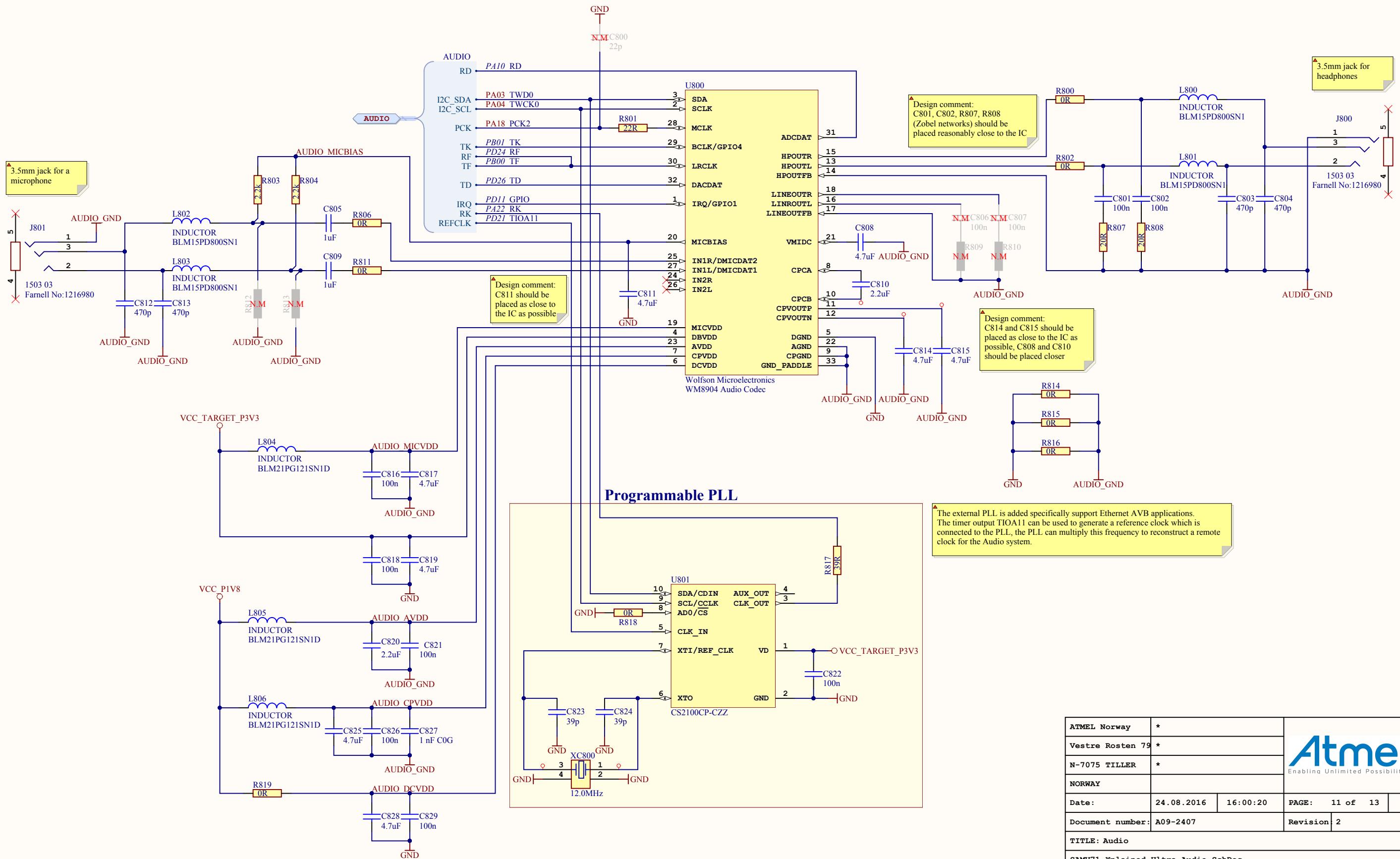
Digitized by srujanika@gmail.com

8



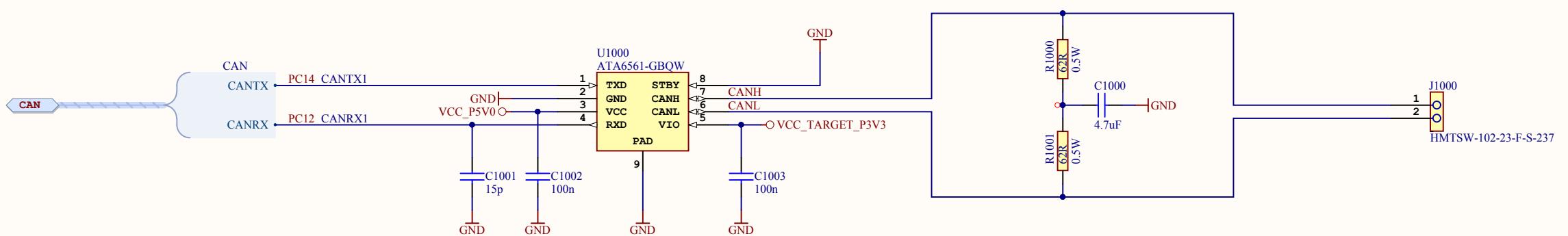




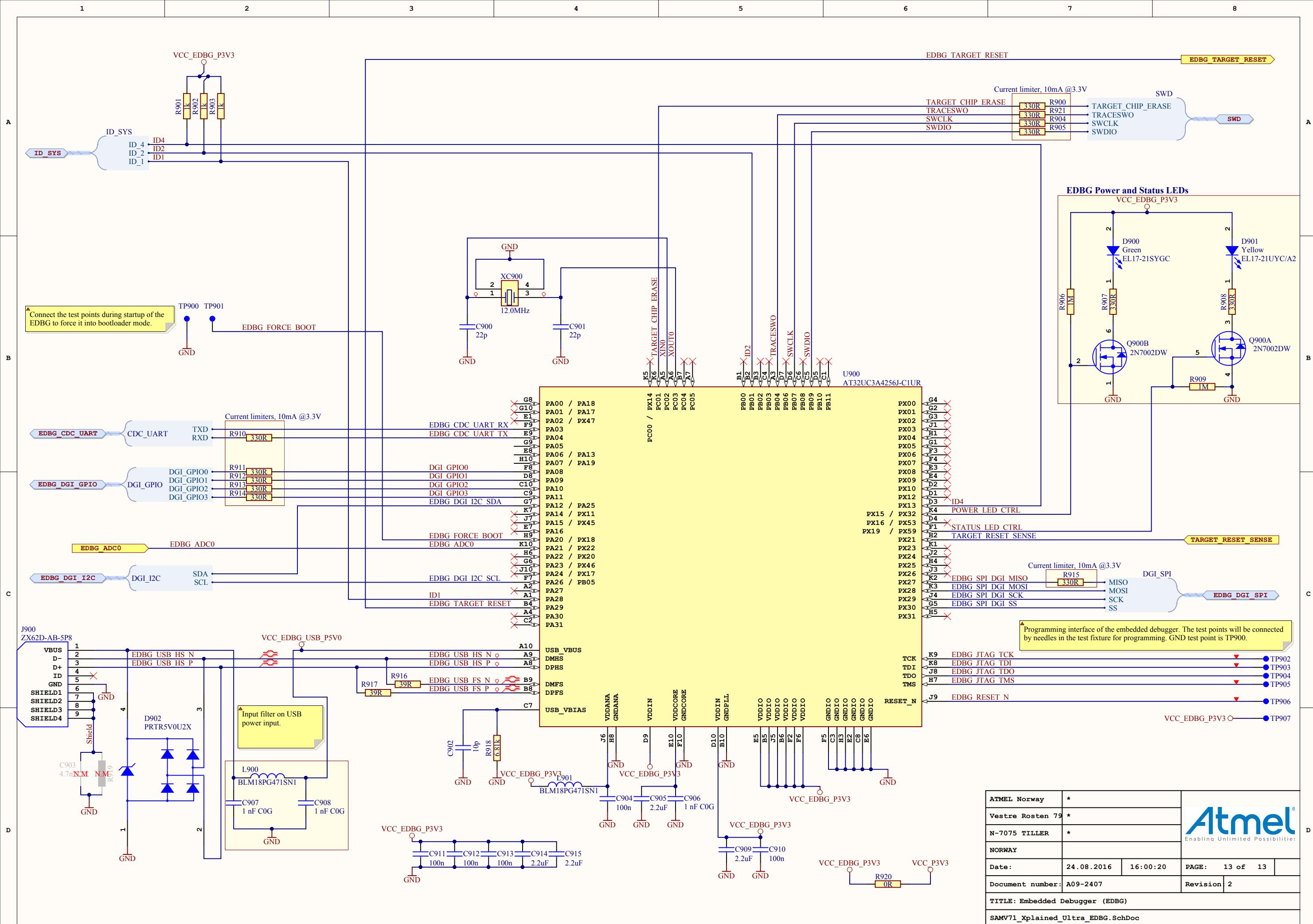


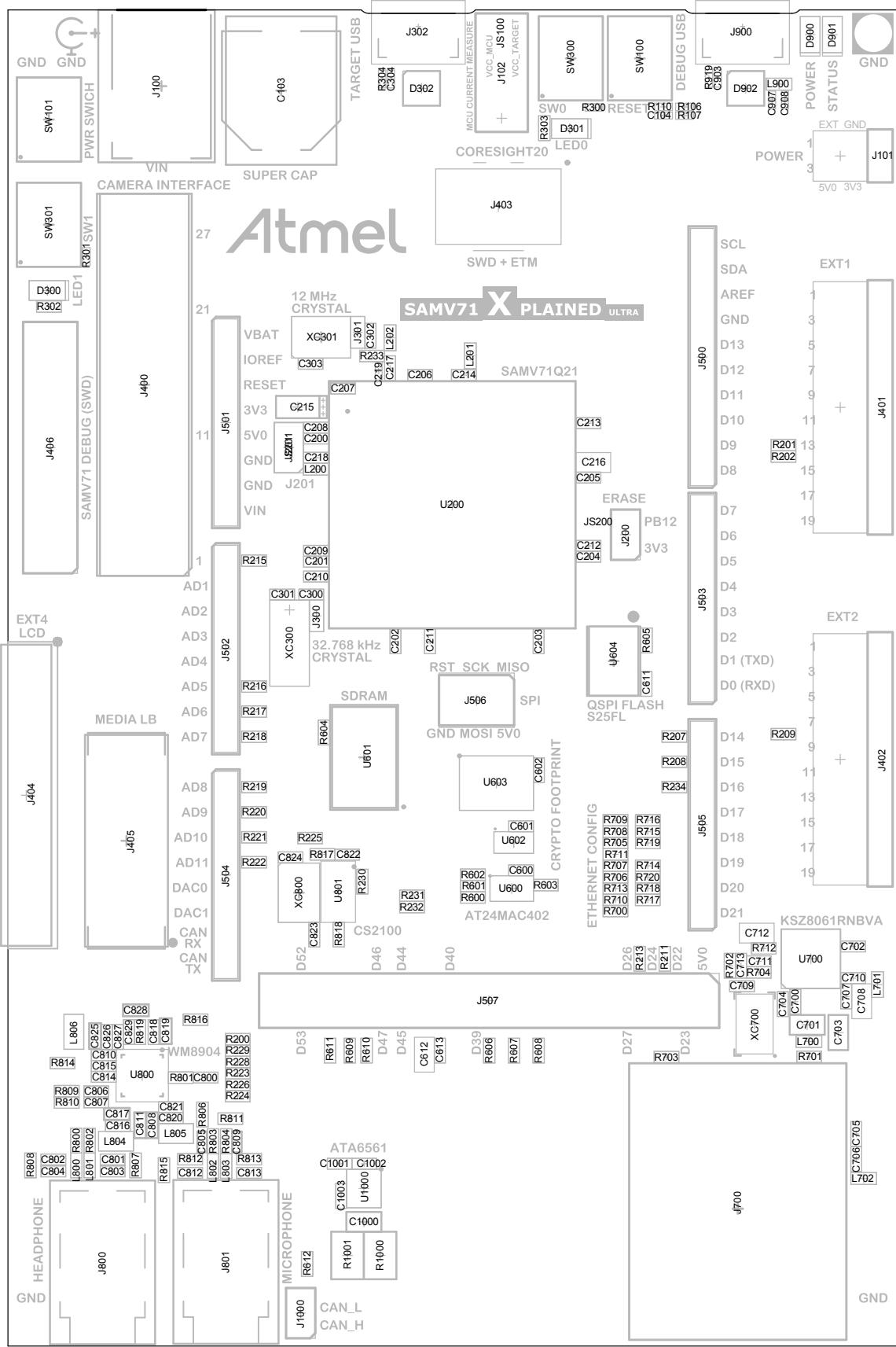
ATMEL Norway	*
Vestre Rosten 79	*
N-7075 TILLER	*
NORWAY	
Date:	24.08.2016 16:00:20
Document number:	A09-2407
Revision:	2
TITLE:	Audio
SAMV71_Xplained_Ultra_Audio.SchDoc	

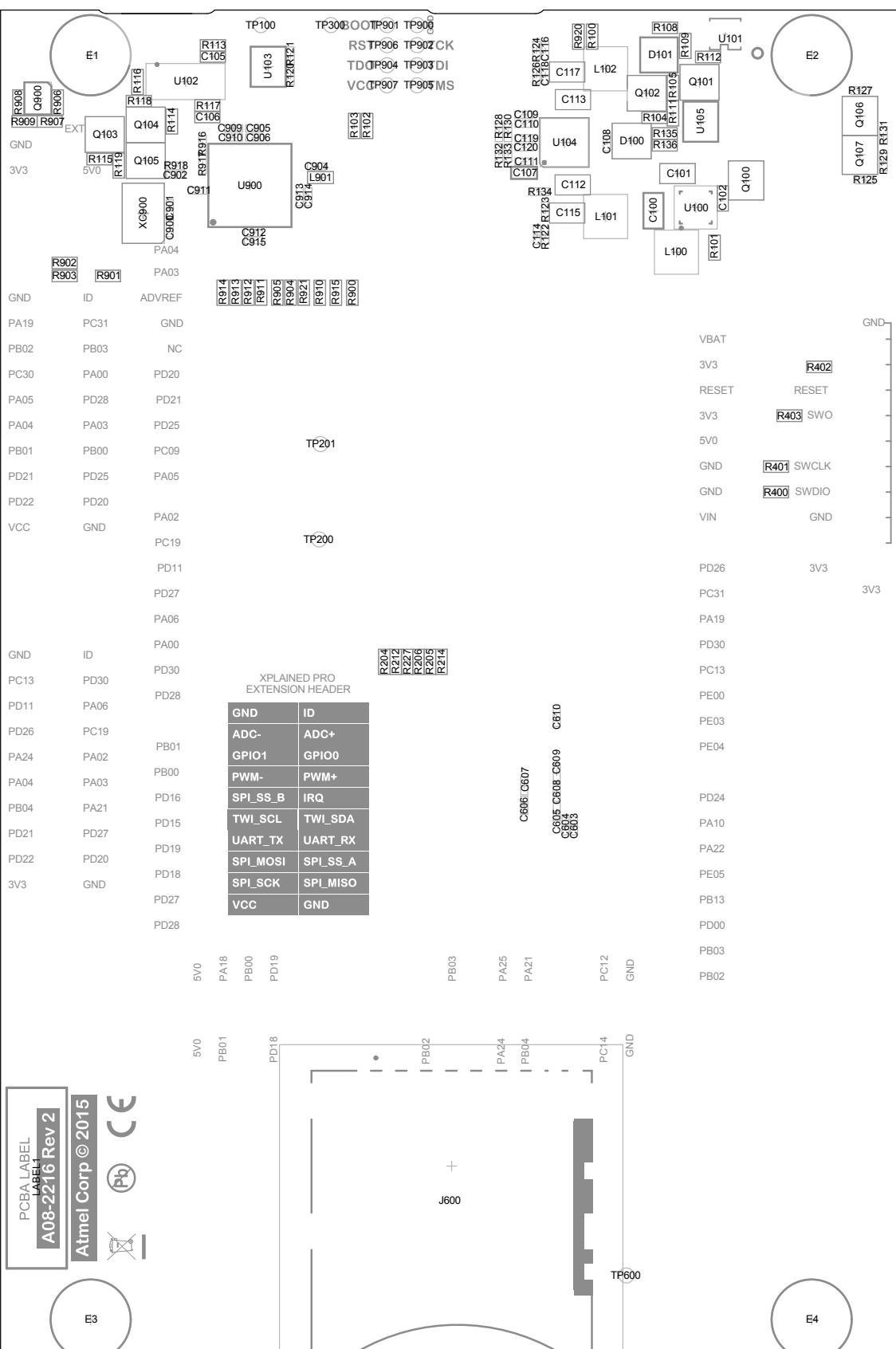
**Atmel**  
Enabling Unlimited Possibilities

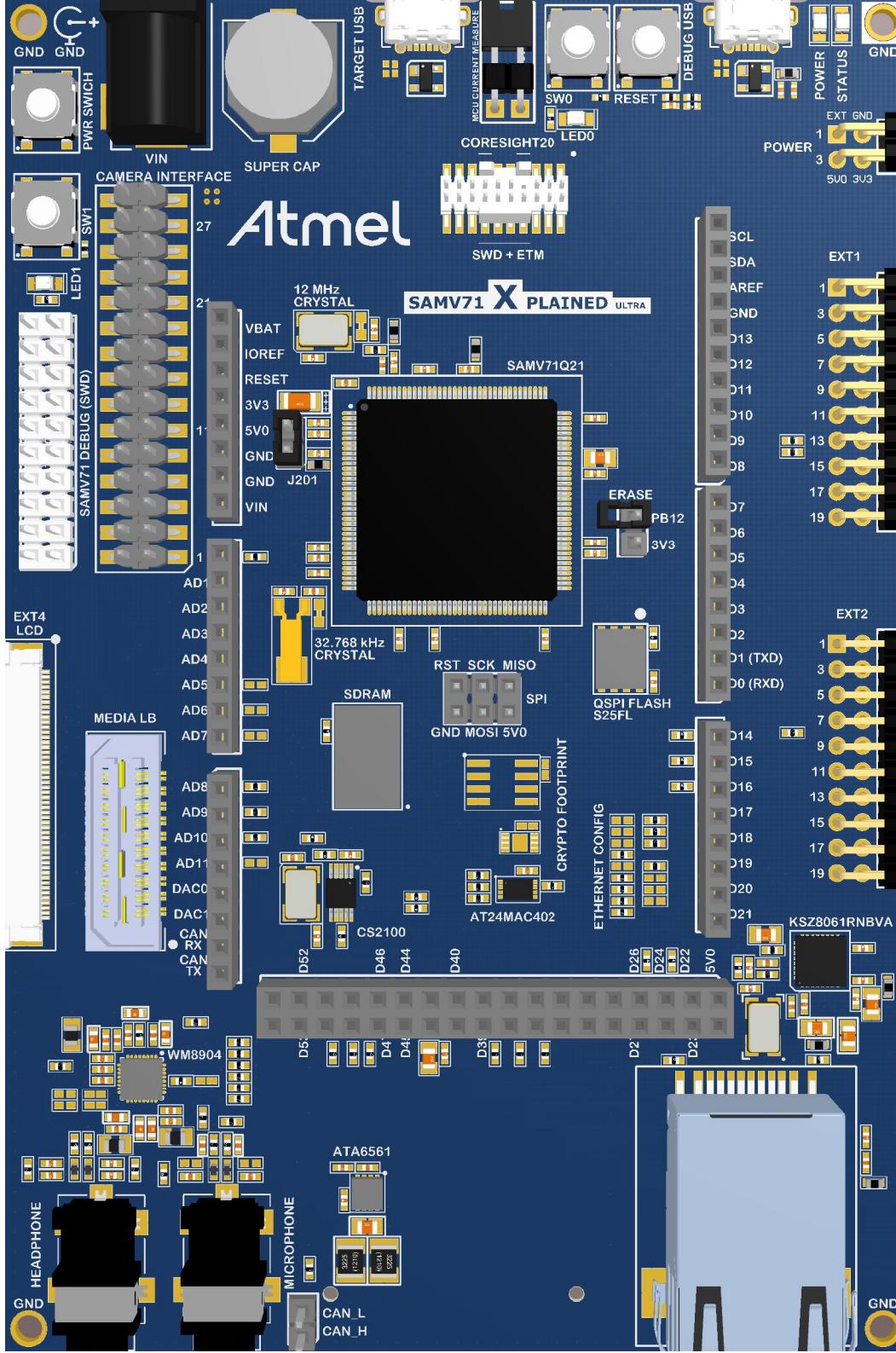


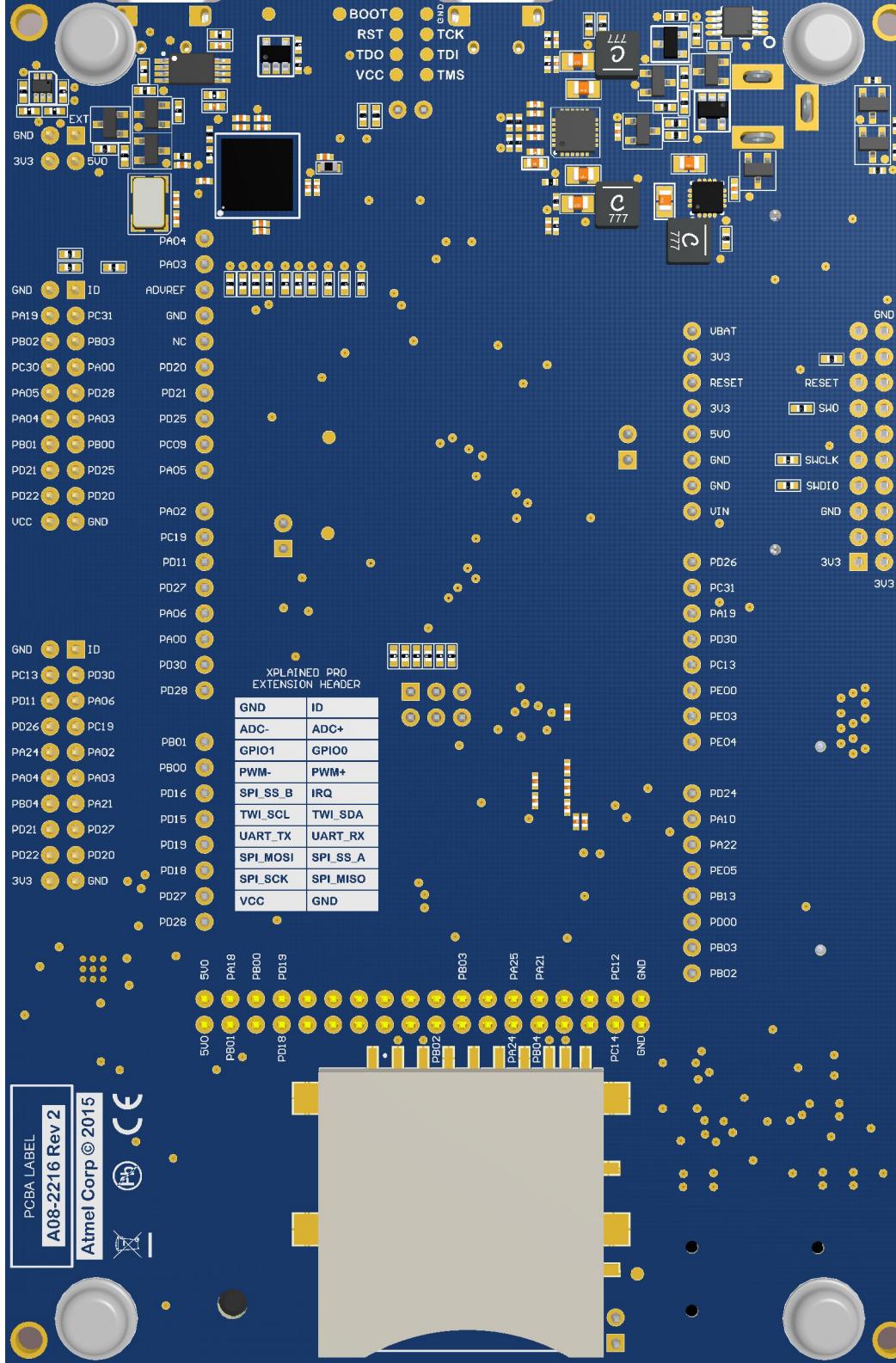
ATMEL Norway	*	
Vestre Rosten 79	*	
N-7075 TILLER	*	
NORWAY		
Date:	24.08.2016	16:00:20
Document number:	A09-2407	Revision 2
TITLE: CAN		
SAMV71_Xplained_Ultra_CAN.SchDoc		

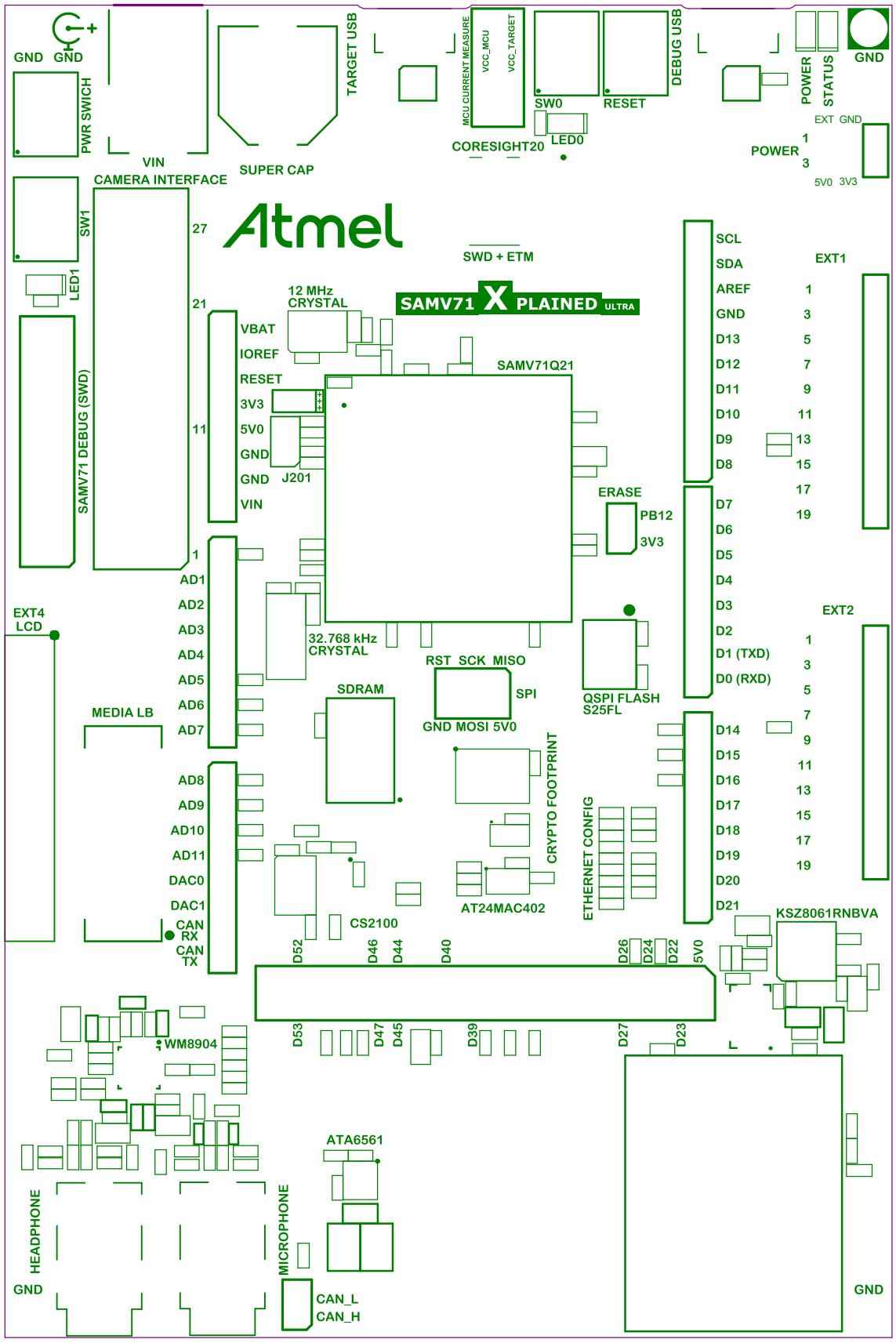


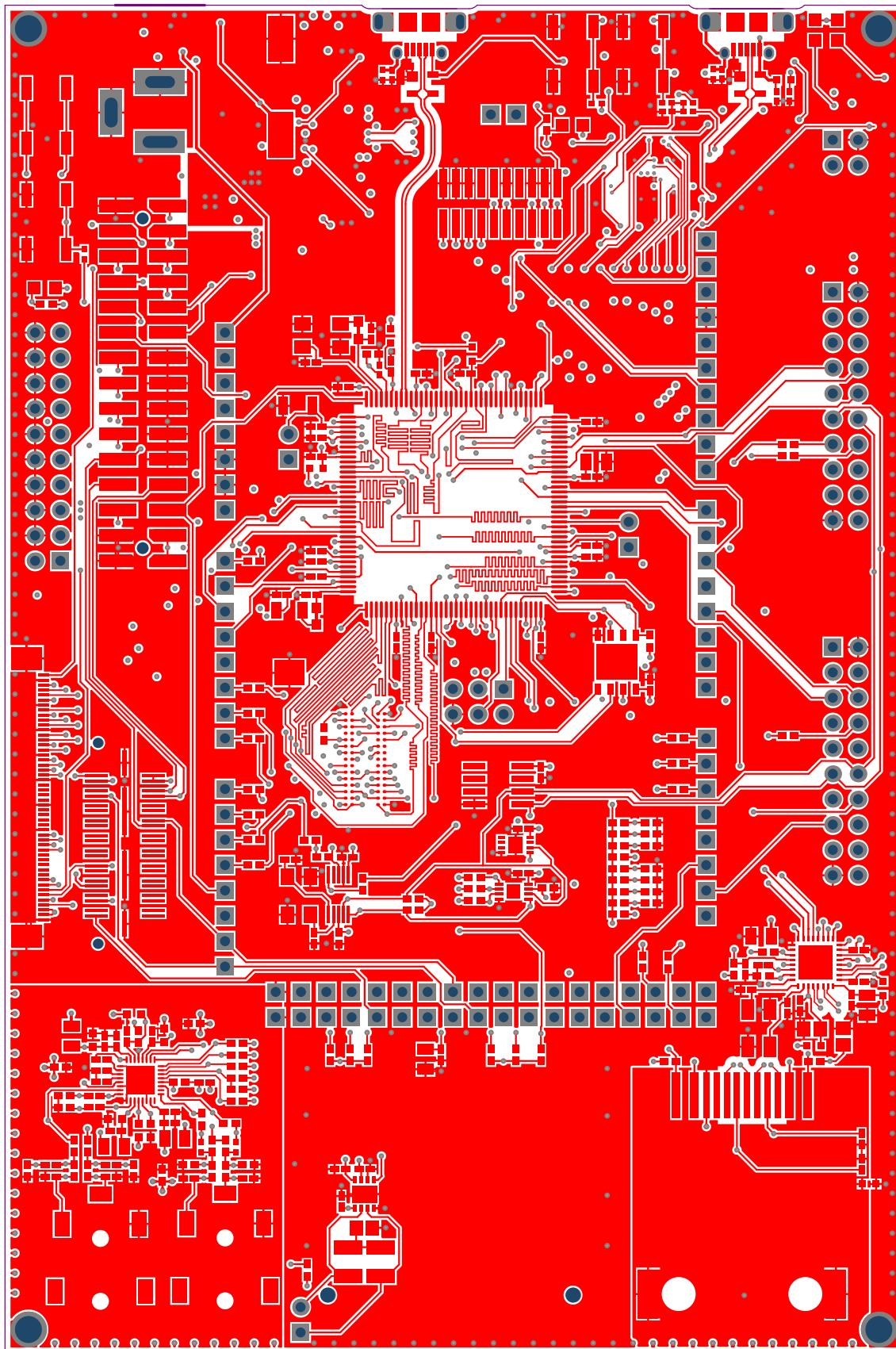


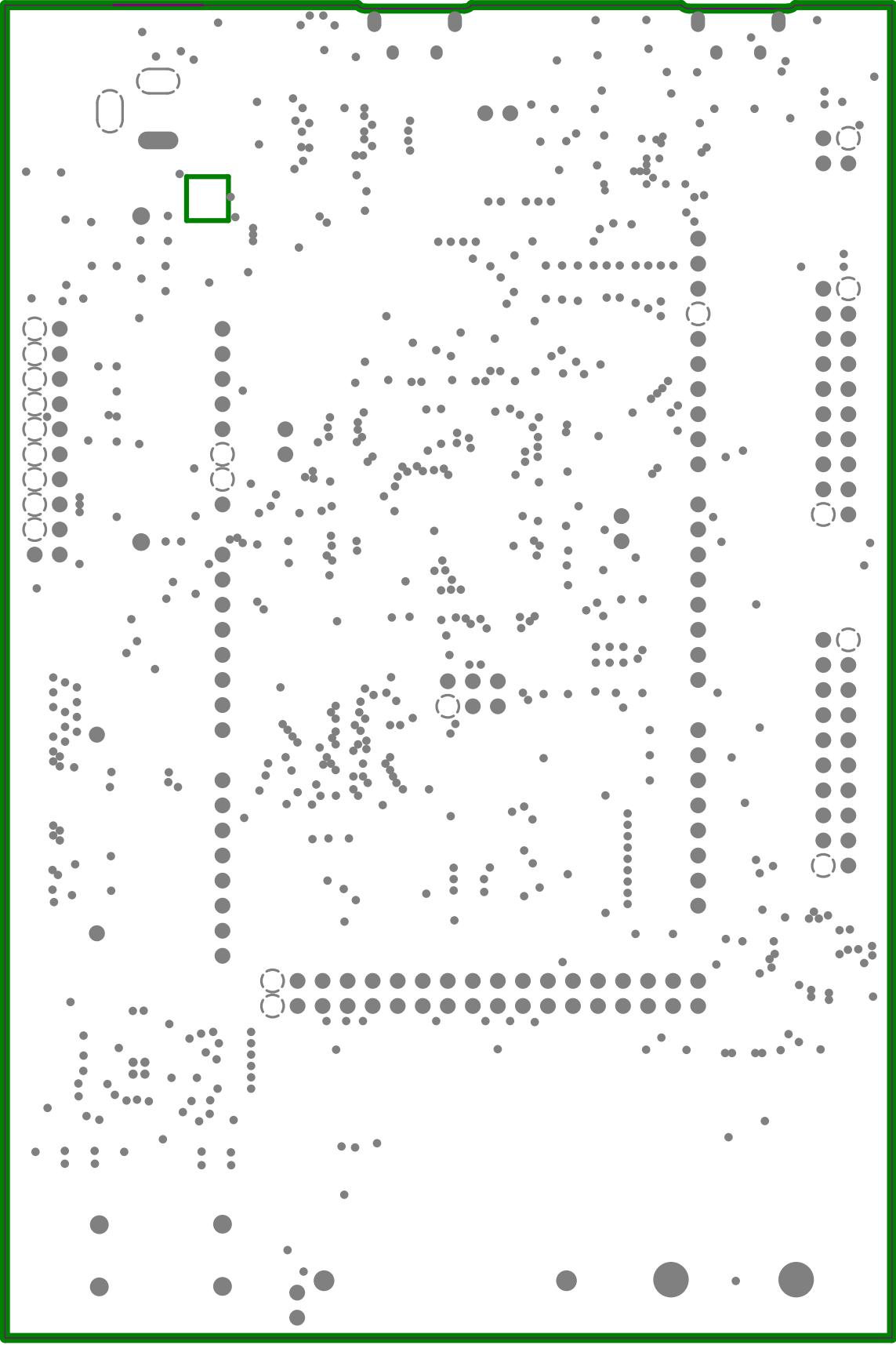


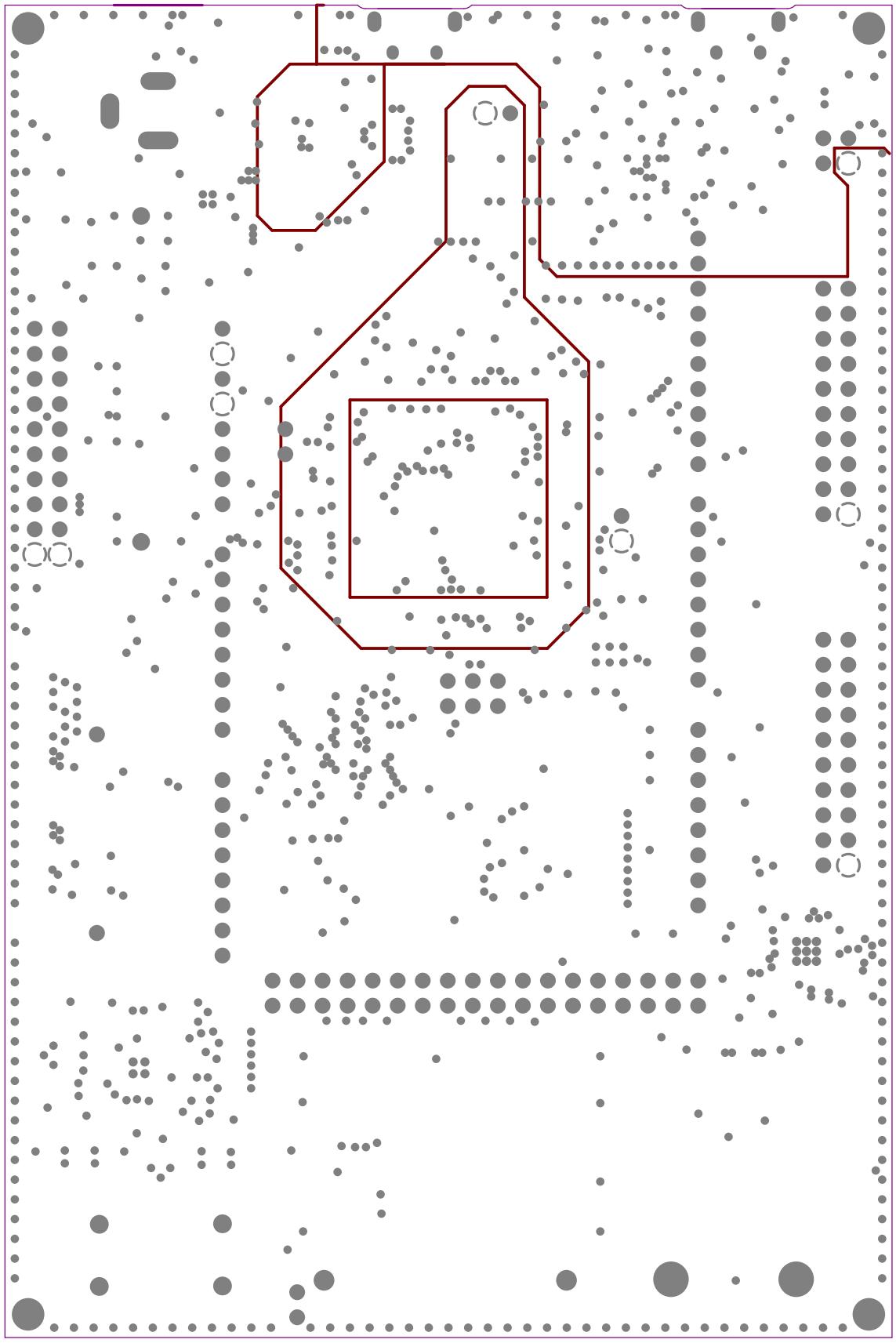


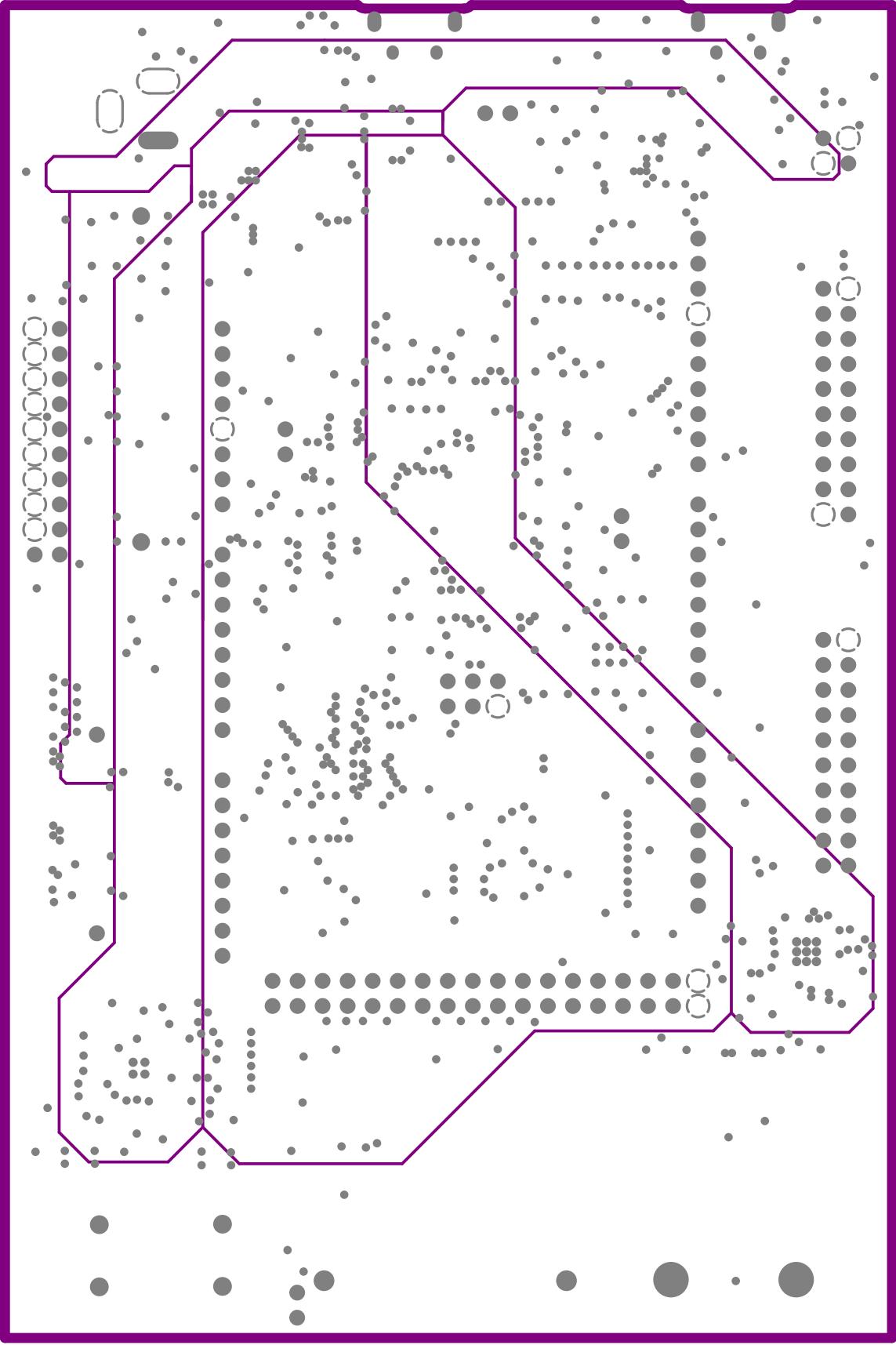


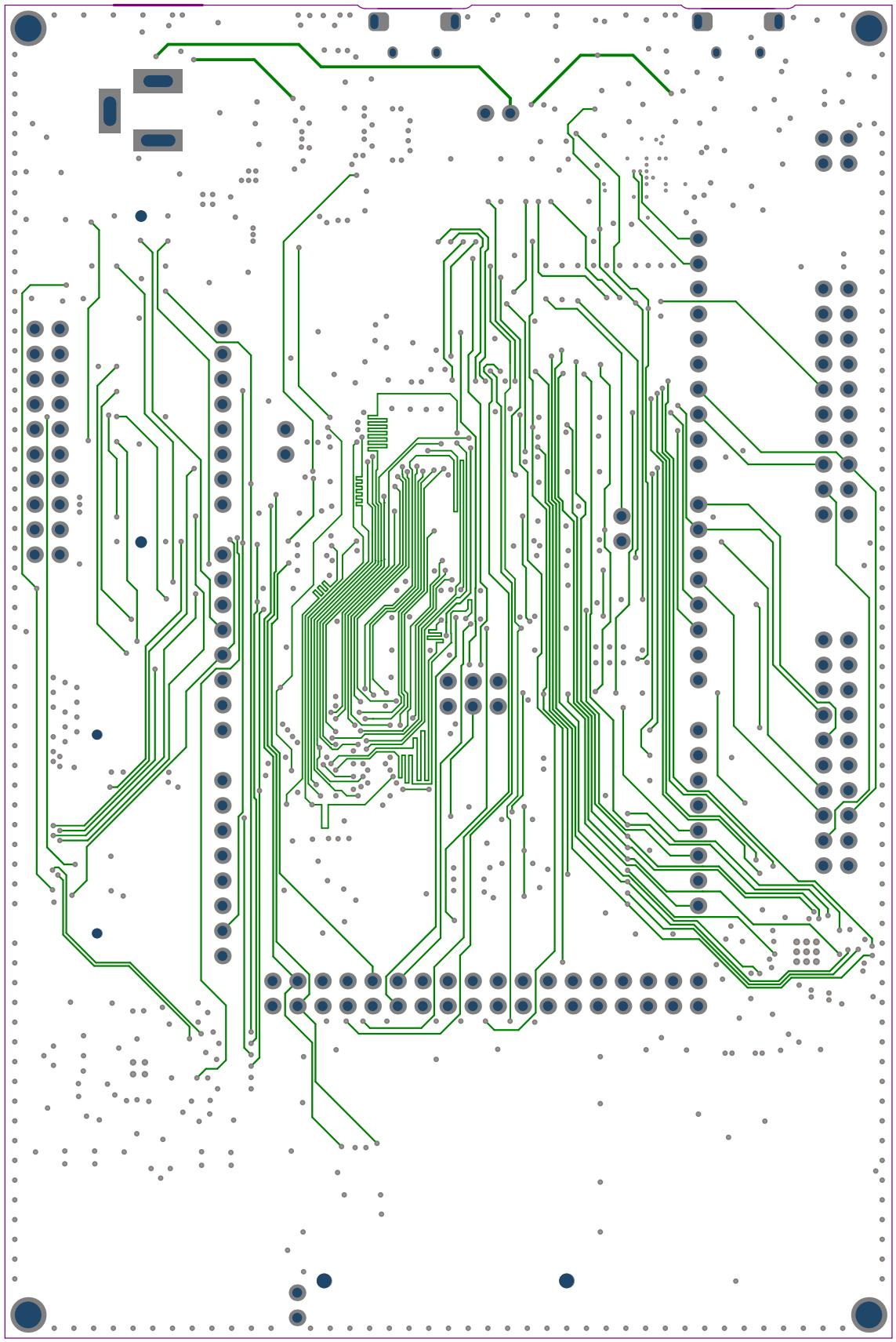


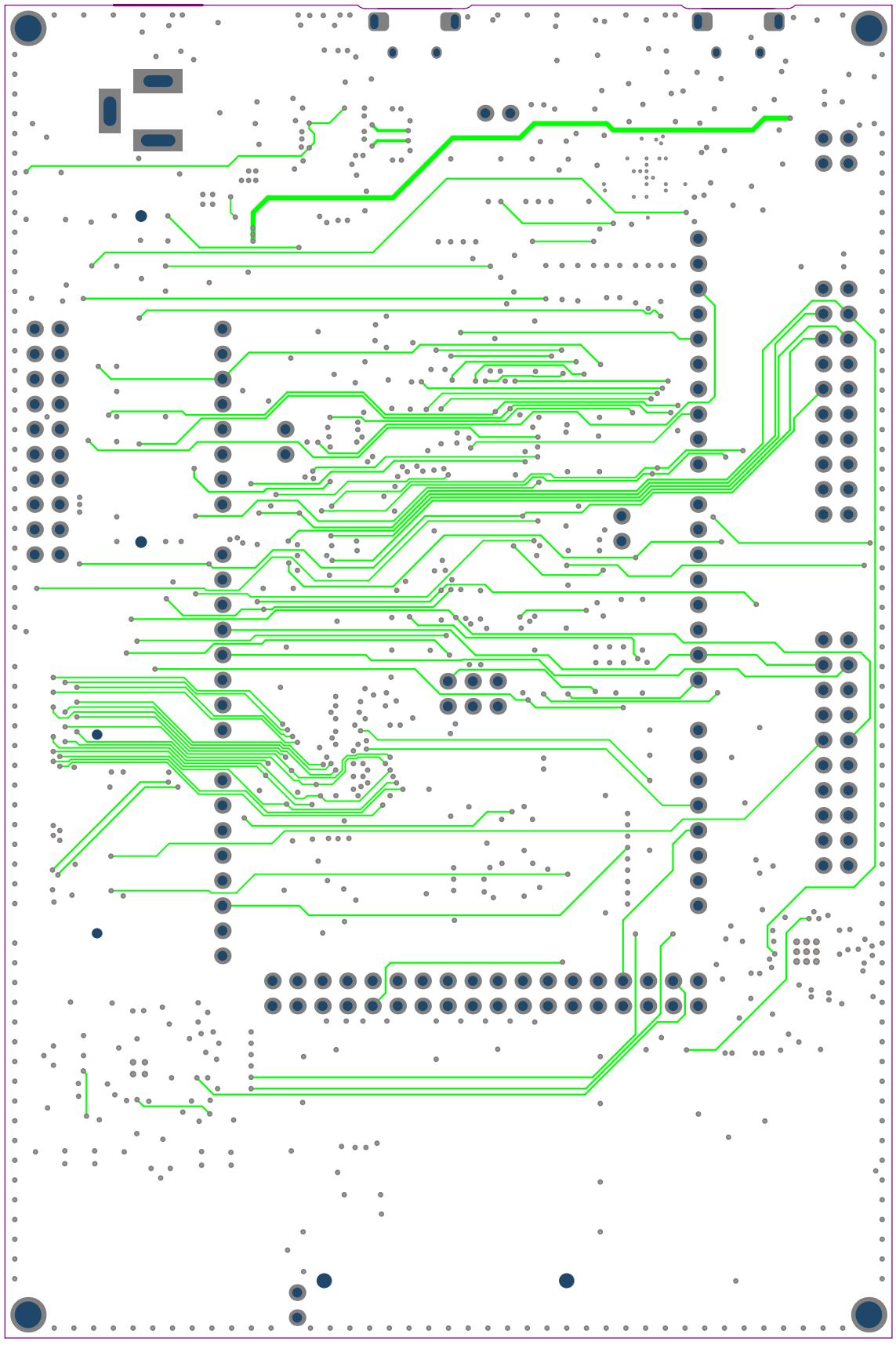


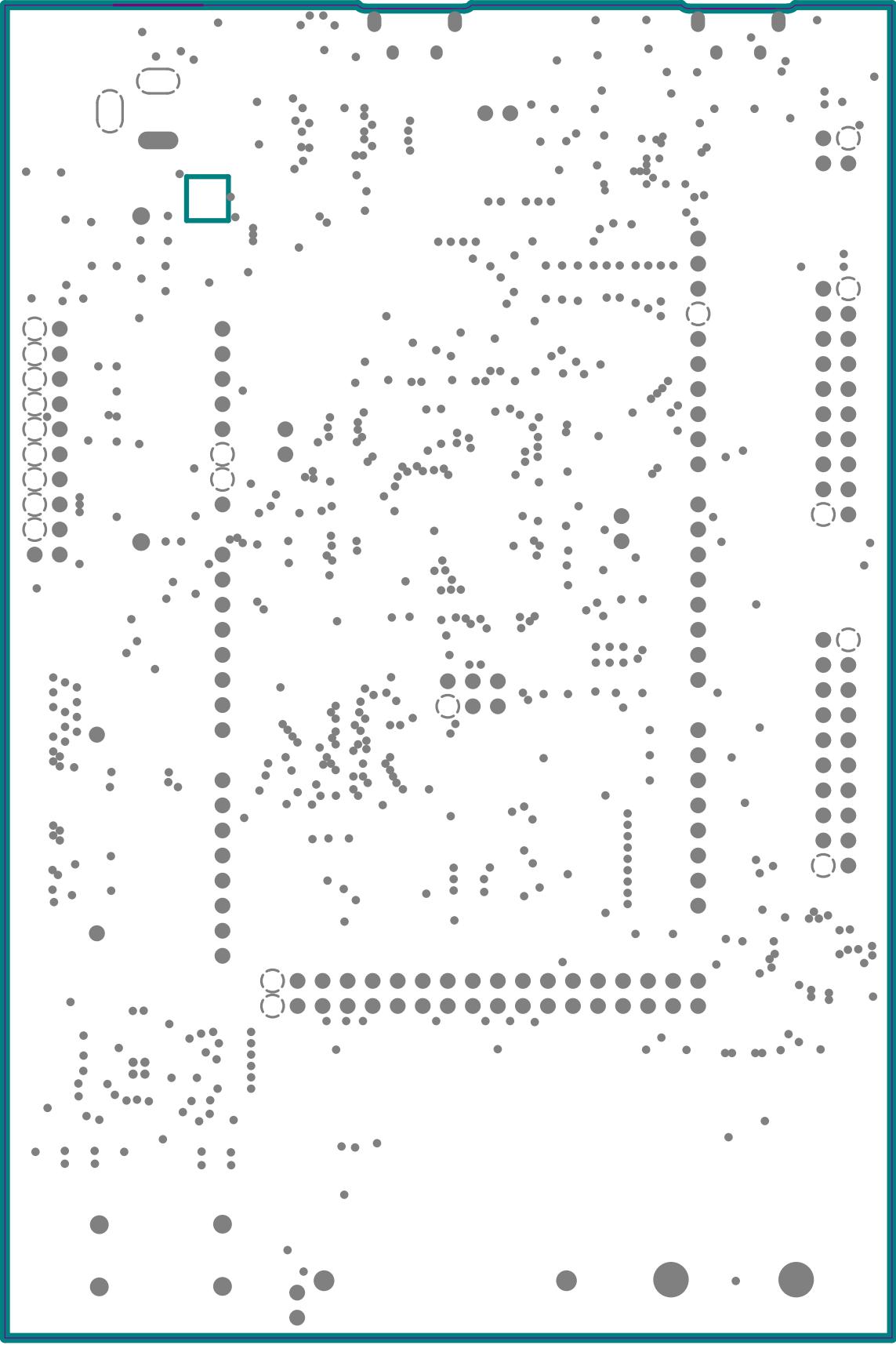


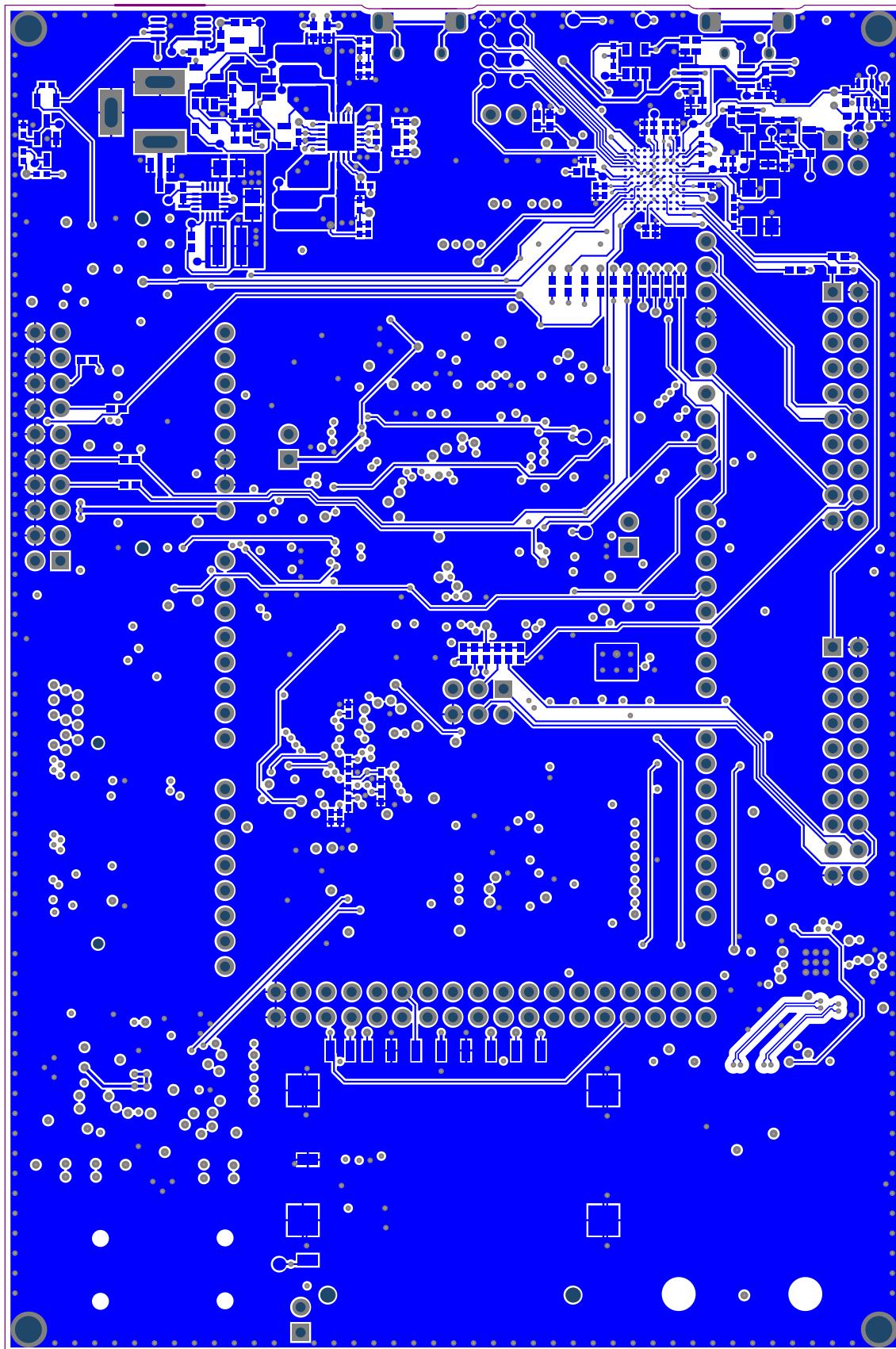


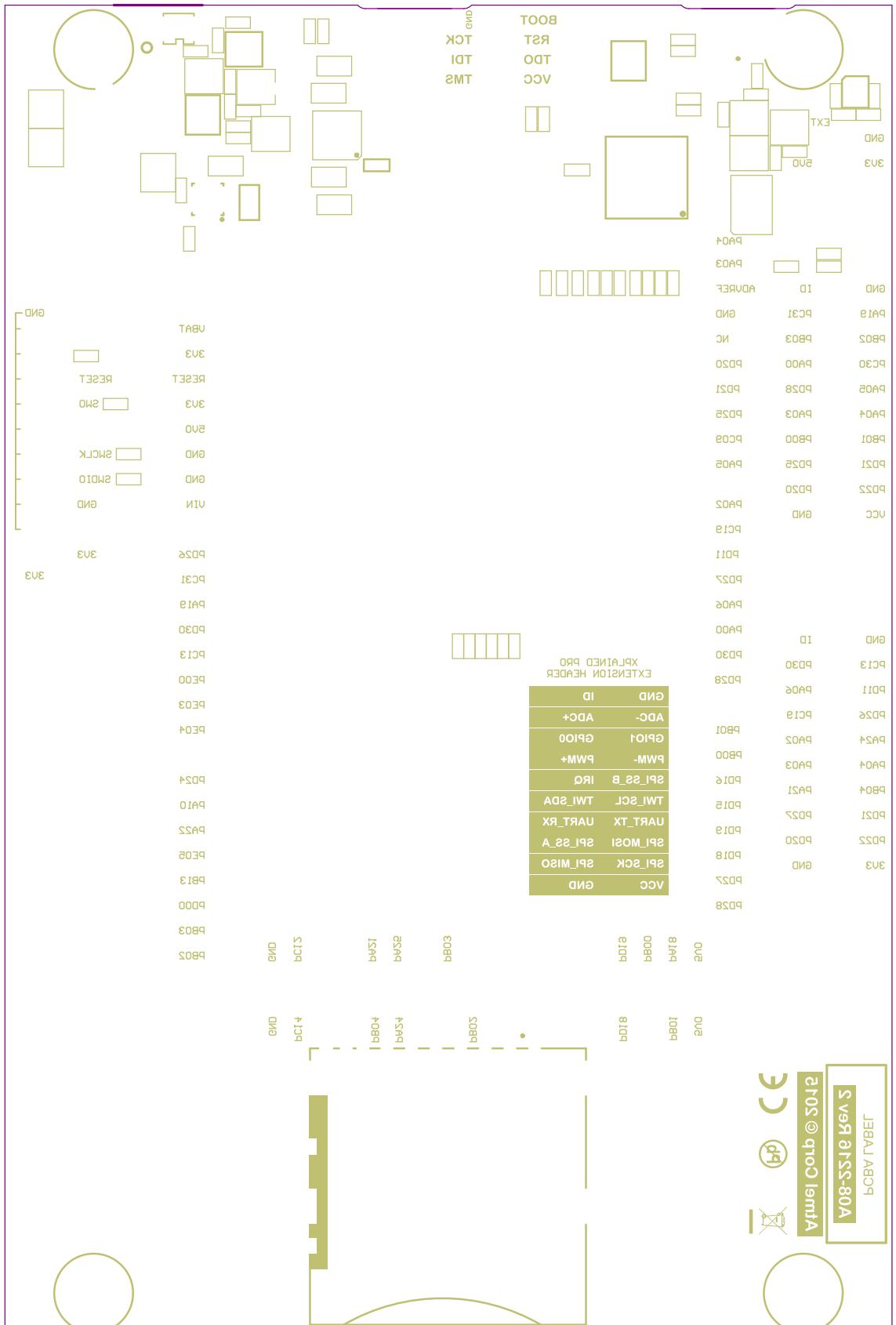












## Component list

Top Level Schematic

**Source Data From:** SAMV71\_Xplained\_Ultra.PrjPCB  
**Project:** SAMV71\_Xplained\_Ultra.PrjPCB  
**Variant:** Default\_assembly



Report Date: 24.08.2016							Print Date: 24.08.2016		16:00:52		16:00:46	
Fitted	Designator	Quantity	Value	Manufacturer	MPN	Description						
Fitted	C100, C701, C703	3	22uH10V	tdk	C2120GR12A280M095	Ceramic capacitor, SMD 0805, X9R, 10V, A3201, Ceramic capacitor, SMD 0805, X9R, 10V, ±20%						
Fitted	C100	1	4.7uF	Murata	GRM218R161E47KA12L	Ceramic capacitor, SMD 0805, X9R, 10V, ±20%						
Fitted	C101	1	15p	Murata	GRM218R161E10KA73L	Ceramic capacitor, SMD 0402, NP0, 50V, ±1%						
Fitted	C102	1	3.3n			Ceramic capacitor, SMD 0805, X9R, 25V, ±10%						
Fitted	C103	1	100p			Ceramic capacitor, SMD 0402, NP0, 50V, ±1%						
Fitted	C104	1	10n			Electric Double Layer Capacitor, EDLC, 10nF, 2.5V, 200 ESR						
Fitted	C108, C109, C200, C201, C202, C203, C204, C205, C206, C207, C210, C211, C212, C213, C214, C217, C218, C200, C011, C013, C703, C702, C705, C707, C708, C709, C710, C711, C801, C802, C803, C818, C819, C821, C822, C826, C828, C1002, C1003	40	100n	Kemet	CD4020104K4R9ACTU	Gummierte Keramik-Kondensatoren, Kemet, CD4020104K4R9ACTU						
Fitted	C109, C110, C111, C117, C118, C119, C120	7	4.7uF	tdk	C1608XTR14A75K	Ceramic capacitor, SMD 0805, X9R, 10V, 10% (d23109)						
Fitted	C110, C119, C119, C117, C118	9	2.2uF	Kemet	CD4020225M9RAC	Ceramic capacitor, SMD 0402, X9R, 3V, ±10%						
Fitted	C112, C113, C113, C117, C118	5	10uF	Murata	GRM218R161E050K16L	Ceramic capacitor, SMD 0805, X9R, 10V, 10% (d19441)						
Fitted	C113	1	8.2p			Ceramic capacitor, SMD 0402, NP0, 50V, ±1%						
Fitted	C118	1	6.8p			Ceramic capacitor, SMD 0402, NP0, 50V, ±1%						
Fitted	C119	1	3.3p			Ceramic capacitor, SMD 0402, NP0, 50V, ±1%						
Fitted	C119, C120	2	1uF	AVX	0402ZD109K1A2A	Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C125	1	2.2uF	Kemet	T494A122K9019A7	Capacitor Tantalum 10V 2.2uF 10% ESR 6 ohm						
Fitted	C216, C708, C712	3	10uF	Murata	GRM218R161E10KA73L	Ceramic capacitor, SMD 0805, X9R, 10V, 10% (d19441)						
Fitted	C219, C202	2	10p			Ceramic capacitor, SMD 0402, NP0, 50V, ±1%						
Fitted	C220, C230	2	4.7p			Ceramic capacitor, SMD 0402, NP0, 50V, ±1%						
Fitted	C220, C230	2	12p			Ceramic capacitor, SMD 0402, NP0, 50V, ±1%						
Fitted	C604, C605, C606, C607, C608	7	100n	Kemet	CD4020104K4R9ACTU	Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C604, C606, C607, C608	7	100n	Kemet	CD4020104K4R9ACTU	Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C605, C607, C608	2	22p			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C603, C604	2	47p			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C605, C608	2	1uF	AVX	0402ZD109K1A2A	Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C610, C610	2	2.2uF	Kemet	CD4020225M9RAC	Ceramic capacitor, SMD 0402, X9R, 3V, ±10%						
Fitted	C612, C613	2	47p			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C612, C613	2	1uF	AVX	0402ZD109K1A2A	Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C613	1	100p			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C614	1	10n			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C615	1	4.7p			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C616	1	12p			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C617	1	22p			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C618	1	47p			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C619	1	1uF	AVX	0402ZD109K1A2A	Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C620	1	100p			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C621	1	10n			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C622	1	4.7p			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C623	1	12p			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C624	1	22p			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C625	1	47p			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C626	1	1uF	AVX	0402ZD109K1A2A	Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C627	1	100p			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C628	1	10n			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C629	1	4.7p			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C630	1	12p			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C631	1	22p			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C632	1	47p			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C633	1	1uF	AVX	0402ZD109K1A2A	Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C634	1	100p			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C635	1	10n			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C636	1	4.7p			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C637	1	12p			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C638	1	22p			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C639	1	47p			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C640	1	1uF	AVX	0402ZD109K1A2A	Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C641	1	100p			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C642	1	10n			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C643	1	4.7p			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C644	1	12p			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C645	1	22p			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C646	1	47p			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C647	1	1uF	AVX	0402ZD109K1A2A	Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C648	1	100p			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C649	1	10n			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C650	1	4.7p			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C651	1	12p			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C652	1	22p			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C653	1	47p			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C654	1	1uF	AVX	0402ZD109K1A2A	Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C655	1	100p			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C656	1	10n			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C657	1	4.7p			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C658	1	12p			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C659	1	22p			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C660	1	47p			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C661	1	1uF	AVX	0402ZD109K1A2A	Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C662	1	100p			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C663	1	10n			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C664	1	4.7p			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C665	1	12p			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C666	1	22p			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C667	1	47p			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C668	1	1uF	AVX	0402ZD109K1A2A	Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C669	1	100p			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C670	1	10n			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C671	1	4.7p			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C672	1	12p			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C673	1	22p			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C674	1	47p			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C675	1	1uF	AVX	0402ZD109K1A2A	Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C676	1	100p			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C677	1	10n			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C678	1	4.7p			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C679	1	12p			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C680	1	22p			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C681	1	47p			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C682	1	1uF	AVX	0402ZD109K1A2A	Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C683	1	100p			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C684	1	10n			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C685	1	4.7p			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C686	1	12p			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C687	1	22p			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C688	1	47p			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C689	1	1uF	AVX	0402ZD109K1A2A	Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C690	1	100p			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C691	1	10n			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C692	1	4.7p			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C693	1	12p			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C694	1	22p			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C695	1	47p			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C696	1	1uF	AVX	0402ZD109K1A2A	Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C697	1	100p			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C698	1	10n			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C699	1	4.7p			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C700	1	12p			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C701	1	22p			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C702	1	47p			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C703	1	1uF	AVX	0402ZD109K1A2A	Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C704	1	100p			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C705	1	10n			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
Fitted	C706	1	4.7p			Ceramic capacitor, SMD 0402, X9R, 10V, ±10%						
F												