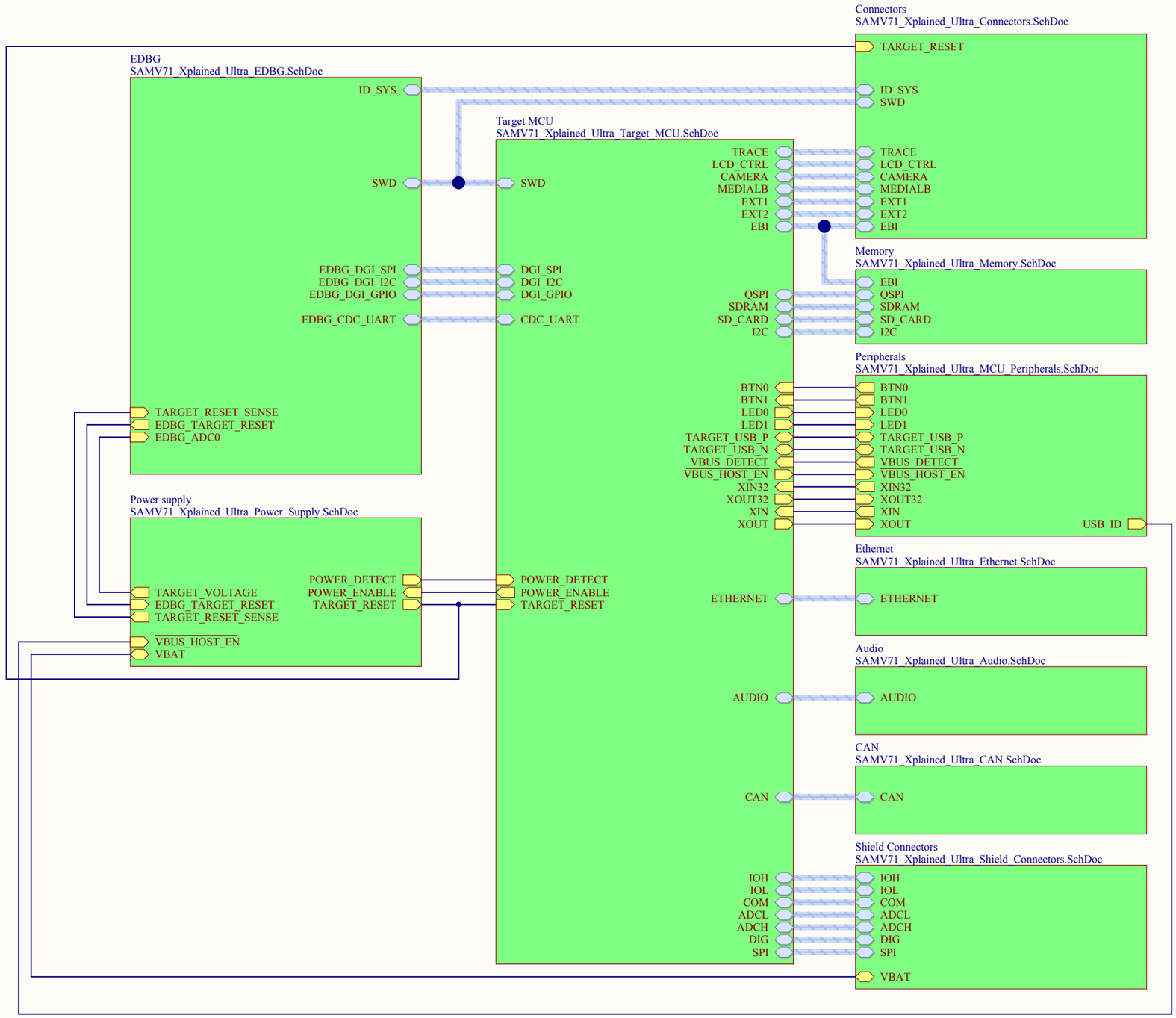
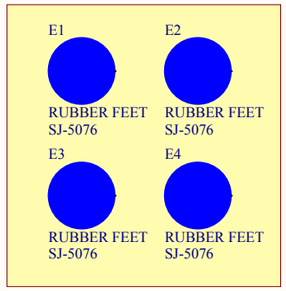
SAM V71 Xplained ULTRA

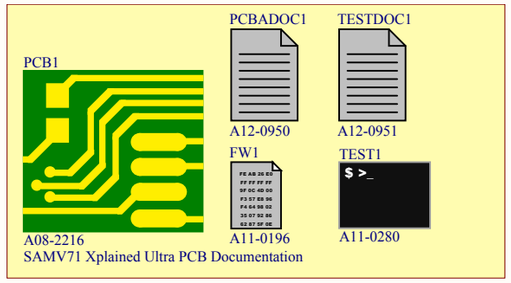




LABEL1

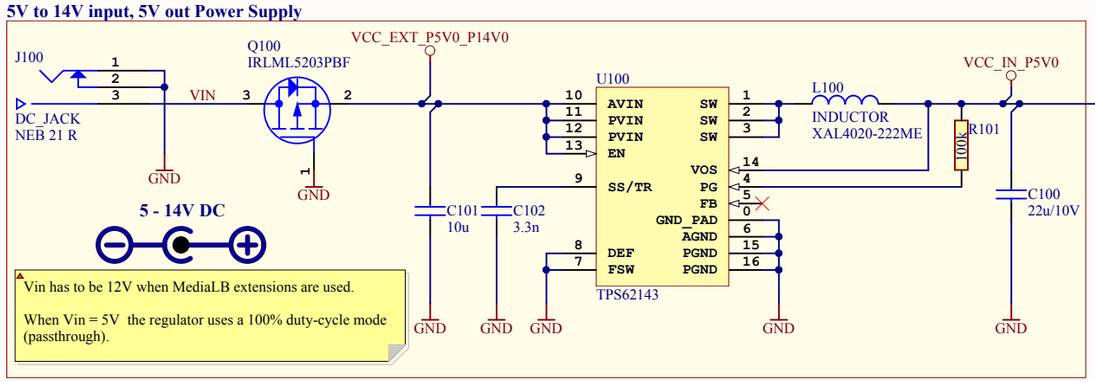
Product number/revision
Serial number

PCBA Label



ATMEL Norway	*		Atmel Enabling Unlimited Possibilities
Vestre Rosten 79	*		
N-7075 TILLER	*		
NORWAY			
Date:	16.03.2015	15:01:48	PAGE: 1 of 13
Document number:	A09-2407		Revision: 3
TITLE: Top Level Schematics			
SAMV71_Xplained_Ultra_TopLevel.SchDoc			

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



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 17V.

VCC_EXT_P5V0:
This power input can be used to power the whole board and it has a higher priority as 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%.

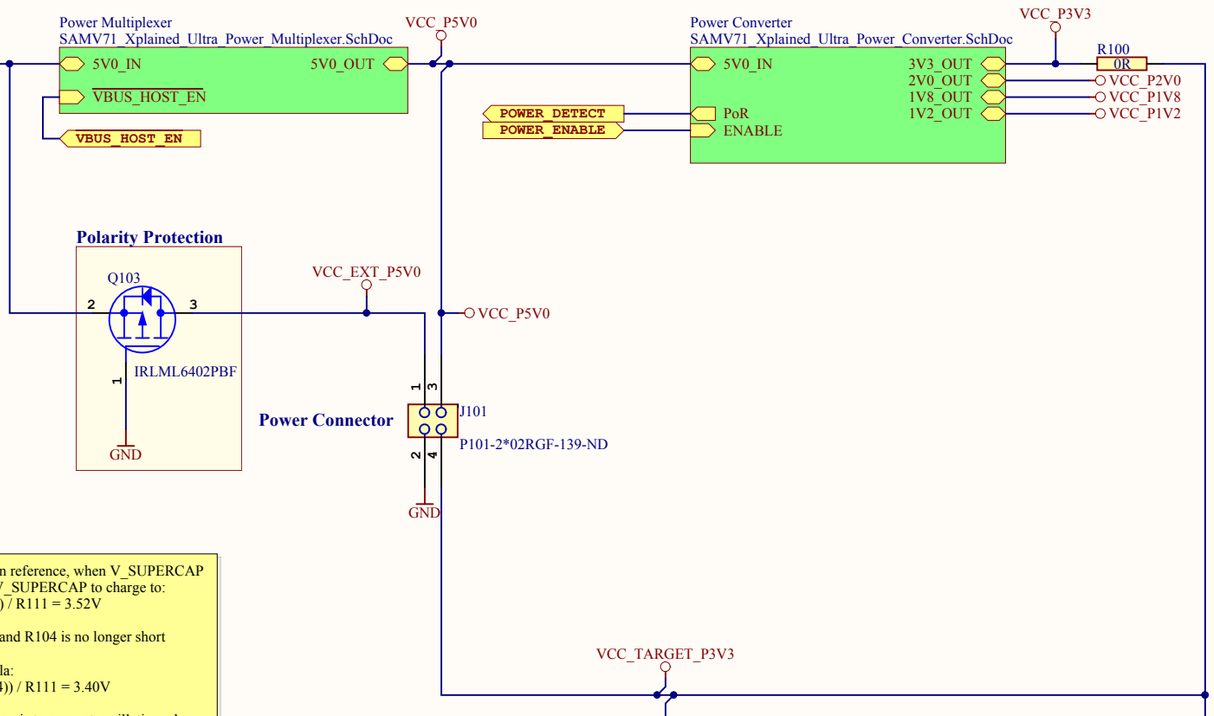
VCC_EDBG_USB_P5V0:
EDBG USB power input. This supply is used when VCC_EXT_P5V0 is not present.

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 ot these supplies.

VCC_P3V3: Regulated 3.3V from VCC_P5V0
VCC_P2V0: Regulatred 2.0V from VCC_P5V0
VCC_P1V8: Regulated 1.8V from VCC_P5V0
VCC_P1V2: Regulatred 1.2V from VCC_P5V0

VCC_TARGET_P3V3: Target supply voltage (target MCU, peripherals, connectors and SuperCap charge)
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 sleep mode and currents below 100µA.

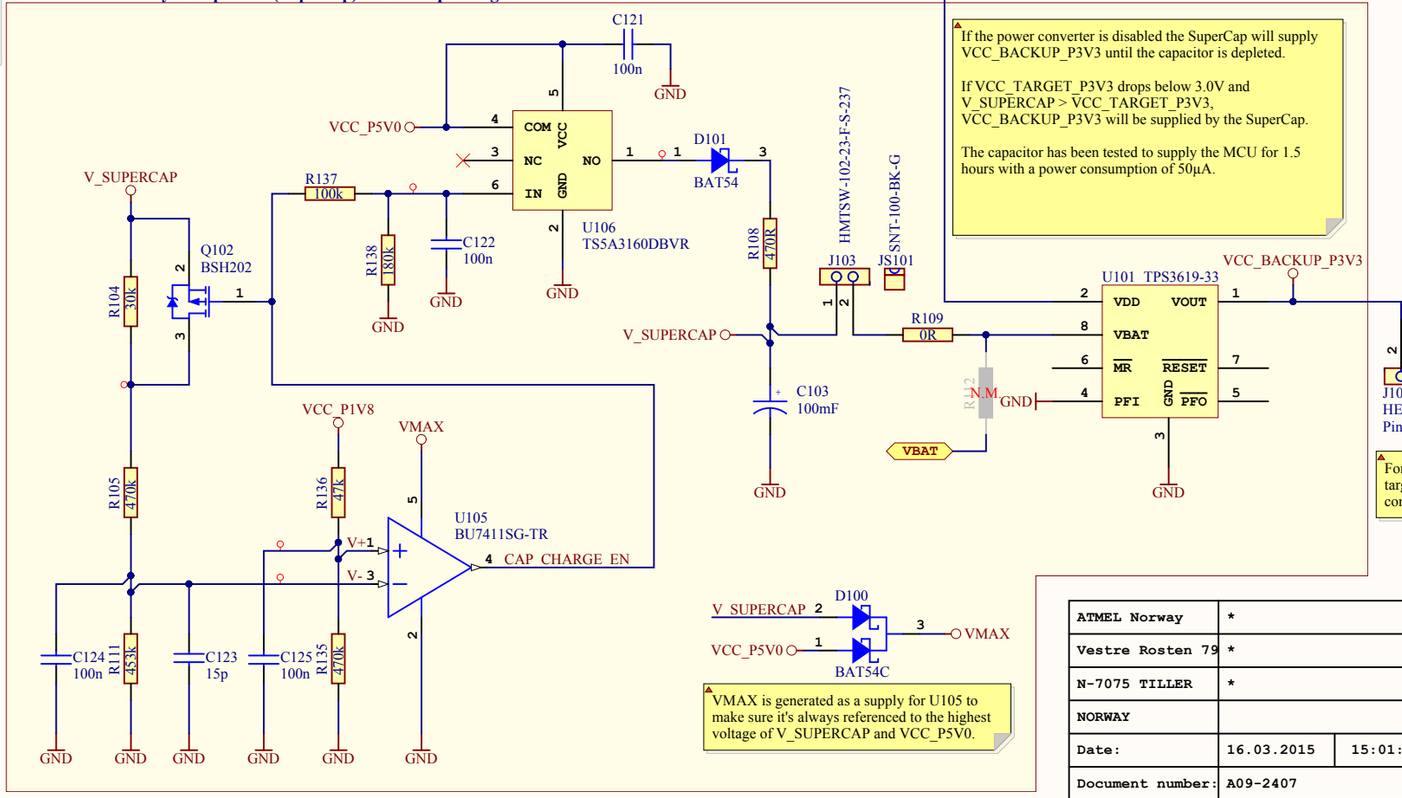


U105 compares V_SUPERCAP to a known reference, when V_SUPERCAP is low Q101 and Q102 will open causing V_SUPERCAP to charge to:
Vcap (max) = (U105_V- * (R111 + R105)) / R111 = 3.52V

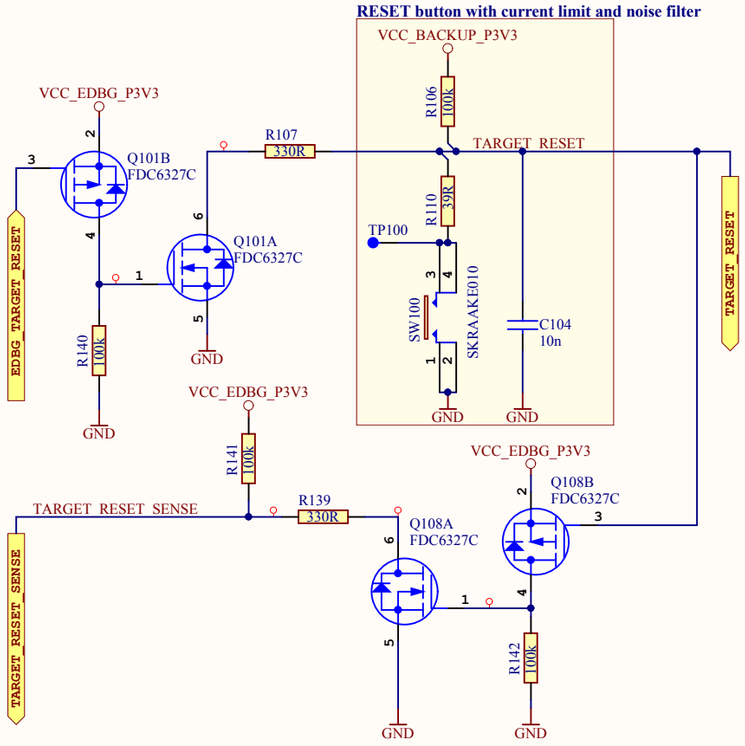
At Vcap (max) Q101 and Q102 will close and R104 is no longer short circuited by Q102.
Vcap is now given by the following formula:
Vcap = (U105_V- * (R111 + R105 + R104)) / R111 = 3.40V

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

Electric Double-Layer Capacitor (Supercap) for backup voltage



RESET button with current limit and noise filter



ATMEL Norway	*		
Vestre Rosten 79	*		
N-7075 TILLER	*		
NORWAY			
Date:	16.03.2015	15:01:48	PAGE: 2 of 13
Document number:	A09-2407		Revision: 3
TITLE: Power supply			
SAMV71_Xplained_Ultra_Power_Supply.SchDoc			

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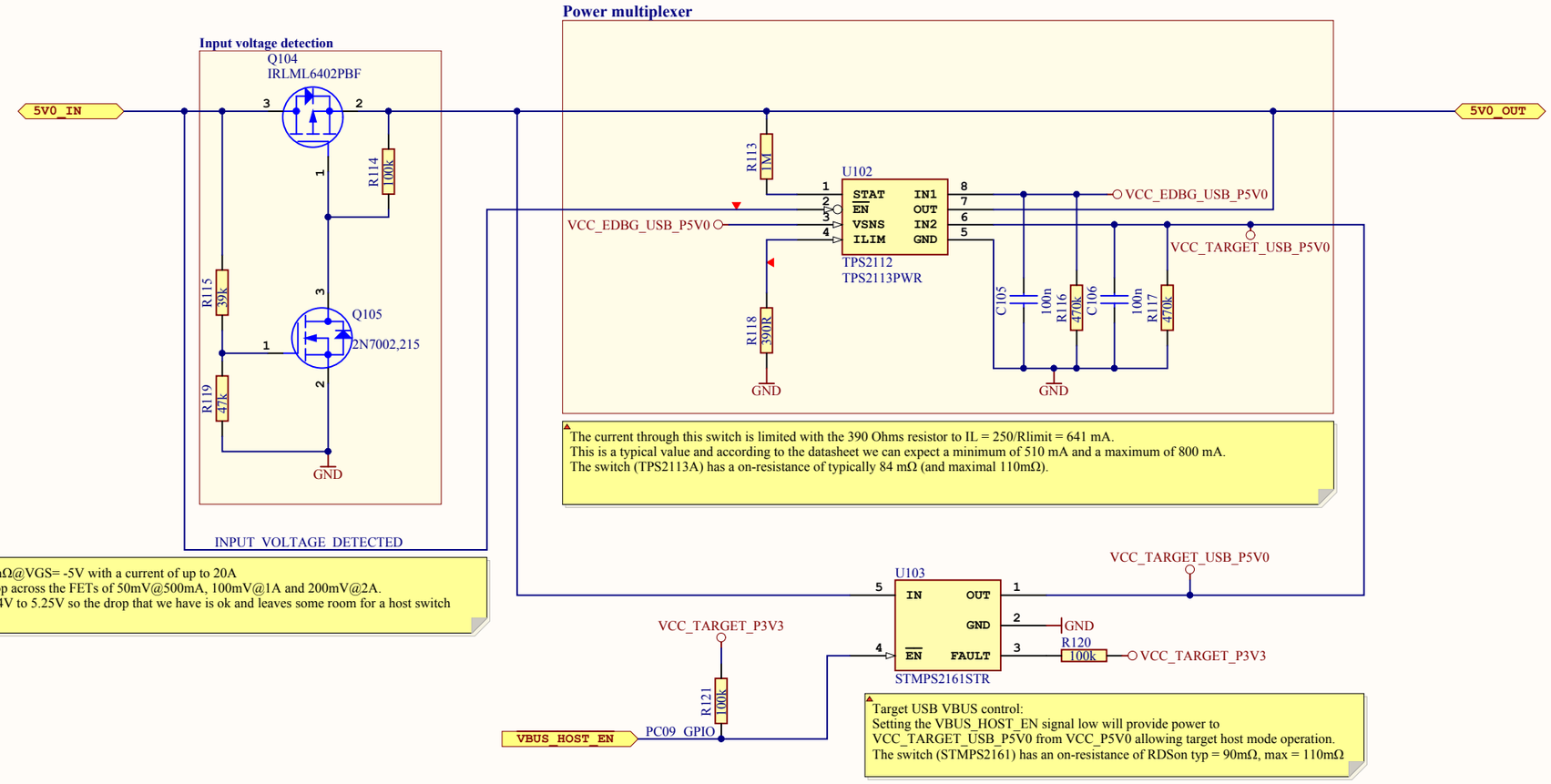

ATMEL Norway	*			
Vestre Rosten 79	*			
N-7075 TILLER	*			
NORWAY				
Date:	16.03.2015	15:01:48	PAGE: 3 of 13	
Document number:	A09-2407		Revision	3
TITLE: Power Multiplexer				
SAMV71_Xplained_Ultra_Power_Multiplexer.SchDoc				

See datasheet page 29 for reccomended PCB layout

5V0_IN

C107 4.7uF, C108 2.2uF, C109 2.2uF, C110 2.2uF, C111 2.2uF, C112 10uF, C113 10uF — GND

U104
LM26480
Auto-mode, no sync.

VINLDO12 (1), VINLDO2 (24), AVDD (10), VINLDO1 (19), VIN2 (13), VIN1 (6)

SW1 (5) — L101 INDUCTOR XAL4020-222ME — 2V0_OUT
C114 8.2p, R122 453k, R123 150k, C115 10uF — GND

Iout max = 1500mA
Accuracy 0.089%/V + 0.0013%/mA (max 2.13%)
RDSON typ 200mΩ (400mΩ max)
Quiescent current 33 uA (no load)
Current limit max 500 mA
Thermal shutdown
Minimum input / output capacitance is 10uF

FB1 (8)

GND_SW1 (4) — GND

SW2 (14) — L102 INDUCTOR XAL4020-222ME — 3V3_OUT
C116 6.8p, R124 560k, C118 33p, R126 100k, C117 10uF — GND

Iout max = 1500mA
Accuracy 0.089%/V + 0.0013%/mA (max 2.24%)
RDSON typ 200mΩ (400mΩ max)
Quiescent current 33 uA (no load)
Current limit max 500 mA
Thermal shutdown
Minimum input / output capacitance is 10uF

FB2 (11)

GND_SW2 (15) — GND

When Q106 is open the voltage divider between R125 and R129 causes PSU_ENABLE = 0.24V, below the off-treshold of 0.4V

Pushing down SW101 will force PSU_ENABLE = 5V.
The regulator will be on regardless of the Enable signal level as long as SW101 is pushed.

R125 200k, SW101 SKRAAKE010

GND

PSU_ENABLE

SYNC (2)
ENSW1 (7)
ENSW2 (12)
ENLDO1 (17)
ENLDO2 (16)

VCC_BACKUP_P3V3

R127 470k

ENABLE — PC17_GPIO

Q106 IRLML6402PBF

When the system is powered (supercap empty) the Enable signal will have the same ramp-up as VCC_BACKUP_P3V3 causing Vgs = 0V during the entire powerup sequence.

This causes #ENABLE to stay sufficiently low which effectively closes Q106, ensuring PSU_ENABLE = 5V

R131 470k — GND

R129 10k

Q107 2N7002,215

LDO1 (20) — 1V8_OUT
R128 604k, R130 232k, C119 1uF — GND

Iout max = 300mA
Accuracy 0.15%/V + 0.011%/mA (max 3.57%)
Dropout typical 25mV at 50mA (max 200mv)
Quiescent current 40 uA (no load)
Current limit max 500 mA
Thermal shutdown
Minimum capacitance required on output is 0.68uF (with ESR between 5 - 500mOhm)

FBL1 (21)

LDO2 (23) — 1V2_OUT
R132 280k, R133 200k, C120 1uF — GND

Iout max = 300mA
Accuracy 0.15%/V + 0.011%/mA (max 3.48%)
Dropout typical 25mV at 50mA (max 200mv)
Quiescent current 40 uA (no load)
Current limit max 500 mA
Thermal shutdown
Minimum capacitance required on output is 0.68uF (with ESR between 5 - 500mOhm)

FBL2 (22)

GND_C (9), GND_L (18), GND_PAD (25) — GND

nPOR (3) — PoR — PA01_WKUP1

nPOR is held low (0v) by the regulator when either of the switch mode regulators outputs are not ready/good.

On rising power flank the nPOR is let go when the output voltage reaches 92%.
On falling power flank the nPOR is forced low when the output voltage falls below 82%.

nPOR can be pulled to VCC_TARGET_P3V3 as the regulator won't let go of the nPOR pin before the voltage is at a sufficient level.

R134 100k — VCC_TARGET_P3V3

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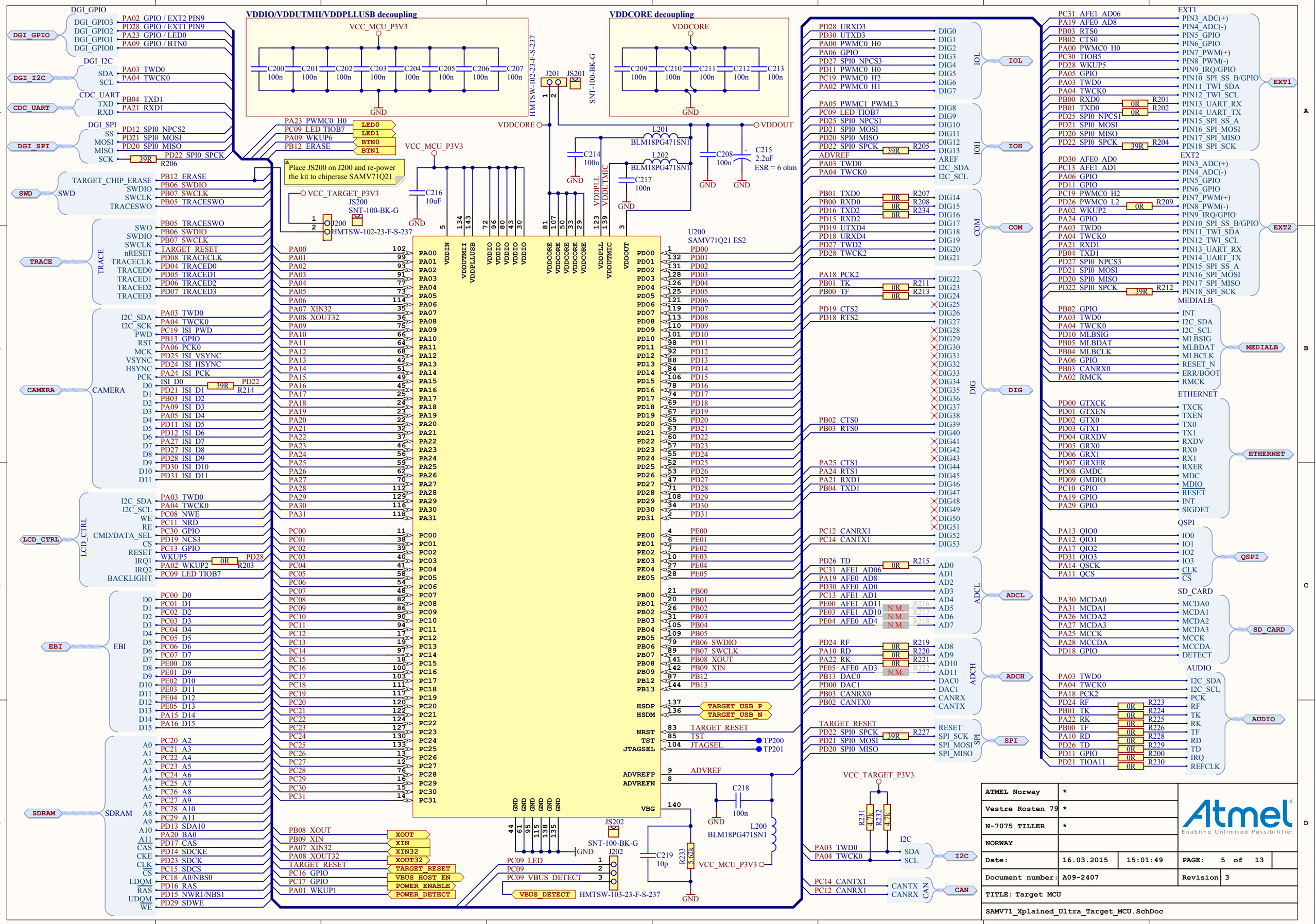
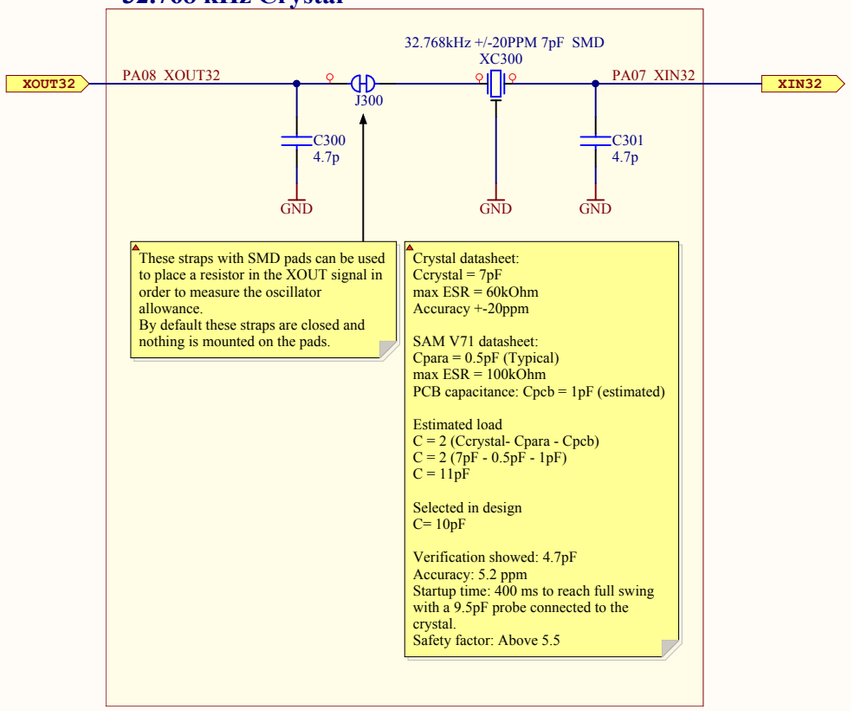
Document number:	A09-2407		Revision: 3
TITLE: Power Converter			
SAMV71_Xplained_Ultra_Power_Converter.SchDoc			

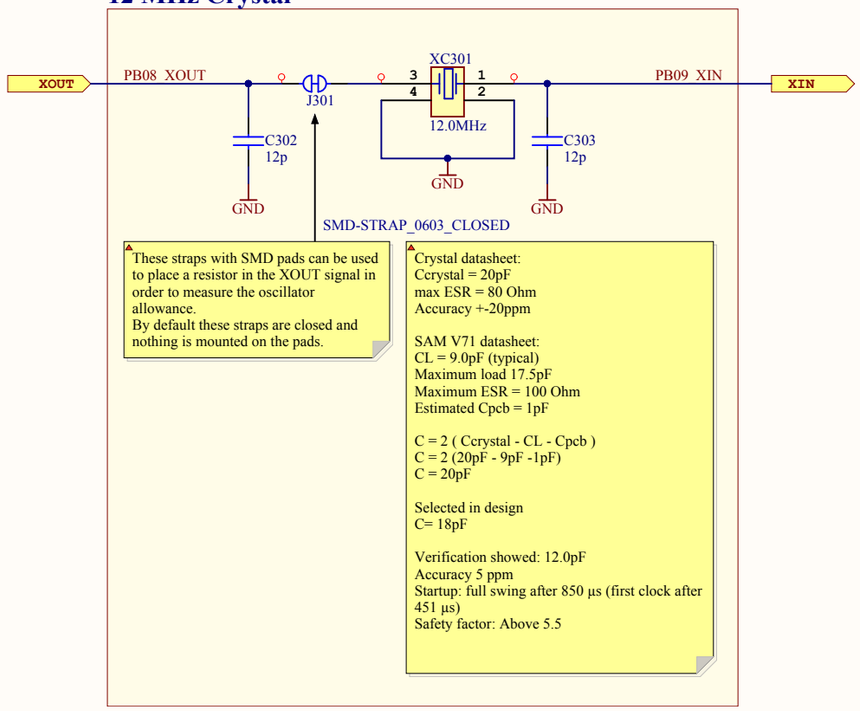


ATMEL Norway	*		
Vestre Rosten 79	*		
N-7075 TILLER	*		
NORWAY			
Date:	16.03.2015	15:01:49	PAGE: 5 of 13
Document number:	A09-2407		Revision: 3
TITLE: Target MCU			
SAMV71_Xplained_Ultra_Target_MCU.SchDoc			

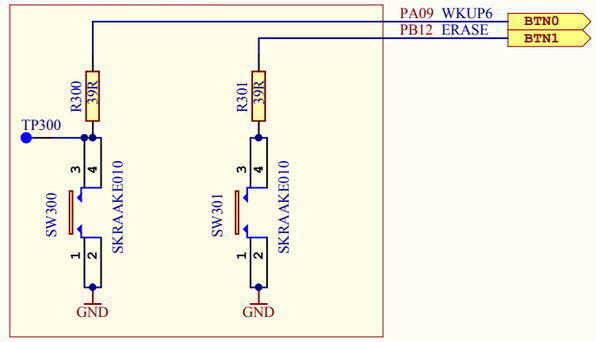
32.768 kHz Crystal



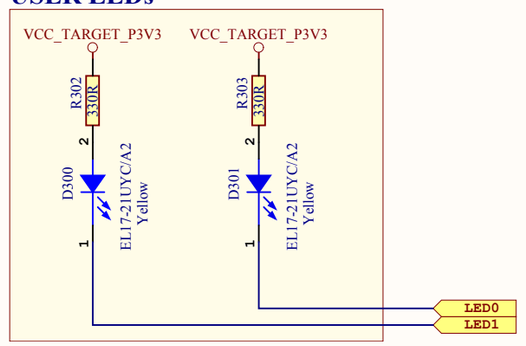
12 MHz Crystal



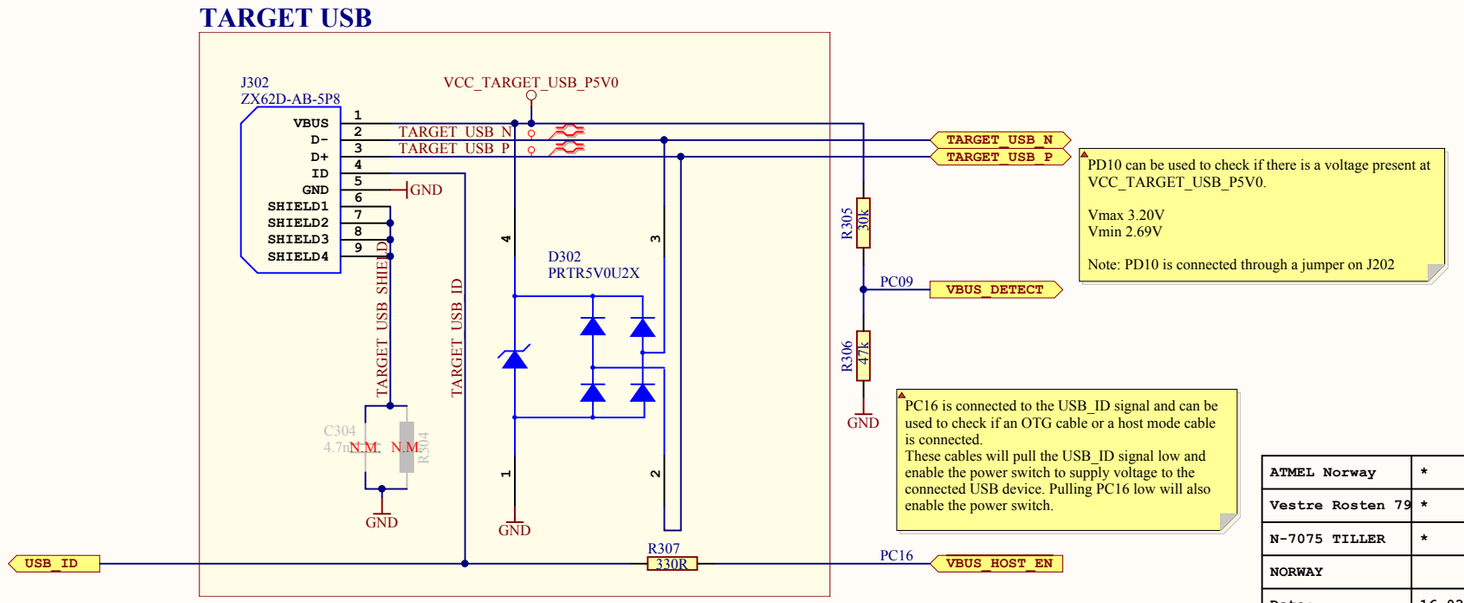
USER BUTTONs



USER LEDs



TARGET USB



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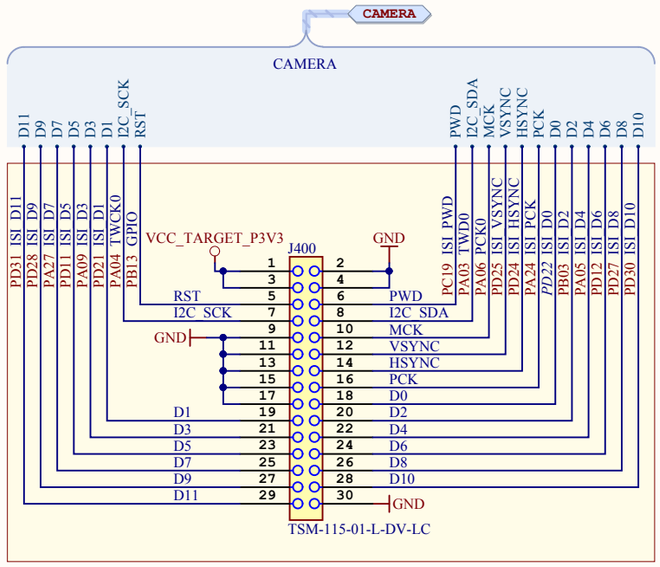
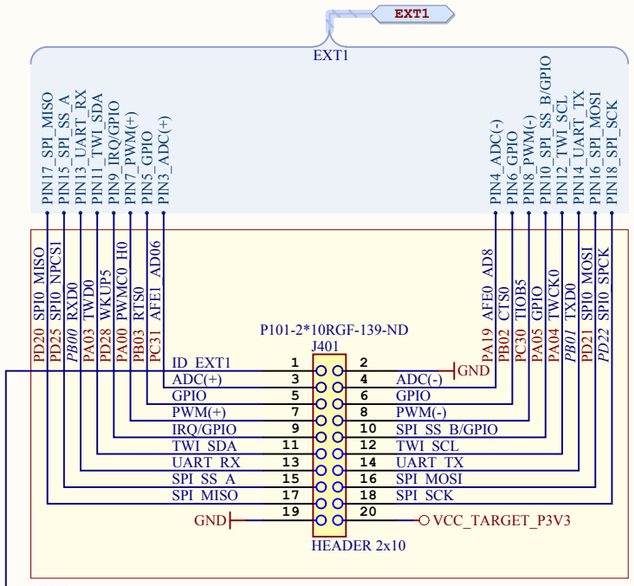
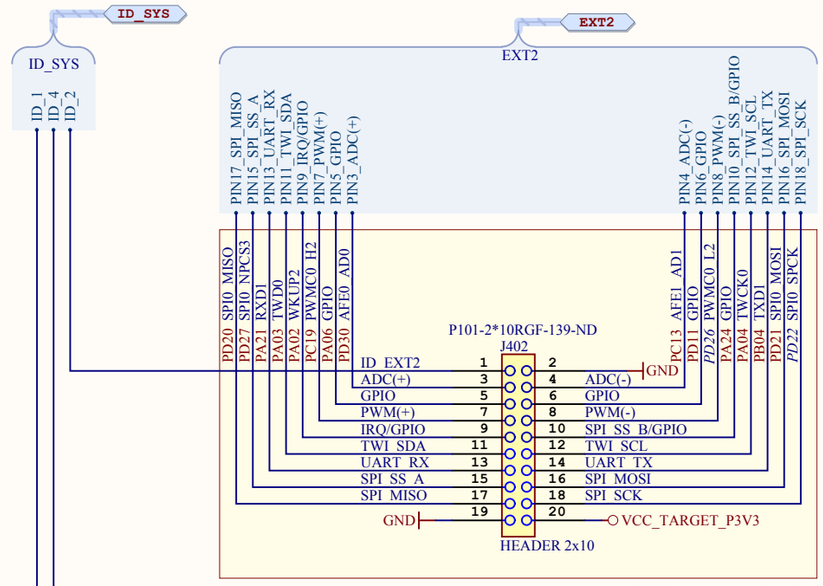
Date:	16.03.2015	15:01:49	PAGE: 6 of 13
Document number:	A09-2407		Revision 3
TITLE: Target MCU Peripherals			
SAMV71_Xplained_Ultra_MCU_Peripherals.SchDoc			



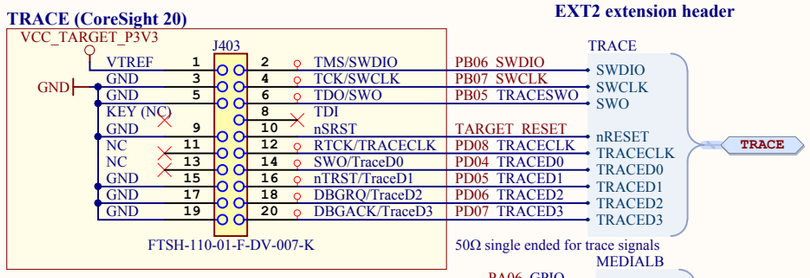
Camera Interface Connector

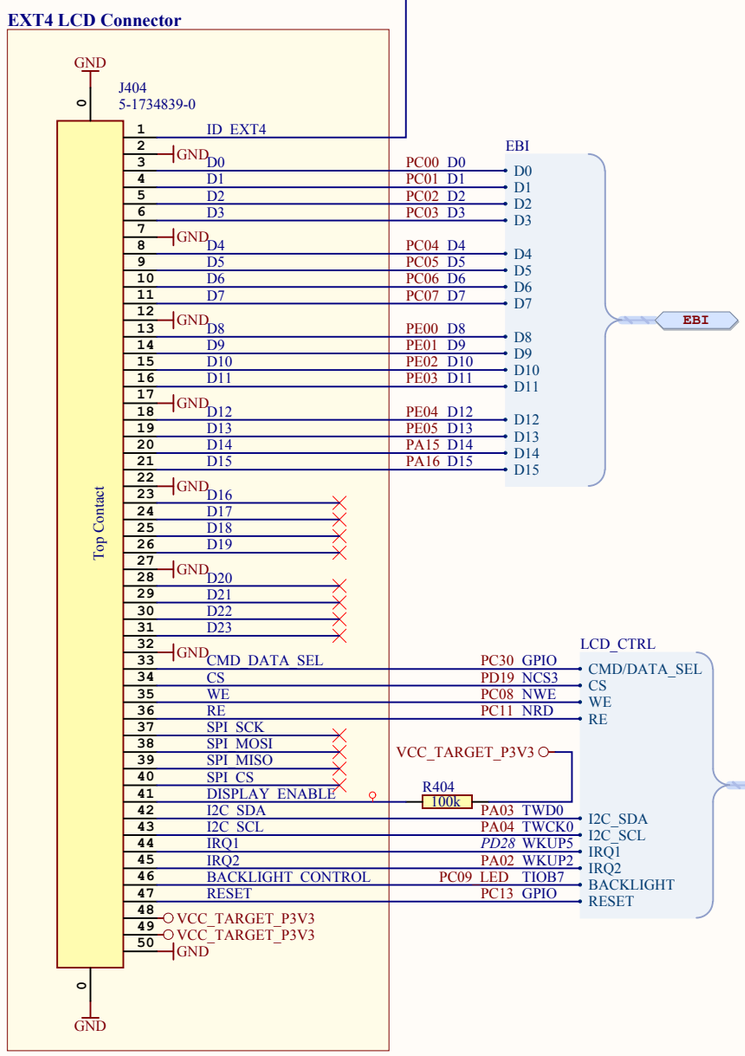


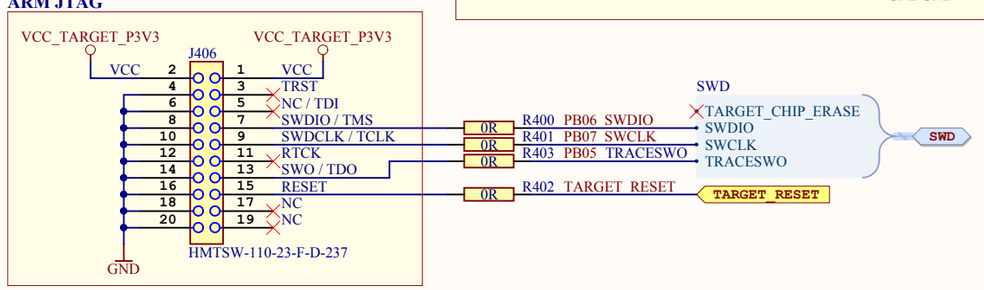
EXT1 extension header

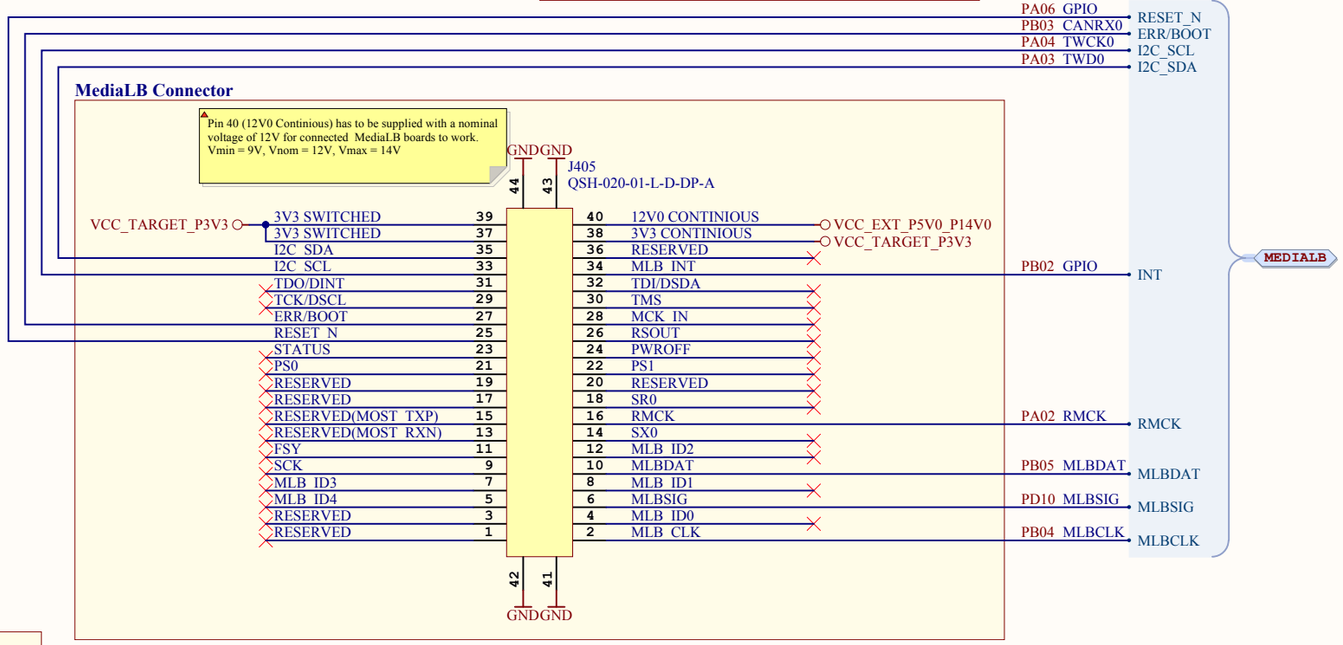


EXT2 extension header









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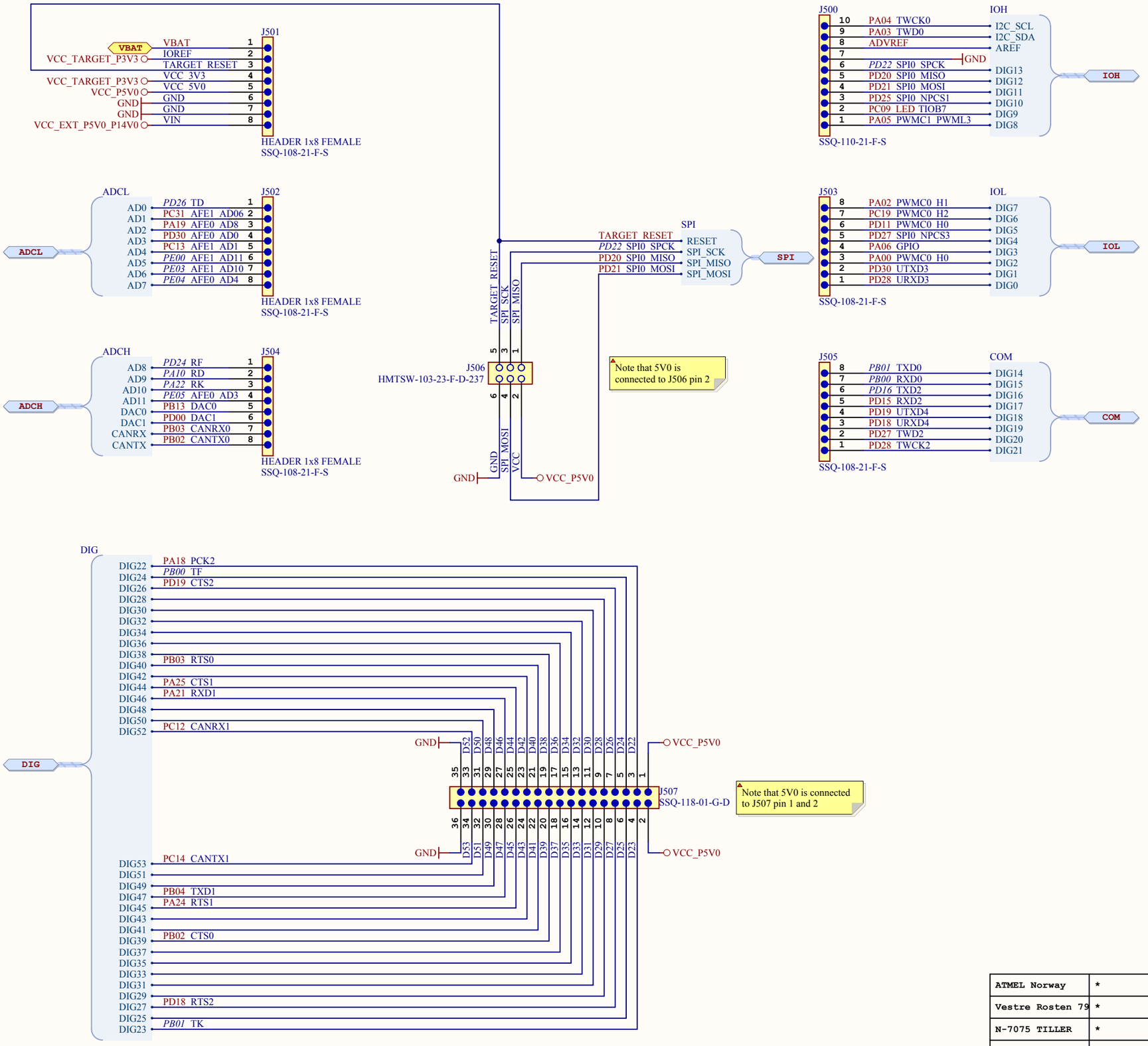
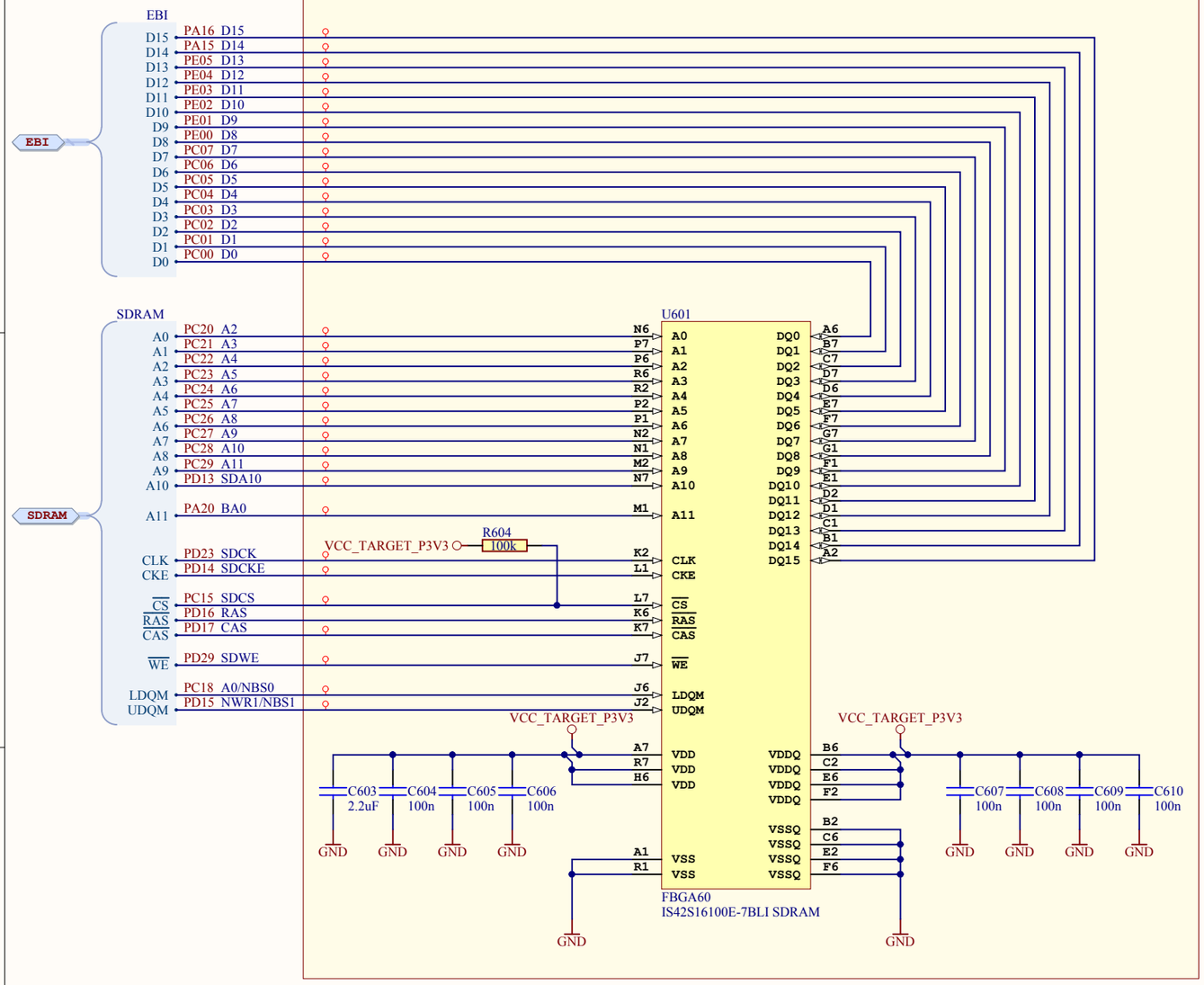
Date:	16.03.2015	15:01:49	PAGE: 7 of 13
Document number:	A09-2407		Revision: 3
TITLE: Extension connectors			
SAMV71_Xplained_Ultra_Connectors.SchDoc			

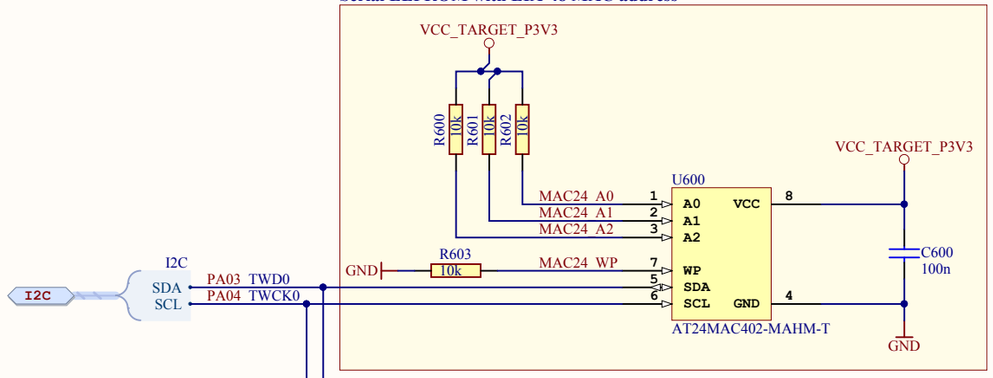


ATMEL Norway	*		
Vestre Rosten 79	*		
N-7075 TILLER	*		
NORWAY			
Date:	16.03.2015	15:01:50	PAGE: 8 of 13
Document number:	A09-2407		Revision: 3
TITLE: Shield Connectors			
SAMV71_Xplained_Ultra_Shield_Connectors.SchDoc			

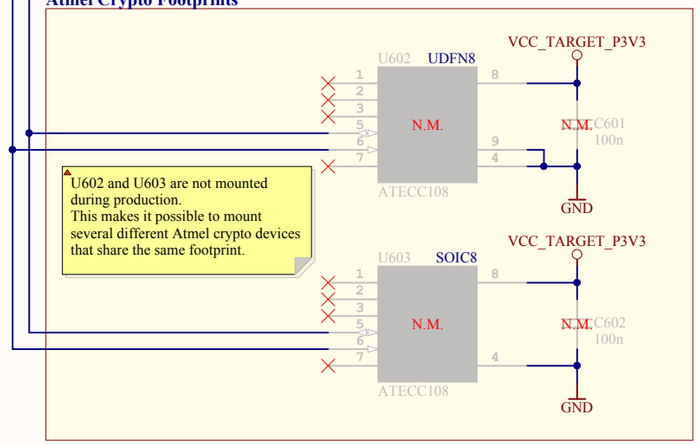
SDRAM (16MBit)



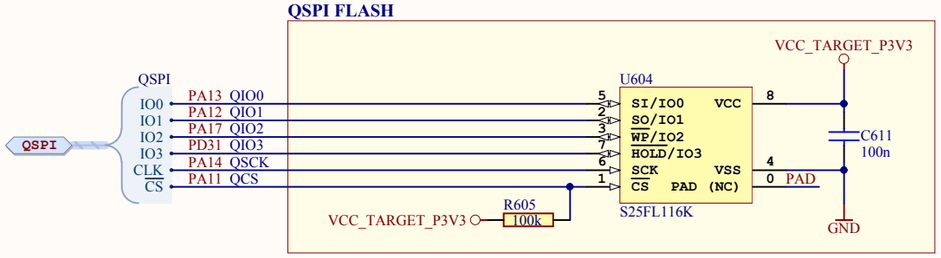
Serial EEPROM with EIA-48 MAC address



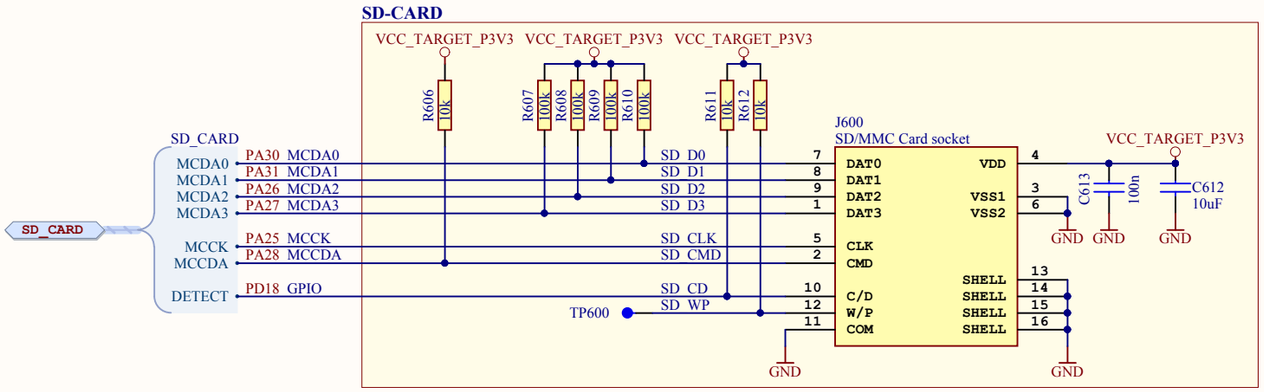
Atmel Crypto Footprints



QSPI FLASH



SD-CARD



C/D is connected to COM when a card is placed into the socket.
W/P is connected to COM when the write protect slider is in protect position.

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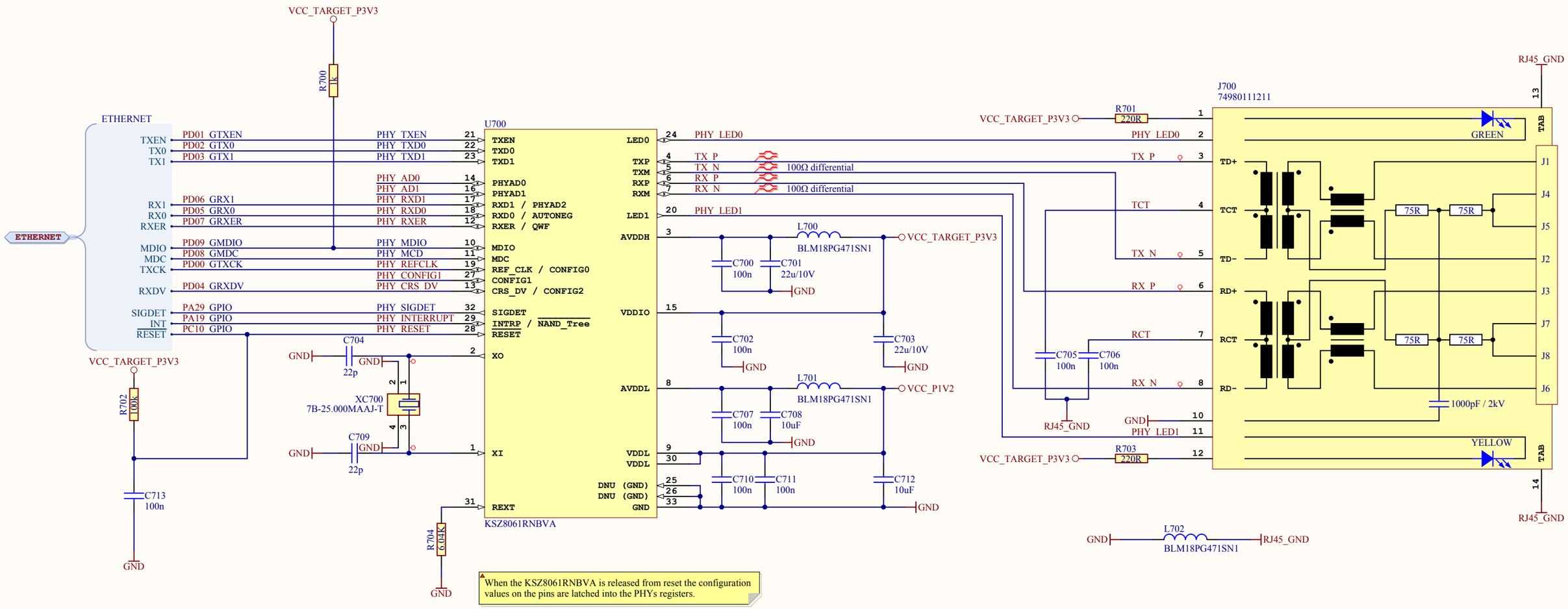
Date:	16.03.2015	15:01:50	PAGE: 9 of 13
Document number:	A09-2407		Revision: 3
TITLE: Memory			
SAMV71_Xplained_Ultra_Memory.SchDoc			



When the KSZ8061RNBVA is released from reset the configuration values on the pins are latched into the PHYs registers.

PHYAD[2:0] is used to set the PHYs address:
001 (default on board)
010
....
110
111

CONFIG[2:0] is used to select operation mode.
001 = RMII normal, MDI/MDI-X disabled
101 = RMII back to back
111 = RMII normal MDI/MDI-X enabled

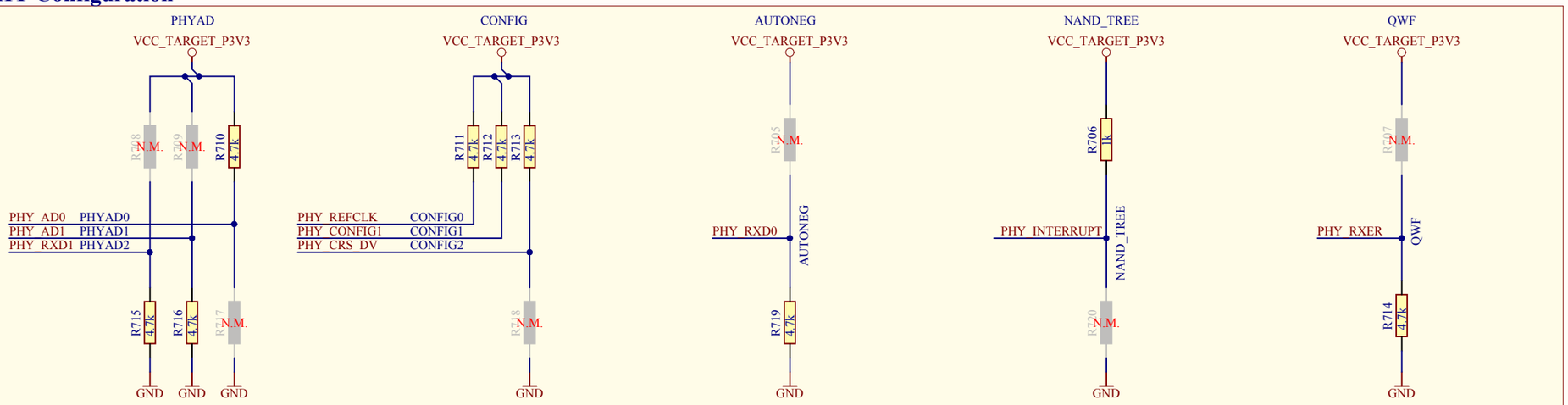
Not configurable on board as back to back

AUTONEG is used to select if auto negotiation of link speed should be enabled.
1 = disable Auto-Negotiation
0 = enable Auto-Negotiation (default on board)

NAND_TREE enables a test mode for all pins connected to the SAMV71Q21.
1 = Disable NAND_TREE (default on board)
0 = Enable NAND_TREE

QWF is used to enable/disable Quiet-WIRE Filtering
1 = Disale Quiet-WIRE Filtering
0 = Enable Quiet-WIRE Filtering (defaul on board)

PHY Configuration



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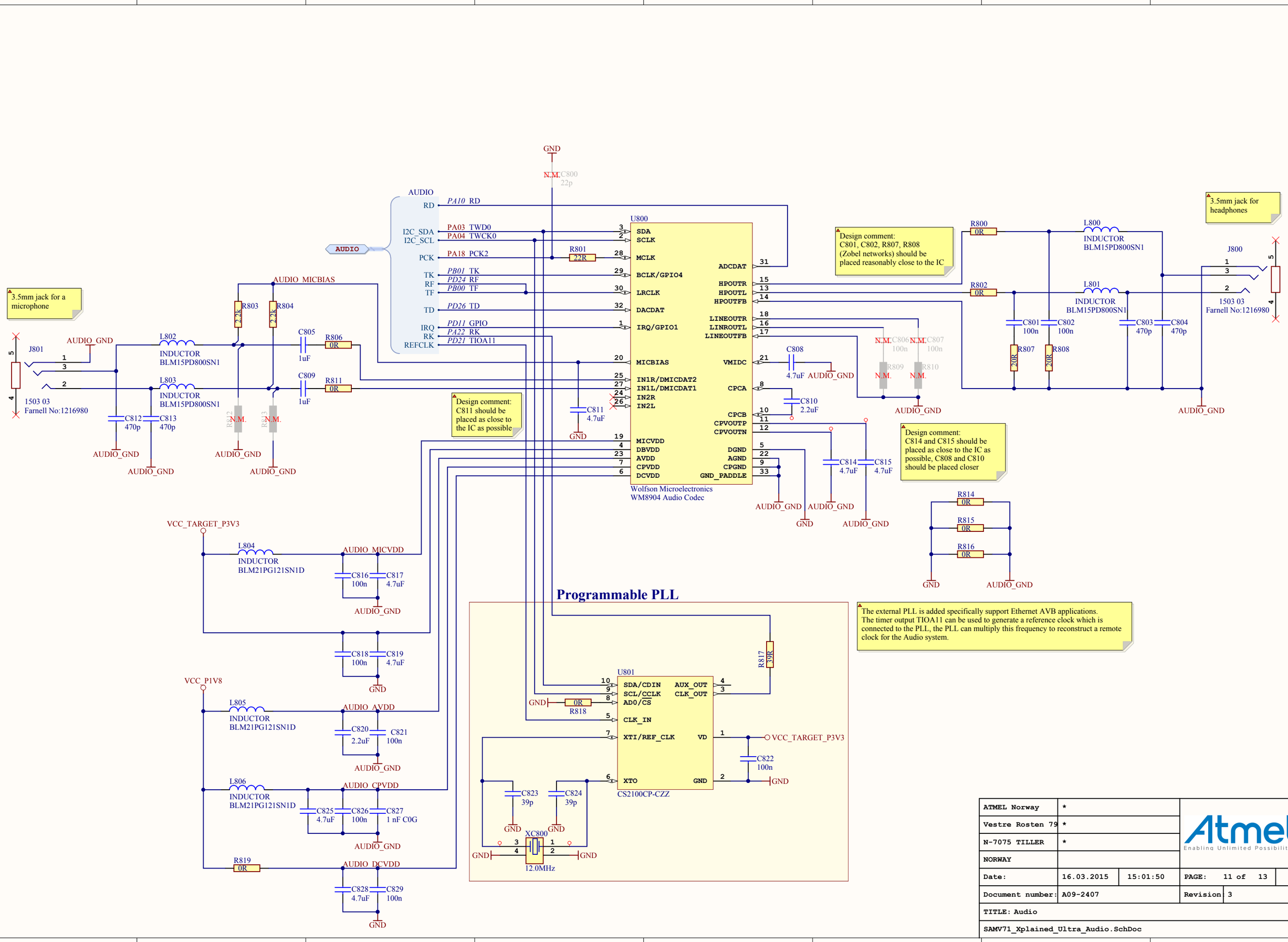
N-7075 TILLER	*		
NORWAY			
Date:	16.03.2015	15:01:50	PAGE: 10 of 13
Document number:	A09-2407		Revision: 3
TITLE: Ethernet			
SAMV71_Xplained_Ultra_Ethernet.SchDoc			


AUDIO
RD
I2C_SDA
I2C_SCL
PCK
TK
RF
TF
TD
IRQ
RK
REFCLK
PA10 RD
PA03 TWD0
PA04 TWCK0
PA18 PCK2
PB01 TK
PD24 RF
PB00 TF
PD26 TD
PD11 GPIO
PA22 RK
PD21 TIOA11
GND
N.M. C800 22p
R801 22R
U800
SDA
SCLK
MCLK
BCLK/GPIO4
LRCLK
DACDAT
IRQ/GPIO1
MICBIAS
IN1R/DMICDAT2
IN1L/DMICDAT1
IN2R
IN2L
MICVDD
DBVDD
AVDD
CPVDD
DCVDD
ADCDAT
HPOUTR
HPOUTL
HPOUTFB
LINEOUTR
LINROUTL
LINEOUTFB
VMIDC
CPCA
CPCB
CPVOUTP
CPVOUTN
DGND
AGND
CPGND
GND_PADDLE
Wolfson Microelectronics
WM8904 Audio Codec
C811 4.7uF
C808 4.7uF
C810 2.2uF
C814 4.7uF
C815 4.7uF
N.M. C806 100n
N.M. C807 100n
N.M. R809
N.M. R810
AUDIO_GND
Design comment:
C801, C802, R807, R808
(Zobel networks) should be
placed reasonably close to the IC
Design comment:
C811 should be
placed as close to
the IC as possible
Design comment:
C814 and C815 should be
placed as close to the IC as
possible, C808 and C810
should be placed closer
3.5mm jack for a
microphone
J801
1503 03
Farnell No:1216980
AUDIO_MICBIAS
R803 2.2K
R804 2.2K
L802
INDUCTOR
BLM15PD800SN1
L803
INDUCTOR
BLM15PD800SN1
C805 1uF
C809 1uF
R806 0R
R811 0R
C812 470p
C813 470p
R812 N.M.
R813 N.M.
R800 0R
R802 0R
L800
INDUCTOR
BLM15PD800SN1
L801
INDUCTOR
BLM15PD800SN1
C801 100n
C802 100n
C803 470p
C804 470p
R807 20R
R808 20R
3.5mm jack for
headphones
J800
1503 03
Farnell No:1216980
R814 0R
R815 0R
R816 0R
VCC_TARGET_P3V3
L804
INDUCTOR
BLM21PG121SN1D
AUDIO_MICVDD
C816 100n
C817 4.7uF
C818 100n
C819 4.7uF
VCC_P1V8
L805
INDUCTOR
BLM21PG121SN1D
AUDIO_AVDD
C820 2.2uF
C821 100n
L806
INDUCTOR
BLM21PG121SN1D
AUDIO_CPVDD
C825 4.7uF
C826 100n
C827 1 nF C0G
R819 0R
AUDIO_DCVDD
C828 4.7uF
C829 100n
Programmable PLL
U801
SDA/CDIN
SCL/CCLK
AD0/CS
CLK_IN
XTI/REF_CLK
XTO
AUX_OUT
CLK_OUT
VD
GND
CS2100CP-CZZ
R817 39R
R818 0R
C822 100n
C823 39p
C824 39p
XC800
12.0MHz
VCC_TARGET_P3V3
The external PLL is added specifically support Ethernet AVB applications.
The timer output TIOA11 can be used to generate a reference clock which is
connected to the PLL, the PLL can multiply this frequency to reconstruct a remote
clock for the Audio system.
ATMEL Norway
Vestre Rosten 79
N-7075 TILLER
NORWAY
Date: 16.03.2015 15:01:50
PAGE: 11 of 13
Document number: A09-2407
Revision: 3
TITLE: Audio
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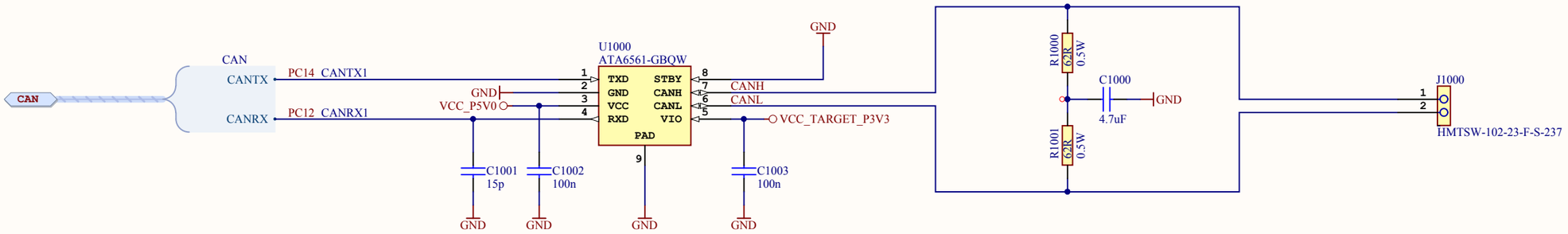

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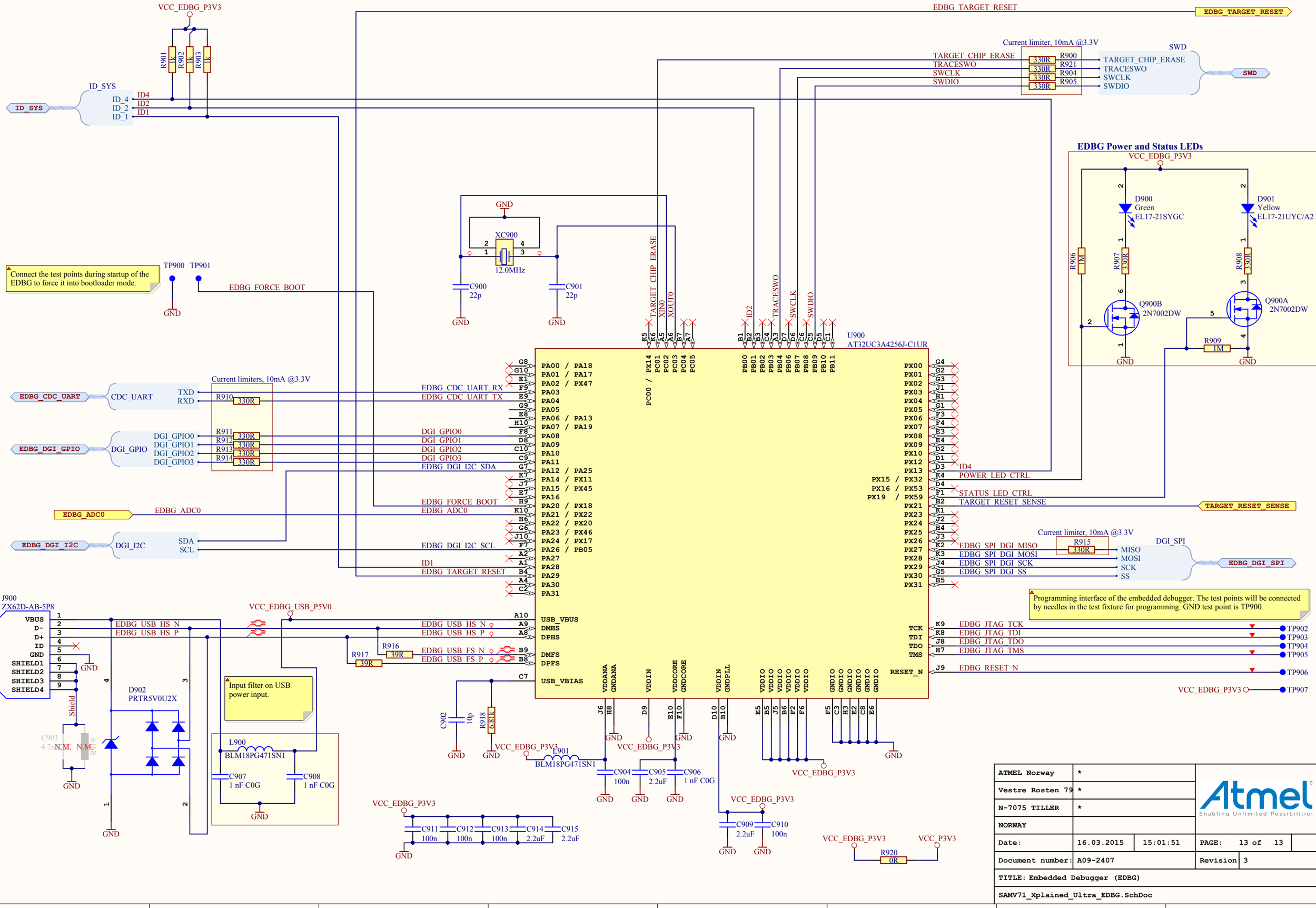
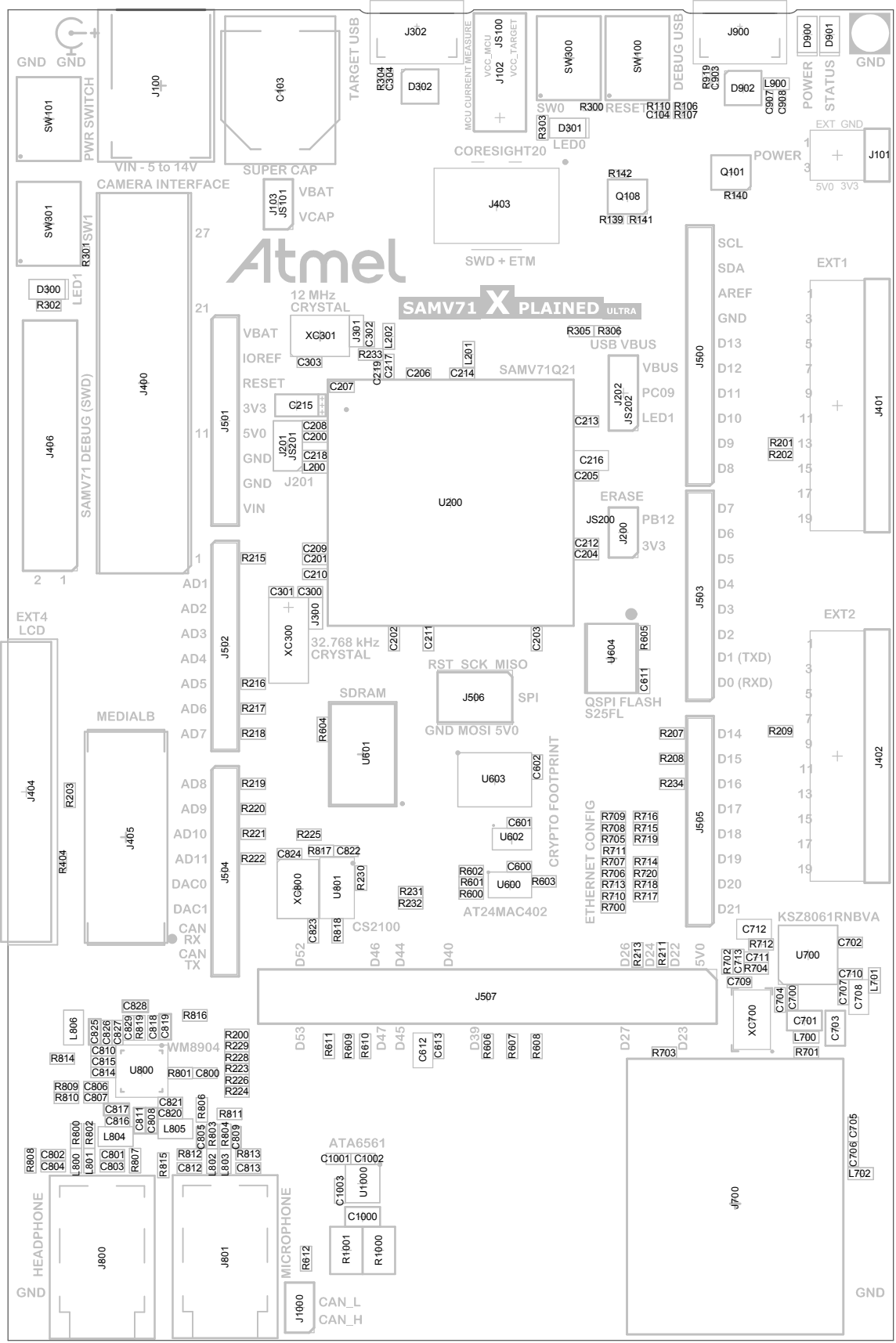
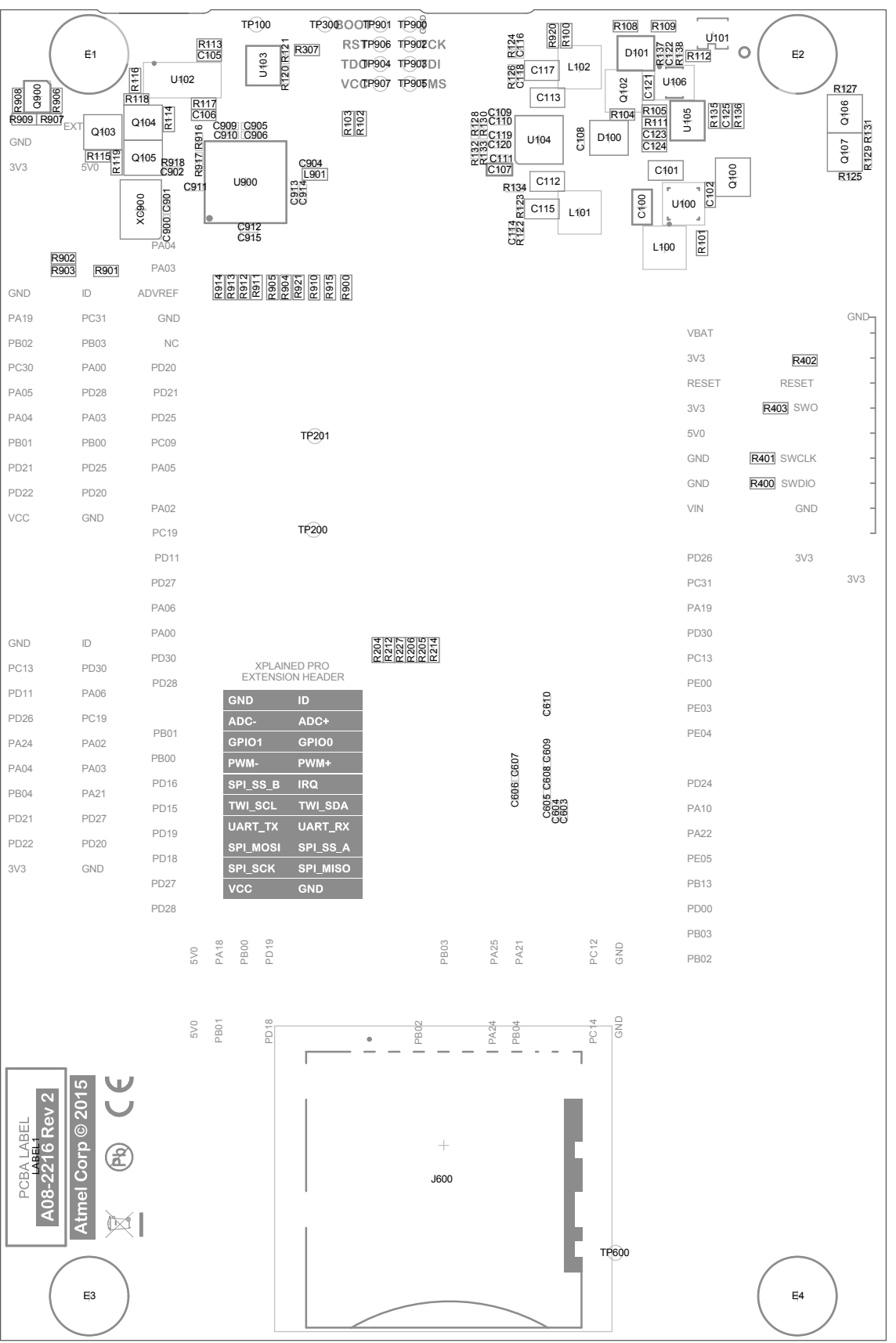
Vestre Rosten 79	*		
N-7075 TILLER	*		
NORWAY			
Date:	16.03.2015	15:01:51	PAGE: 12 of 13
Document number:	A09-2407		Revision: 3
TITLE: CAN			
SAMV71_Xplained_Ultra_CAN.SchDoc			



ATMEL Norway	*		Atmel Enabling Unlimited Possibilities
Vestre Rosten 79	*		
N-7075 TILLER	*		
NORWAY			
Date:	16.03.2015	15:01:51	PAGE: 13 of 13
Document number:	A09-2407		Revision 3
TITLE: Embedded Debugger (EDBG)			
SAMV71_Xplained_Ultra_EDBG.SchDoc			


GND GND
PWR SWITCH
SW101
J100
VIN - 5 to 14V
C103
SUPER CAP
TARGET USB
J302
R304 C304
D302
VCC_MCU
JS100
J102
VCC_TARGET
MCU CURRENT MEASURE
SW300
SW100
DEBUG USB
J900
D900
D901
POWER
STATUS
GND
R919 C903
D902
L900
C907 C908
SW0
R300
RESET
R110 R106
C104 R107
R303
D301
LED0
CORESIGHT20
EXT GND
POWER
J101
5V0 3V3
CAMERA INTERFACE
SW301
R301
SW1
J103
JS101
VBAT
VCAP
J403
SWD + ETM
R142
Q108
R139 R141
Q101
R140
Atmel
SAMV71 XPLAINED ULTRA
12 MHz CRYSTAL
XC301
J301
C302
L202
C303
R233
C219
C217
C206
C214
L201
SAMV71Q21
R305 R306
USB VBUS
VBUS
PC09
LED1
J202
JS202
D300
R302
LED1
J400
SAMV71 DEBUG (SWD)
J406
J501
VBAT
IOREF
RESET
3V3
5V0
GND
GND
VIN
J201
C215
C208
C200
C218
L200
C207
U200
C213
C216
C205
J500
SCL
SDA
AREF
GND
D13
D12
D11
D10
D9
D8
EXT1
J401
R201
R202
ERASE
JS200
J200
PB12
3V3
C212
C204
J503
D7
D6
D5
D4
D3
D2
D1 (TXD)
D0 (RXD)
C209
C201
C210
R215
AD1
AD2
AD3
AD4
AD5
AD6
AD7
J502
R216
R217
R218
C301 C300
XC300
J300
32.768 kHz CRYSTAL
C202
C211
C203
U604
R605
C611
RST SCK MISO
J506
SPI
QSPI FLASH S25FL
EXT4 LCD
J404
R203
R404
MEDIALB
J405
SDRAM
U601
R604
GND MOSI 5V0
U603
C602
CRYPTO FOOTPRINT
R207
R208
R234
D14
D15
D16
D17
D18
D19
D20
D21
J505
R209
J402
EXT2
AD8
AD9
AD10
AD11
DAC0
DAC1
CAN RX
CAN TX
J504
R219
R220
R221
R222
R225
C824
R817
C822
XC800
U801
R230
C601
U602
C600
R602
R601
R600
U600
R603
R231
R232
C823
R818
CS2100
AT24MAC402
ETHERNET CONFIG
R709 R716
R708 R715
R705 R719
R711
R707 R714
R706 R720
R713 R718
R710 R717
R700
KSZ8061RNBVA
C712
R712
C702
U700
C702
C713
C711
R704
C710
C709
C704
C700
C707
C708
L701
XC700
C701
C703
L700
R703
R701
D53
D47
D45
D39
D27
D23
D52
D46
D44
D40
D26
D24
D22
5V0
R213
R211
R702
J507
R816
L806
C828
C825
C826
C827
C829
R819
C818
C819
C810
C815
C814
WM8904
U800
R801
C800
R814
R809
R810
C806
C807
C817
C816
C811
C808
C821
C820
L805
R806
C805
R803
R804
C809
R811
L804
R800
R802
L801
R807
R808
C802
C804
L800
C801
C803
R815
R812
C812
L802
L803
R813
C813
R200
R229
R228
R223
R226
R224
R611
R609
R610
C612
C613
R606
R607
R608
ATA6561
C1001 C1002
C1003
U1000
C1000
R1001
R1000
R612
MICROPHONE
HEADPHONE
J800
J801
J1000
CAN_L
CAN_H
J700
GND
C706 C705
L702
GND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E2
E3
E4
TP100
TP300
BOOT
TP901
TP900
RST
TP906
TP902
SWCK
TDO
TP904
TP903
SWDI
VCC
TP907
TP905
SWMS
U102
U103
U101
U104
U105
U106
U900
U100
D101
D100
Q900
Q906
Q103
Q104
Q105
Q102
Q106
Q107
Q100
XC900
C900
C901
C902
C904
L901
C905
C906
C909
C910
C911
C912
C913
C914
C915
C916
C917
C918
L102
L101
L100
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C135
C136
C137
C138
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R102
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R104
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R112
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R116
R117
R118
R119
R120
R121
R123
R124
R125
R126
R127
R128
R129
R131
R132
R133
R134
R135
R136
R137
R138
R307
R900
R901
R902
R903
R904
R905
R906
R907
R908
R909
R910
R911
R912
R913
R914
R915
R916
R917
R918
R920
R921
TP200
TP201
R204
R205
R206
R212
R214
R227
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
J600
TP600
EXT
GND
3V3
5V0
ID
ADVREF
PA19
PB02
PC30
PA05
PA04
PB01
PD21
PD22
VCC
PC31
PB03
PA00
PD28
PA03
PB00
PD25
PD20
PC13
PD11
PD26
PA24
PA04
PB04
PD21
PD22
PB01
PB00
PD16
PD15
PD19
PD18
PD27
PD28
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PD19
PB03
PA25
PA21
PC12
PB01
PD18
PB02
PA24
PB04
PC14
NC
PD20
PD21
PD25
PC09
PA05
PA02
PC19
PD11
PD27
PA06
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PD30
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PA22
PE05
PB13
PD00
PB03
PB02
PC31
PA19
PD30
PC13
PE00
PE03
PE04
PD24
PD26
VBAT
RESET
SWO
SWCLK
SWDIO
VIN
PCBA LABEL
LABEL1
A08-2216 Rev 2
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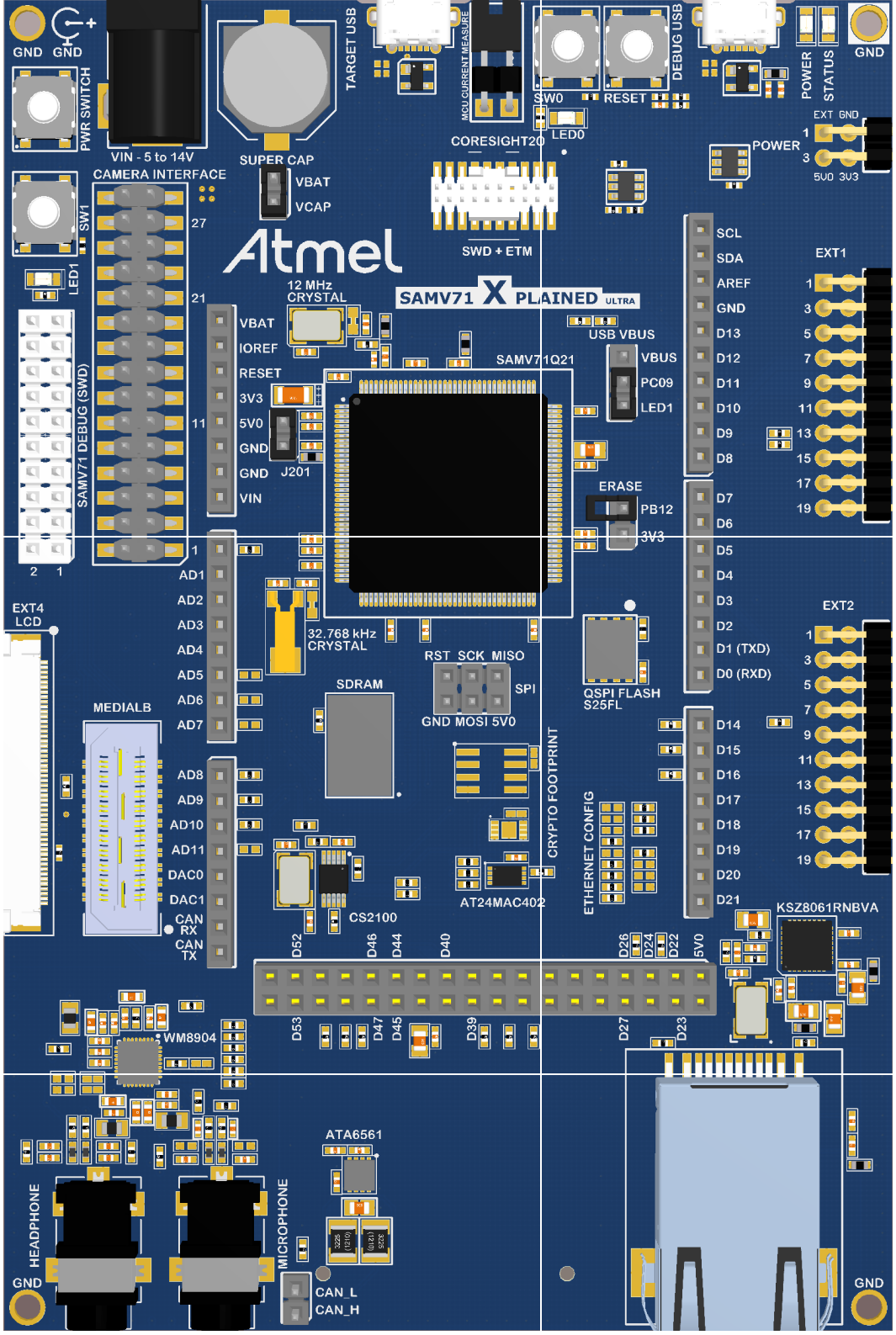
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GND
PWR SWITCH
VIN - 5 to 14V
CAMERA INTERFACE
SUPER CAP
VBAT
VCAP
TARGET USB
MCU CURRENT MEASURE
CORESIGHT20
SW0
RESET
DEBUG USB
LED0
POWER
STATUS
GND
EXT GND
5V0 3V3
POWER
SWD + ETM
SW1
LED1
SAMV71 DEBUG (SWD)
Atmel
SAMV71 X PLAINED ULTRA
12 MHz CRYSTAL
SAMV71Q21
USB VBUS
VBUS
PC09
LED1
ERASE
PB12
3V3
J201
VBAT
IOREF
RESET
3V3
5V0
GND
GND
VIN
SCL
SDA
AREF
GND
D13
D12
D11
D10
D9
D8
D7
D6
D5
D4
D3
D2
D1 (TXD)
D0 (RXD)
EXT1
EXT2
AD1
AD2
AD3
AD4
AD5
AD6
AD7
AD8
AD9
AD10
AD11
DAC0
DAC1
CAN RX
CAN TX
EXT4 LCD
MEDIALB
32.768 kHz CRYSTAL
RST SCK MISO
SPI
GND MOSI 5V0
SDRAM
QSPI FLASH S25FL
D14
D15
D16
D17
D18
D19
D20
D21
CRYPTO FOOTPRINT
ETHERNET CONFIG
CS2100
AT24MAC402
KSZ8061RNBVA
D52
D46
D44
D40
D26
D24
D22
5V0
D53
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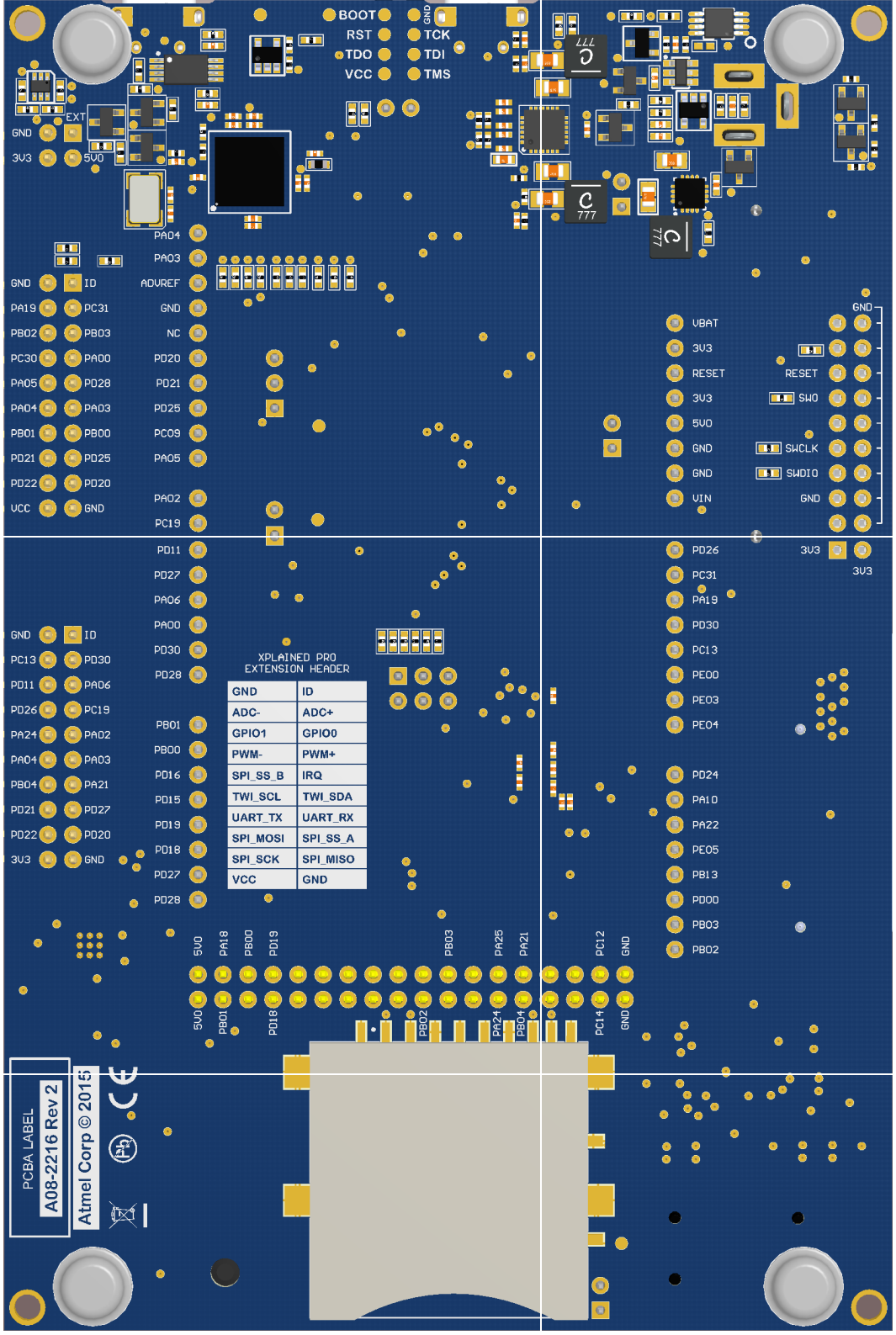
ATA6561
HEADPHONE
MICROPHONE
CAN_L
CAN_H
GND
GND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RST
TDO
VCC
GND
TCK
TDI
TMS
EXT
GND
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5V0
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PA03
ADVREF
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NC
PD20
PD21
PD25
PC09
PA05
PA02
PC19
GND
ID
PA19
PC31
PB02
PB03
PC30
PA00
PA05
PD28
PA04
PA03
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PD21
PD25
PD22
PD20
VCC
GND
VBAT
3V3
RESET
3V3
5V0
GND
GND
VIN
GND
RESET
SWO
SWCLK
SWDIO
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PD27
PA06
PA00
PD30
PD28
PB01
PB00
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PD19
PD18
PD27
PD28
GND
ID
PC13
PD30
PD11
PA06
PD26
PC19
PA24
PA02
PA04
PA03
PB04
PA21
PD21
PD27
PD22
PD20
3V3
GND
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
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PB00
PD19
PB03
PA25
PA21
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GND
PCBA LABEL
A08-2216 Rev 2
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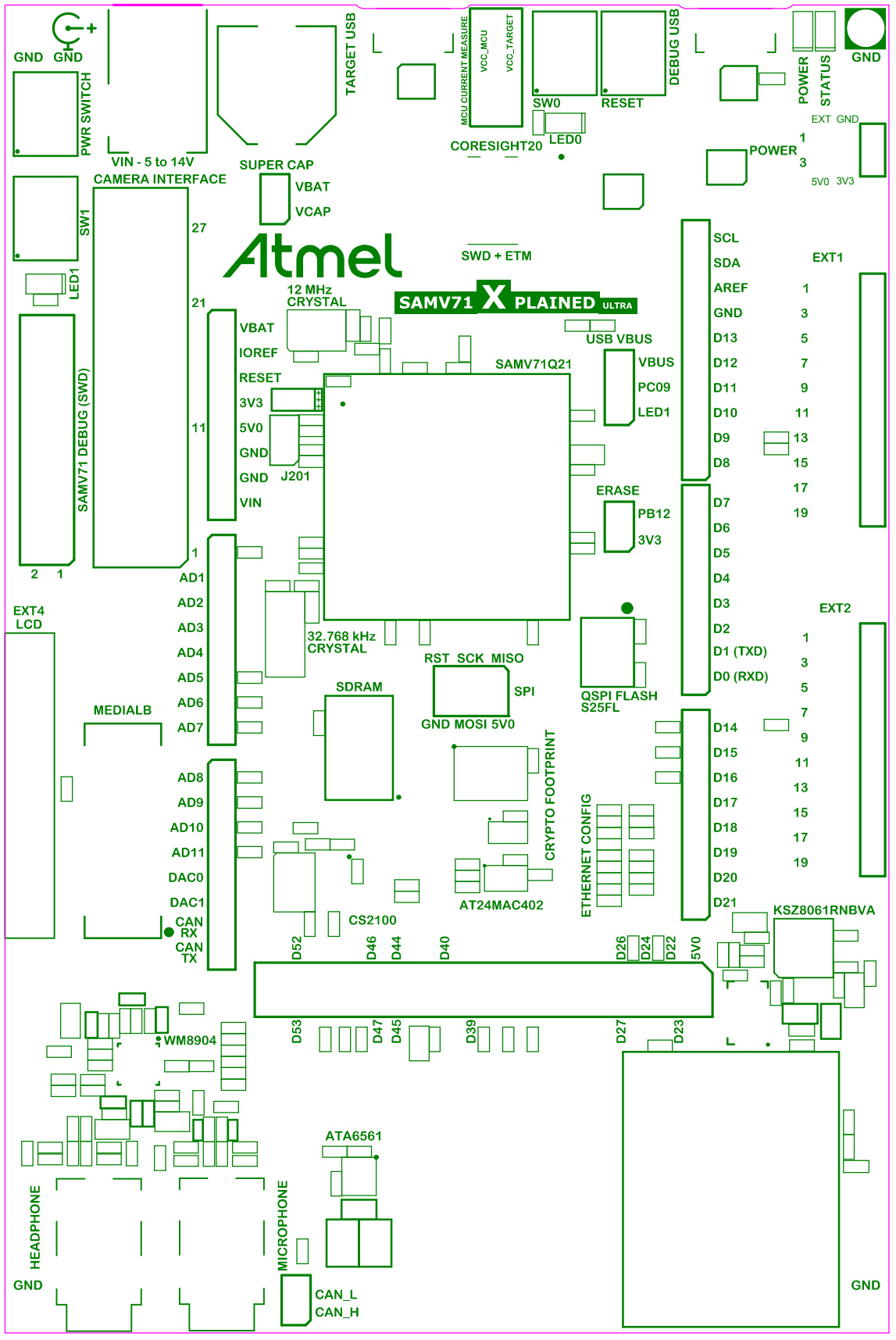
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VIN - 5 to 14V
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MCU CURRENT MEASURE
VCC_MCU
VCC_TARGET
SW0
RESET
DEBUG USB
POWER
STATUS
GND
CORESIGHT20
LED0
EXT GND
POWER
1
3
5V0 3V3
SW1
CAMERA INTERFACE
27
SUPER CAP
VBAT
VCAP
SWD + ETM
SCL
SDA
AREF
GND
D13
D12
D11
D10
D9
D8
EXT1
LED1
21
12 MHz
CRYSTAL
SAMV71 XPLAINED ULTRA
USB VBUS
VBAT
IOREF
RESET
3V3
5V0
GND
GND
VIN
J201
11
SAMV71Q21
VBUS
PC09
LED1
SAMV71 DEBUG (SWD)
2
1
1
ERASE
PB12
3V3
D7
D6
D5
D4
D3
D2
D1 (TXD)
D0 (RXD)
EXT4
LCD
AD1
AD2
AD3
AD4
AD5
AD6
AD7
32.768 kHz
CRYSTAL
RST SCK MISO
SPI
GND MOSI 5V0
QSPI FLASH
S25FL
EXT2
MEDIALB
SDRAM
AD8
AD9
AD10
AD11
DAC0
DAC1
CAN RX
CAN TX
CRYPTO FOOTPRINT
ETHERNET CONFIG
D14
D15
D16
D17
D18
D19
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CS2100
AT24MAC402
KSZ8061RNBVA
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D46
D44
D40
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HEADPHONE
MICROPHONE
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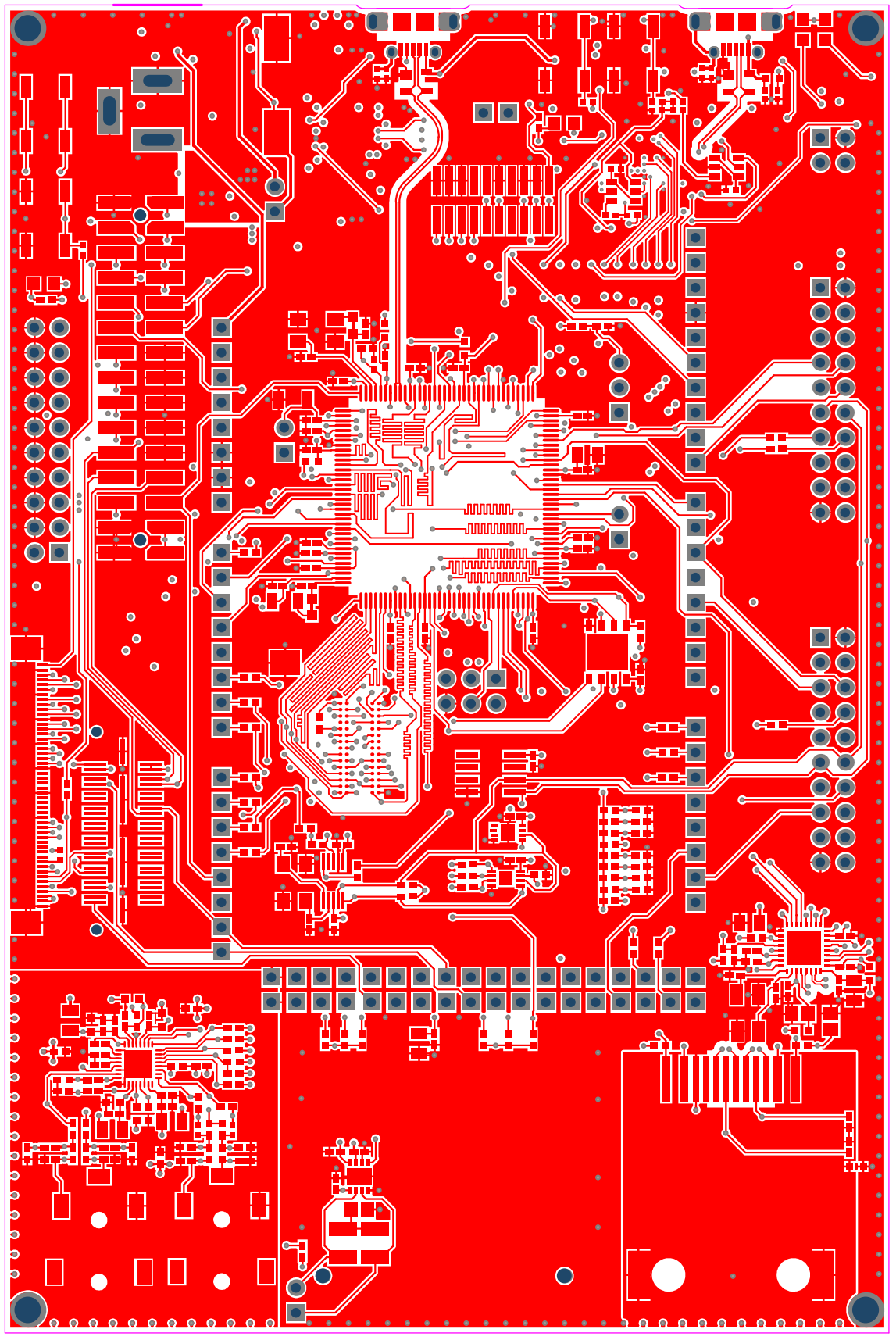
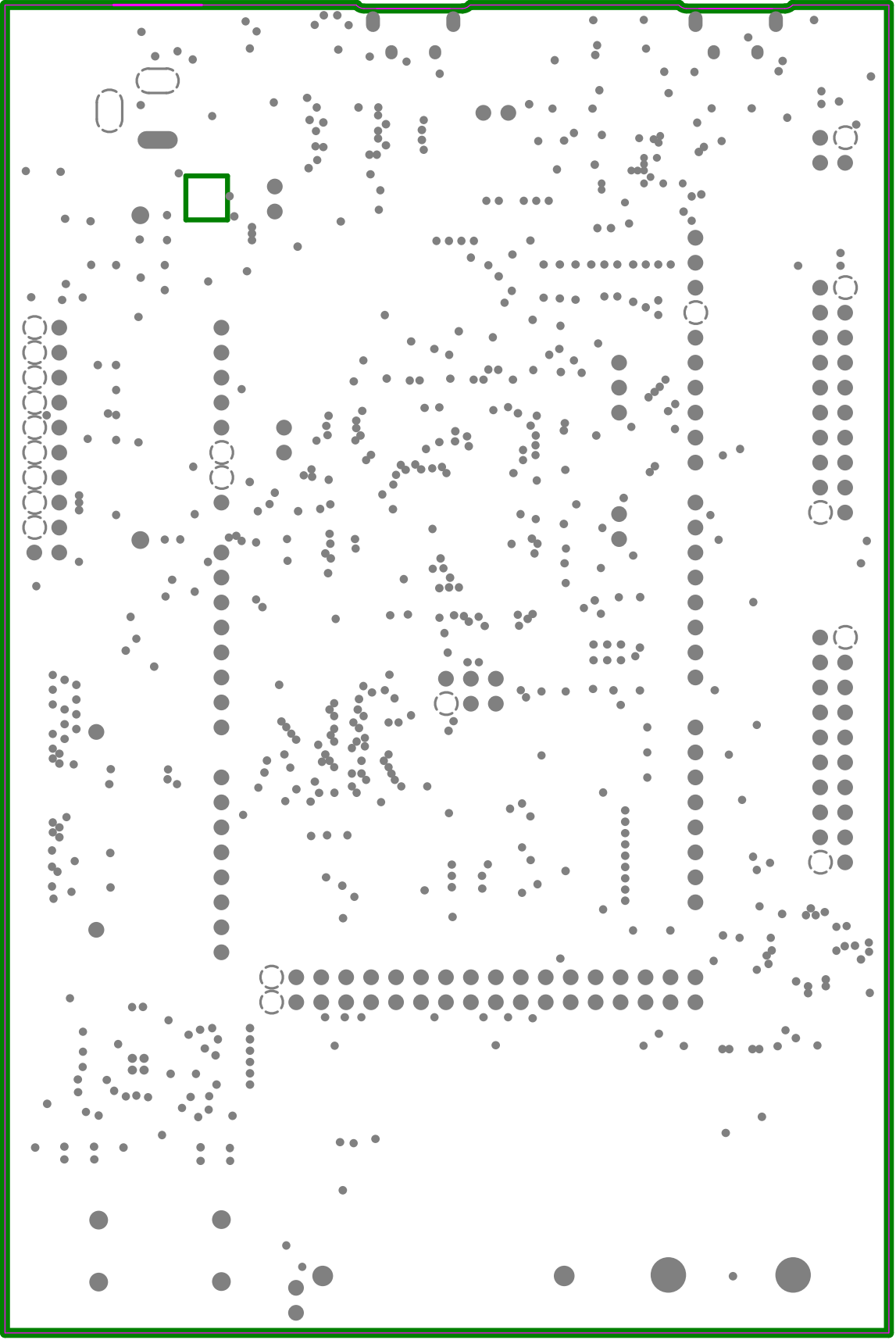
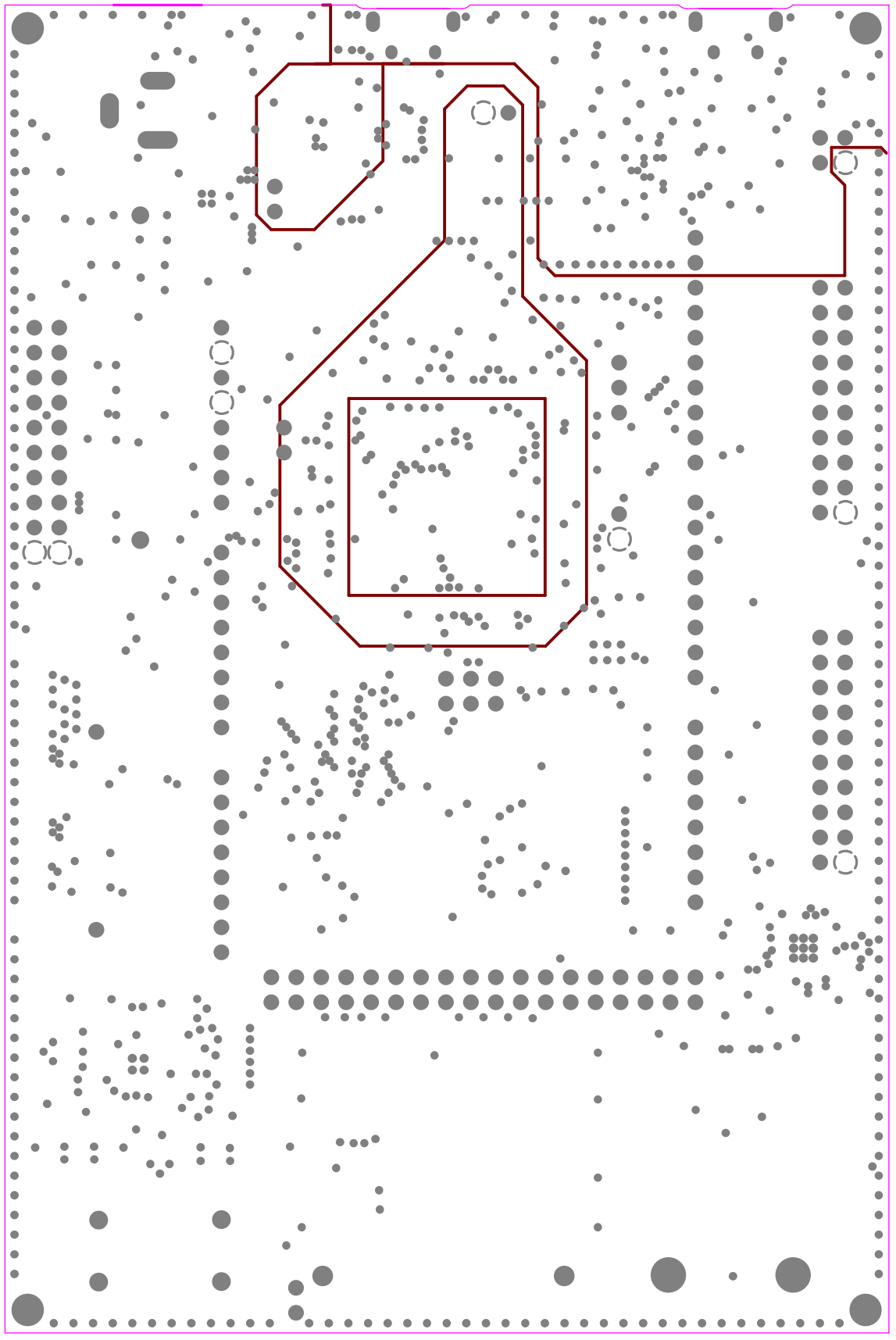
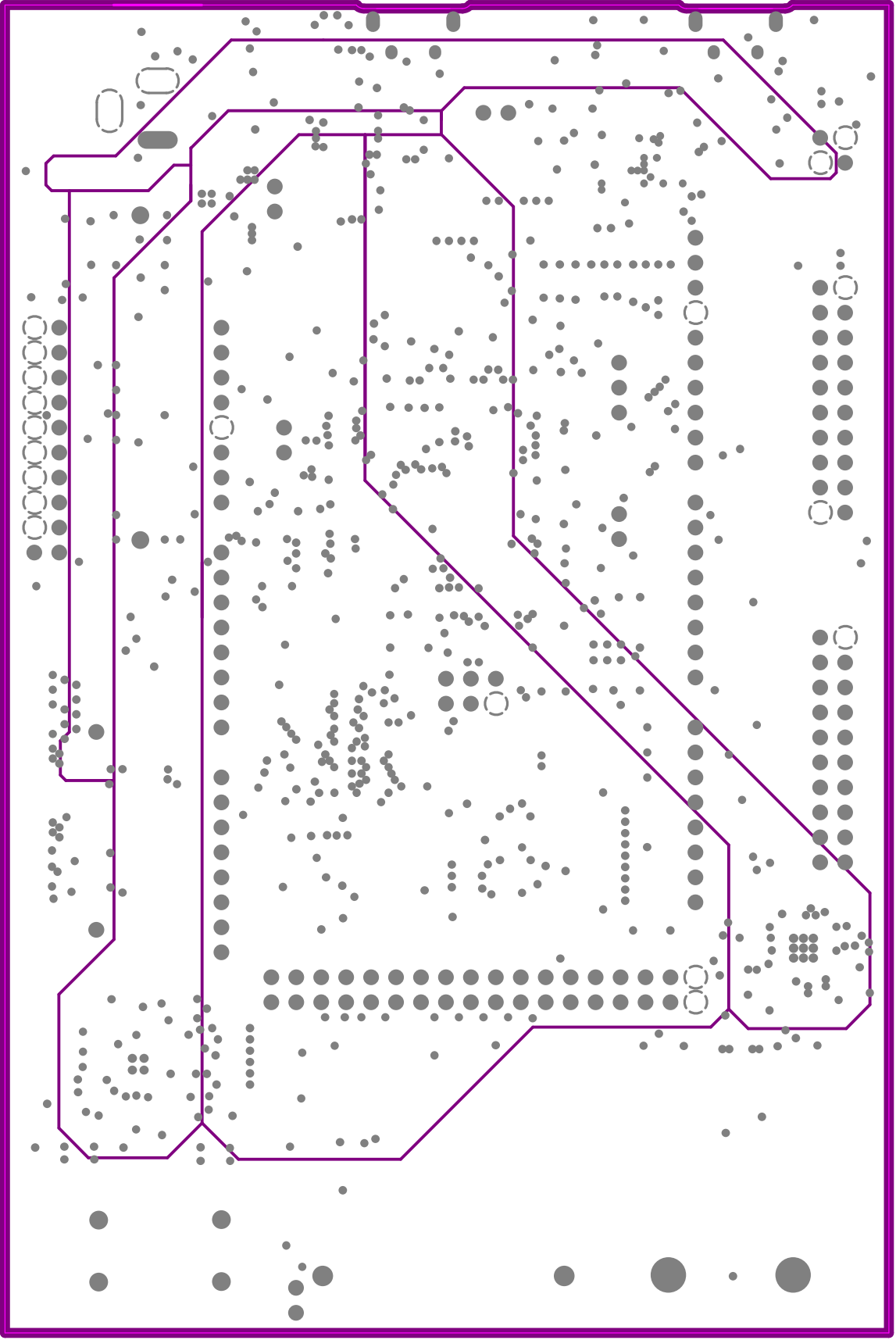
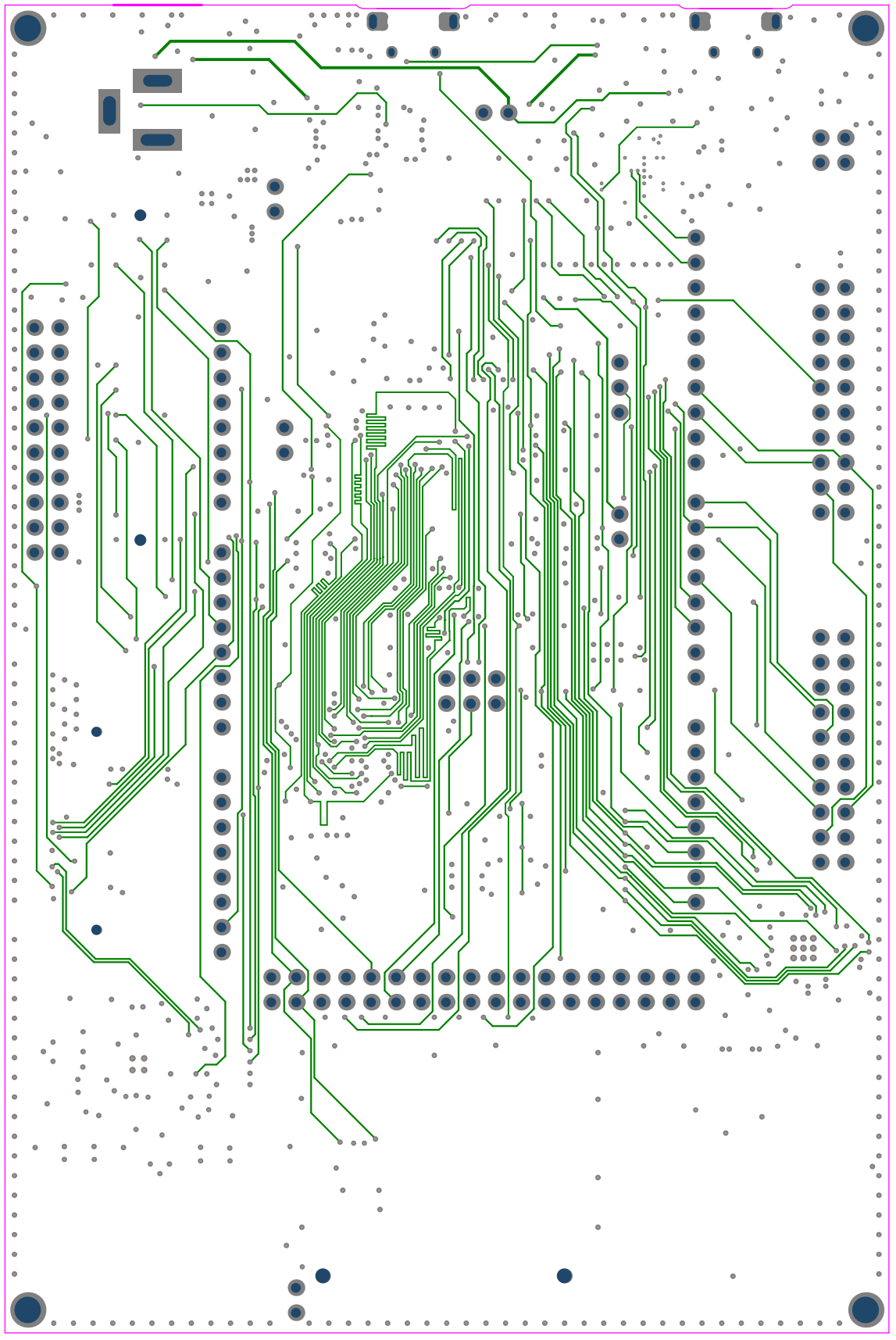
CAN_H
GND

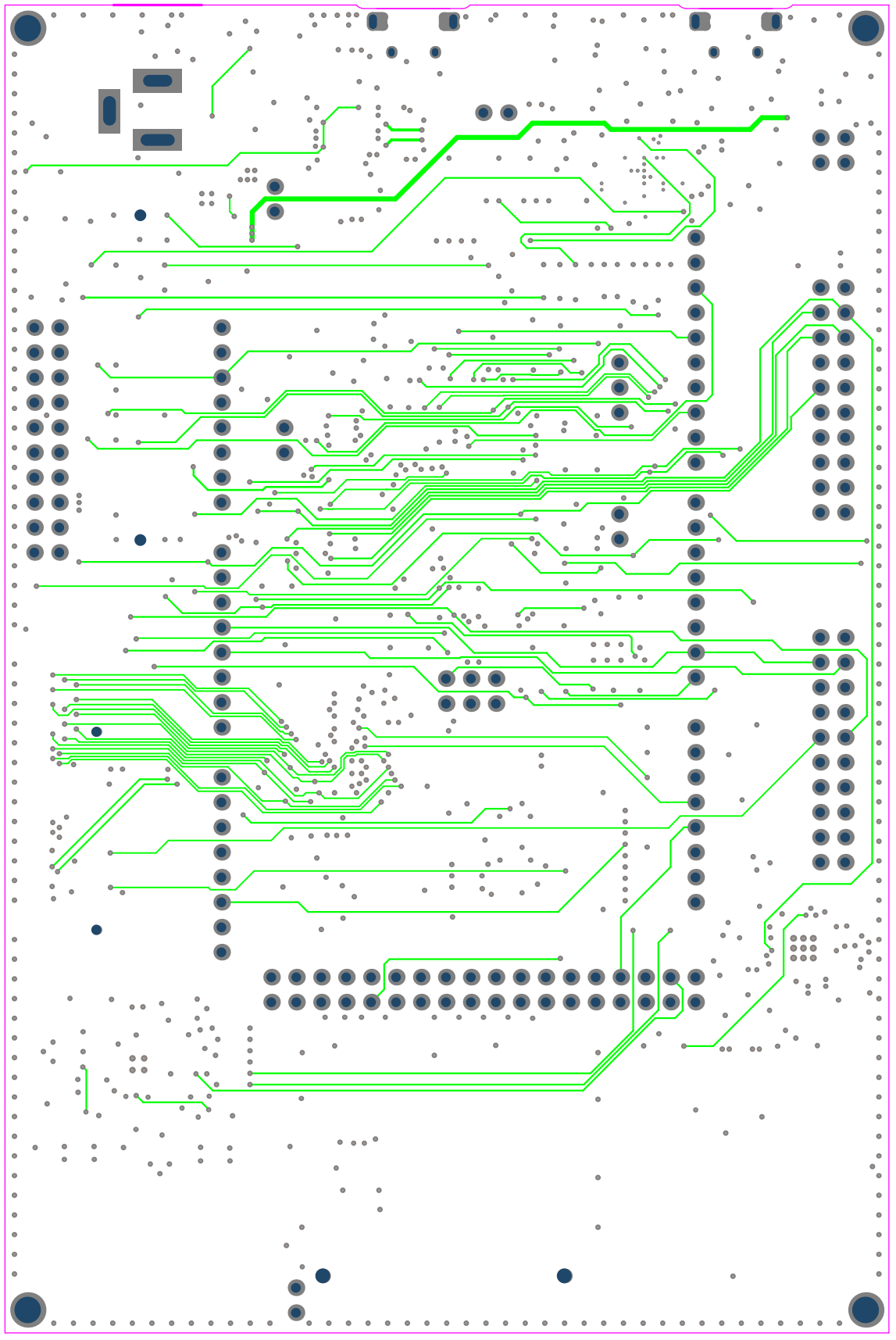


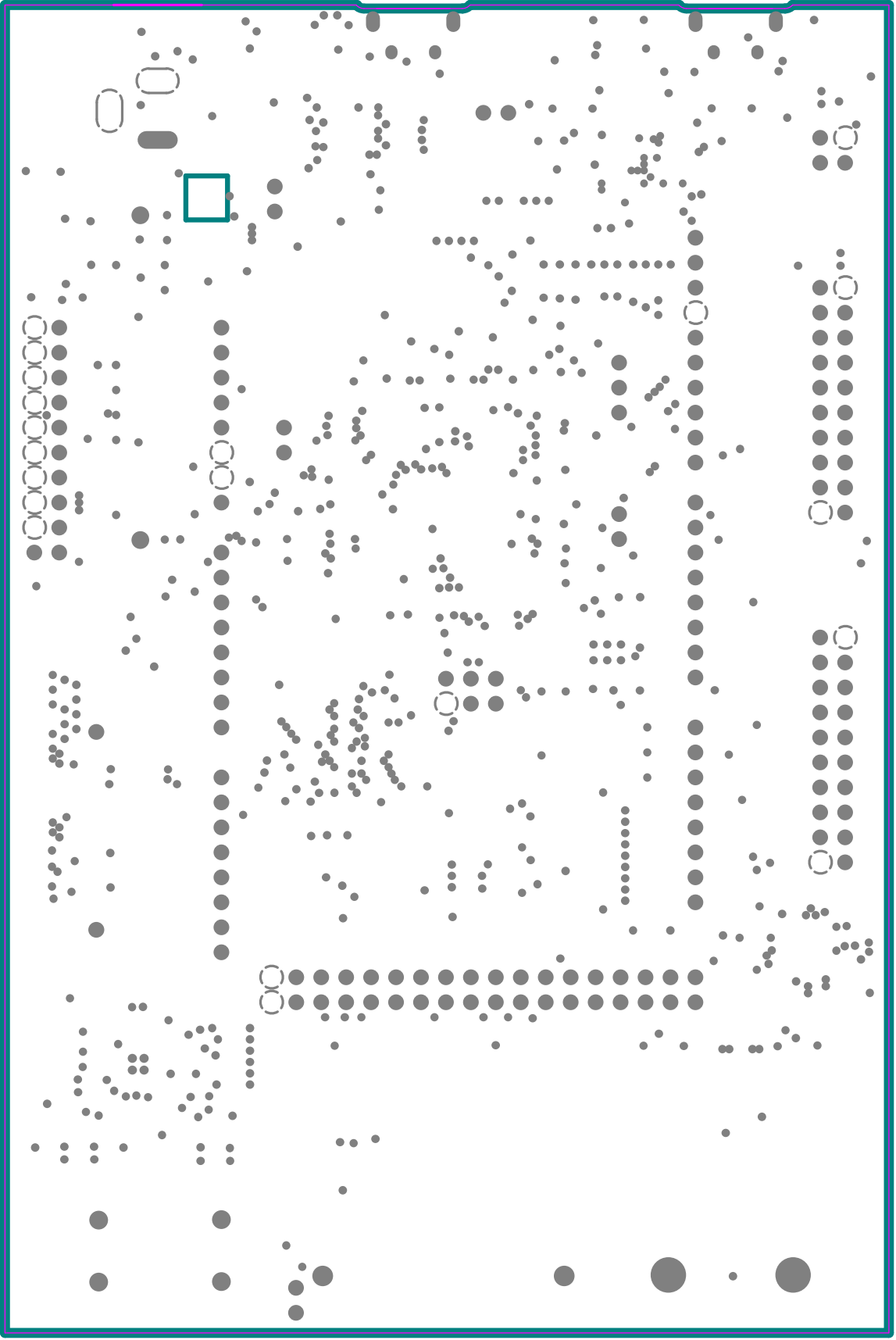


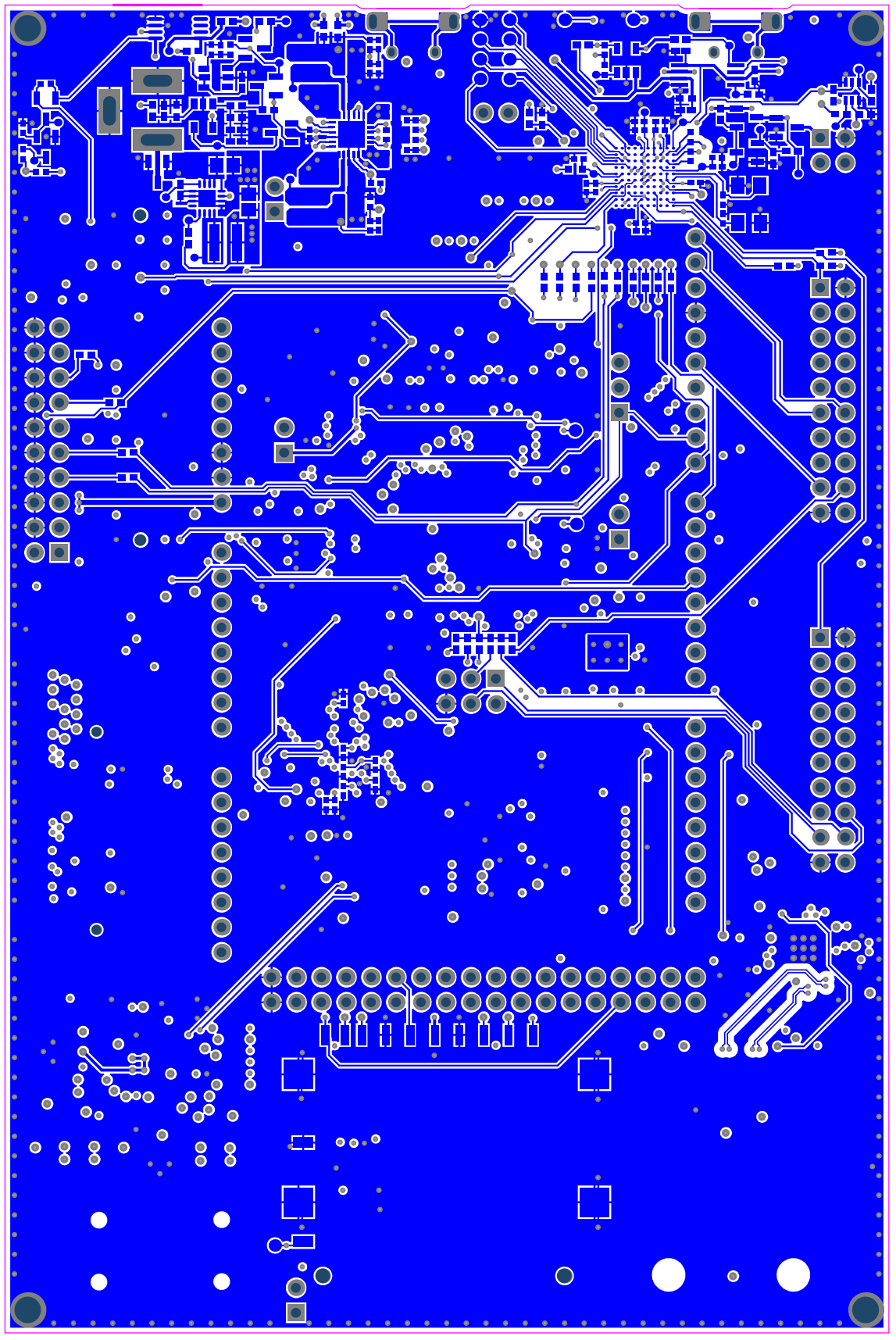












GND
TCK
TDI
TMS
BOOT
RST
TDO
VCC
EXT
GND
3V3
SVO
PA04
PA03
ADVREF
GND
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PA04
PB01
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PC31
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PB00
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GND
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ID
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PD11
PA06
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PA04
PB04
PD21
PD22
3V3
PC19
PA02
PD27
PD28
PB01
PB00
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PD15
PD19
PD18
PD27
PD28
GND
PC13
PD11
PD22
PA24
PA04
PB04
PD21
PD22
3V3
PD30
PA06
PC19
PA02
PD03
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PD30
PC13
PE00
PE03
PE04
PD24
PA10
PA22
PE05
PB13
PD00
PB03
PB02
VBAT
3V3
RESET
3V3
SVO
GND
GND
VIN
PD26
PC31
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PD30
PC13
PE00
PE03
PE04
PD24
PA10
PA22
PE05
PB13
PD00
PB03
PB02
GND
3V3
RESET
SWO
SWCLK
SWDIO
GND
3V3
XPLAINED PRO
EXTENSION HEADER
ID
GND
ADC+
ADC-
GPIO0
GPIO1
PWM+
PWM-
IRQ
SPI_SS_B
TWI_SDA
TWI_SCL
UART_RX
UART_TX
SPI_SS_A
SPI_MISO
SPI_SCK
GND
VCC
GND
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PB04
PA24
PB02
PB03
PA21
PA20
GND
PB18
PB01
SVO
PB18
PB00
PA18
SVO
ATMEL ATBAY
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A08-2216 Rev 2

Component list

Top Level Schematics

Source Data From:	SAMV71_Xplained_Ultra.PrjPCB
Project:	SAMV71_Xplained_Ultra.PrjPCB
Variant:	Default_assembly
Report Date:	16.03.2015 15:02:29
Print Date:	16.03.2015 14:55:47

Fitted	Designator	Quantity	Value	Manufacturer	MPN	Description
Fitted	C100, C701, C703	3	22u/10V	tdk	C2012X5R1A226M/0.85	Ceramic capacitor, SMD 0805, X5R, 10V, Â±20%, Ceramic capacitor, SMD 0805, X5R, 10V, ±20%, Ceramic capacitor, SMD 0805, X5R, 10V, ±20%
Fitted	C1000	1	4.7uF	Murata	GRM21BR61E475KA12L	Ceramic capacitor, SMD 0805, X5R, 25V, ±10 %
Fitted	C101	1	10u	Murata	GRM21BR61E106KA73L	Ceramic capacitor, SMD 0805, X5R, 25V, Â±10%
Fitted	C102	1	3.3n			Ceramic capacitor, SMD 0402, X7R, 25V, +/-10%
Fitted	C103	1	100mF			Electric Double-Layer (Supercapacitor), 100mF, SMD, 10.5mm diameter, 25Î© ESR
Fitted	C104	1	10n			Ceramic capacitor, SMD 0402, X7R, 25V, +/-10%
Fitted	C105, C106, C121, C124, C125, C200, C201, C202, C203, C204, C205, C206, C207, C208, C209, C210, C211, C212, C213, C214, C217, C218, C600, C611, C613, C700, C702, C705, C706, C707, C710, C711, C713, C801, C802, C816, C818, C821, C822, C826, C829, C1002, C1003	43	100n	Kemet	C0402C104K4RACTU	Ceramic capacitor, SMD 0402, X7R, 16V, +/-10%
Fitted	C107, C808, C811, C817, C819, C825, C828	7	4.7uF	tdk	C1608X5R1A475K	Ceramic capacitor, SMD 0603, X5R, 10V, 10% (de31036)
Fitted	C108, C109, C110, C111, C603, C905, C909, C914, C915	9	2.2uF	Kemet	C0402C225M9PAC	Ceramic capacitor, SMD 0402, X5R, 6.3V, +/-20%
Fitted	C112, C113, C115, C117, C612	5	10uF	Murata	GRM21BR61A106KE19L	Ceramic capacitor, SMD 0805, X5R, 10V, 10 %, (de19441)
Fitted	C114	1	8.2p			Ceramic capacitor, SMD 0402, NP0, 50V, +/-5%
Fitted	C116	1	6.8p			Ceramic capacitor, SMD 0402, NP0, 50V, +/-5%
Fitted	C118	1	33p			Ceramic capacitor, SMD 0402, NP0, 50V, +/-5%
Fitted	C119, C120	2	1uF	AVX	0402ZD105KAT2A	Ceramic capacitor, SMD 0402, X5R, 10V, ±10 %
Fitted	C122, C604, C605, C606, C607, C608, C609, C610	8	100n	Kemet	C0402C104K4RACTU	Ceramic capacitor, SMD 0402, X7R, 16V, +/-10%
Fitted	C123, C1001	2	15p			Ceramic capacitor, SMD 0402, NP0, 50V, +/-5%
Fitted	C215	1	2.2uF	Kemet	T494A225K010AT	Capacitor Tantalum 10V 2.2uF 10% ESR = 6 ohm
Fitted	C216, C708, C712	3	10uF	Murata	GRM21BR61A106KE19L	Ceramic capacitor, SMD 0805, X7R, 10V, 10 %, (de19441)
Fitted	C219, C902	2	10p			Ceramic capacitor, SMD 0402, NP0, 50V, +/-5%
Fitted	C300, C301	2	4.7p			Ceramic capacitor, SMD 0402, NP0, 50V, +/-0.25pF
Fitted	C302, C303	2	12p			Ceramic capacitor, SMD 0402, NP0, 50V, +/-5%
Fitted	C704, C709	2	22p			Ceramic capacitor, SMD 0402, NP0, 50V, +/-5%
Fitted	C803, C804	2	470p			Ceramic capacitor, SMD 0402, X7R, 50V, +/-10%
Fitted	C805, C809	2	1uF	AVX	0402ZD105KAT2A	Ceramic capacitor, SMD 0402, X5R, 10V, ±10 %
Fitted	C810, C820	2	2.2uF	Kemet	C0402C225M9PAC	Ceramic capacitor, SMD 0402, X5R, 6.3V, +/-20%
Fitted	C812, C813	2	470p			Ceramic capacitor, SMD 0402, X7R, 50V, +/-10%
Fitted	C814, C815	2	4.7uF	Murata	GRM155R60J475ME87D	Ceramic capacitor, SMD 0402, X5R, 6.3V, +/-20% (de33687)
Fitted	C823, C824	2	39p			Ceramic capacitor, SMD 0402, NP0, 50V, +/-5%
Fitted	C827	1	1 nF C0G	Murata	GRM1555C1H102JA01D	Ceramic capacitor, SMD 0402, C0G, 50V, +/-5%
Fitted	C900, C901	2	22p			Ceramic capacitor, SMD 0402, NP0, 50V, +/-5%
Fitted	C904, C910, C911, C912, C913	5	100n	Kemet	C0402C104K4RACTU	Ceramic capacitor, SMD 0402, X7R, 16V, +/-10%
Fitted	C906, C907, C908	3	1 nF C0G	Murata	GRM1555C1H102JA01D	Ceramic capacitor, SMD 0402, C0G, 50V, +/-5%
Fitted	D100	1	BAT54C	NXP	BAT54C	Schottky double Diodes, NXP, SOT23-3
Fitted	D101	1	BAT54	Philips	BAT54	Schottky diode, V(rrm)=30V, I(f)=0.1A, V(f)=0.4V (at If = 0.01A), I(r)=0.5uA (at Vrrm), t(rr)=5ns, SMD SOT23
Fitted	D300, D301, D901	3	EL17-21UYC/A2	Everlight	17-21UYC/S530-A3/TR8	LED, Yellow , Wave length=591nm, SMD 0805, ±70°
Fitted	D302, D902	2	PRTR5V0U2X	Philips	PRTR5V0U2X	Double rail-to-rail USB ESD protection diode
Fitted	D900	1	EL17-21SYGC	Everlight	EL17-21SYGC	LED, Green, Wave length=575nm, SMD 0805, ±70°
Fitted	E1, E2, E3, E4	4	SJ-5076	3M	SJ-5076	2.8mm adhesive feet,diam 8.0mm
Fitted	FW1	1	EDBG secured firmw are	ATMEL		EDBG secured firmw are
Fitted	J100	1	NEB 21 R	Lumberg	NEB 21 R	Through hole DC jack 2.1mm, 12V, 3A
Fitted	J101	1	P101-2*02RGF-139-ND		P101-2*02RGF-139-ND	Pin header, 2x2, Right Angle, 2.54mm, THT, Pin In Paste
Fitted	J102	1	Pin header 1x2 right angle	Pro-data International Corp	2213R-2G	1x2 pin header, right angle, 2.54 mm pitch, through-hole
Fitted	J103, J200, J201, J1000	4	HMTSW-102-23-F-S-237	SAMTEC	HMTSW-102-23-F-S-237	1x2 pin header, 2.54mm pitch, Pin-in-Paste THM
Fitted	J202	1	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	J302, J900	2	ZX62D-AB-5P8			Micro USB AB Connector, Standard SMT + DIP
Fitted	J400	1	TSM-115-01-L-DV-LC			Samtec TSM series, 2x15 pin header, straight, 2.54mm pitch SMD, locking leads.
Fitted	J401, J402	2	P101-2*10RGF-139-ND		P101-2*10RGF-139-ND	Pin header, 2x10, Right Angle, 2.54mm, THM, Pin In Paste
Fitted	J403	1	FTSH-110-01-F-DV-007-K			SAMTEC FTSH series 50-mil header, shrouded, pin 7 removed, SMD
Fitted	J404	1	5-1734839-0	TE Connectivity	5-1734839-0	50 pin FPC connector, e=0.5mm, single side contact (top).
Fitted	J405	1	QSH-020-01-L-D-DP-A			SAMTEC 0.5mm, 20-pair, High-Speed Differential Pair Socket
Fitted	J406	1	HMTSW-110-23-F-D-237	SAMTEC	HMTSW-110-23-F-D-237	2x10 pin header, 2.54mm pitch, Pin-in-Paste THM, 1mm hole
Fitted	J500	1	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
Fitted	J501, J502, J503, J504, J505	5	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
Fitted	J506	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	J507	1	SSQ-118-01-G-D	SAMTEC	SSQ-118-01-G-D	2x18 female pin header, 2.54mm pitch, THM
Fitted	J600	1	KYOCERA - 14 5738 009 220 859+	Kyocera-elco	KYOCERA - 14 5738 009 220 859+	SD/MMC socket, 2.7mm, push-push, SMD
Fitted	J700	1	74980111211	Wurth Elektronik	74980111211	10/100Base-TX, SMD, RJ45, green and yellow LEDs, integrated magnetics
Fitted	J800, J801	2	1503 03	Lumberg	1503 03	3.5mm stereo phone jack
Fitted	JS100, JS101, JS200, JS201, JS202	5	SNT-100-BK-G	SAMTEC	SNT-100-BK-G	Jumper cap for 2.54mm pinheader
Fitted	L100, L101, L102	3	XAL4020-222ME			2.2ÂµH Shielded Pow er Inductor, 4x4x2mm, Isat=5.6A , Irms=4.0A , DCR=35.2mÎ©
Fitted	L200, L201, L202, L700, L701, L702	6	BLM18PG471SN1	Murata	BLM18PG471SN1	SMD RF inductor 0603. Z=470Ohm (@100MHz), Max R(dc)=0.65Ohm, Max current=1A
Fitted	L800, L801, L802, L803	4	BLM15PD800SN1	Murata	BLM15PD800SN1	FERRITE CHIP 80 OHM 1500MA 0402
Fitted	L804, L805, L806	3	BLM21PG121SN1D	Murata	BLM21PG121SN1D	SMD EMI FERRITE 0805, Z=120 ohm(@100MHz), Max R(dc)=0.03 ohm, Max current=3A, (Digikey:490-5986-2-ND)
Fitted	L900, L901	2	BLM18PG471SN1	Murata	BLM18PG471SN1	SMD RF inductor 0603. Z=470Ohm (@100MHz), Max R(dc)=0.65Ohm, Max current=1A
Fitted	LABEL1	1	PCBA Label	ACT Logimark AS	505462	PCBA identification label PP Top White Gloss
Fitted	PCB1	1	SAMV71 Xplained Ultra PCB Documentation			SAMV7 Xplained Ultra PCB Documentation
Fitted	PCBADOC1	1	SAMV7 Xplained pro PCBA Documentation			SAMV7 Xplained pro PCBA Documentation
Fitted	Q100	1	IRLML5203PBF	International Rectifier	IRLML5203PBF	P-ch. MOSFET. -30V, -3.0A continuous, -24A Peak. RDS(ON)=0.098Ohm@VGS=-10V, RDS(ON)=0.165Ohm@VGS=-4.5V, -2.5V<VGS(th)<-1.0V
Fitted	Q101, Q108	2	FDC6327C	Fairchild	FDC6327C	Dual N/P-ch MOSFET, 20V, 2.7A/-1.9A cont, 8A/-8A pulse, RDS(ON)<0.08/0.17Ohm@VGS=4.5V, VGS(th)<1.5/-1.5V, SSOT6
Fitted	Q102	1	BSH202	NXP	BSH202	P-channel Pow er MOSFET,30V, 520mA continuous drain current
Fitted	Q103, Q104, Q106	3	IRLML6402PBF	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	Q105, Q107	2	2N7002,215	NXP	2N7002,215	N-Channel MOSFET. 60V, 0.300A continuous, 1.2A Peak. RDS(ON) = 3.8Ohm@VGS=4.5V, VGS(th)<2.5V
Fitted	Q900	1	2N7002DW	Fairchild	2N7002DW	Dual N-Channel MOSFET, 60V, 115mA cont,RDS(ON) < 7.5 Ohm @50mA@5V, SOT-363
Fitted	R100, R109, R200, R201, R202, R203, R207, R208, R209, R211, R213, R215, R219, R220, R221, R223, R224, R225, R226, R228, R229, R230, R234, R400, R401, R402, R403, R800, R802, R806, R811, R814, R815, R816, R818, R819, R920	37	0R			Thick film resistor, SMD 0402, 1/16W, 1%, RES 0.0 OHM 1/16W 0402 SMD, Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	R1000, R1001	2	62R			Thick film resistor, SMD 1210, 0.5W, 1%
Fitted	R101, R114, R604, R605, R607, R608, R609, R610, R702	9	100k			Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	R102, R103, R119, R306	4	47k			Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	R104, R305	2	30k			Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	R105, R116, R117, R135	4	470k			Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	R106, R120, R121, R126, R134, R137, R140, R141, R142, R404	10	100k			Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	R107, R139	2	330R			Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	R108	1	470R			Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	R110, R300, R301, R916, R917	5	39R			Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	R111	1	453k			Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	R113, R906, R909	3	1M			Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	R115	1	39k			Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	R118	1	390R			Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	R122	1	453k			Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	R123	1	150k			Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	R124	1	560k			Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	R125, R133	2	200k			Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	R127, R131	2	470k			Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	R128	1	604K			Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	R129	1	10k	vishay	CRCW040210K0FKED	Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	R130	1	232K			Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	R132	1	280k			Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	R136	1	47k			Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	R138	1	180k			Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	R204, R205, R206, R212, R214, R227, R817	7	39R			Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	R231, R232, R710, R711, R712, R713, R714, R715, R716, R719	10	4.7k			Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	R233	1	5.62k			Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	R302, R303, R307, R900, R904, R905, R907, R908, R910, R911, R912, R913, R914, R915, R921	15	330R			Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	R600, R601, R602, R603, R606, R611, R612	7	10k	vishay	CRCW040210K0FKED	Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	R700, R706, R901, R902, R903	5	1k			Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	R701, R703	2	220R			Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	R704	1	6.04K			Thick film resistor, SMD 0402, 1/16W, 1%, E192
Fitted	R801	1	22R	Samsung	RC100SF22R0CS	Thick film resistor, SMD 0402, 1/16W, 1% (de23607)
Fitted	R803, R804	2	2.2k			Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	R807, R808	2	20R			Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	R918	1	6.81k			Thick film resistor, SMD 0402, 1/16W, 1%
Fitted	SW100, SW101, SW300, SW301	4	SKRAAKE010	ALPS	SKRAAKE010	6.2x6.2 mm SMD tact sw itch, same as A08-0091 but less force is needed
Fitted	TEST1	1	SAMV7 Xplained Ultra Test			Fixture eggTest for SAMV7 Xplained Ultra
Fitted	TESTDOC1	1	SAMV7 Xplained Pro Test Instructions			SAMV7 Xplained Pro Test Instructions
Fitted	U100	1	TPS62143			5V to 17V in, 5V 2A out, Step-Dow n Converter
Fitted	U1000	1	ATA6561-GBQW			5Mbit/s CAN Trasceiver,VCC = 5V, VIO = 2.8-5V, 3x3 mm VDFN8
Fitted	U101	1	TPS3619-33	Texas Instruments	TPS3619-33DGK	Backup battery supervisors for RAM retention
Fitted	U102	1	TPS2113PWR	Texas Instruments	TPS2113PWR	Autosw itching 2:1 Pow er Mux
Fitted	U103	1	STMPS2161STR			Single channel pow er sw itch, 1A, reverse block, active low enabled.
Fitted	U104	1	LM26480			Externally Programmable Dual High-Current Step-Dow n DC/DC and Dual Linear Regulators
Fitted	U105	1	BU7411SG-TR			Single, Low Voltage (1.6-5.5V), Low Pow er (0.35ÂµA), low cost
Fitted	U106	1	TS5A3160DBVR	Texas Instruments	TS5A3160DBVR	1.65V to 5.5V SPDT Analog sw itch
Fitted	U200	1	SAMV71Q21 ES2			SAM 32-bit ARM Cortex-M* RISC MCU, SAMV71 Series, QFP144
Fitted	U600	1	AT24MAC402-MAHM-T			2kbit I2C EEPROM, single EUI-48 MAC, 1.7-5.5V, 2x3mm UDFN (8MA2)
Fitted	U601	1	IS42S16100E-7BLI SDRAM			16Mbit SDRAM (512K Words x 16 Bits x 2 Banks), 143 MHz 3,3V
Fitted	U604	1	S25FL116K			16 Mbit (2MB) SPI Quad I/O flash, 3.3V, 108MHz, WSON-8, industrial temperature
Fitted	U700	1	KSZ8061RNBVA			10Base-T/100Base-TX PHY, RMII, EEE, 50MHz clock output, AEC-Q100 Automotive
Fitted	U800	1	WM8904 Audio Codec			Ultra Low Pow er Codec for Portable Audio Applications
Fitted	U801	1	CS2100CP-CZZ			Programmable Phase-Locked Loop Clock Generator
Fitted	U900	1	AT32UC3A4256J-C1UR	ATMEL	AT32UC3A4256J-C1UR	AVR 32-bit RISC MCU
Fitted	XC300	1	32.768kHz +/-20PPM 7pF SMD	Micro Crystal	MS1V-T1K 32.768kHz 7pF +/-20PPM TA	32k768 crystal, +-20ppm, CL=7pF, max ESR 60kOhm, SMD
Fitted	XC301, XC800	2	12.0MHz	Fox Electronics	FQ5032B-12-C-C-C-200-1 / 738B-12	Fox FQ5032B 12.0MHz SMD crystal 738B-12
Fitted	XC700	1	7B-25.000MAAJ-T	TXC Corporation	7B-25.000MAAJ-T	25.000 MHz crystal, 18pF, ±30ppm, 5.0 x 3.2 mm
Fitted	XC900	1	12.0MHz	Fox Electronics	FQ5032B-12-C-C-C-200-1	Fox FQ5032B 12.0MHz SMD crystal 738B-12
Not Fitted	C304, C903	0	4.7n			Ceramic capacitor, SMD 0402, X7R, 25V, +/-10%
Not Fitted	C601, C602, C806, C807	0	100n	Kemet	C0402C104K4RACTU	Ceramic capacitor, SMD 0402, X7R, 16V, +/-10%
Not Fitted	C800	0	22p			Ceramic capacitor, SMD 0402, NP0, 50V, +/-5%
Not Fitted	R112, R216, R217, R218, R222	0	0R	(n/a)	RMCF0402ZT0R00	RES 0.0 OHM 1/16W 0402 SMD
Not Fitted	R304, R919	0	1M	KOA	RK73H1ETTP1004F	Thick film resistor, SMD 0402, 1/16W, 1%
Not Fitted	R705, R707, R708, R709, R717, R718, R720	0	4.7k			Thick film resistor, SMD 0402, 1/16W, 1%
Not Fitted	R809, R810	0	20R			Thick film resistor, SMD 0402, 1/16W, 1%
Not Fitted	R812, R813	0	47k			Thick film resistor, SMD 0402, 1/16W, 1%
Not Fitted	U602	0	ATECC108			Secure authentication and product validation device, EEPROM, I2C, 2.0 - 5.5V, UDFN8
Not Fitted	U603	0	ATECC108			Secure authentication and product validation device, EEPROM, I2C, 2.0 - 5.5V, SOIC8
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Approved

Notes