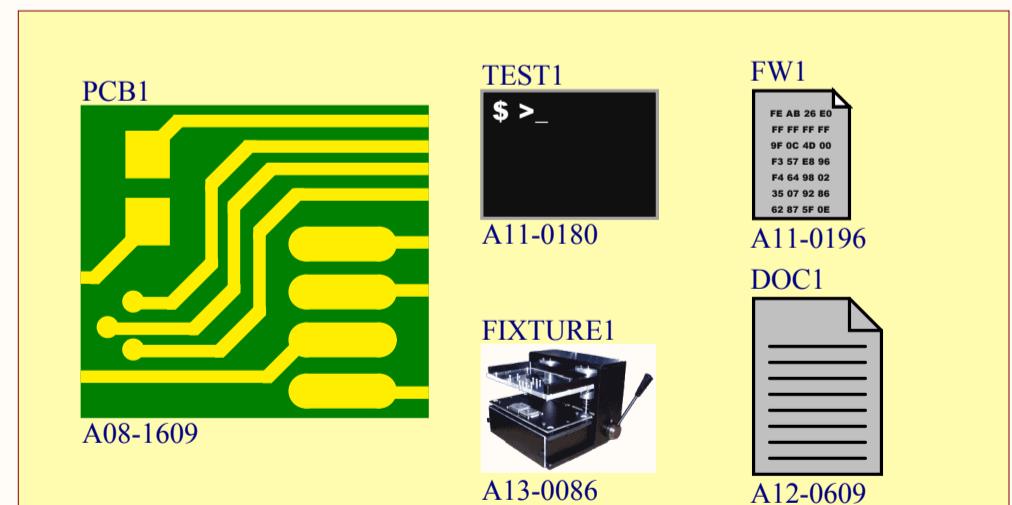
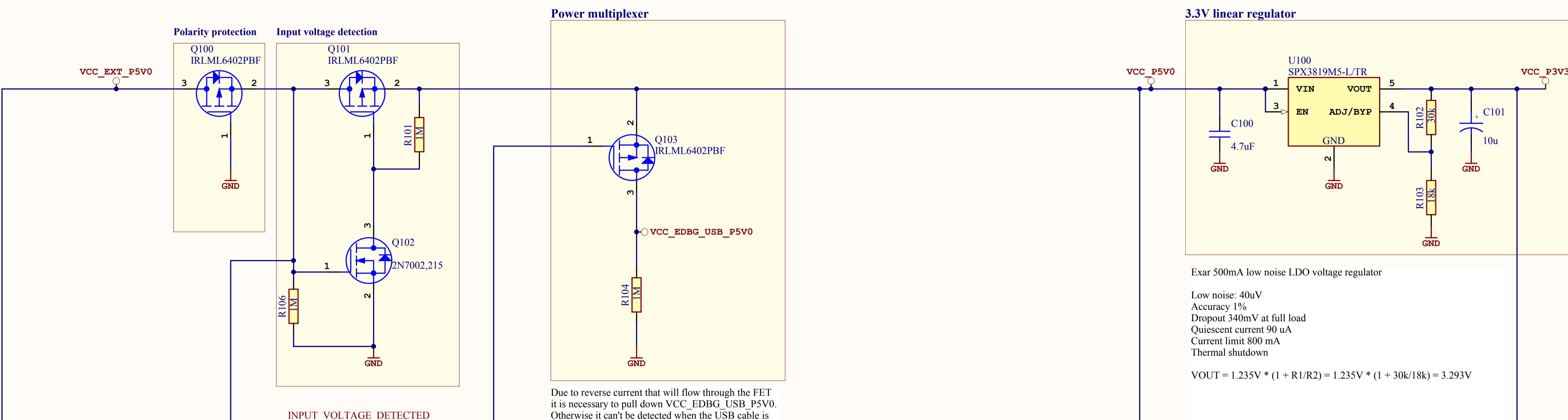


LABEL1
Product number/revision
Serial number

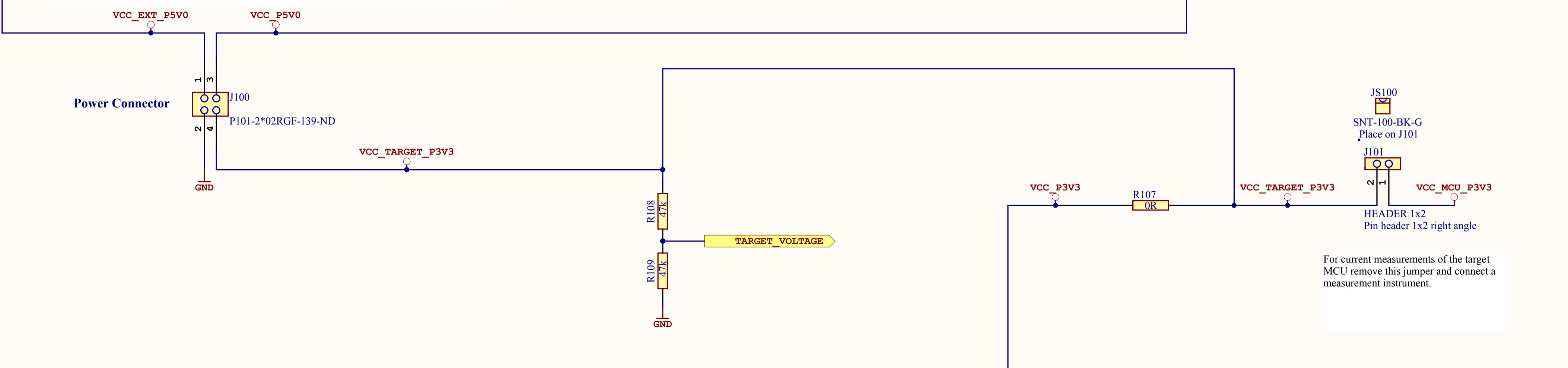
Label PCBA with MAC64 and FCC ID



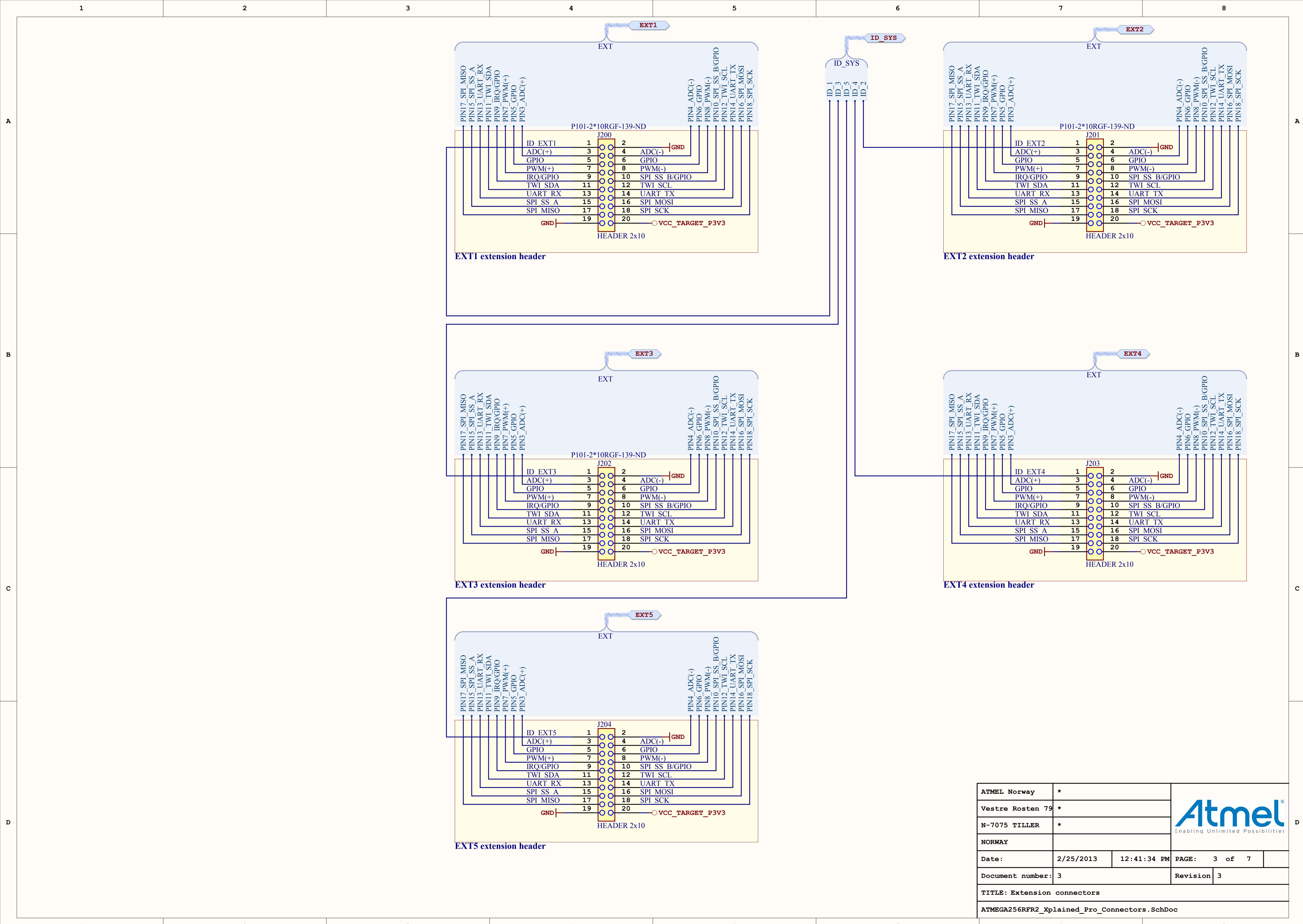
| | | | |
|--|-----------|---|--------------|
| ATMEL Norway | * | Atmel Enabling Unlimited Possibilities | |
| Vestre Rosten 79 | * | | |
| N-7075 TILLER | * | | |
| NORWAY | | | |
| Date: | 2/25/2013 | 12:41:34 PM | PAGE: 1 of 7 |
| Document number: | 1 | Revision 3 | |
| TITLE: Top Level Schematics | | | |
| ATMEGA256RFR2_Xplained_Pro_TopLevel.SchDoc | | | |

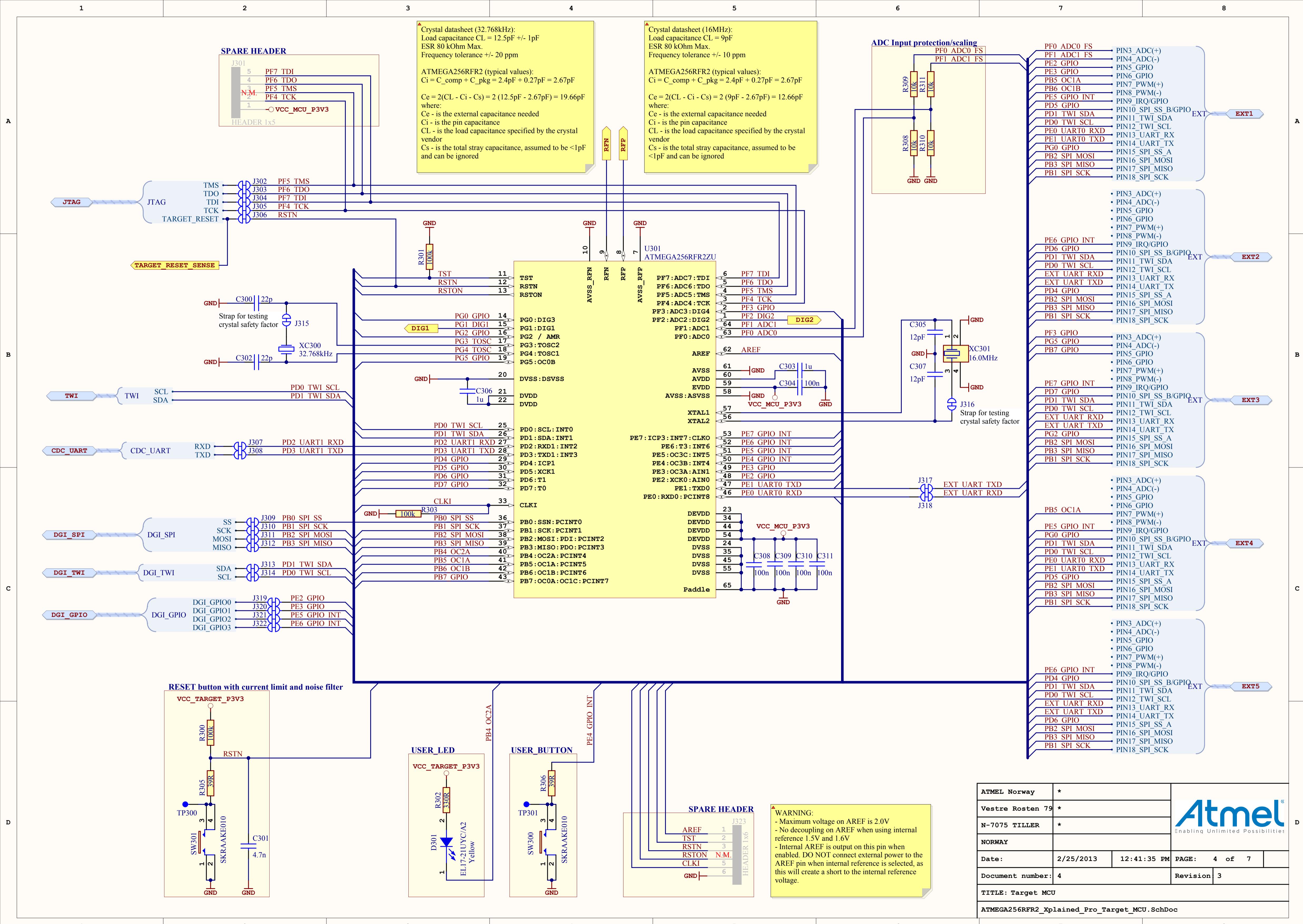


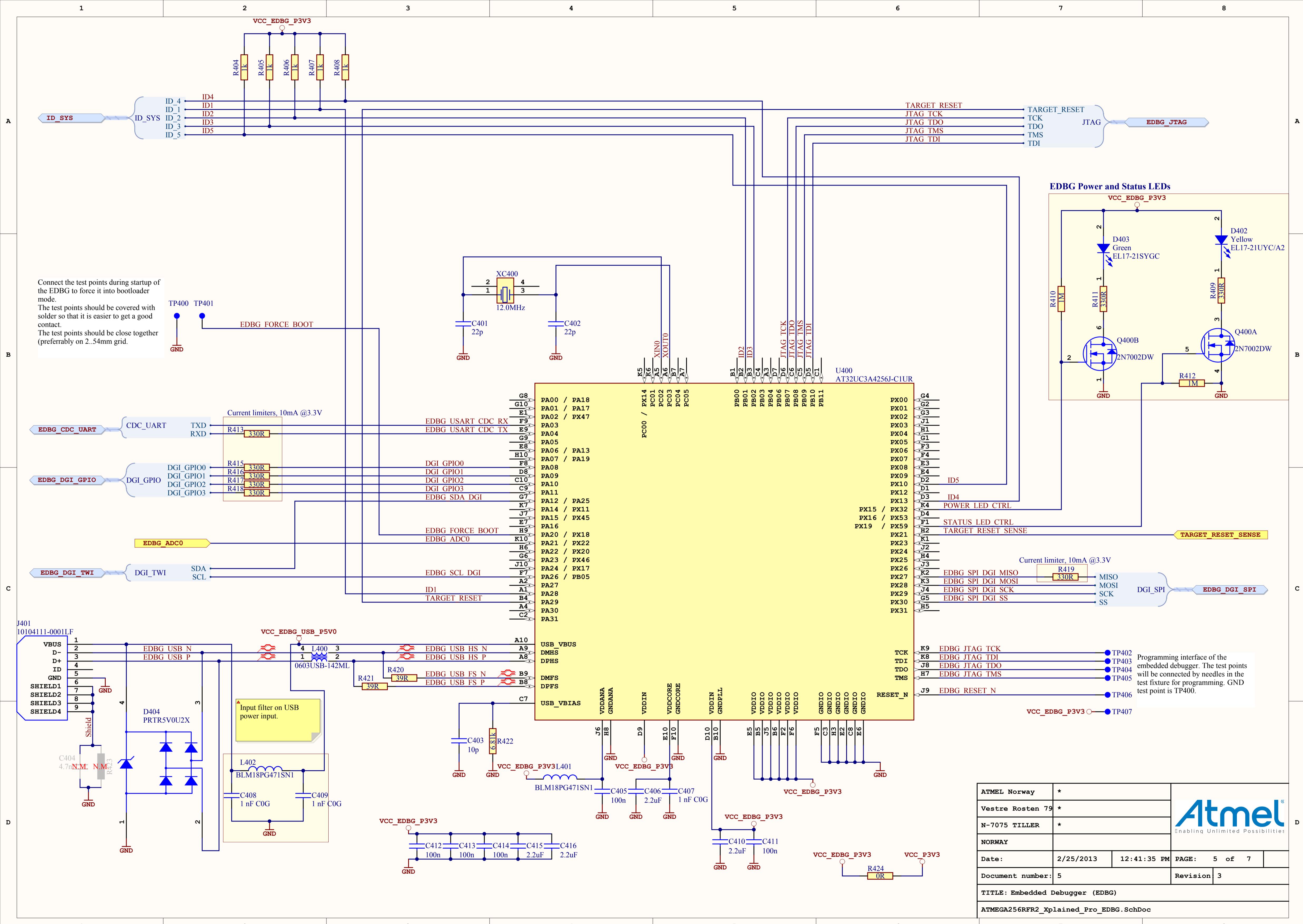
Each FET in the power path has a RDSON of <50mΩ@VGS= -5V with a current of up to 20A. That means we can expect a maximum voltage drop across the FETs of 50mV@500mA, 100mV@1A and 200mV@2A.
For USB host mode we need a voltage between 4.4V to 5.25V so the drop that we have is ok and leaves some room for an OTG switch on-resistance.



| | | | |
|---|-----------|-------------|--------------|
| ATMEL Norway | * | | |
| Vestre Rosten 79 | * | | |
| N-7075 TILLER | * | | |
| NORWAY | | | |
| Date: | 2/25/2013 | 12:41:34 PM | PAGE: 2 of 7 |
| Document number: | 2 | | Revision 3 |
| TITLE: Power supply | | | |
| ATMEGA256RFR2_Xplained_Pro_dual_input_power_supply.SchDoc | | | |





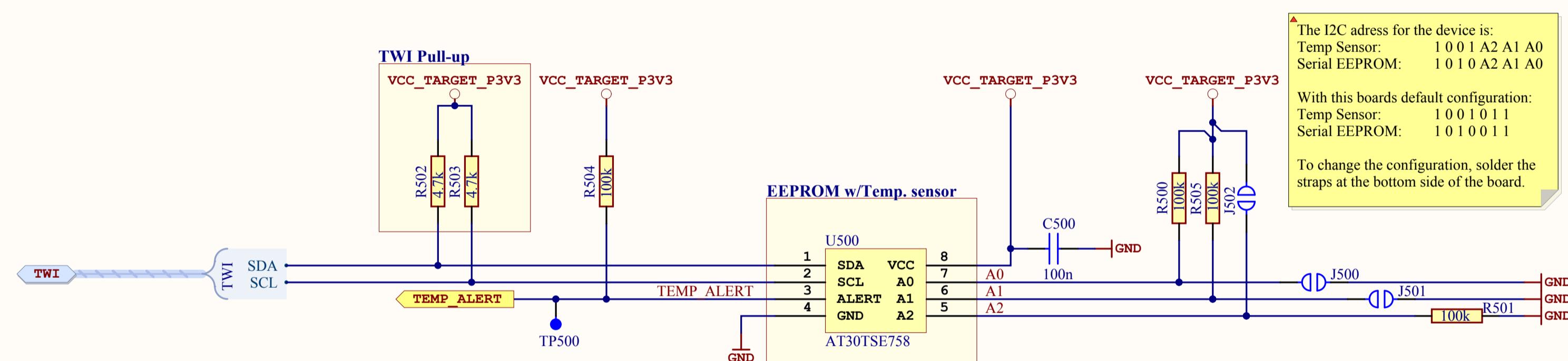


A

A

B

B



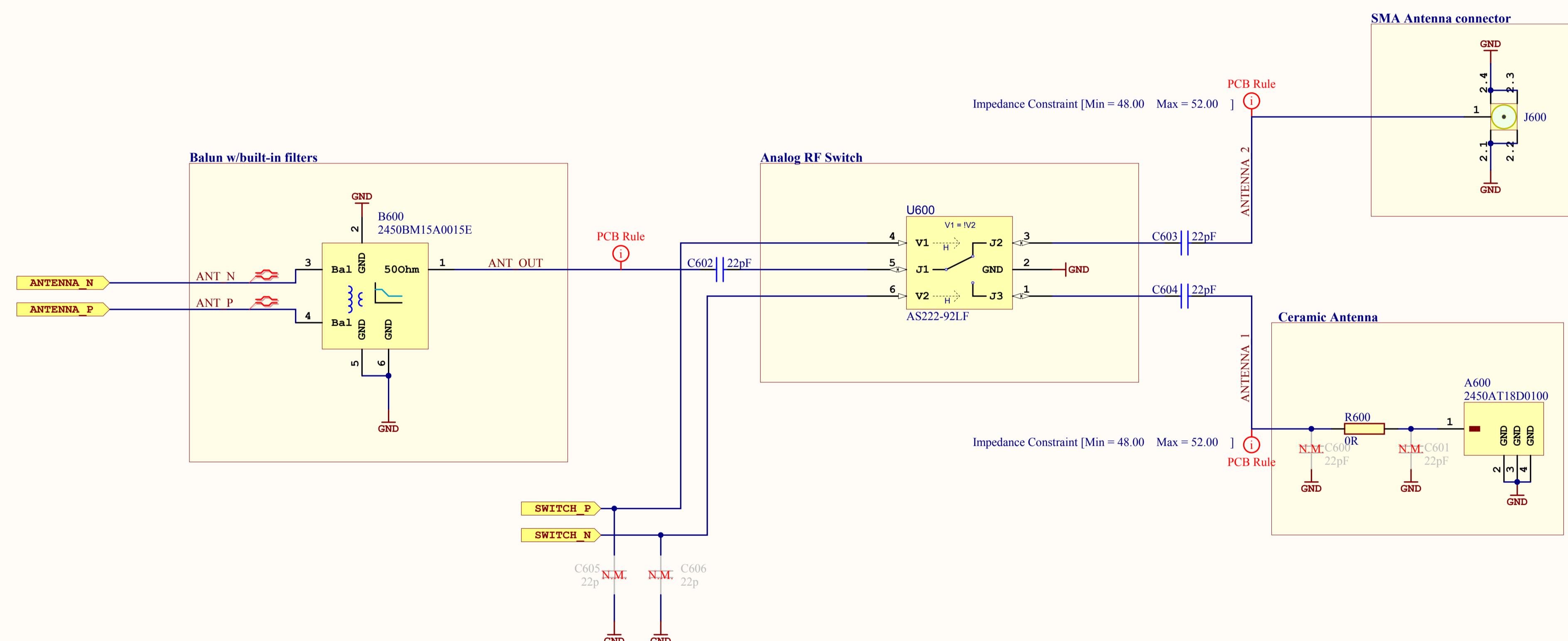
C

C

D

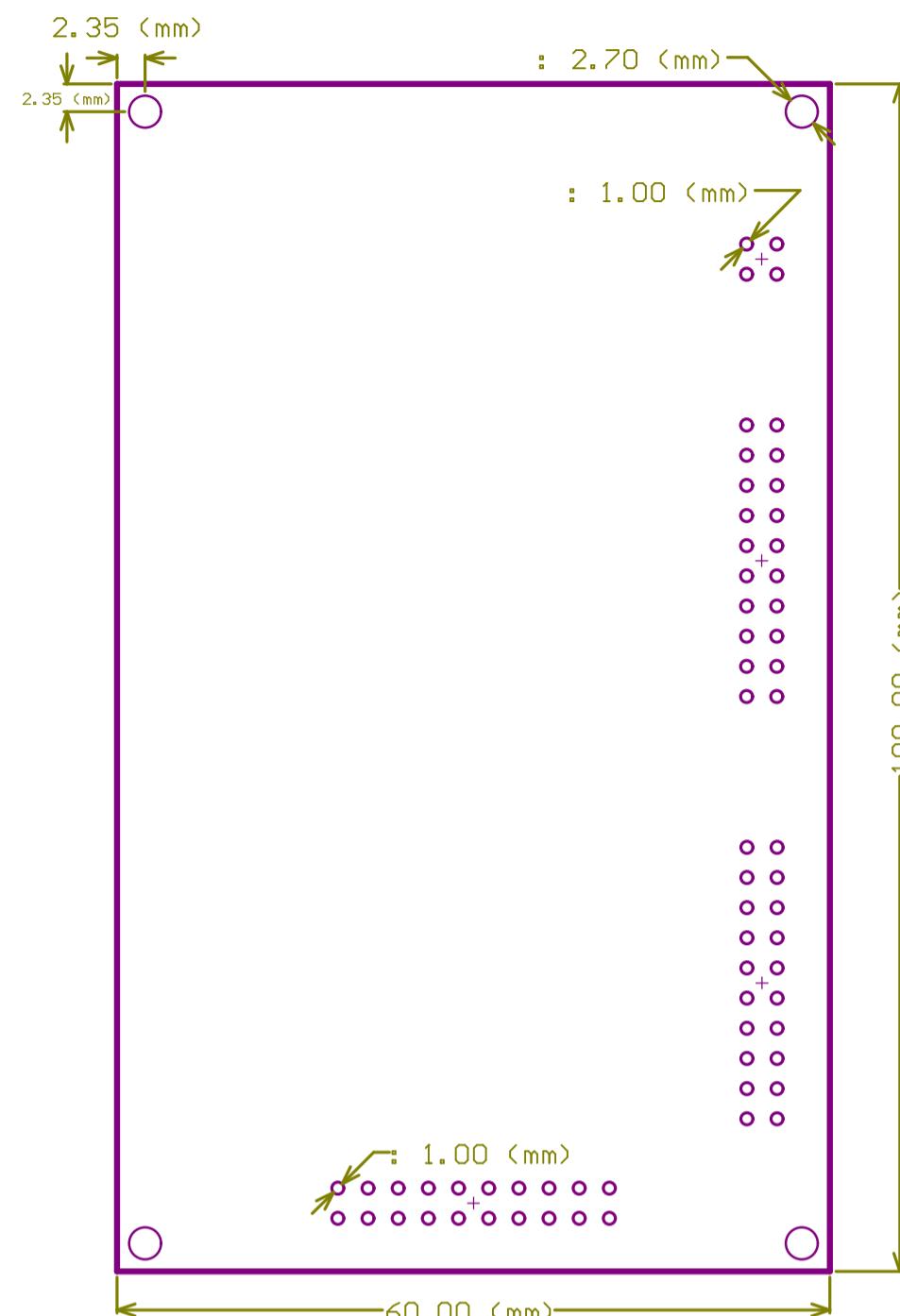
D

| | | |
|---|-----------|-------------|
| ATMEL Norway | * | |
| Vestre Rosten 79 | * | |
| N-7075 TILLER | * | |
| NORWAY | | |
| Date: | 2/25/2013 | 12:41:35 PM |
| Document number: | 6 | Revision 3 |
| TITLE: Temperature Sensor | | |
| ATMEGA256RFR2_Xplained_Pro_Temperature.SchDoc | | |

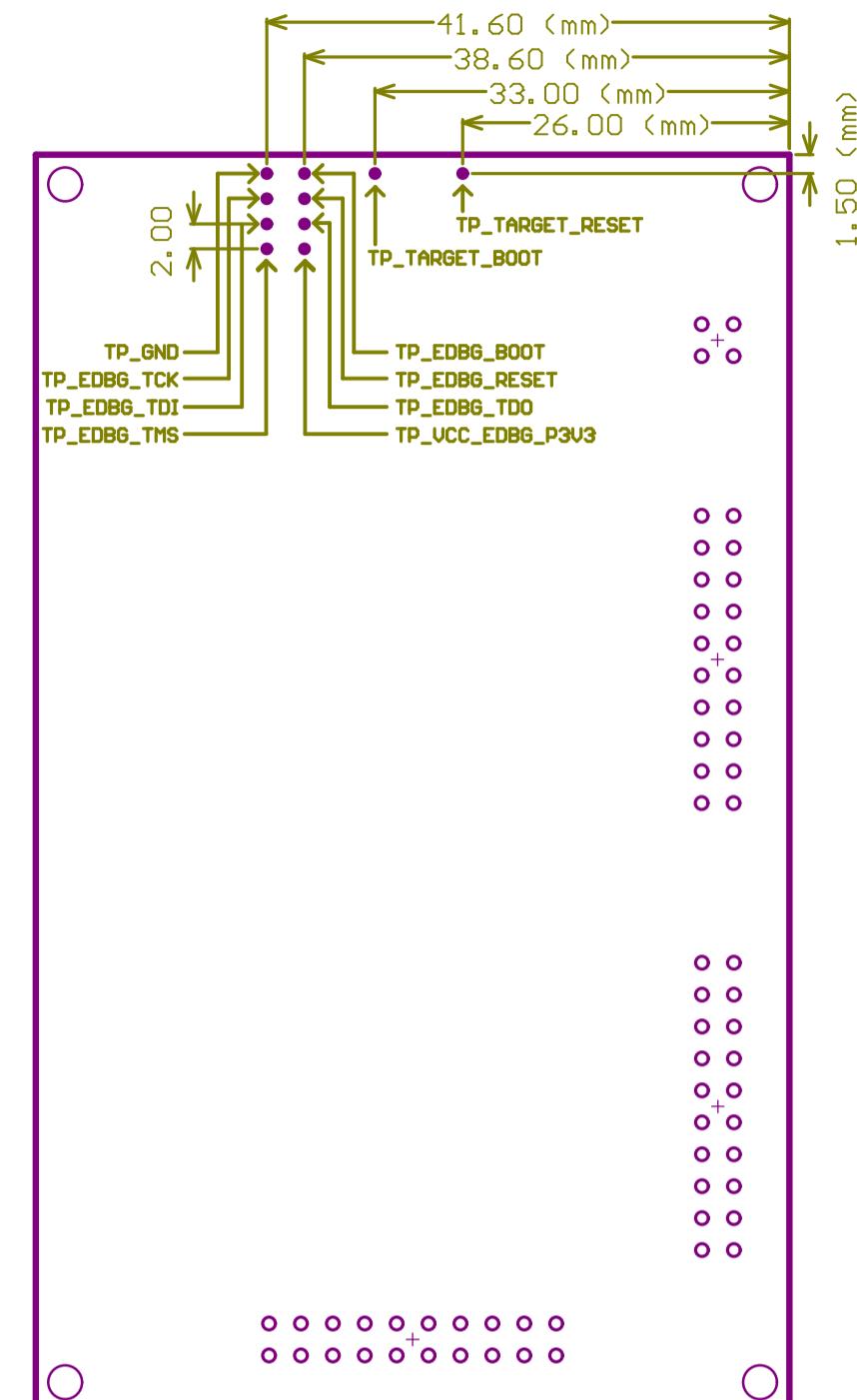


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| ATMEL Norway | * | | |
| Vestre Rosten 79 | * | | |
| N-7075 TILLER | * | | |
| NORWAY | | | |
| Date: | 2/25/2013 | 12:41:35 PM | PAGE: 7 of 7 |
| Document number: | 7 | Revision | 3 |
| TITLE: Antenna | | | |
| ATMEGA256RFR2_Xplained_Pro_Antenna.SchDoc | | | |

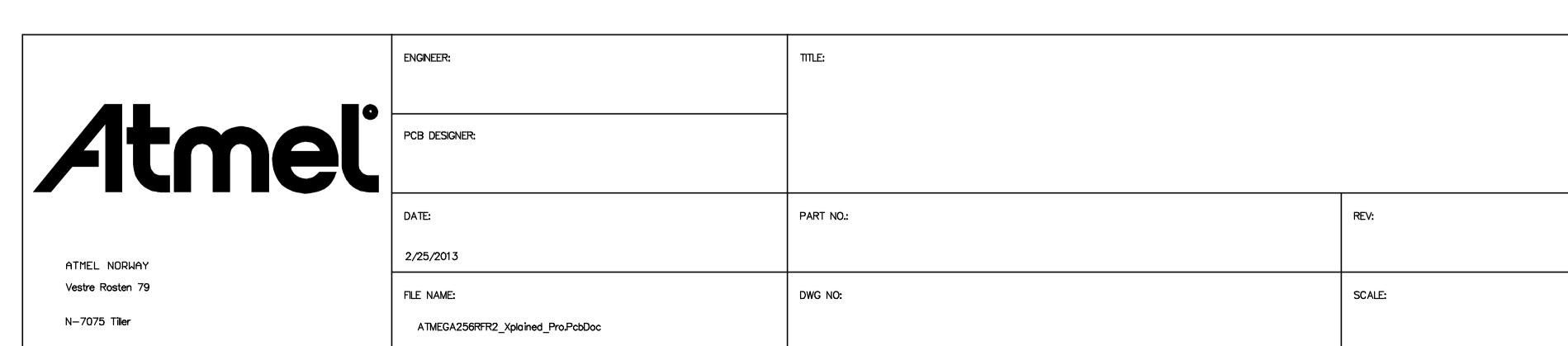
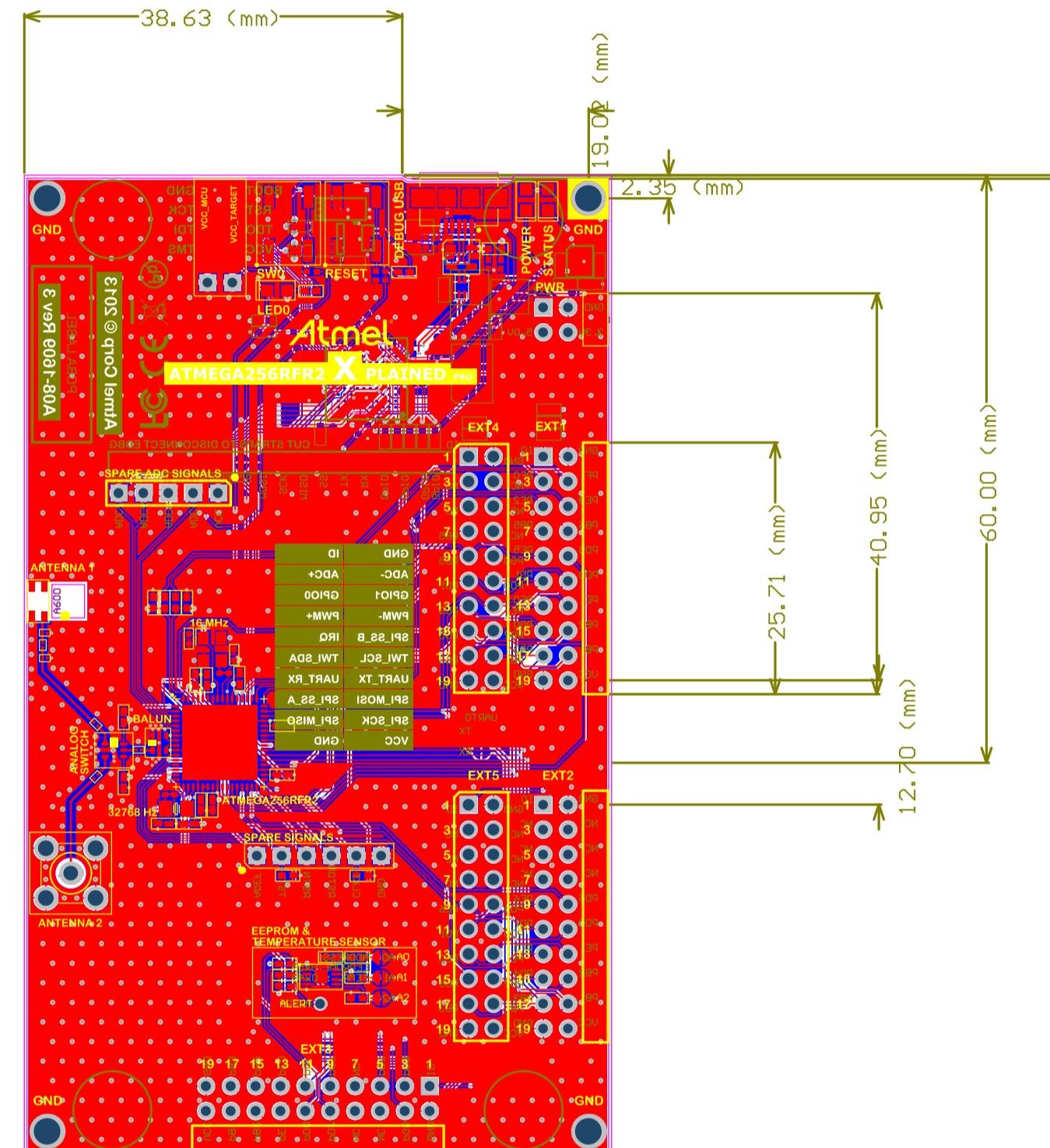
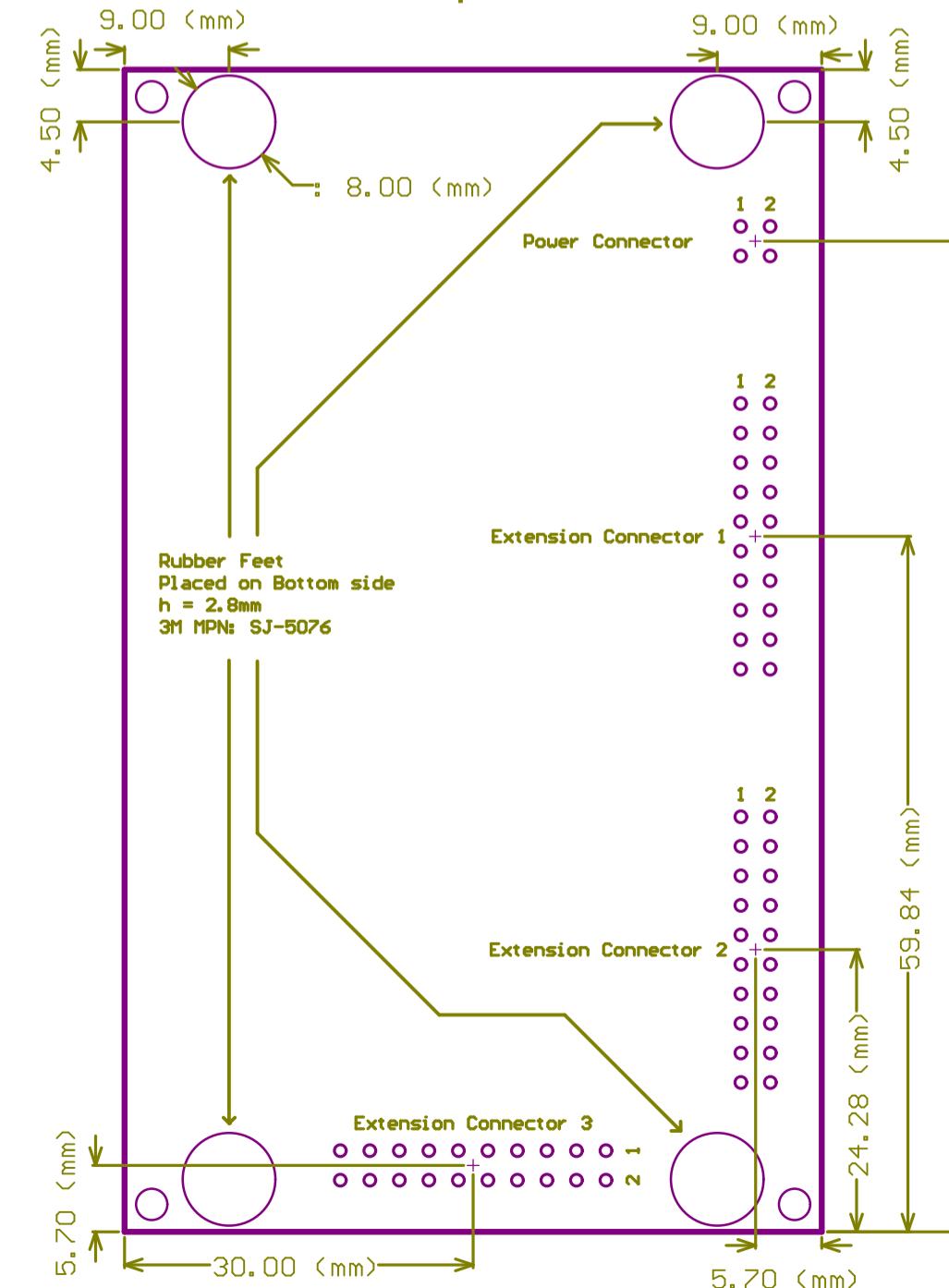
MCU Board Mechanical Dimensions



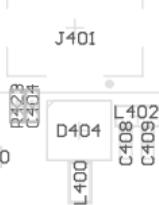
MCU Board Test Points



MCU Board Component Placement



GND



ATMEGA256RFR2 X PLAINED PRO



ANTENNA 1



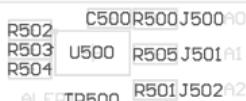
ANALOG SWITCH



ANTENNA 2



EEPROM & TEMPERATURE SENSOR



EXT4 EXT1



EXT5 EXT2

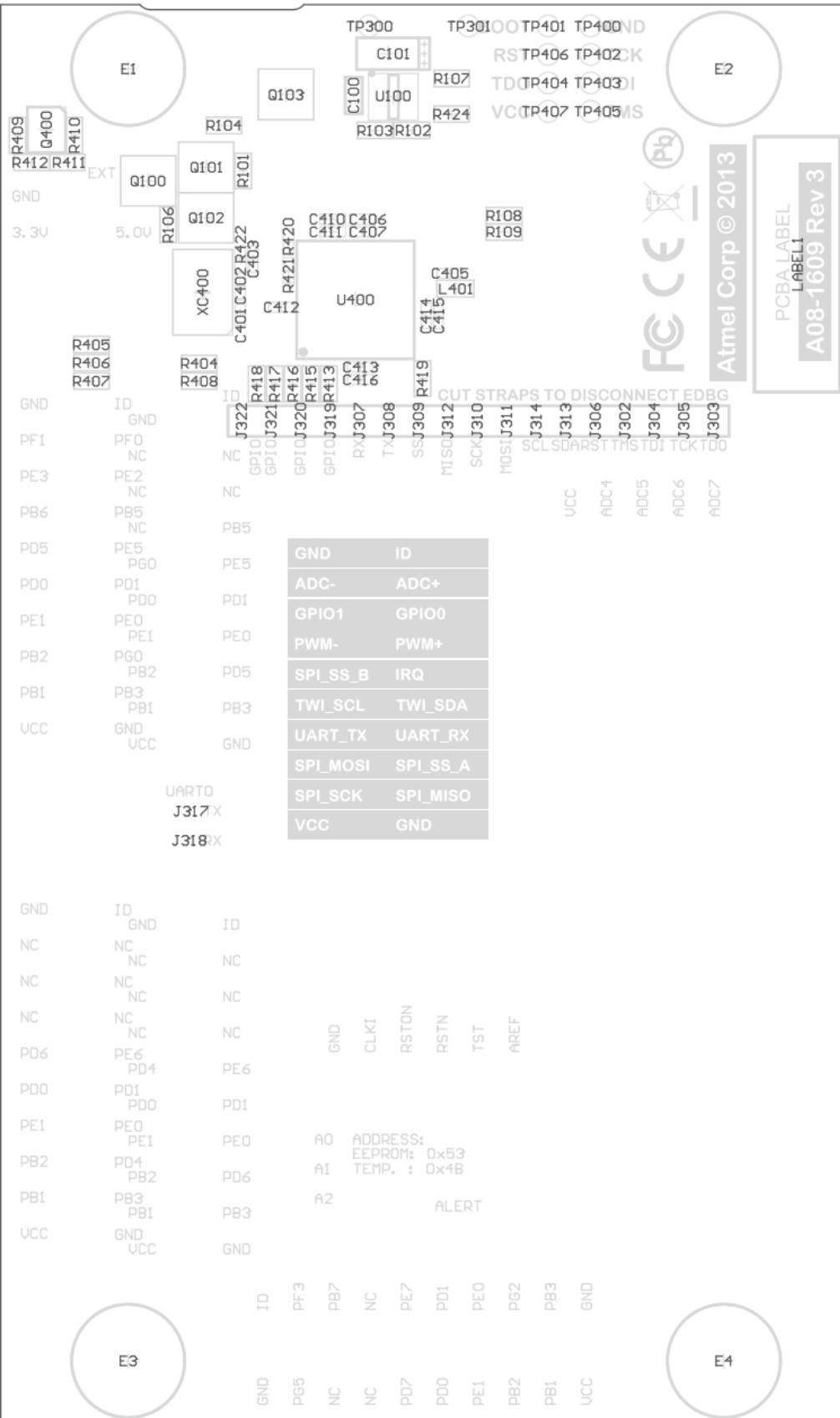


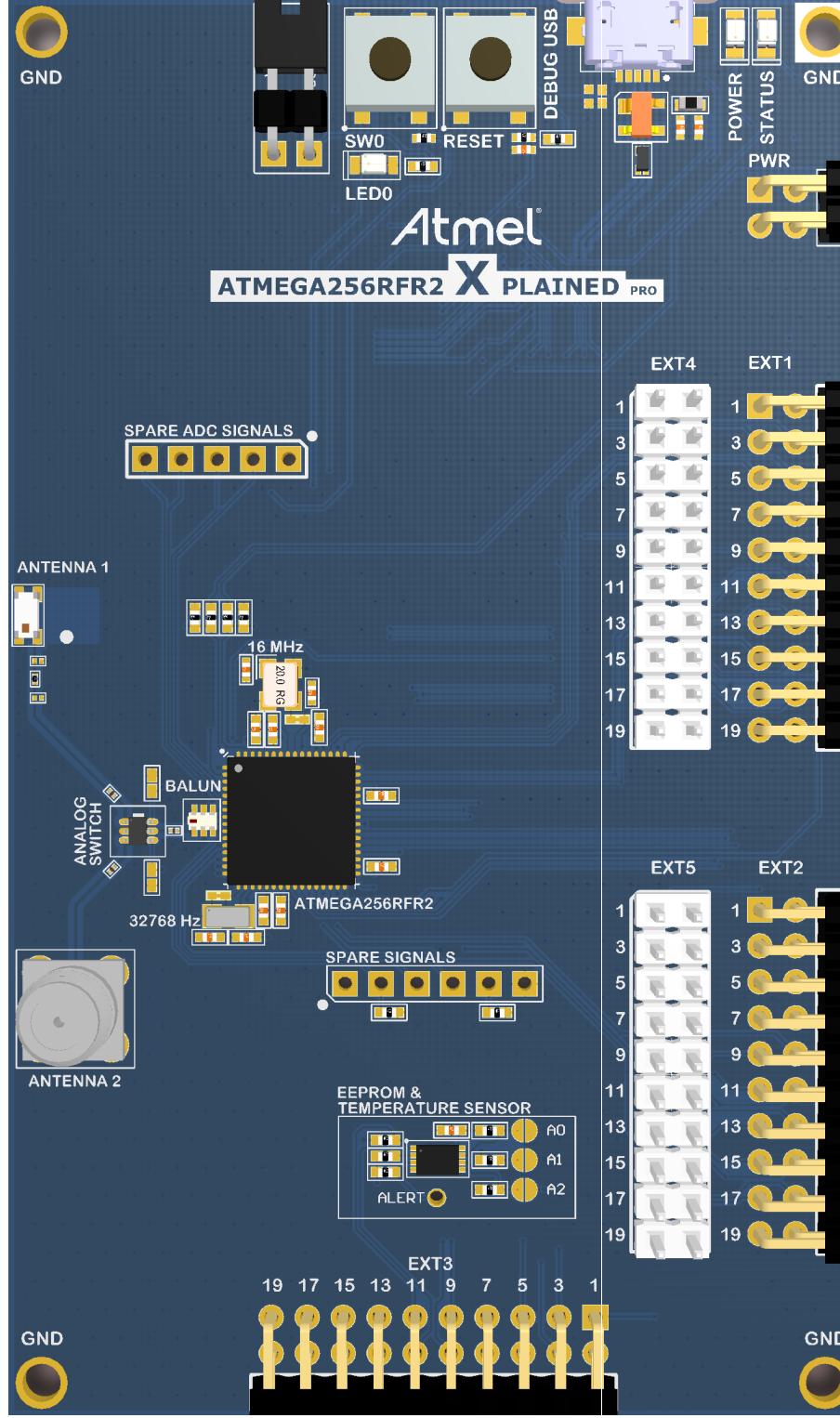
EXT3

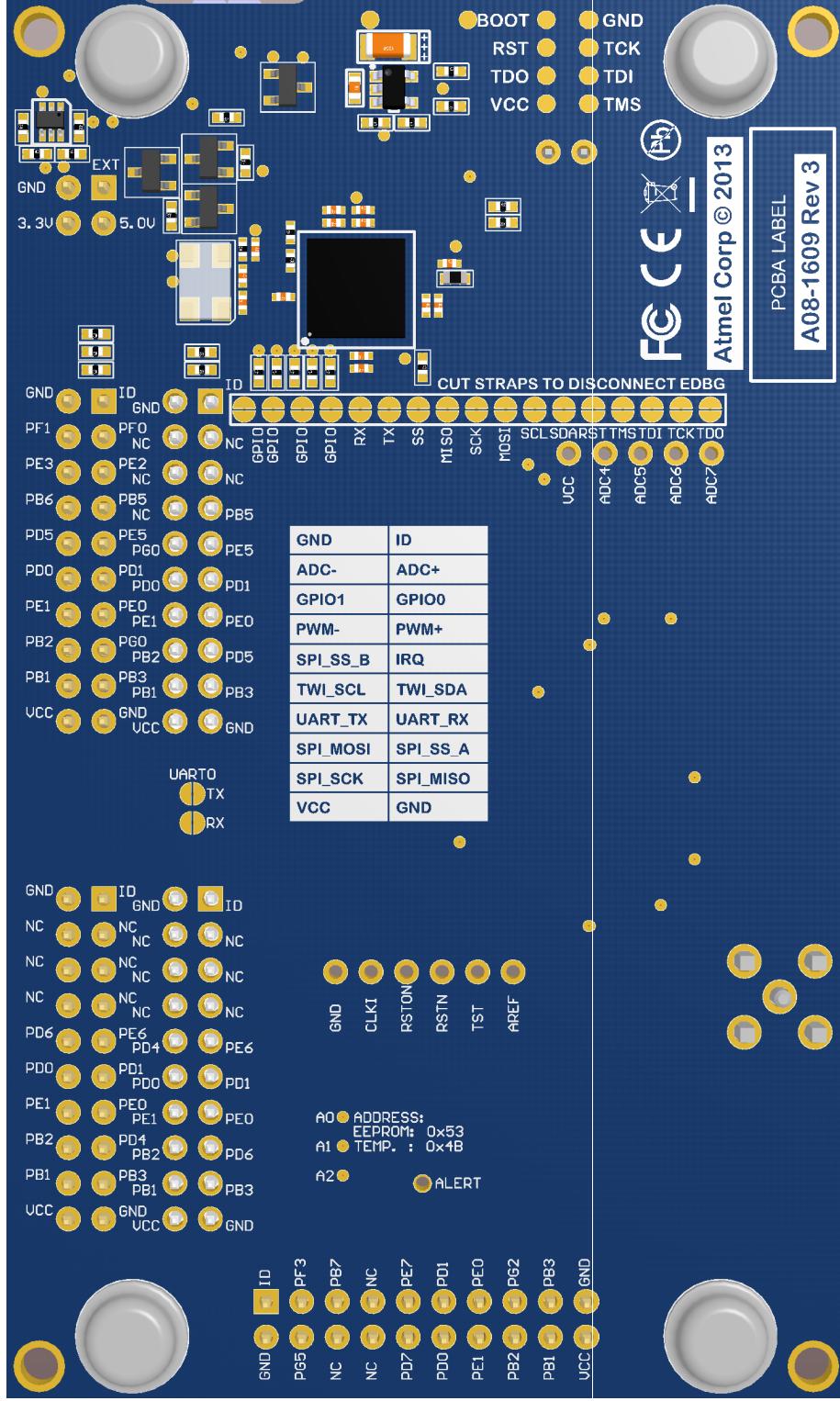


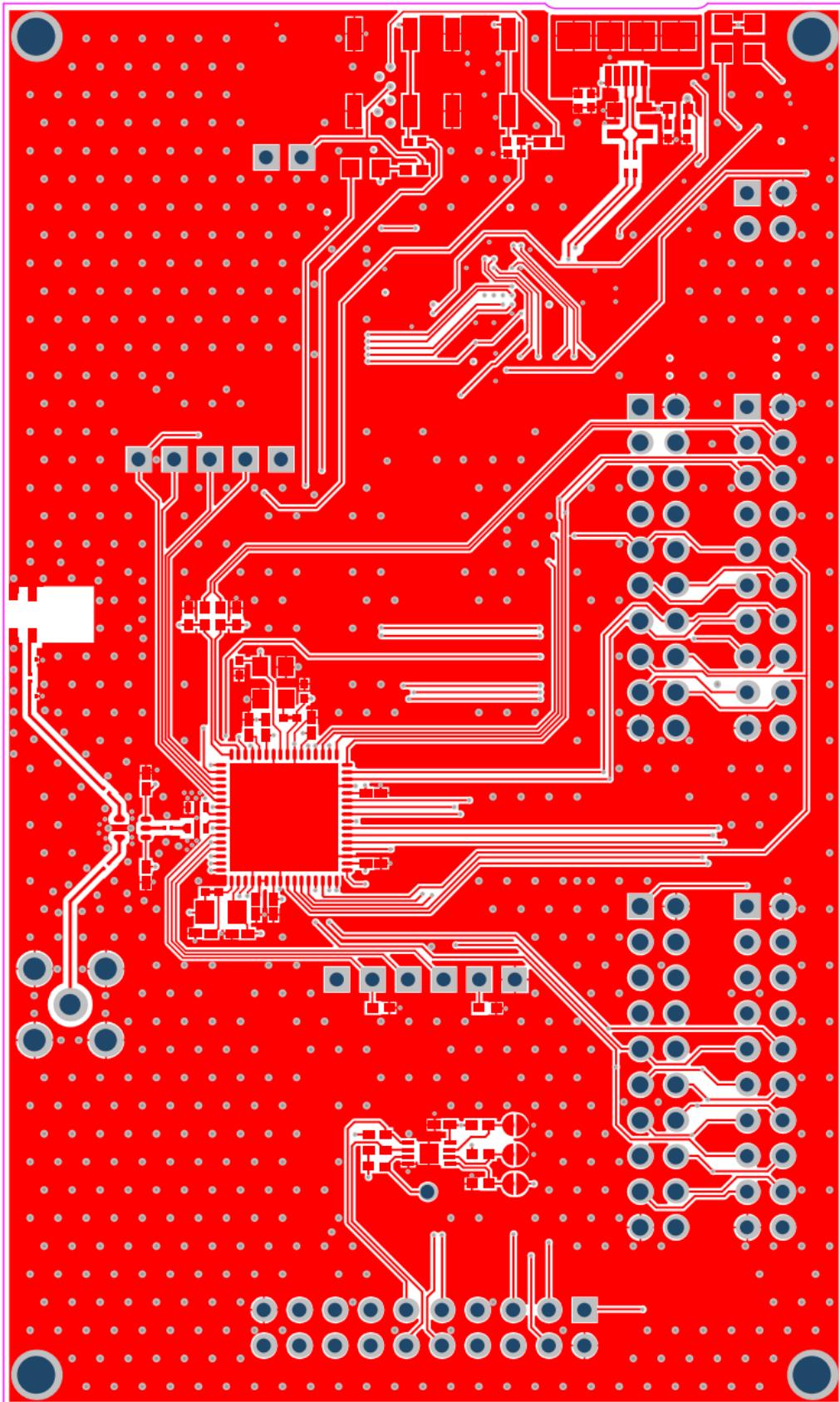
GND

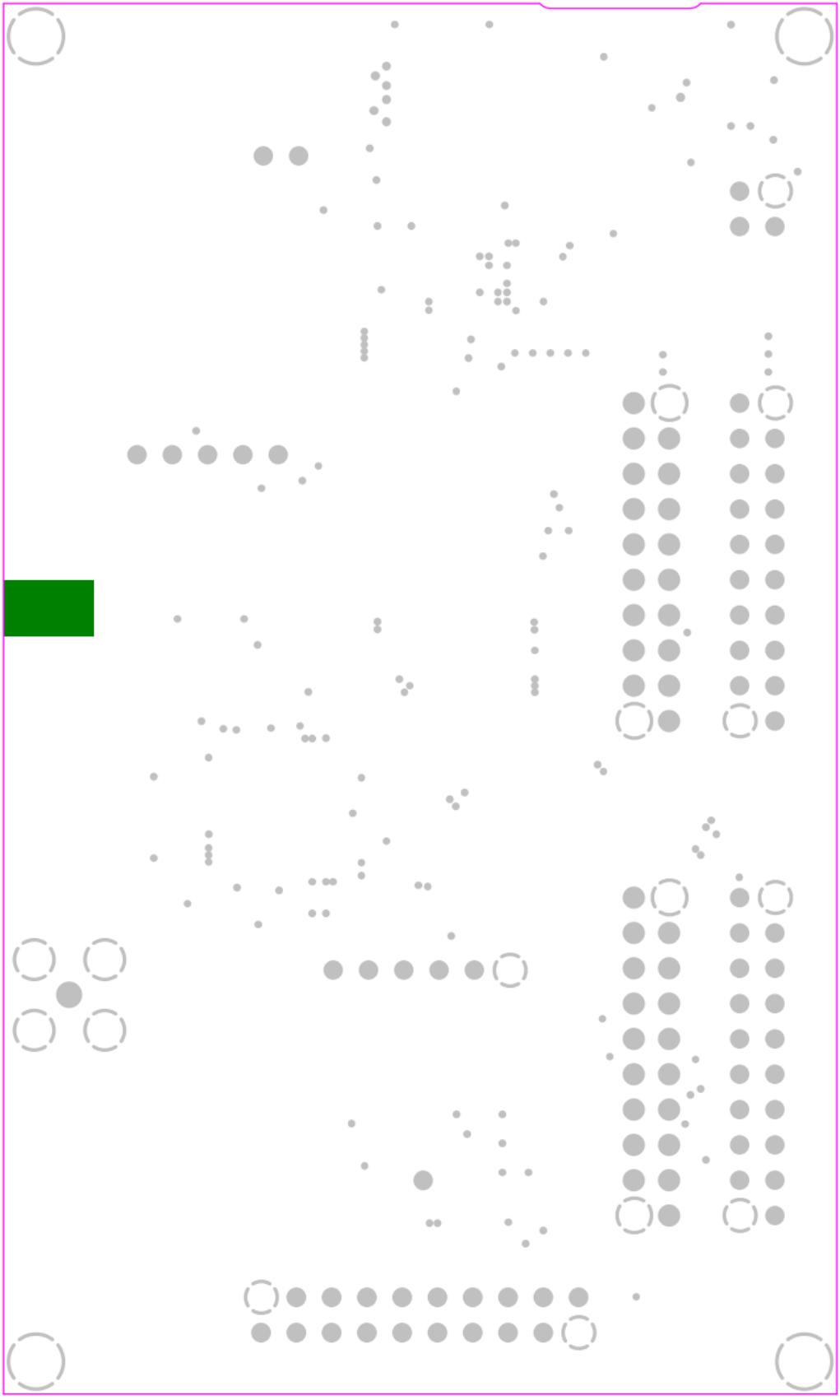
GND

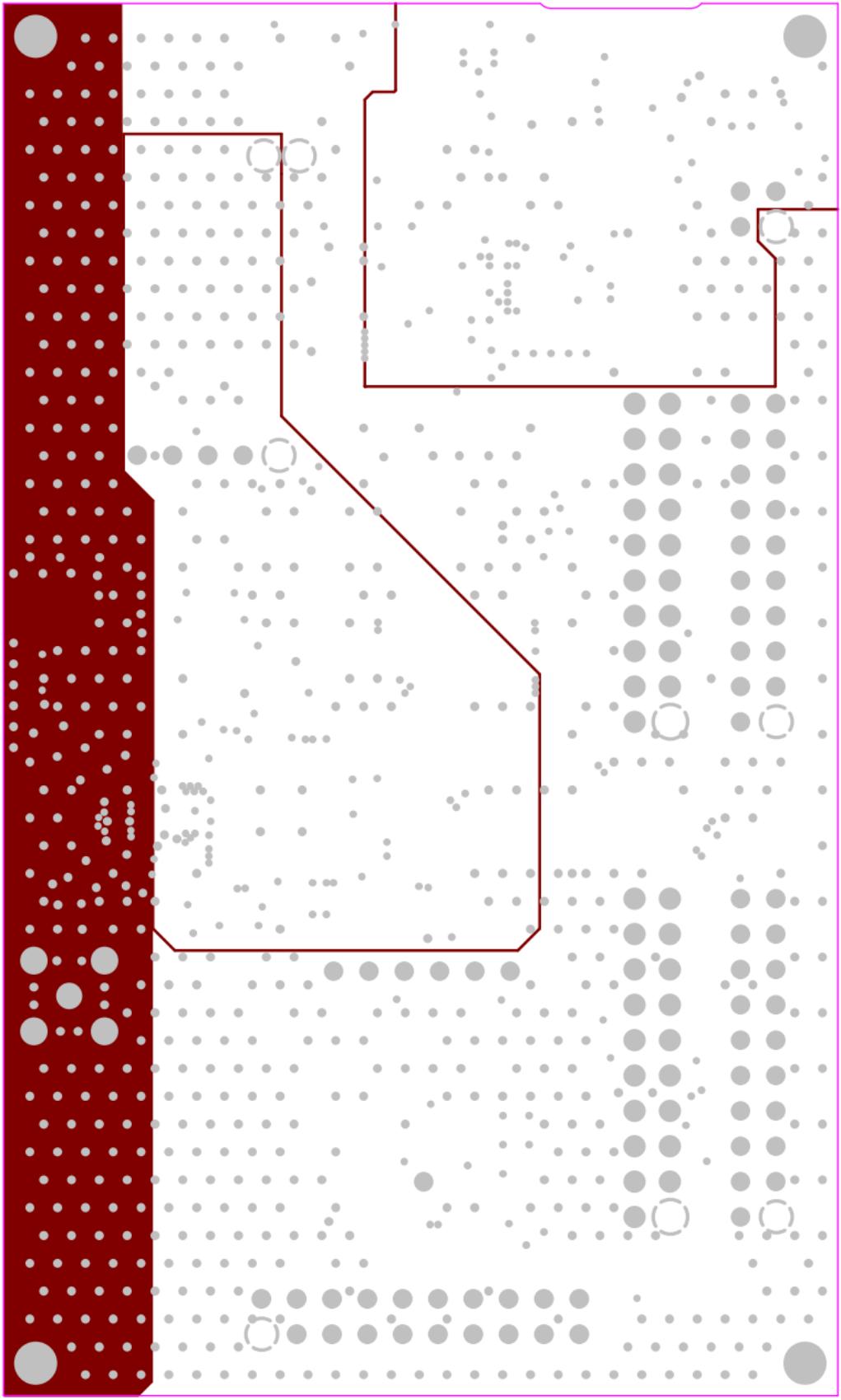


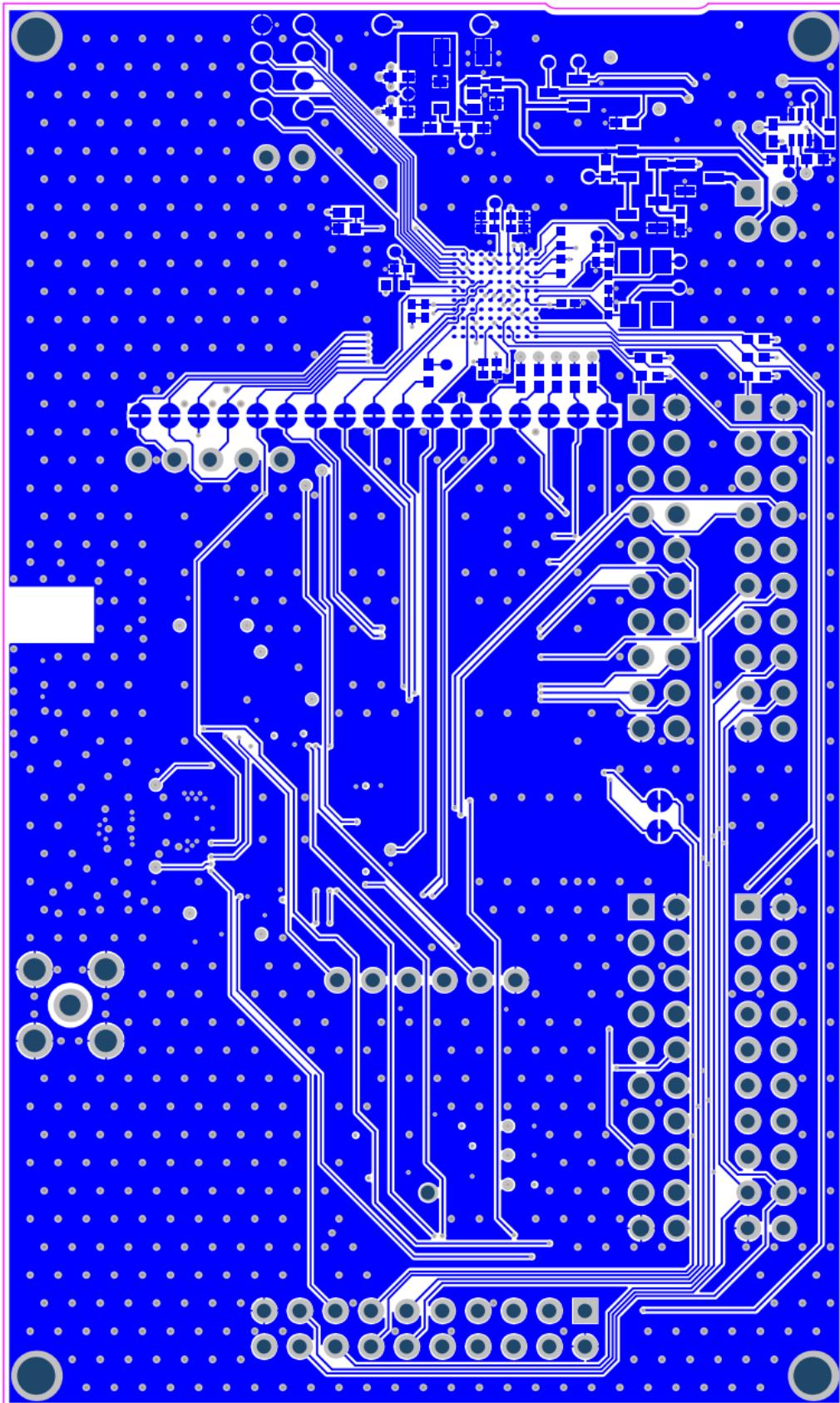












Component list

Bill of Materials Print For Variant [Default_assembly] of Project [ATMEGA256RFR2_Xplained_Pro.PsjPCB] (No PCB Document Selected)

| Source Data From: | | | |
|-------------------|-----------|-------------|--|
| Project: | | | |
| Variant: | | | |
| Report Date: | 2/25/2013 | 12:42:00 PM | |
| Print Date: | 2/25/2013 | 12:41:58 PM | |



| # | Designator | Quantity | Value | Manufacturer | MPN | Description |
|----|--|----------|---|-----------------------------|---|---|
| 1 | A600 | 1 | 2450A1T8DD100 | Johanson Technology | 2450A1T8DD100 | 2.45 GHz Ceramic Antenna |
| 2 | B600 | 1 | 2450BM15A0015E | Johanson Technology | 2450BM15A0015E | Filtered Balun to match AT86RF232/233 (35288) |
| 3 | C100 | 1 | 4.7uF | tdk | C1608X5R1A475K | Ceramic capacitor, SMD 0603, X5R, 10V, 10% (de31036) |
| 4 | C101 | 1 | 10u | vishay | TR3A106K016C1700 | SMD tantalum capacitor, ESR = 1.7, 3216 (EA) 1206, |
| 5 | C300, C302, C401, C402 | 4 | 22p | | | Ceramic capacitor, SMD 0402, NP0, 50V, +/-5% |
| 6 | C301 | 1 | 4.7n | | | Ceramic capacitor, SMD 0402, X7R, 25V, +/-10% (de35287) |
| 7 | C303, C306 | 2 | 1u | Kemet | C0402C105K9PAC | Ceramic capacitor, SMD 0402, X5R, 6.3V, +/-10% (de26942) |
| 8 | C304, C308, C309, C310, C311, C405, C411, C412, C413, C414, C500 | 11 | 100n | Kemet | C0402C104K4RACTU | Ceramic capacitor, SMD 0402, X7R, 16V, +/-10% |
| 9 | C305, C307 | 2 | 12pF | Kyocera-elco | CM05CG120J50AH | Ceramic capacitor, SMD 0402, NP0, 50V, +/-5% (de19819) |
| 10 | C403 | 1 | 10p | | | Ceramic capacitor, SMD 0402, NP0, 50V, +/-5% |
| 11 | C406, C410, C415, C416 | 4 | 2.2uF | Kemet | C0402C225M9PAC | Ceramic capacitor, SMD 0402, X5R, 6.3V, +/-20% |
| 12 | C407, C408, C409 | 3 | 1nF 00G | Murata | GRM1555C1H102JA01D | Ceramic capacitor, SMD 0402, CG, 50V, +/-5% |
| 13 | C602, C603, C604 | 3 | 22pF | Johanson Technology | 250R05L220JV4T | Ceramic Capacitor, SMD 0201, 25V, NP0, 22PF |
| 14 | D301, D402 | 2 | EL17-21UYC/A2 | Everlight | 17-21UYC5S30-A3/TR8 | LED, Yellow, Wave length=591nm, SMD 0805, +/-0° |
| 15 | D403 | 1 | EL17-21SYGC | Everlight | EL17-21SYGC | LED, Green, Wave length=576nm, SMD 0805, +/-0° |
| 16 | D404 | 1 | PRT8V5U02X | Philips | PRT8V5U02X | Double rail-to-rail USB ESD protection diode |
| 17 | DOC1 | 1 | A09-1784 PCB4 Files | ATMEL | | ATmega256RFR2 Xplained PRO PCB4 documentation |
| 18 | E1, E2, E3, E4 | 4 | SJ-5076 | | | 2.8mm adhesive feet, diam 8.0mm |
| 19 | FIXTURE1 | 1 | Xplained PRO MCU board Jupiter Test Fixture | ESCAPEC | Xplained PRO MCU board Jupiter Test Fixture | Xplained PRO MCU board Jupiter Test Fixture |
| 20 | FW1 | 1 | EDBG secured firmware | | | EDBG secured firmw are |
| 21 | J100 | 1 | P101-2*02RGF-139-ND | | P101-2*02RGF-139-ND | Pin header, 2x2, Right Angle, 2.54mm, TH, Pin In Paste |
| 22 | J101 | 1 | Pn header 1x2 right angle | Pro-data International Corp | 2213R-2G | 1x2 pin header, right angle, 2.54 mm pitch, through-hole |
| 23 | J200, J201, J202 | 3 | P101-2*10RGF-139-ND | | P101-2*10RGF-139-ND | Pin header, 2x10, Right Angle, 2.54mm, TH, Pin In Paste |
| 24 | J203, J204 | 2 | HMT5W-110-23-F-D-237 | SAMTEC | HMT5W-110-23-F-D-237 | 2x10 pin header, 2.54mm pitch, Pin-in-Paste THM |
| 25 | J401 | 1 | 10104111-0001LF | FCI | 10104111-0001LF | Micro USB AB Connector |
| 26 | J600 | 1 | 19-46-1-TGG | Multicomp | 19-46-1-TGG | SMA PCB mounted connector 50Ohm (de19205) |
| 27 | JS100 | 1 | SNT-100-BK-G | SAMTEC | SNT-100-BK-G | Junper cap for 2.54mm pinheader |
| 28 | L400 | 1 | 0603USB-142ML | Coilcraft | 0603USB-142ML | USB common-mode filter in 0603 |
| 29 | L401, L402 | 2 | BLML8PFG471SN1 | Murata | BLML8PFG471SN1 | SMD RF inductor 0603, Z=4700nH (@100MHz), Max R(d)=0.65Ohm, Max current=1A |
| 30 | LABEL1 | 1 | Label PCB4 with MAC064 and FCC ID | ACT Logmark AS | 505462 | Label for use on wireless PCBs that needs 64 bit MAC and FCC ID |
| 31 | PCB1 | 1 | ATMEGA256RFR2 Xplained Pro PCB | ATMEL | | ATMEGA256RFR2 XPRO PCB, 4 layer, 60mm x 100 mm |
| 32 | Q100, Q101, Q103 | 3 | IRML6402PBF | International Rectifier | IRML6402PBF | P-ch: MOSFET, -30V, -3.7A continuous,RDS(ON)=0.05Ohm@VGS=-4.5V, RDS(ON)=0.08Ohm@VGS=-2.5V |
| 33 | Q102 | 1 | 2N7002.215 | NXP | 2N7002.215 | N-Channel MOSFET, 60V, 0.300A continuous, 1.2A Peak, RDS(ON) = 3.80Ohm@VGS=4.5V, VGS(th)<2.5V |
| 34 | Q400 | 1 | 2N7002DW | Fairchild | 2N7002DW | Dual N-Channel MOSFET, 60V, 115mA cont,RDS(ON) < 7.5 Ohm @50mA@5V, SOT-363 |
| 35 | R101, R104, R106, R410, R412 | 5 | 1M | | | Thick film resistor, SMD 0402, 1/16W, 1% |
| 36 | R102 | 1 | 30k | | | Thick film resistor, SMD 0402, 1/16W, 1% |
| 37 | R103 | 1 | 18k | | | Thick film resistor, SMD 0402, 1/16W, 1% |
| 38 | R107, R424 | 2 | 0R | | | Thick film resistor, SMD 0402, 1/16W, 1% |
| 39 | R108, R109 | 2 | 47k | | | Thick film resistor, SMD 0402, 1/16W, 1% |
| 40 | R300, R301, R303, R500, R501, R504, R505 | 7 | 100k | | | Thick film resistor, SMD 0402, 1/16W, 1% |
| 41 | R302, R409, R411, R413, R415, R416, R417, R418, R419 | 9 | 330R | | | Thick film resistor, SMD 0402, 1/16W, 1% |
| 42 | R305, R306, R420, R421 | 4 | 39R | | | Thick film resistor, SMD 0402, 1/16W, 1% |
| 43 | R308, R309, R310, R311 | 4 | 10k | | | Thick film resistor, SMD 0402, 1/16W, 1% |
| 44 | R404, R405, R406, R407, R408 | 5 | 1k | | | Thick film resistor, SMD 0402, 1/16W, 1% |
| 45 | R422 | 1 | 6.81k | | | Thick film resistor, SMD 0402, 1/16W, 1% |
| 46 | R502, R503 | 2 | 4.7k | | | Thick film resistor, SMD 0402, 1/16W, 1% |
| 47 | R600 | 1 | 0R | ROHM | MCR006YZPU000 | Thick film resistor, SMD 0201, 1/20W, 5% |
| 48 | SW300, SW301 | 2 | SKRAAKE010 | ALPS | SKRAAKE010 | 6.2x6.2 mm SMD tact switch, same as A08-0091 but less force is needed |
| 49 | TEST1 | 1 | ATmega256RFR2 Xplained PRO test | ATMEL | | Fixture test for ATmega256RFR2 Xplained PRO |
| 50 | U100 | 1 | SPX3819M5-L/TR | Ekar | SPX3819M5-L/TR | 500mA LDO, low noise, SOT23-5 package |
| 51 | U301 | 1 | ATMEGA256RFR2ZU | ATMEL | ATMEGA256RFR2ZU | AVR Microcontroller with Low Power 2.4GHz Transceiver for IEEE 802.15.4 (de35289) |
| 52 | U400 | 1 | AT32UC3A4256J-CTUR | ATMEL | AT32UC3A4256J-CTUR | AVR 32-bit RISC MCU |
| 53 | U500 | 1 | AT30TS758 | ATMEL | AT30TS758-MAB-T | SINGLE DIGITAL TEMPERATURE SENSOR WI SERIAL EEPROM, UDFN8 |
| 54 | U600 | 1 | AS222-92LF | SKYWORKS SOLUTIONS | AS222-92LF | PHEMT SPDT Analog SWITCH 0.1-3 GHz |
| 55 | XC300 | 1 | 32.768kHz | GEYER ELECTRONIC | 12.87150 | 32.768kHz KX-327NHT, 3.2 x 1.5 mm SMD 20ppm (de19774) |
| 56 | XC301 | 1 | 16.0MHz | GEYER ELECTRONIC | 12.88785 | 3.2x2.5mm, 10/15/5ppm, 9pF, 80Ohm (de33221) |
| 57 | XC400 | 1 | 12.0MHz | Fox Electronics | FQ05032B-12-C-C-C-200-1 | Fox FQ05032B 12.0-MHz SMD crystal 738B-12 |
| 58 | C404 | 0 | 4.7n | | | Ceramic capacitor, SMD 0402, X7R, 25V, +/-10% |
| 59 | C600, C601 | 0 | 22pF | Johanson Technology | 250R05L220JV4T | Ceramic Capacitor, SMD 0201, 25V, 22PF |
| 60 | C605, C606 | 0 | 22p | | | Ceramic capacitor, SMD 0402, NP0, 50V, +/-5% |
| 61 | J301 | 0 | PIN HEADER 1x5 THM | SAMTEC | TSW-105-26-L-S | 1x5 pin header, 2.54 mm pitch, THM |
| 62 | J323 | 0 | PIN HEADER 1x6 PIP | Freiber | CD0750141XGTR | 1x6 pin header, 2.54mm pitch, THM Pin-In-Paste |
| 63 | R423 | 0 | 1M | KOA | RK73H1ETTP1004F | Thick film resistor, SMD 0402, 1/16W, 1% |
| | | 121 | | | | |

Approved

Notes