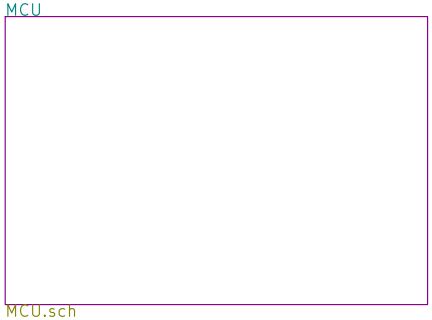
Power and FTDI

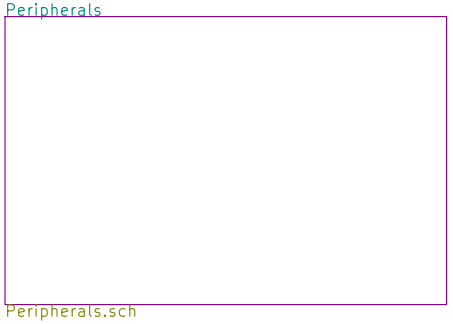
Power.sch

MCU



MCU.sch

Peripherals



Peripherals.sch

Headers and Debug

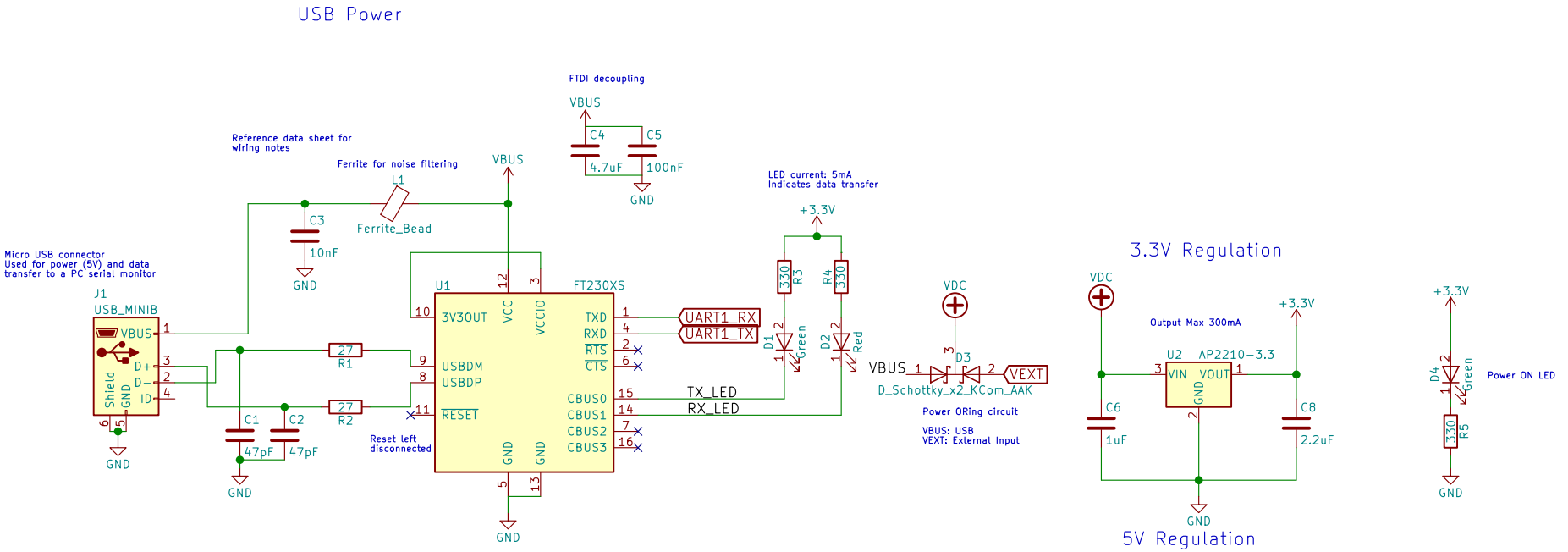
Headerssch.sch

Garnet Tanner
Andromeda
SOAR

Sheet: /
File: STM32_SOAR_Reference_Board.sch

Title: SOAR Avionics Development Board

Size: USLetter	Date: 2017-12-03	**Rev: 1**
KiCad E.D.A. kicad 4.0.7		Id: 1/5



Garnet Tanner		
Andromeda		
SOAR		
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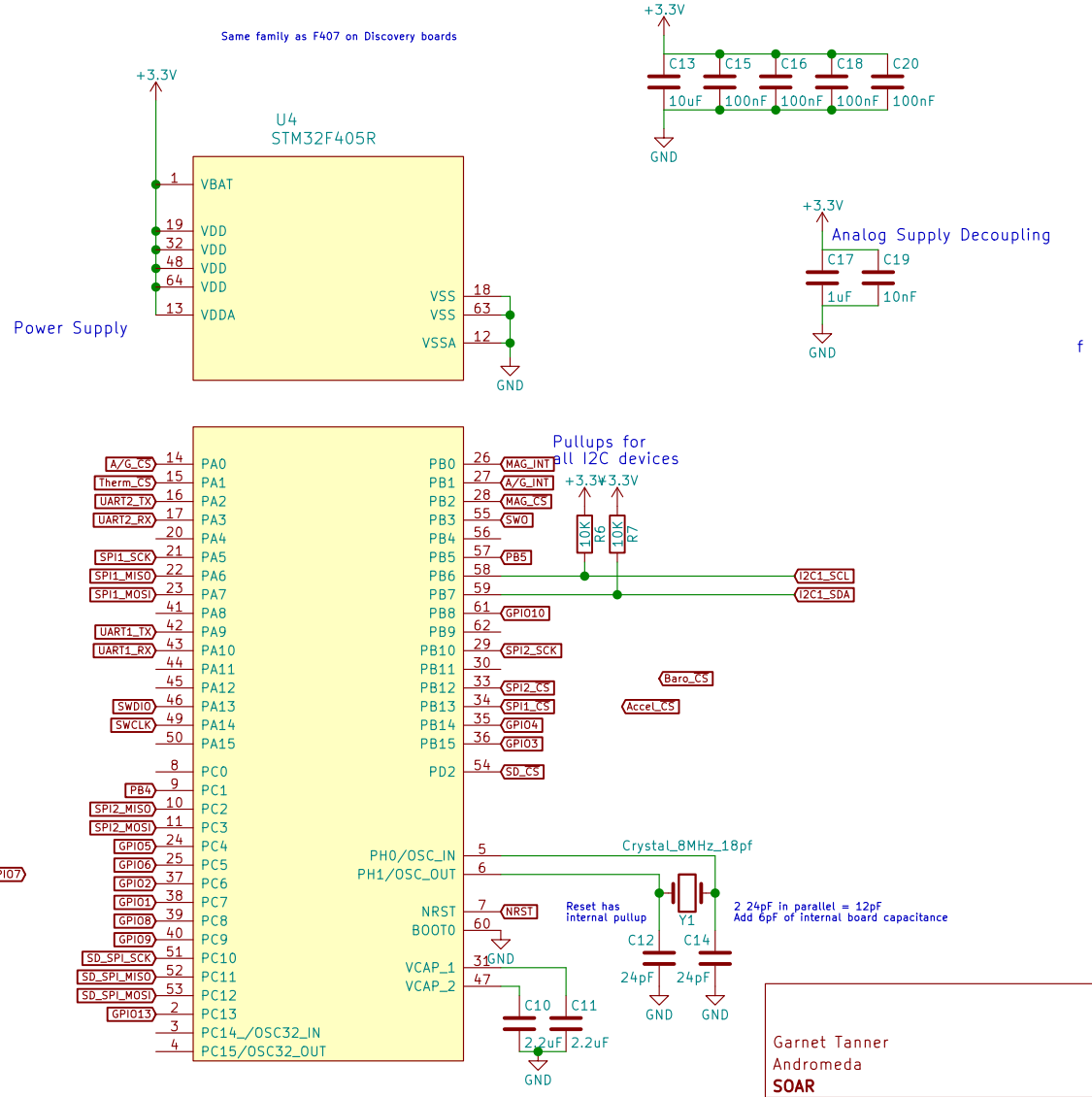
Title: SOAR Avionics Development Board		
Size: A4	Date: 2017-12-03	**Rev: 1**
KiCad E.D.A. kicad 4.0.7		Id: 2/5

See STM32 Hardware Design Guide for schematic example

Digital Decoupling
1 100nF for each power supply (place close to each VDD pin)
plus 1 10uF

STM32F405

Same family as F407 on Discovery boards



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Andromeda		
SOAR		
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Size: A4	Date: 2017-12-03	**Rev: 1**
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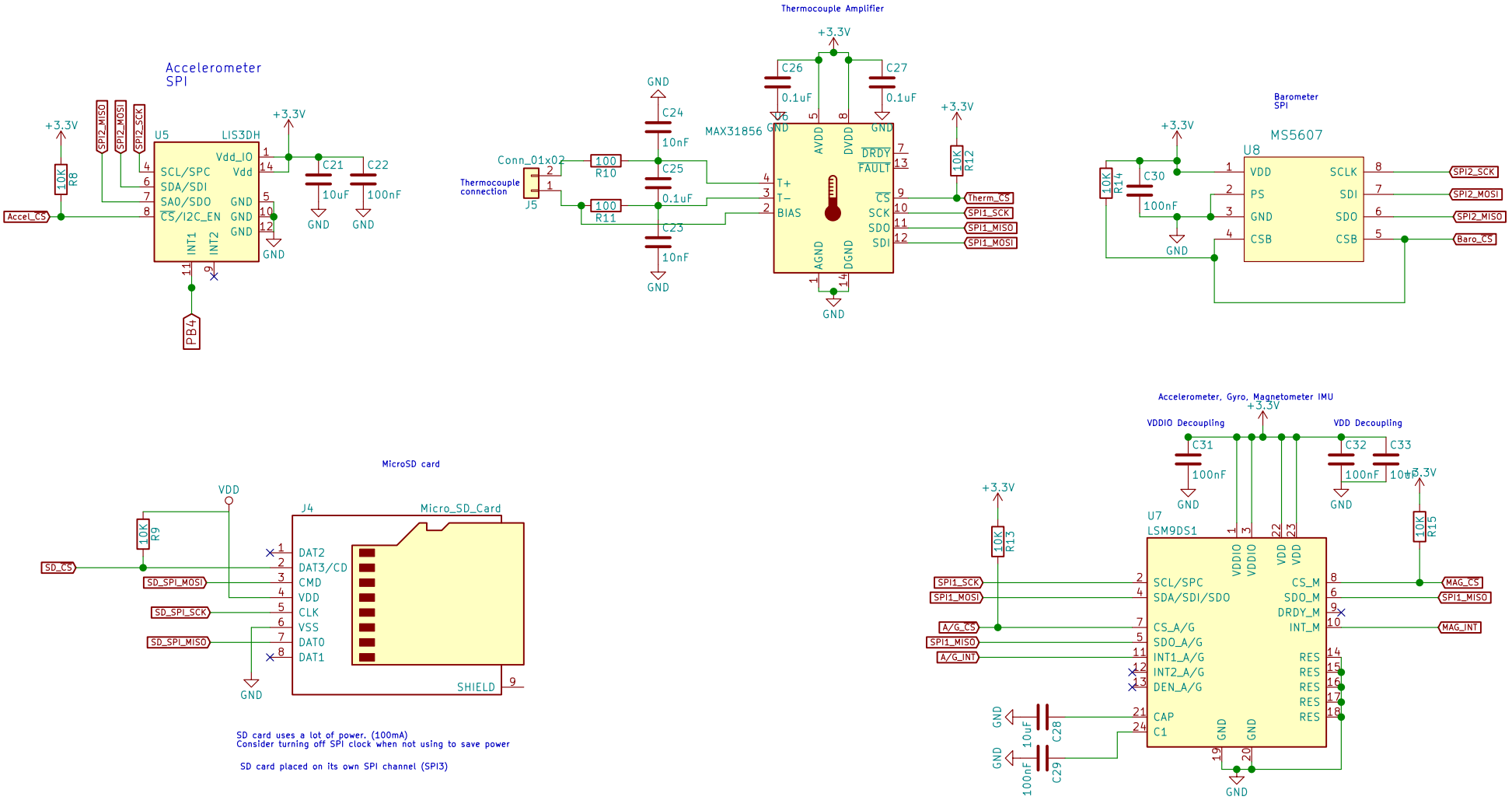
Accelerometer
SPI
U5
LIS3DH
SCL/SPC
SDA/SDI
SA0/SDO
CS/I2C_EN
Vdd_IO
Vdd
GND
INT1
INT2
+3.3V
SPI2_MISO
SPI2_MOSI
SPI2_SCK
Accel_CS
PB4
R8
10K
C21
10uF
C22
100nF
Thermocouple Amplifier
MAX31856
Conn_01x02
Thermocouple connection
J5
R10
R11
100
C24
C25
C23
10nF
0.1uF
C26
C27
R12
AVDD
DVDD
DRDY
FAULT
T+
T−
BIAS
CS
SCK
SDO
SDI
AGND
DGND
Therm_CS
SPI1_SCK
SPI1_MISO
SPI1_MOSI
Barometer
SPI
MS5607
U8
VDD
PS
GND
CSB
SCLK
SDI
SDO
C30
R14
SPI2_SCK
SPI2_MOSI
SPI2_MISO
Baro_CS
MicroSD card
J4
Micro_SD_Card
DAT2
DAT3/CD
CMD
VDD
CLK
VSS
DAT0
DAT1
SHIELD
R9
SD_CS
SD_SPI_MOSI
SD_SPI_SCK
SD_SPI_MISO
SD card uses a lot of power. (100mA)
Consider turning off SPI clock when not using to save power
SD card placed on its own SPI channel (SPI3)
Accelerometer, Gyro, Magnetometer IMU
VDDIO Decoupling
VDD Decoupling
C31
C32
C33
U7
LSM9DS1
SCL/SPC
SDA/SDI/SDO
CS_A/G
SDO_A/G
INT1_A/G
INT2_A/G
DEN_A/G
CAP
C1
CS_M
SDO_M
DRDY_M
INT_M
RES
VDDIO
VDD
R13
R15
A/G_CS
A/G_INT
MAG_CS
MAG_INT
C28
C29
Garnet Tanner
Andromeda
SOAR
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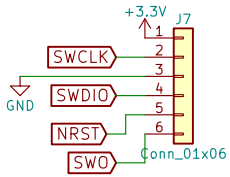
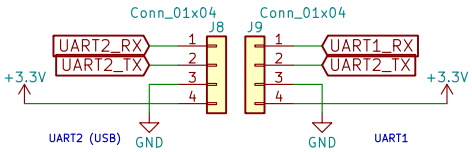
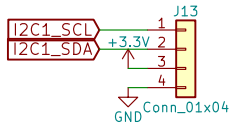
Title: SOAR Avionics Development Board
Size: A4
Date: 2017-12-03
Rev: 1
KiCad E.D.A. kicad 4.0.7
Id: 4/5



SWD Programming

For use with ST-Link V2 programmer
or discovery board

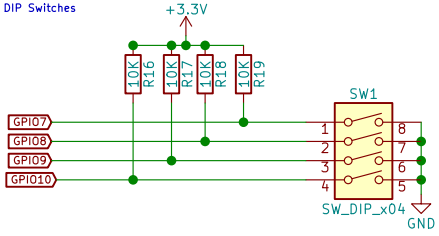




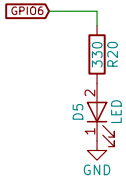
I2C1

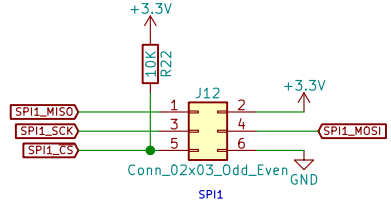
Pullups on MCU sheet

DIP Switches

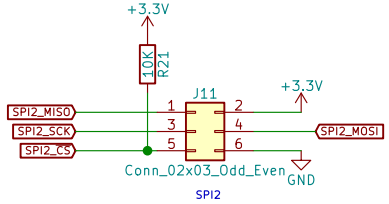


Debugging LED

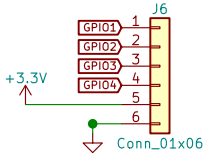




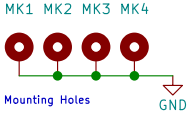
SPI1



SPI2



Debug GPIO



Mounting Holes

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Title: SOAR Avionics Development Board

Size: A4	Date: 2017-12-03	**Rev: 1**
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