IMU (ICM−20948)

1.8V

U2
VDD   AUX_CL   — AUX_CL
VDDIO   AUX_DA   — AUX_DA
INT   CS   — CS
FSYNC   SCL/SCLK   — SCL/SCLK
REGOUT   SDA/SDI   — SDA/SDI
GND   AD0/SDO   — AD0/SDO
9DoF IMU

INT
FSYNC

C1   C2   C3
1.0uF   0.1uF   0.1uF
GND   GND   GND GND

Connections

J1
SCL   4
SDA   3
VCC   2
GND   1
VIN

J2
SCL   4
SDA   3
VCC   2
GND   1
— SCL/SCLK_VIN
— SDA/SDI_VIN
GND

J3
6   — CS_VIN
5   — AD0/SDO_VIN
4   — SCL/SCLK_VIN
3   — SDA/SDI_VIN
2
1
VIN
GND

J4
6   — AUX_CL_VIN
5   — AUX_DA_VIN
4   — FSYNC_VIN
3   — INT_VIN
2
1
VIN
GND
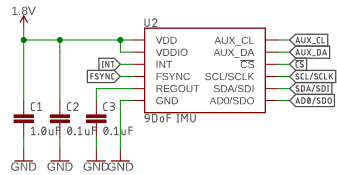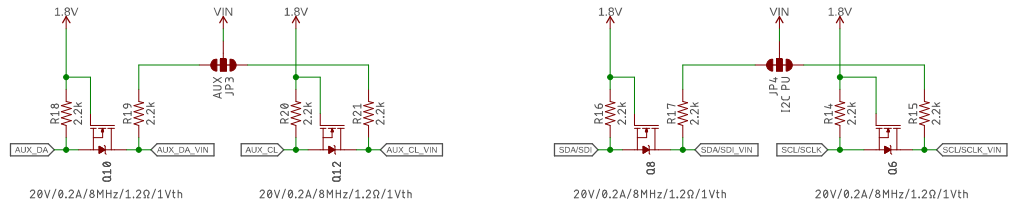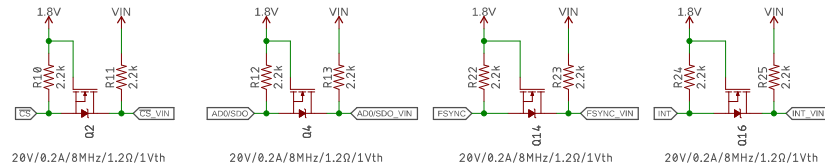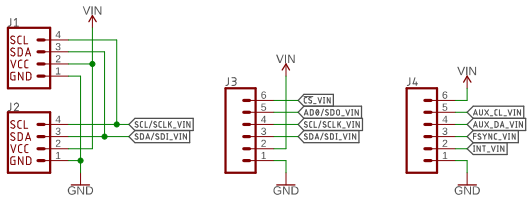
I2C Level Shifting + Pullup Disconnects

Optionally disconnect the I2C pullup resistors on the primary
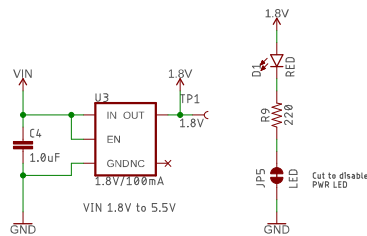and auxillary busses in case of too strong pullup from other sources

1.8V   VIN   1.8V
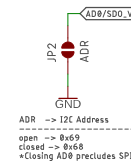R18   AUX   R20   R21
2.2k   JP3   2.2k   2.2k
R19
2.2k

AUX_DA   AUX_DA_VIN   AUX_CL   AUX_CL_VIN
Q10   Q12
20V/0.2A/8MHz/1.2Ω/1Vth   20V/0.2A/8MHz/1.2Ω/1Vth

1.8V   VIN   1.8V
R16   JP4   R14   R15
2.2k   I2C PU   2.2k   2.2k
R17
2.2k

SDA/SDI   SDA/SDI_VIN   SCL/SCLK   SCL/SCLK_VIN
Q8   Q6
20V/0.2A/8MHz/1.2Ω/1Vth   20V/0.2A/8MHz/1.2Ω/1Vth

SPI / Interrupt Level Shifting

1.8V   VIN   1.8V   VIN   1.8V   VIN   1.8V   VIN
R10   R11   R12   R13   R22   R23   R24   R25
2.2k   2.2k   2.2k   2.2k   2.2k   2.2k   2.2k   2.2k

CS   CS_VIN   AD0/SDO AD0/SDO_VIN FSYNC   FSYNC_VIN   INT   INT_VIN
Q2   Q4   Q14   Q16
20V/0.2A/8MHz/1.2Ω/1Vth 20V/0.2A/8MHz/1.2Ω/1Vth 20V/0.2A/8MHz/1.2Ω/1Vth 20V/0.2A/8MHz/1.2Ω/1Vth

Voltage Regulator

VIN   1.8V
U3   TP1
IN OUT   1.8V
EN
GNDNC   1.8V
C4
1.0uF
1.8V/100mA
GND
VIN 1.8V to 5.5V

1.8V
D1 RED
R9
220
JP5   LED   Cut to disable
GND   PWR LED

Address Option

JP2   ADR   — AD0/SDO_VIN
GND

ADR −−> I2C Address
−−−−−−−−−−−−−−−−−−−−
open −> 0x69
closed −> 0x68
*Closing AD0 precludes SPI

sparkfun

open hardware

TITLE: SparkFun_IMU_Breakout_ICM−20948

Design by: Owen Lyke

REV:
v31

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