Sheet: External Input

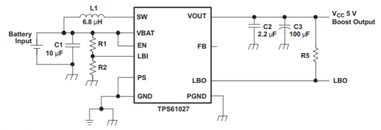
Estimated BOM cost: $0.03

Alt Power Input

File: ExternalInput.sch

Sheet: Boost Converters

Estimated BOM cost: $0.60



List of Components:
U1 = TPS61027DRC
L1 = EPCOS B82462-G4682
C1, C2 = X7R,X5R Ceramic
C3 = Low ESR Tantalum

Figure 24. Power Supply Solution for Maximum Output Power Operating From a Single Alkaline Cell

Power Conversion

File: Boost.sch

Sheet: Sensors

File: Sensors.sch

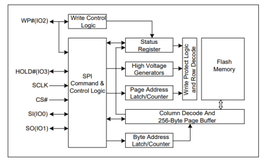
Sheet: USB Input

Estimated BOM cost: $1.00
($0.02 without serial to usb)

USB Input (Power/serial)

File: USB_Input.sch

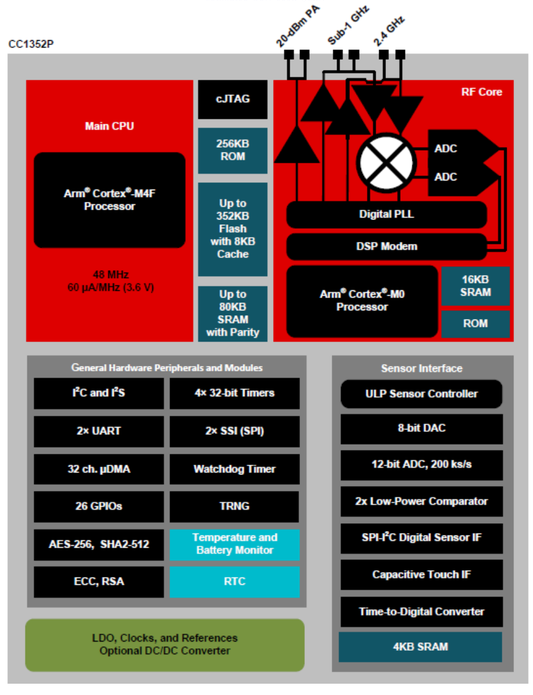
Sheet: SPI FLASH



File: SPI_FLASH.sch

Sheet: RF

Estimated BOM cost: $1.27

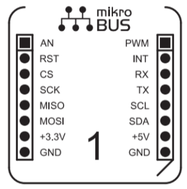


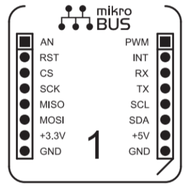
RF and Processor

File: RF.sch

Sheet: MikroBus Click

Estimated BOM cost: $0.15





MikroBus Headers

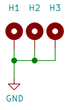
File: MikroBusClick.sch

Sheet: Sheet5D099F01

Estimated BOM cost: $0.03

Indicators

File: Indicators.sch



Sheet: User Input/Output

Estimated BOM cost: $0.05

User I/O

File: UserInputOutput.sch

Sheet: Programming

Estimated BOM cost: $0.00

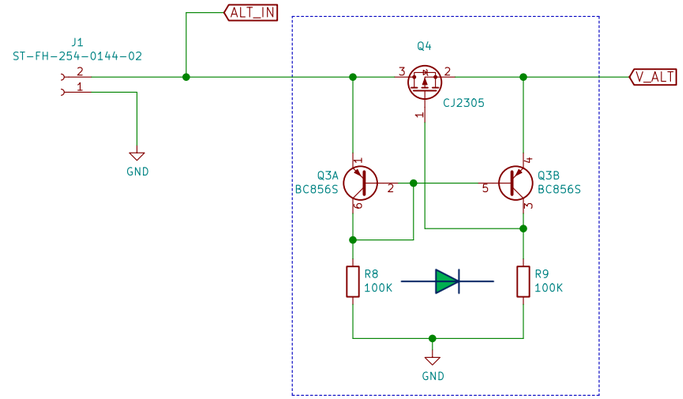
Programming

File: Programming.sch

Schematic originally designed by Analog Life, LLC
Beagleboard.org
Sheet: /
File: BeagleConnect Freedom.sch

Title: BeagleConnect Freedom

Size: C	Date: 2020-11-03	**Rev: C4**
KiCad E.D.A. kicad (5.1.9)-1		Id: 1/11



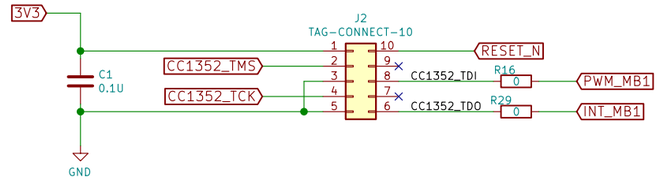
Schematic originally designed by Analog Life, LLC

Beagleboard.org

Sheet: /External Input/
File: ExternalInput.sch

Title: BeagleConnect Freedom

Size: B	Date: 2020-11-03	**Rev: C4**
KiCad E.D.A. kicad (5.1.9)-1		Id: 2/11



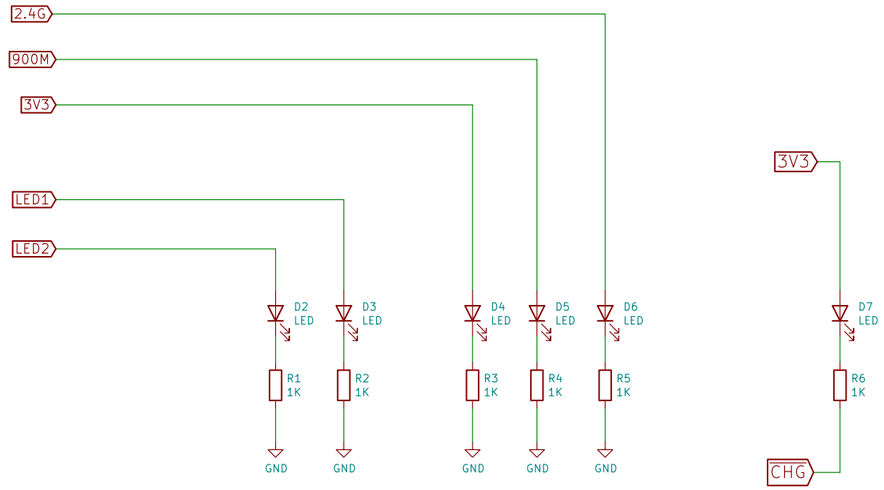
Schematic originally designed by Analog Life, LLC

Beagleboard.org

Sheet: /Programming/
File: Programming.sch

Title: BeagleConnect Freedom

Size: B	Date: 2020-11-03	**Rev: C4**
KiCad E.D.A. kicad (5.1.9)-1		Id: 3/11



Schematic originally designed by Analog Life, LLC

Beagleboard.org

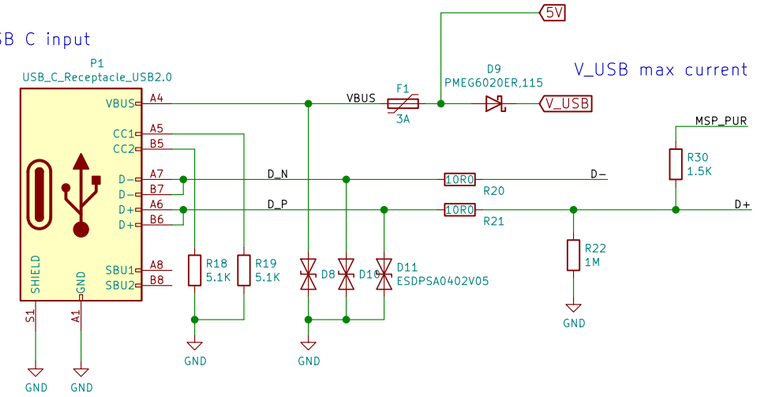
Sheet: /Sheet5D099F01/

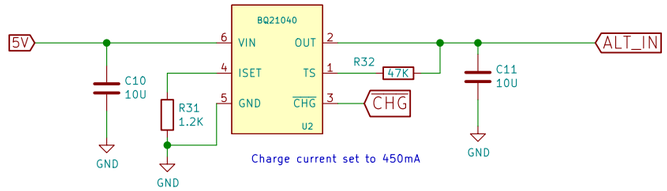
File: Indicators.sch

Title: BeagleConnect Freedom

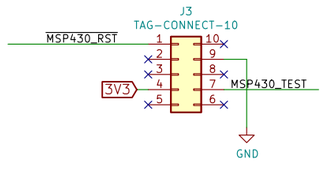
Size: B	Date: 2020-11-03	**Rev: C4**
KiCad E.D.A. kicad (5.1.9)-1		Id: 4/11

USB C input

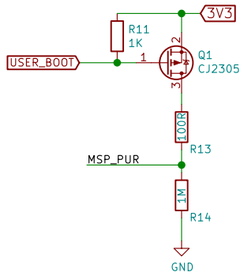




Decoupling cap shared
with other prog header

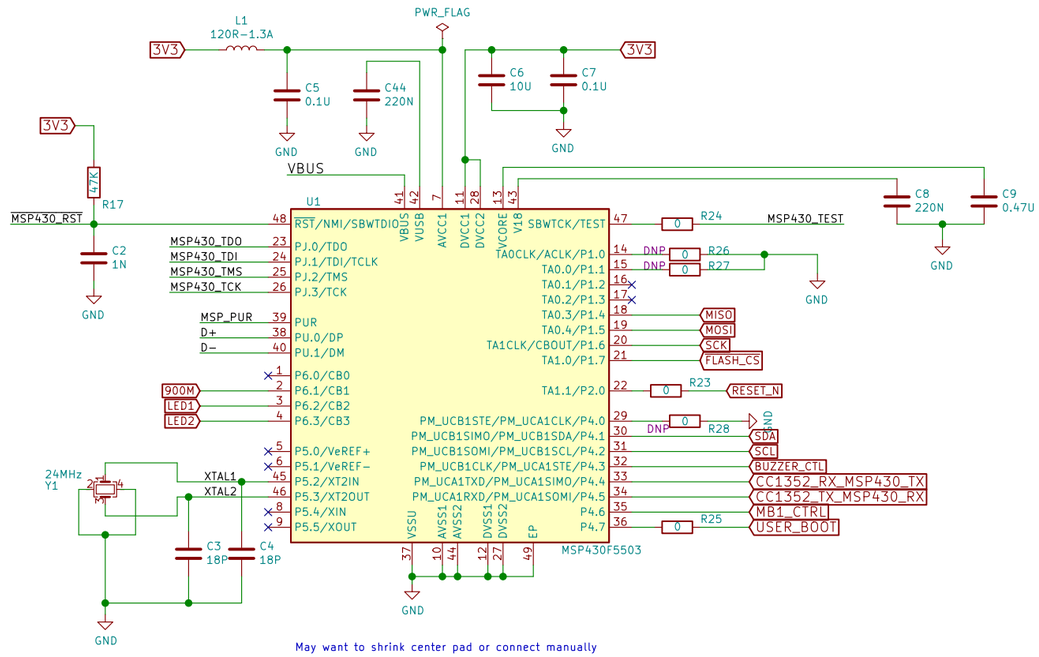


Verify all connections with Erik Larson



When USER_BOOT button is pressed during USB power up,
it pulls MSP_PUR high. This puts the MSP430 into programming mode.

The USER_BOOT button is also used as an input to the
CC1352R for it's programming, but is active low



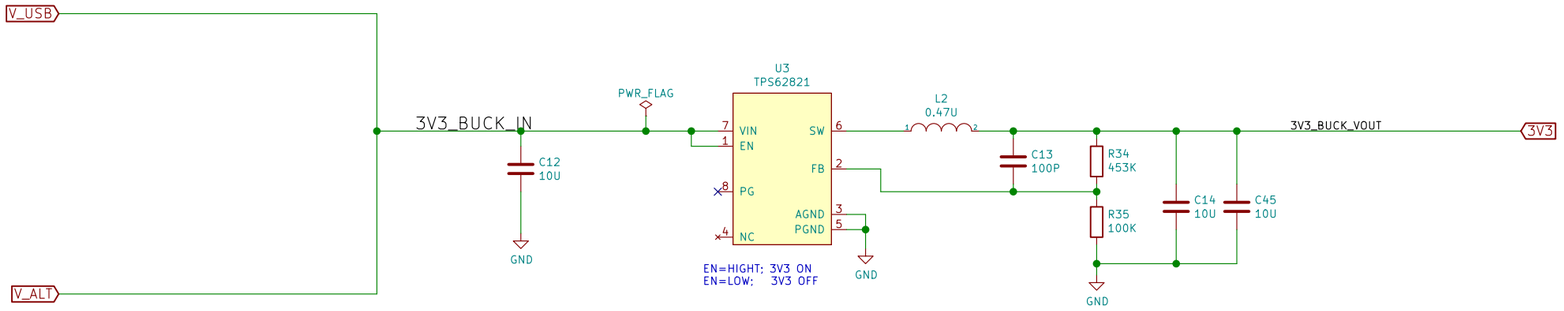
May want to shrink center pad or connect manually

On rev B prototype, the soldermask peeled back and many of the
pins on the edge of the QFN would short to the center pad after
attempted repair to the part (reflow, component replacement)

Schematic originally designed by Analog Life, LLC
Beagleboard.org
Sheet: /USB Input/
File: USB_Input.sch

Title: BeagleConnect Freedom

Size: B	Date: 2020-11-03	**Rev: C4**
KiCad E.D.A. kicad (5.1.9)-1		Id: 5/11



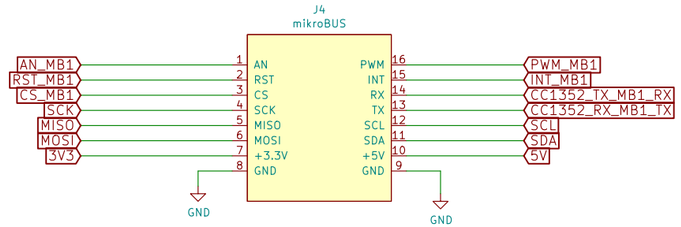
Schematic originally designed by Analog Life, LLC

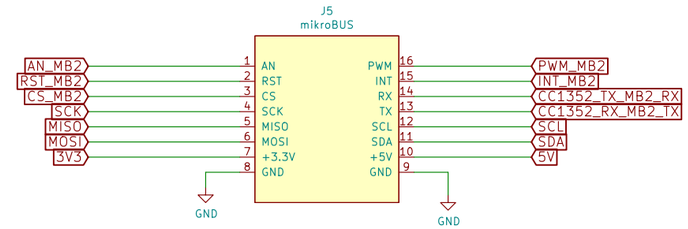
Beagleboard.org

Sheet: /Boost Converters/
File: Boost.sch

Title: BeagleConnect Freedom

Size: B	Date: 2020-11-03	**Rev: C4**
KiCad E.D.A. kicad (5.1.9)-1		Id: 6/11





Schematic originally designed by Analog Life, LLC

Beagleboard.org

Sheet: /MikroBus Click/

File: MikroBusClick.sch

Title: BeagleConnect Freedom

Size: B	Date: 2020-11-03	**Rev: C4**
KiCad E.D.A. kicad (5.1.9)-1		Id: 7/11

PWR_FLAG
R36 0
PWR_FLAG
VDD
L3 120R-1.3A
PWR_FLAG
3V3
VDDS
VDDS
Optional sense resistor for power measurement

U4A
CC1352P-LeashPCB
Power Subsection
Y3 48MHz
C47 7P
C48 7P
GND
Y2 32.768KHz
C15 12P
C16 12P
GND
X48M_N
X48M_P
X32K_Q1
X32K_Q2
VDDR
VDDR_RF
VDDS
VDDS2
VDDS3
VDDS_DCDC
DCDC_SW
DCOUPL
GND/EP
Must connect!
C22 0.1U
C23 0.1U
VDDR
GND
C18 0.1U
C19 0.1U
C20 0.1U
C21 0.1U
VDDS
L4 6.8 uH
33 DCDC_SW
C17 1U
C24 22U
VDDR
GND

Analog Subsection
AN_MB1
AN_MB2
SCL
SDA
CS_MB2
CS_MB1
RF_SW_CTRL1
RF_SW_CTRL2
DIO_23
DIO_24
DIO_25
DIO_26
DIO_27
DIO_28
DIO_29
DIO_30
U4D
CC1352P-LeashPCB

VDDS
R55 2.21K
R56 2.21K
R57 2.21K
U10
TS5A2066YZPR
SDA
SCL
I2C_CTRL
COM1
IN1
COM2
IN2
NO1
NO2
V+
GND
SEN_SDA
SEN_SCL
C51 0.1U
GND

U4B
CC1352P-LeashPCB
RF Subsection
RF_P_2_4GHZ
RF_N_2_4GHZ
RF_SUB_1GHZ_P
RF_SUB_1GHZ_N
TX_20DBM_P
TX_20DBM_N
RX_TX

B1 0900PC15A0036E
GND
BP_2_4_GHZ_RF_P
BP_2_4_GHZ_RF_N
BP_SUB-1_GHZ_RF_P
BP_SUB-1_GHZ_RF_N
UBP_2_4_GHZ
UBP_SUB-1_GHZ
RX_TX
C27 100pF
C54 100pF
C43 DNP
0R C34
L15 0 DNP
L5 2.0pF
C29 DNP
C31 0.5pF
AE1 Antenna_Dipole
1nF C37
GND

50 Ohm Traces for All RF

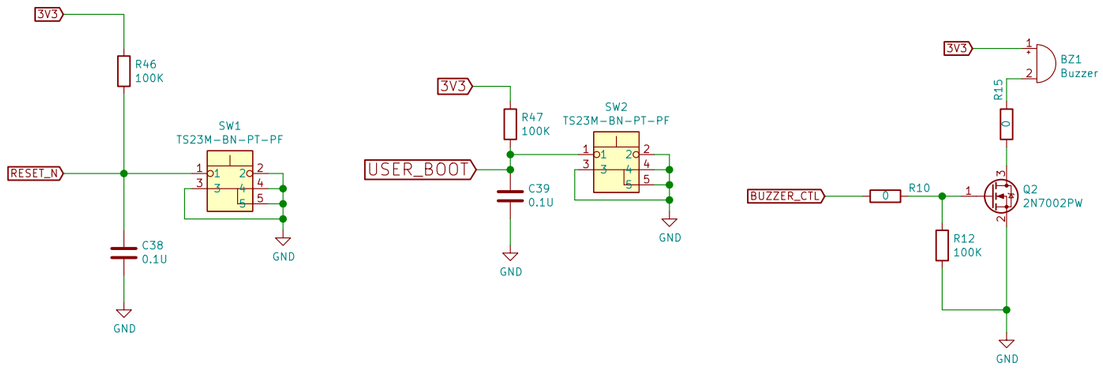
VDDS
L12 12nH
C50 100pF
C55 10nF
L11 1nH
L10 1nH
L7 27nH
L13 12nH
C46 2.4pF
C28 2.4pF
C56 0.7pF
L14 3.9nH
C33 3.9pF
L9 4.7nH
C49 3pF
L8 2.5nH
C52 4.7pF
C53 100pF
GND

U11
SKY13317-373LF
RF3
RF2
RF1
V3
V2
V1
RFC
NC
VSS
2.4G
R58 0
R59 2.21K
RF_SW_CTRL2
RF_SW_CTRL1
0R C36
L6 0
C30 DNP
C32 DNP
J8 UFL
GND

U4C
CC1352P-LeashPCB
Digital Subsection
DIO_5
DIO_6
DIO_7
DIO_8
DIO_9
DIO_10
DIO_11
DIO_16/JTAG_TDO
DIO_17/JTAG_TDI
JTAG_TMSC
JTAG_TCKC
RESET_N
DIO_18
DIO_19
DIO_20
DIO_21
DIO_22
DIO_12
DIO_13
DIO_14
DIO_15
RST_MB2
RST_MB1
INT_SENSOR
FLASH_CS
MOSI
SCK
MISO
INT_MB1
PWM_MB1
CC1352_TMS
CC1352_TCK
RESET_N
2.4G
PWM_MB2
INT_MB2
CC1352_TX_MB2_RX
CC1352_RX_MB2_TX
I2C_CTRL
USER_BOOT
R37 0
R38 0
R39 0
R40 0
R33 0
R50 0
R51 0

VDDS
C25 0.1U
U5 TS5A23157
V+
COM1
IN1
COM2
IN2
NC1
NO1
NC2
NO2
GND
MB1_CTRL
MB1_CTRL
R42 2.21K
CC1352_RX_MB1_TX
CC1352_RX_MSP430_TX
CC1352_TX_MB1_RX
CC1352_TX_MSP430_RX

Schematic originally designed by Analog Life, LLC
Beagleboard.org
Sheet: /RF/
File: RF.sch
Title: BeagleConnect Freedom
Size: B | Date: 2020-11-03 | **Rev: C4**
KiCad E.D.A. kicad (5.1.9)-1 | Id: 8/11



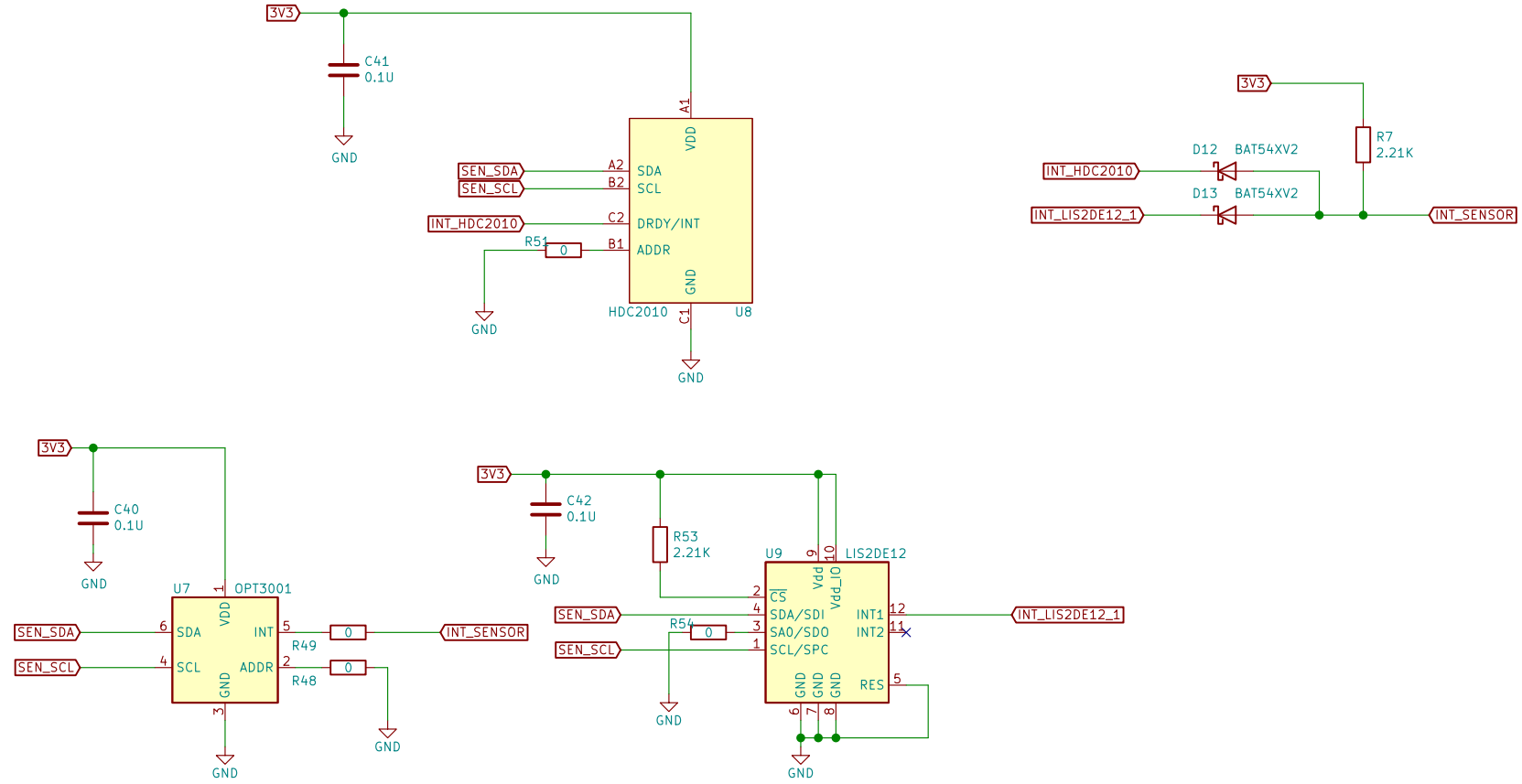
Schematic originally designed by Analog Life, LLC

Beagleboard.org

Sheet: /User Input/Output/
File: UserInputOutput.sch

Title: BeagleConnect Freedom

Size: B	Date: 2020-11-03	**Rev: C4**
KiCad E.D.A. kicad (5.1.9)-1		Id: 9/11



Schematic originally designed by Analog Life, LLC

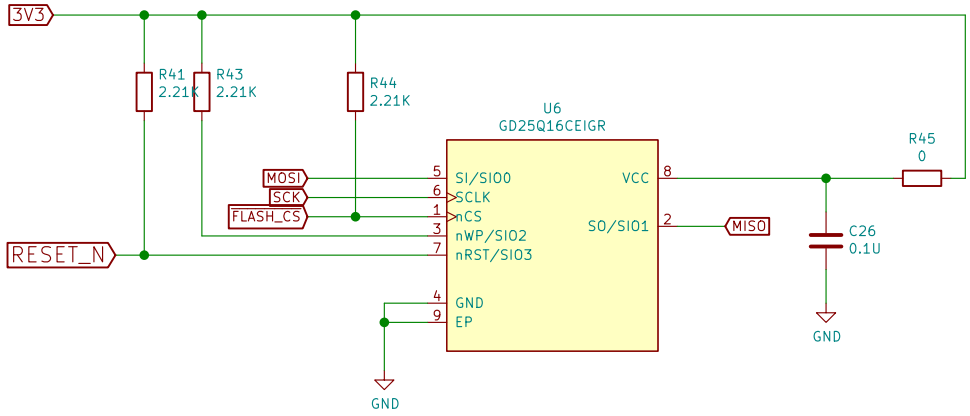
Beagleboard.org

Sheet: /Sensors/

File: Sensors.sch

Title: BeagleConnect Freedom

Size: A4	Date: 2020-11-03	**Rev: C4**
KiCad E.D.A. kicad (5.1.9)-1		Id: 10/11



Schematic originally designed by Analog Life, LLC
Beagleboard.org

Sheet: /SPI FLASH/
File: SPI FLASH.sch

Title: BeagleConnect Freedom

Size: A4	Date: 2020-11-03	**Rev: C4**
KiCad E.D.A. kicad (5.1.9)-1		Id: 11/11