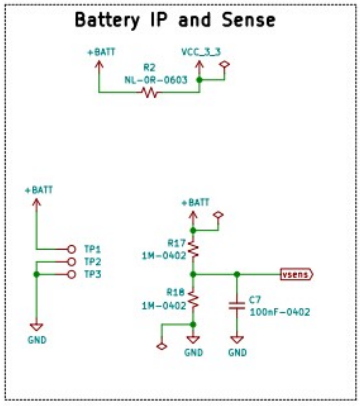
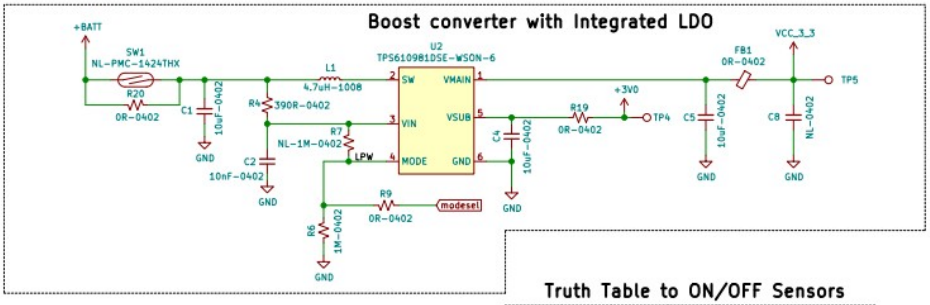
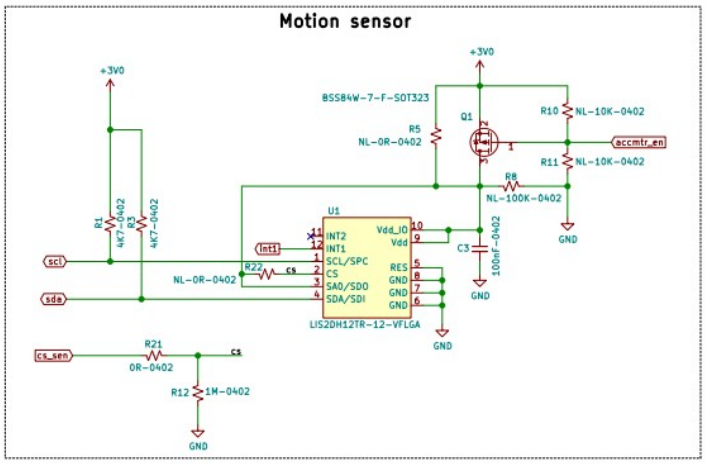
- As shown below is the schematics of the custom board that we have made.

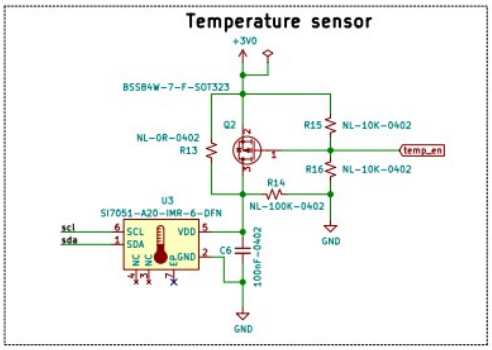



Truth Table to ON/OFF Sensors

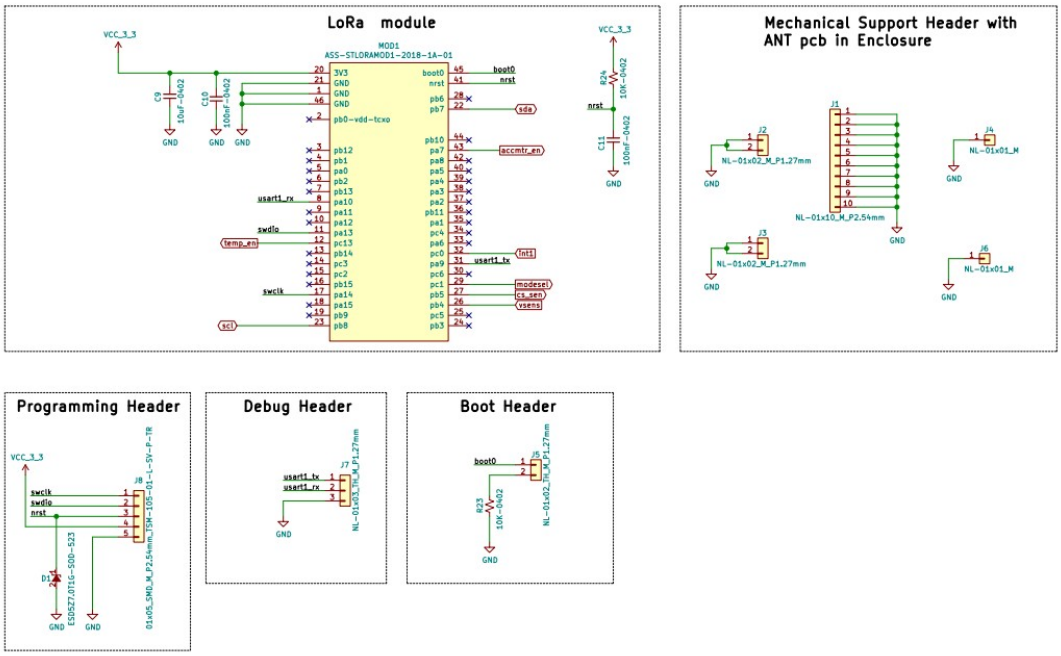
| Modesel | Cs_sen | Accmtr_en | Temp_en | Status |
|---|---|---|---|---|
| 0 | X | X | X | All sensors are off |
| 1 | 0 | 0 | 0 | Temp on,accelerometer off |
| 1 | 1 | 0 | 0 | Both Sensor on |
| 1 | 1 | 1 | 1 | Both Sensor off |
| 1 | 1 | 0 | 1 | Accelerometer on,Temp off |




- This is the power supply and sensors section of the board
- Below is the controller or radio transceiver section of the board.

## LORA MODULE INTERFACE




- As shown below is the waveform that has been observed on the SW, VIN, Vmain(BOOST output) and VSUB(LDO output) at the same time as indicated by their respective texts.


- Initially the Radio transceiver (Host controller) will request for joining the network and the device will be in sleep mode by default.
- The Radio transceiver will pull the modesel signal of the boost converter high to provide

supply +3.0V to the sensors.

- So VSUB(LDO output) will have +3.0V generated on it as shown in waveform(Yellow) for few milliseconds.
- VIN will be +3.3V. In real application we will be using a Non-rechargeable Lithium Thionyl Chloride battery of +3.6V on VIN.
- Soon after the sensors get supply of +3.0V from VSUB, they will provide their respective data to the transceiver on I2C lines.
- After providing the data to the transceiver, the transceiver will pull the modesel signal of the boost converter low to cut-off the supply to the sensors. This mechanism of providing and cutting off the supply of +3.0V to the sensors is required to save on power consumption and hence boost the battery life.
- After this, the radio transceiver will transmit the data/packets to the gateway device.
- The device will go into sleep mode after this.
- The above sequence is repeated at regular intervals.