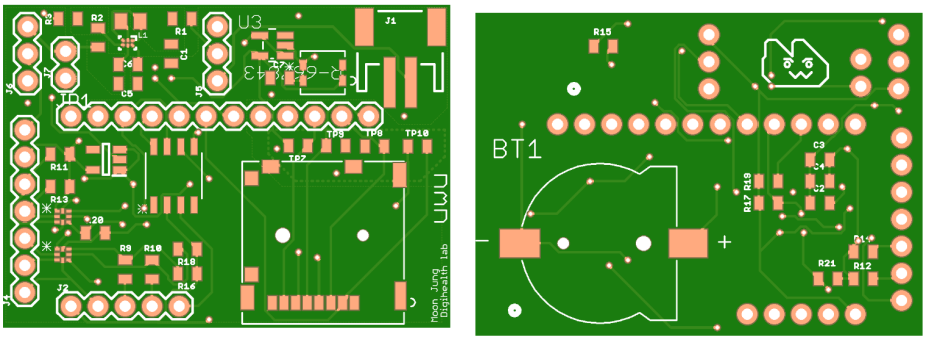
PPG Glove starter doc:
The following will be a starter guide to the ppg glove board. Information such as repair and alternative parts will be updated here, if there are any rush needs for the board please let me know.

Board itself:



Overall function: the headers output 2 GPIO and an I2C bus, It integrates a timer with battery backup as well as an I2C slot and a button for interrupt programming connected to a flip flop for flag raising.

The board itself has the parts listed in file partlist on github
In the following section I will walk through the parts available and how to wire up the board. The unincluded components on the partlist is the pin shorters that I harvested from the TI-MSP boards as well as the headers and qduino

Some parts specifications:
The timer circuit DS3231 is only available as evaluation boards and will have to be harvested from remaining boards

The i2c converters FXMA2102L8X/ will likely be bridged on first pass when remanufacturing. Take off with an airgun, remove excess solder but keep the solder on the pads, use tack flux to provide adhesion and thermal assist as you airgun the part back on.

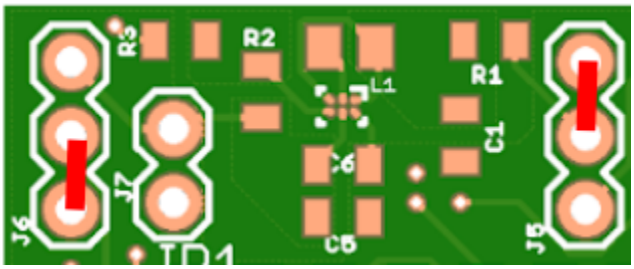
The Sd card slot spring is a bit finicky, be sure to hear the click and unclick to insert.remove

The button is yet to be used in code but it is connected to an interrupt pin in case you need an interrupt function

The power booster is nonfunctional due to not having the equipment to keep it on the board. Message me if you would like a redesign done. If you can find a 5V boost part that would be helpful but since the current draw is so low on the sensor ~1-40mA, its hard to find one with good efficiency at low power. If lead time is not an issue let me know.

A redesign can be requested to reduce profile

Functional:



This is the configuration of shorts that you want to work with as it connects the VCC = 3.3V power supply to the rest of the board. Do not configure in different configs as the 5V is not connected

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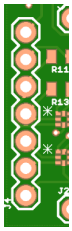
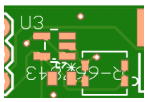
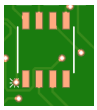


For the header pins make any selection that fit the form factor(header, 90degree header, bare wire etc.)

. You will likely need another stencil or to clean the large one to get the 32 pin connector soldered on

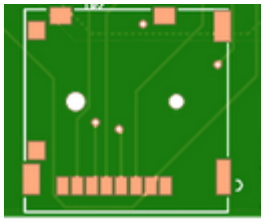


The button design is made to trigger a flip flop so when powered a click will flip the state of the flop and preserve it. Be sure to reset after the interrupt is finished or change the state of the interrupt or allow enough time to click button again before finishing the interrupt. Or it can be used as another GPIO input that is polled.

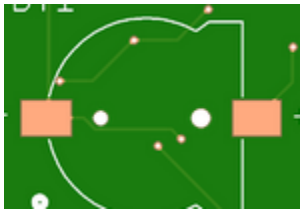


DS3231 was chosen for a short lead time and integrated package that eliminates the need for an oscillator. It has a battery backup and the square wave output remains unused. The output data goes down to second specificity. Using the arduino DS3231 library (searchable in Arduino library search), setting time function pulls your system time during compile (around 6 seconds for my system) adjust as needed.

To reduce space this may be switched out of a different component oscillator pair but may take a while to come. Request redesign if needed.



There is nothing too special about the microSD slot besides its flat profile and easy to reflow design. Do not reflow more than twice



Flat pins and small battery size

Code:

The code is derived from
https://pdfserv.maximintegrated.com/en/an/user-guide-6924-max32664c-quick-start-guide-rev-4-p-2.pdf
Table 5 page 12 especially
The address is different (0x55)
And the datesheet for the sensor board has different customization options
The inbuilt filter doesn't seem to interfere with data
The strength of the LED at 3.3V should be set to Max
The positioning of the sensor is important as it doesnt seem to read through certain parts of the finger.
Play around with setting such as sampling time and others