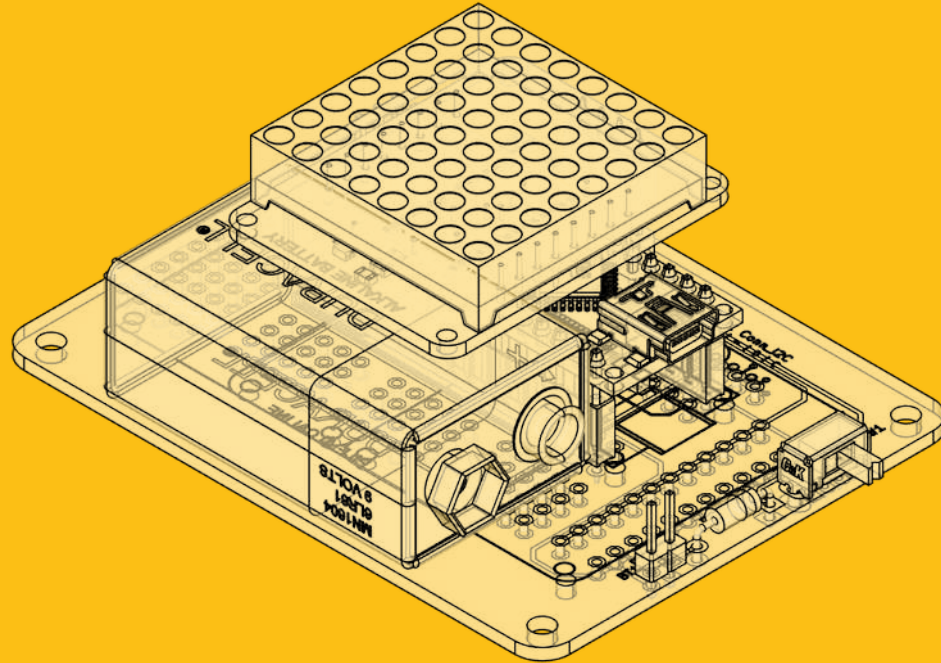




MAKER'STM
ASYLUM



"Bag Tag" v2 Electronics 8x8 LED Matrix

**(Proposed project
for Innov School Jr)**

Requirements

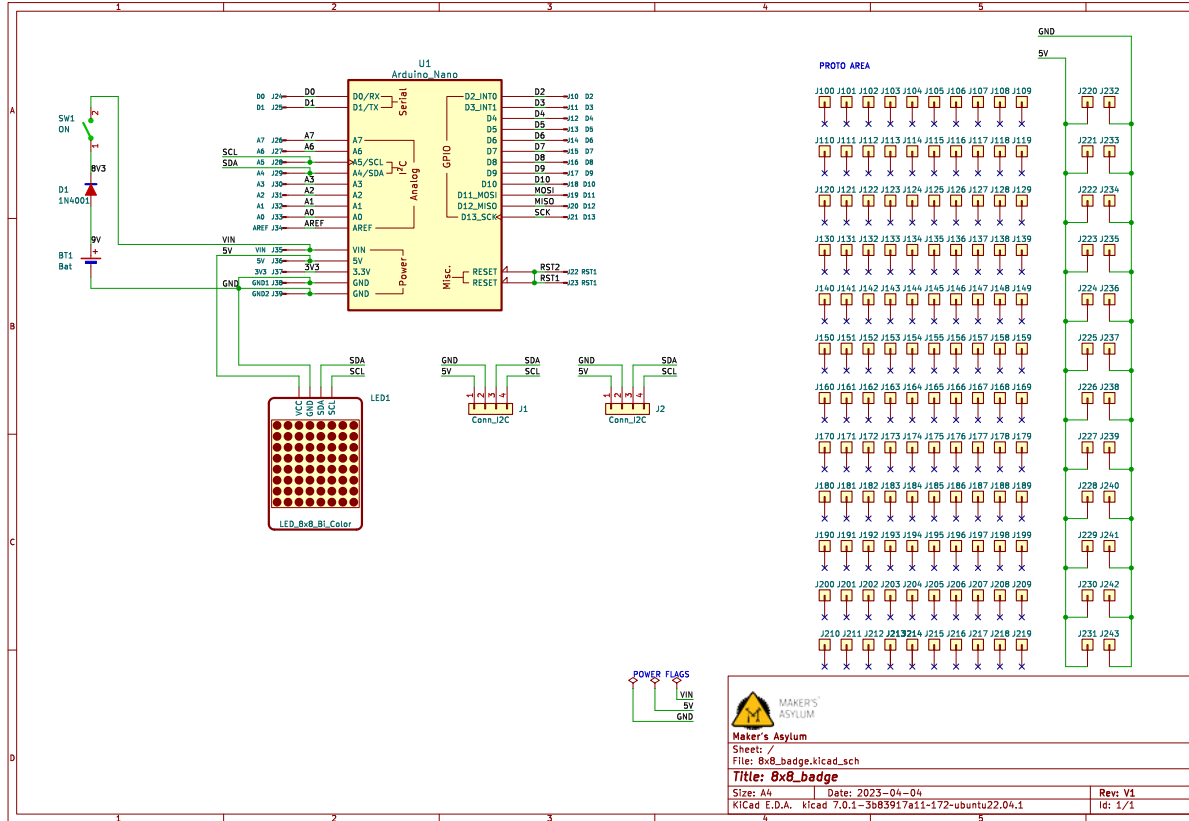


- Complexity level - SIMPLE
- Must include elements of
 - Electronics (soldering)
 - Arduino (programming)
 - Rapid prototyping (3DP/laser)
- BADGE form factor
- Powered by 9V battery
- Expandable / Hackable

Changes in v2 (v/s v1)

- All parts on FRONT side of PCB
- Three I²C headers
- Can install one or two 8x8 LED display
- Parts aligned along vertical axis for balance
- Extra 24 prototyping pads (12 each for +5V and GND)

Schematic



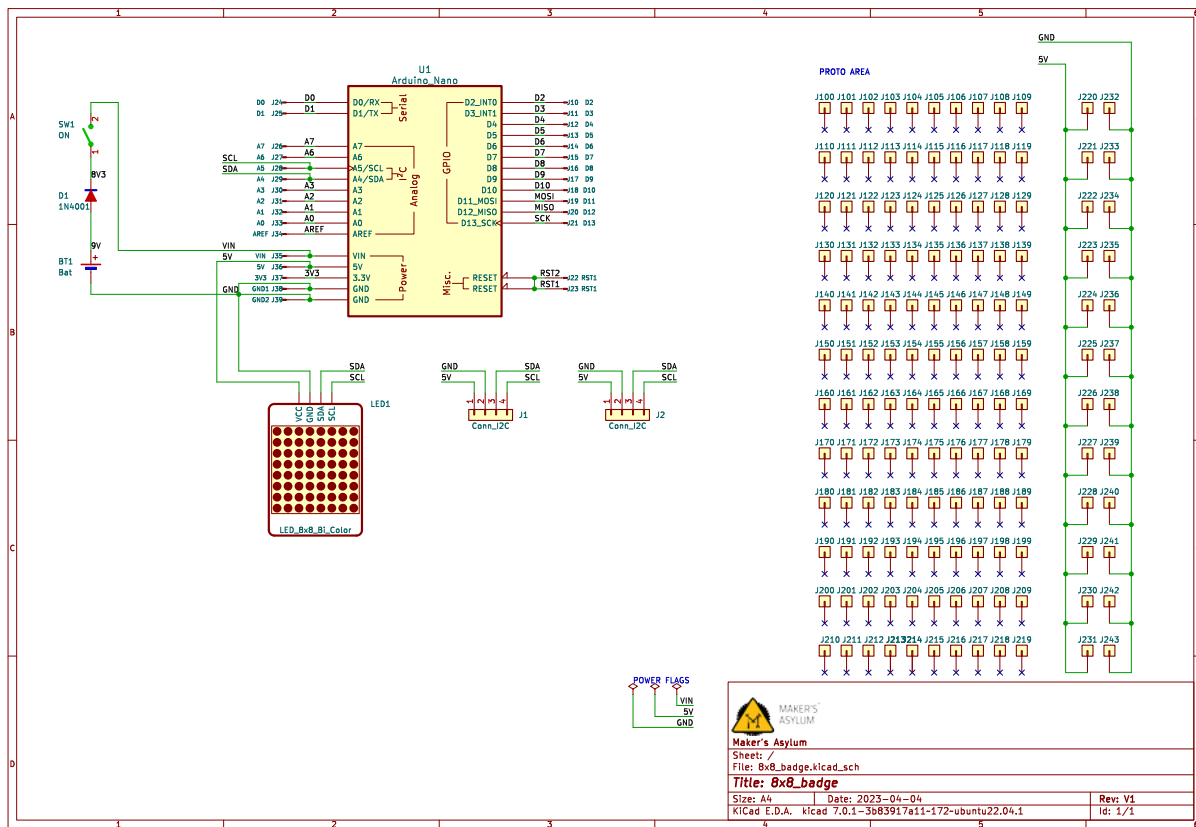
Components:

- Arduino Nano
- Bi-Color 8x8 LED Matrix
- Switch
- Diode
- 9V Battery with clip
- Header sockets
- Header pins
- PCB

Options



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Optional upgrades (not included in kit)

- 2nd Bi-Color 8x8 LED Matrix
- Add extra modules
 - I²C modules such as accelerometer, IMU, RTC
 - Buttons, joystick etc
- Hackable via prototyping area with 120 pads+ 24 power rail pads

PCB Render



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Lanyard slot

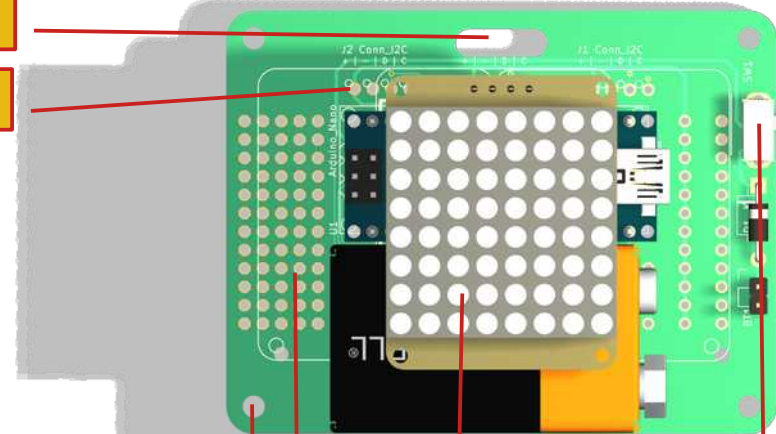
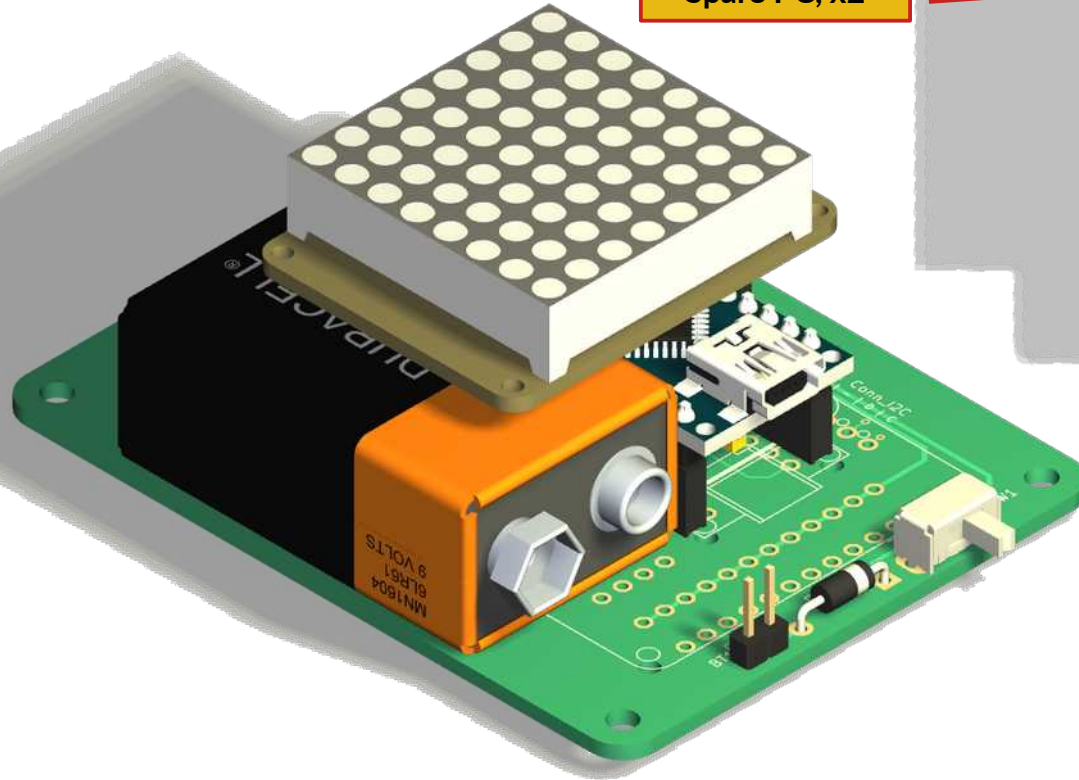
Spare I²C, x2

Display

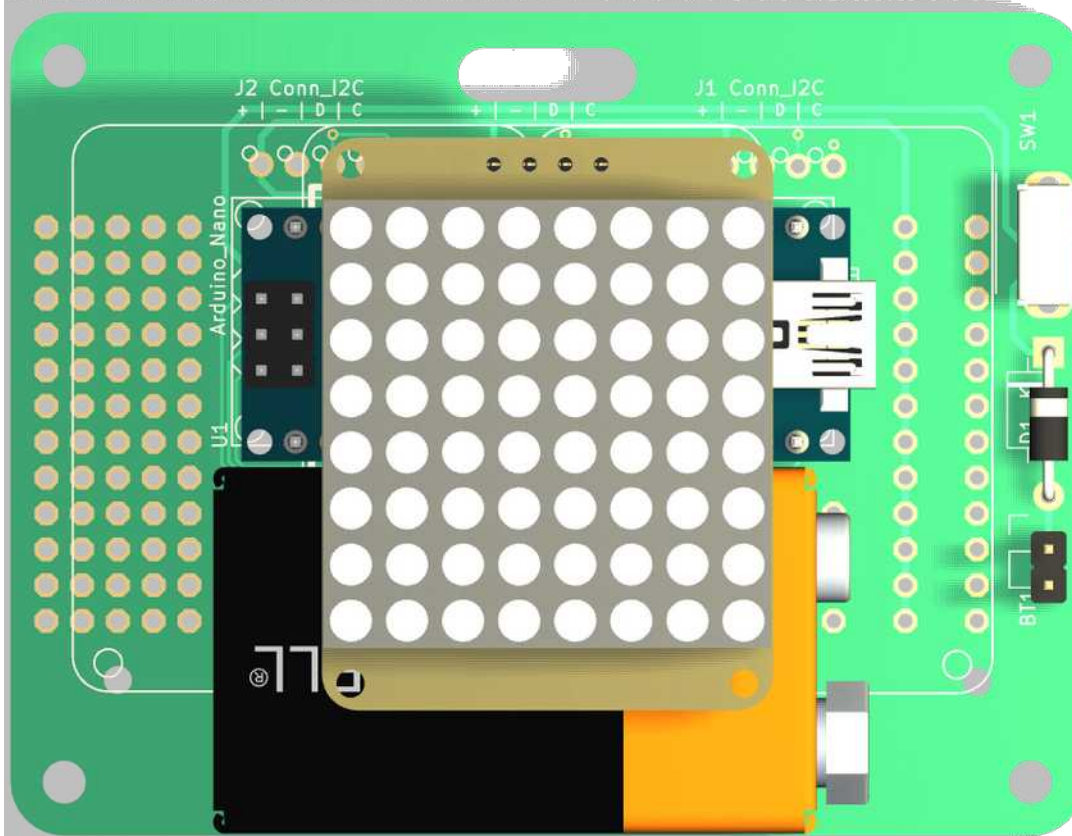
Proto area

Mount holes, x4

Switch

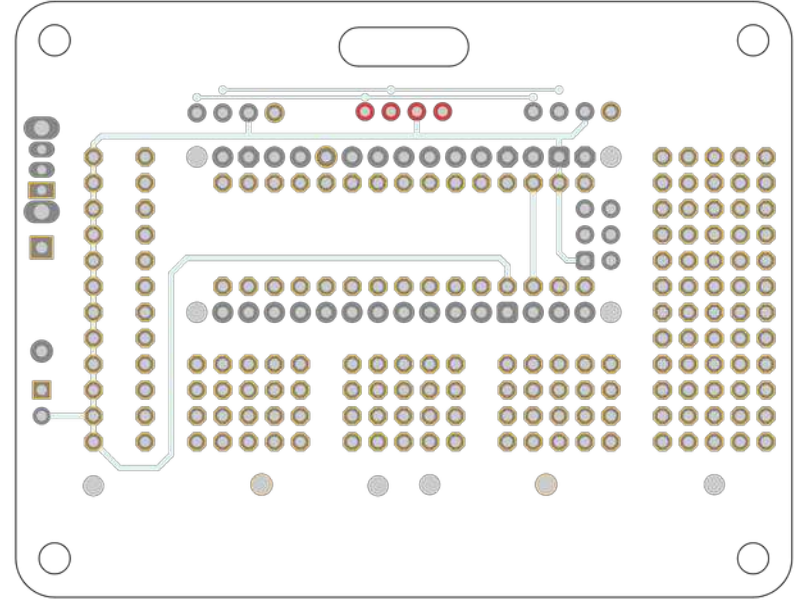
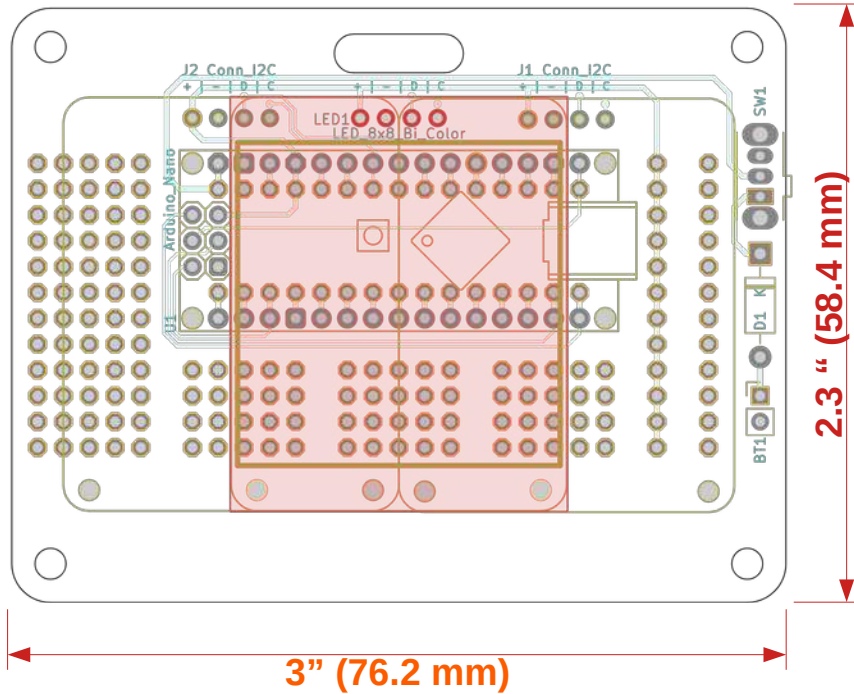


PCB Front view



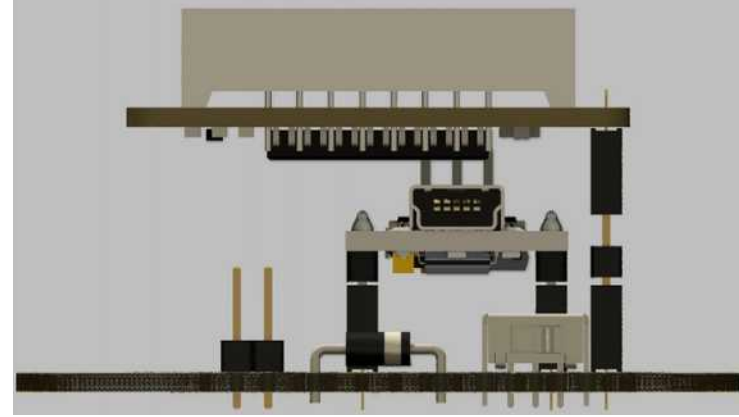
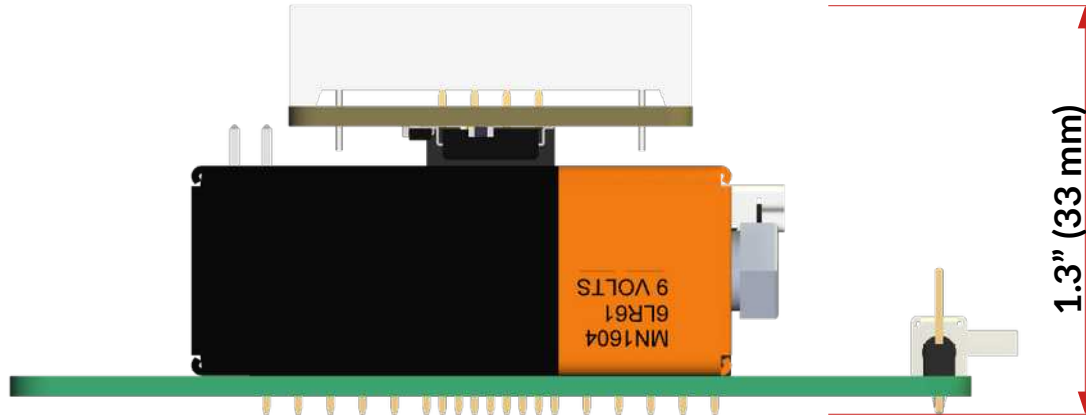
- All components are assembled on Front side.
- Components are aligned along vertical axis for weight distribution
- There are 120 pads for prototyping + 24 power pads (12 each connected to +5V and GND)
- There are 3 I²C headers. For single display, use the center one. For dual display, use the I²C left/right headers.
- The blank part of the PCB can be used to stick the 9V battery using adhesive tape.

PCB dimensions



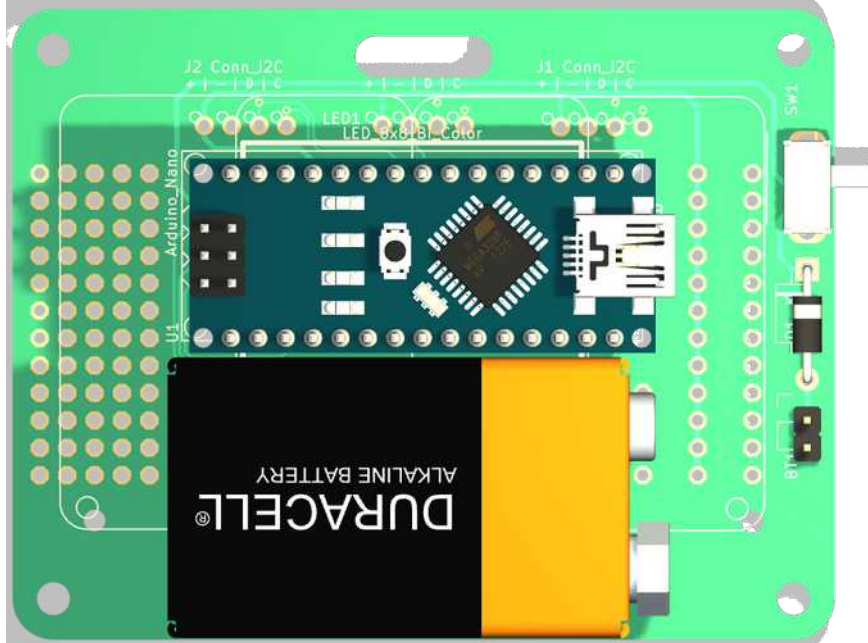
3 inches x 2.3 inches
(76.2 mm x 58.4 mm)

PCB Side view

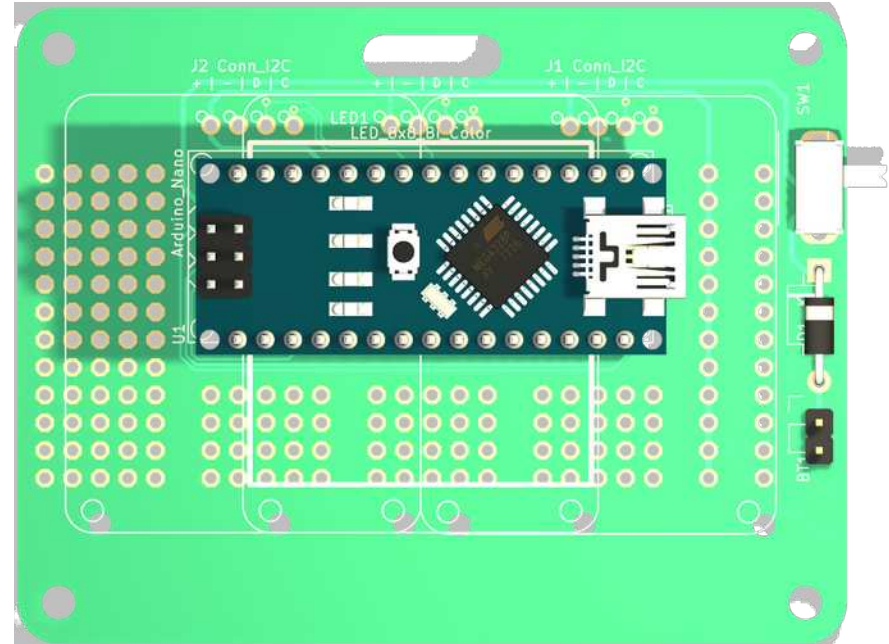


- Side views of the PCB.
- 8x8 LED matrix display requires extra long header pins, or one pair of sockets and regular header pins.
- Some support will be needed under the LED matrix.
- Height is 1.3" (33mm). This can be reduced if header sockets are not used and Arduino+LED matrix are directly soldered.

PCB Battery location



Location of 9V battery
(attached using double sided tape)



Hacking



- Extra I²C header and 120 copper pads for future hacking
- Add a second 8x8 LED matrix, I²C modules (accel, IMU, RTC), buttons etc.
- Some hacking ideas:
 - Electronic Dice (using accelerometer for shake detection)
 - Timer or Clock (using RTC)
 - SNAKE game (using 5 buttons)
 - PONG game using two joysticks
 - Ornament or Wearable
 - VU meter (sound decibel display, using microphone module)