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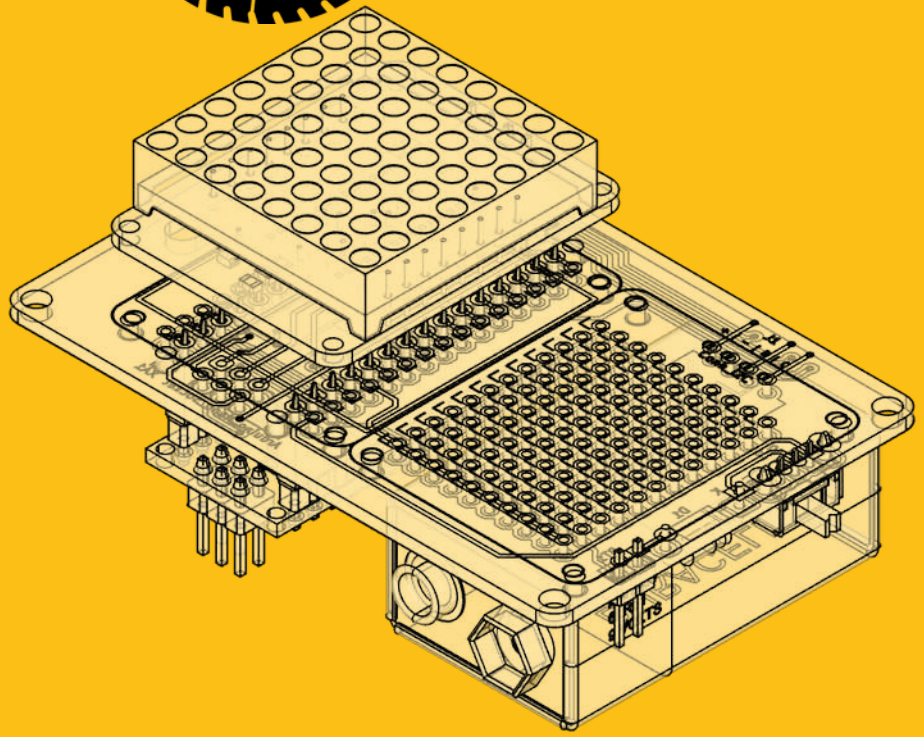
ASYLUM



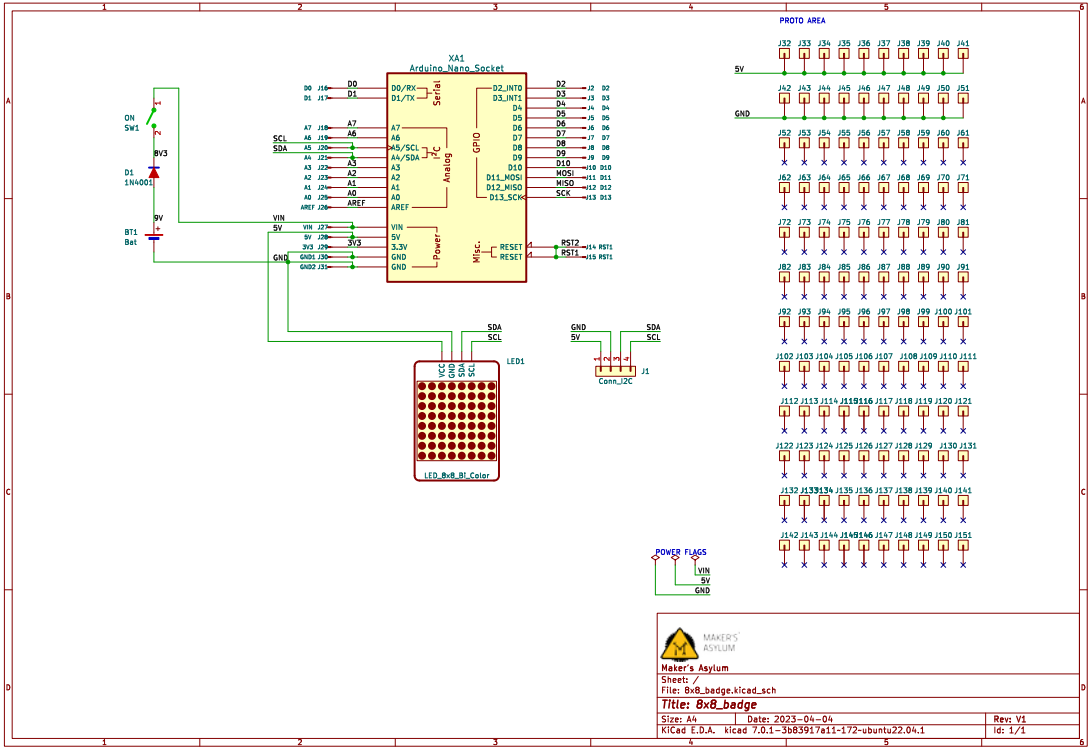
“Bag Tag” Electronics 8x8 LED Matrix

(Proposed project for Innov School Jr)

Requirements

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

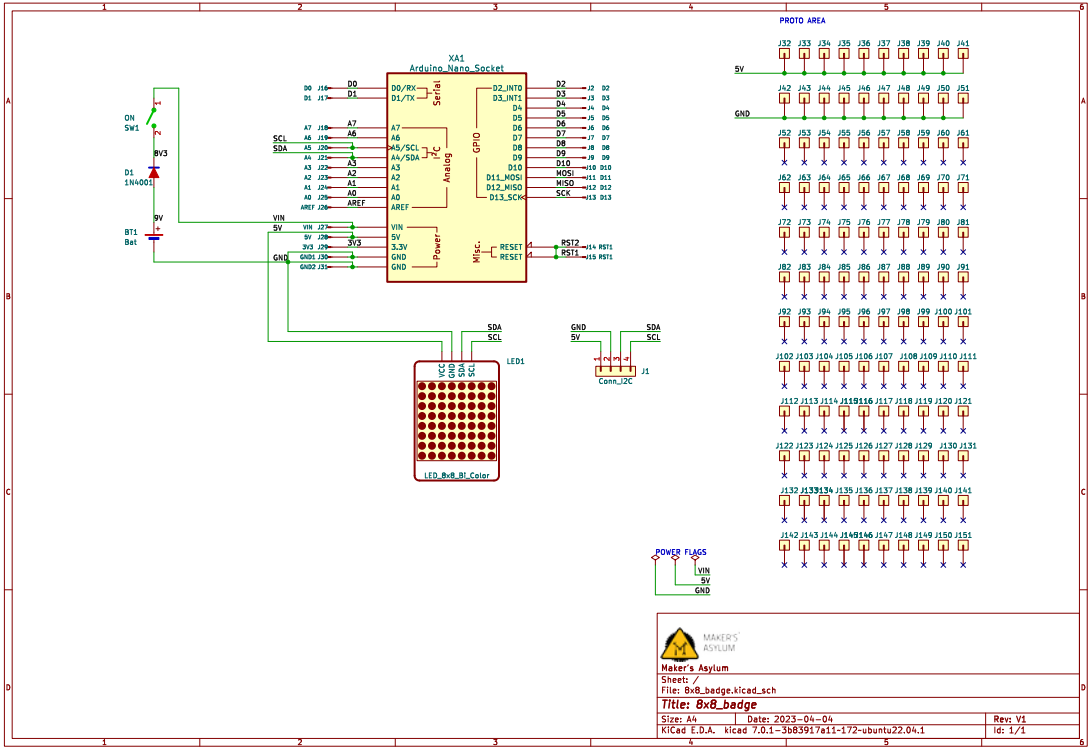
Schematic



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
- Hackable via prototyping area with 120 pads

PCB Render

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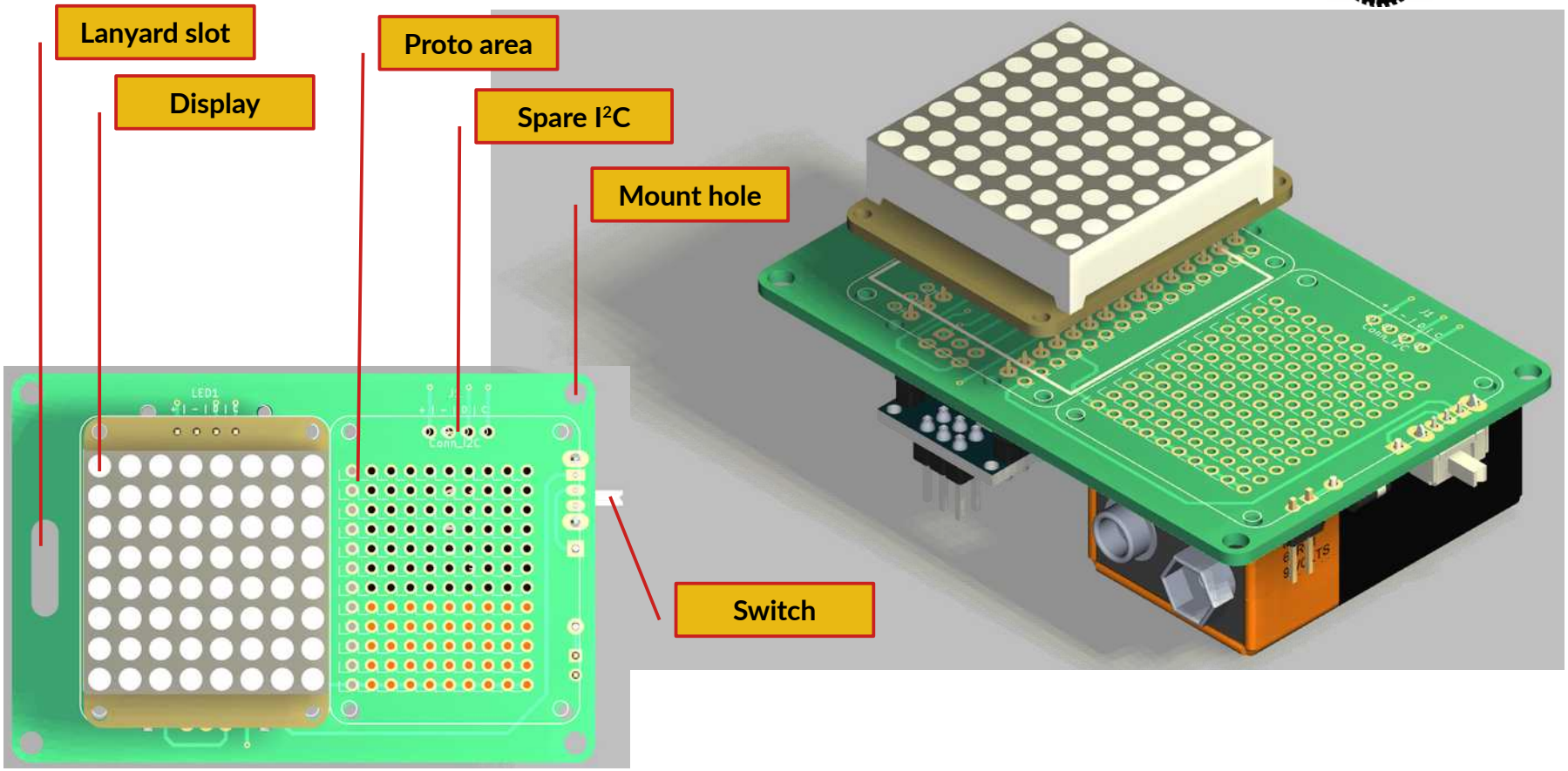

PCB Front / Bottom view

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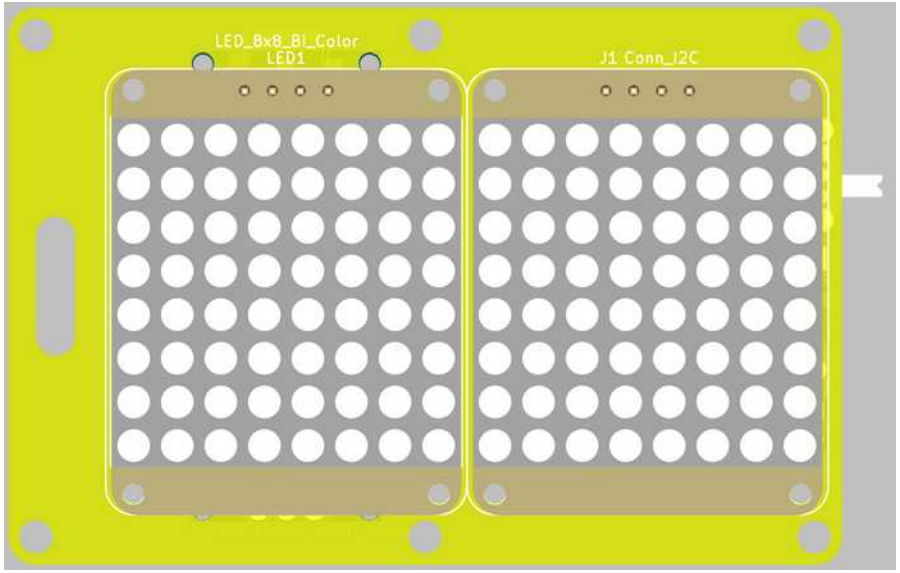
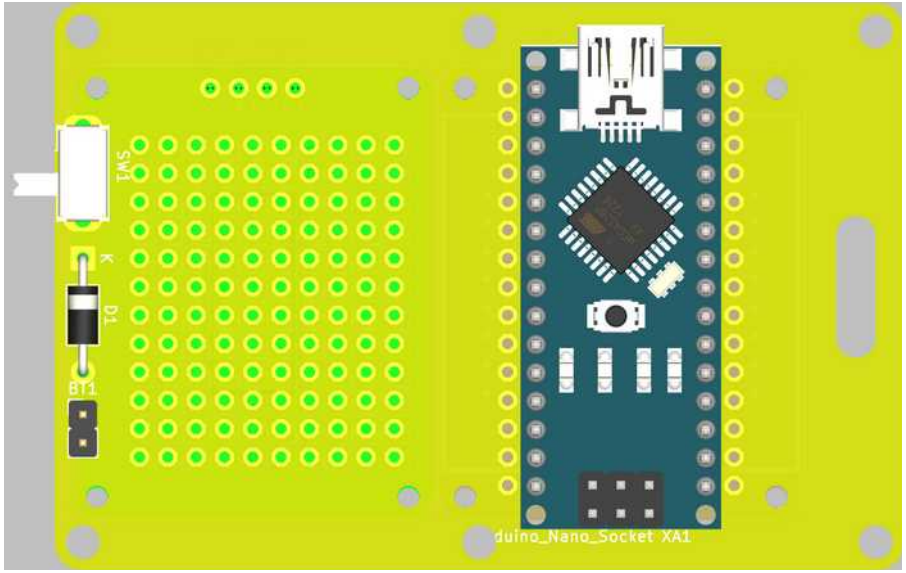
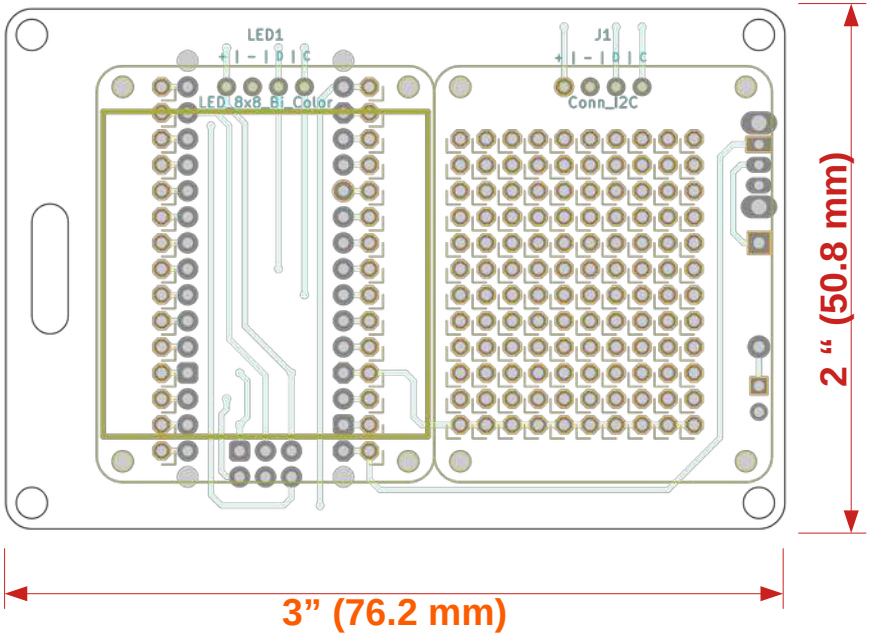


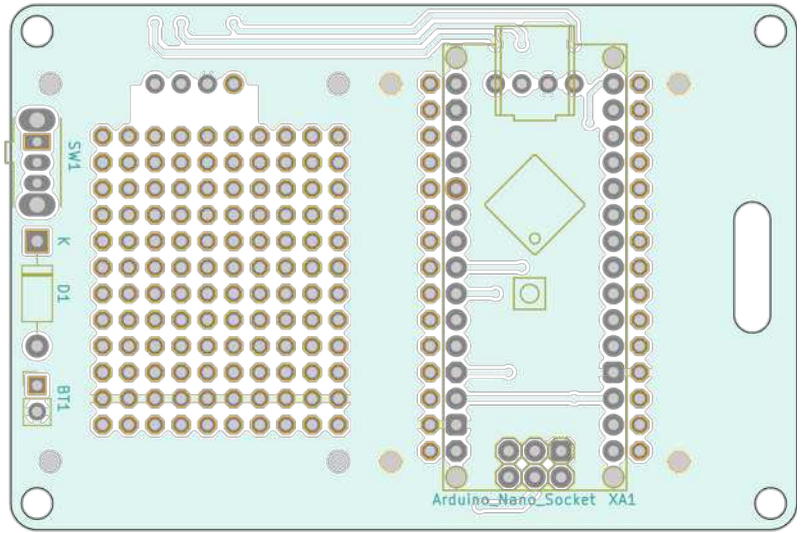


- Front side of BAG TAG has ONE 8x8 LED matrix.
- The second LED matrix is optional (future hacking)
- There are 120 pads for prototyping

- Bottom side of BAG TAG has Arduino Nano, slide switch, reverse polarity protection diode, and 2 pin header for battery connection.
- The blank part of the PCB can be used to stick the 9V battery using adhesive tape.

PCB dimensions

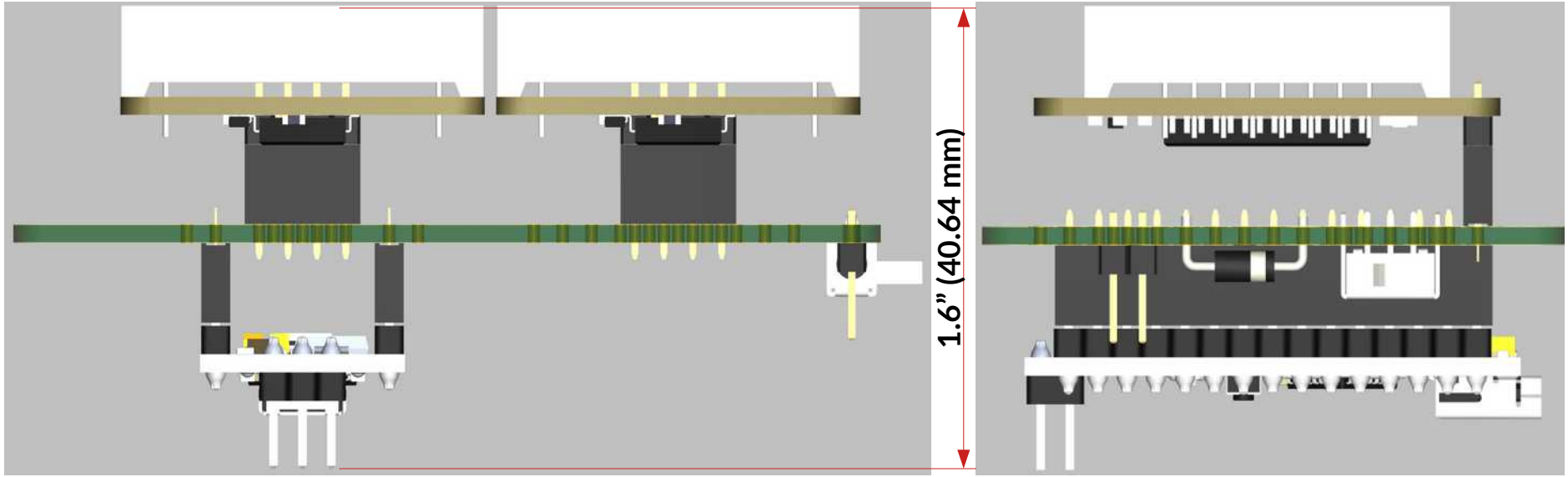




Size is smaller than credit card

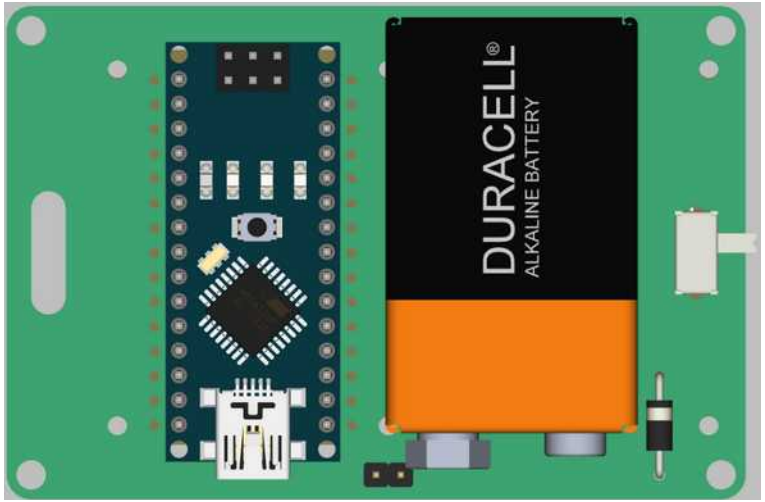
3 inches x 2 inches
(76.2 mm x 50.8 mm)

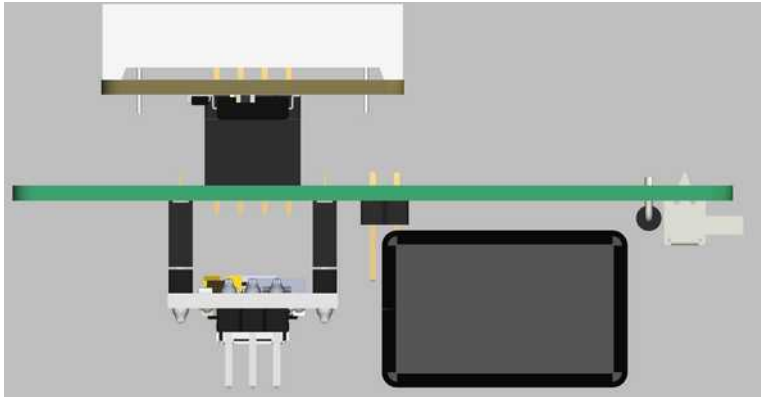
PCB Side view



- Side views of the PCB.
- Arduino Nano and 8x8 matrix display are mounted using header sockets and header pins.
- Some support will be needed under the LED matrix
- Height is 1.6” (41mm). 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 I^2C header and 120 copper pads for future hacking
- Add a second 8x8 LED matrix, I^2C 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)