

How to choose the wrong footprint

Ambrose Chua

Overview

- Motivation
 - Skye - A tiny microcontroller board
 - Software
-
- Status on Software

Motivation

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DEF CON 26!
August 9-12, 2018 at Caesars Palace & Flamingo!
Here's the skinny so far:

START HERE.
New to DEF CON?
Find out what it's all about!

GET EDUCATED.
A treasure trove of hacking knowledge
awaits in our past media!

GET INVOLVED.
Want to participate?
There are a myriad of ways!

THE LATEST

DEF CON 26 WiFi Reg is Live!
Posted 8.6.18

The DEF CON 26 WiFi Reg page is live, with all the info you need to securely log in to the wireless network on the DEF CON conference areas.

Please read carefully - there's new cert information and there are pretty explicit instructions for your specific OS.

It's not a trap.

DEF CON 26 ATTENDEE REPORTED INCIDENT POLICY
Posted 8.6.18

DEF CON Sites

Forums **Media Server**

The Goods

.onion Links
defcon.org
media.defcon.org
defcongroups.org

DEF CON Dates

DEF CON 26
Call For Everything Open!
August 9-12, 2018

DEF CON 27
August 8-11, 2019

DEF CON 28
July 30 - Aug. 2, 2020

Recent News

- 2016, I was really into watching DEFCON talks
 - DEF CON is a security conference with a ton of talks on hacking both hardware and software, unconventional attacks and many other things.
 - It is quite an informal conference and scary because you shouldn't bring electronic devices there.
- They record all their talks and put them online

PROGRAMMABLE HID USB KEYBOARD/MOUSE DONGLE FOR PEN-TESTING

Adrian Crenshaw

Project site:

<http://www.irongeek.com/i.php?page=security/programmable-hid-usb-keystroke-dongle>

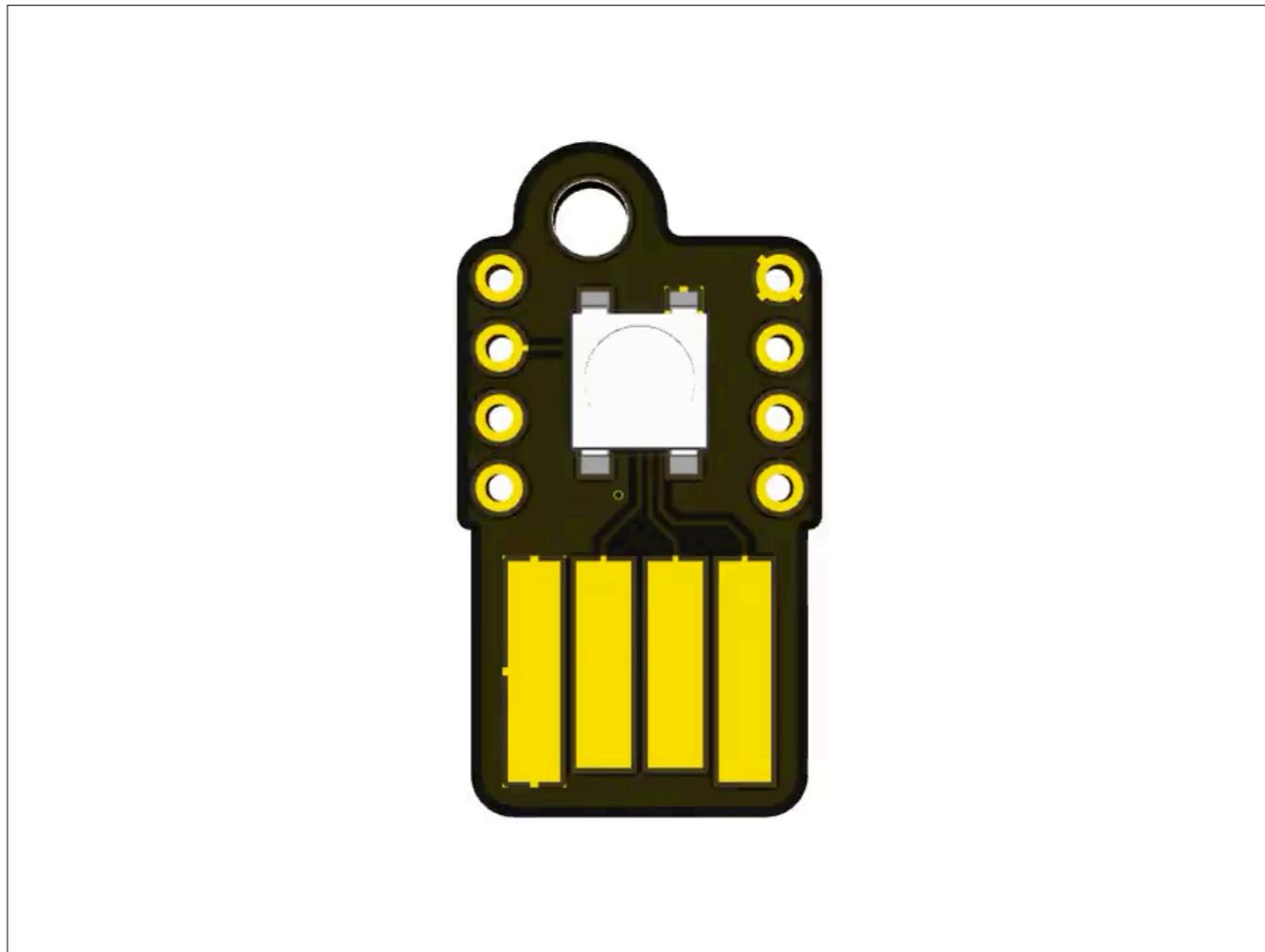
<http://irongeek.com>



- USB HID as an exploit tool
- What is USB HID?
 - Keyboard, Mouse standard for USB
 - Almost all K & M use USB HID
- Read about other articles of using USB HID as an exploit tool

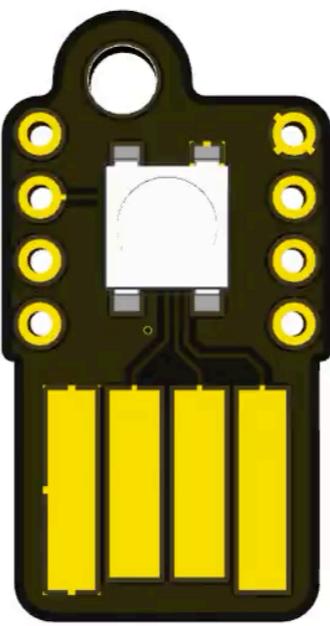
Also, I wanted...

- A keychain
 - Programmable
 - RGB LED 
 - Breadboard-friendly

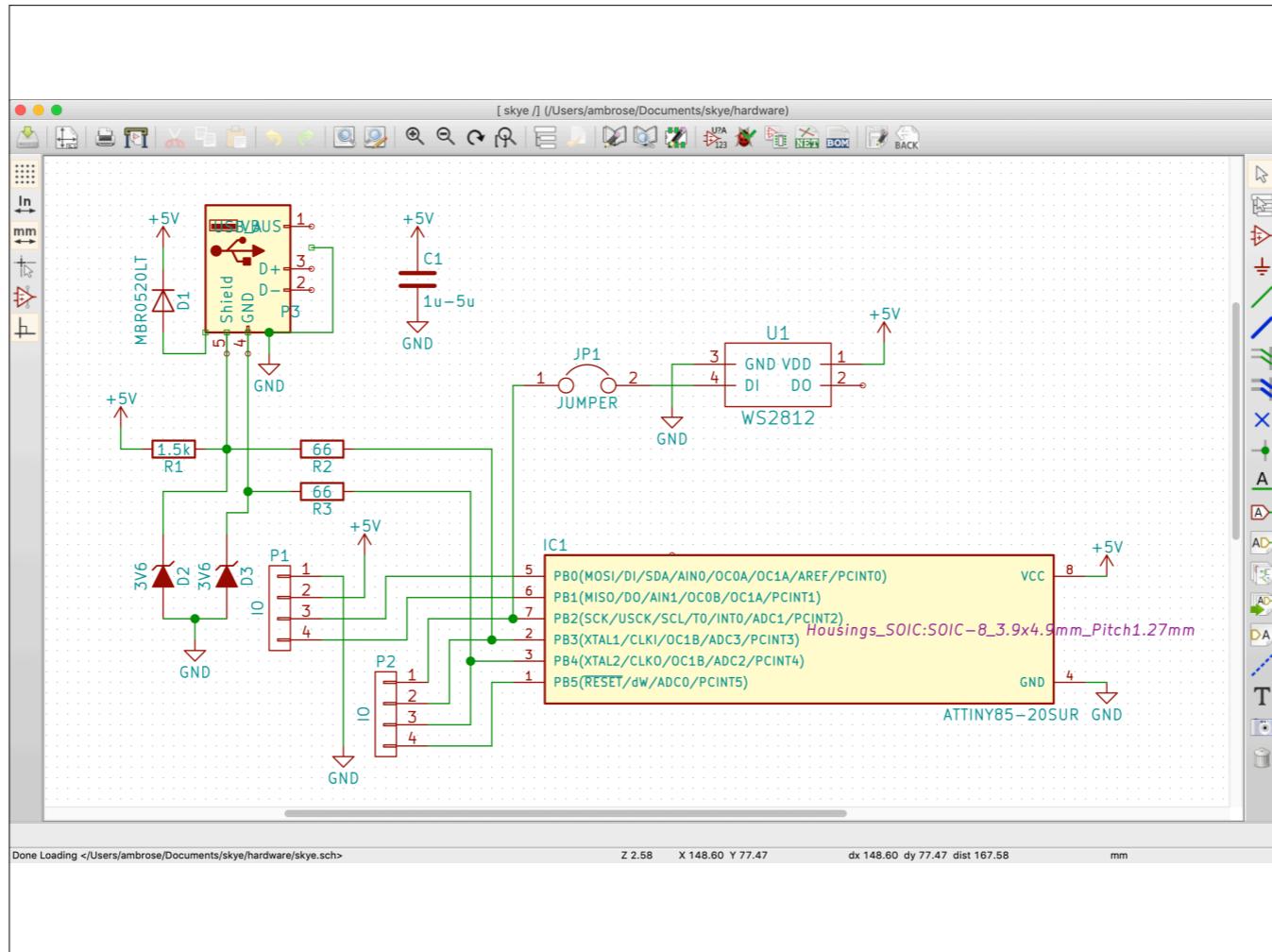


- Based on those factors
- KiCad

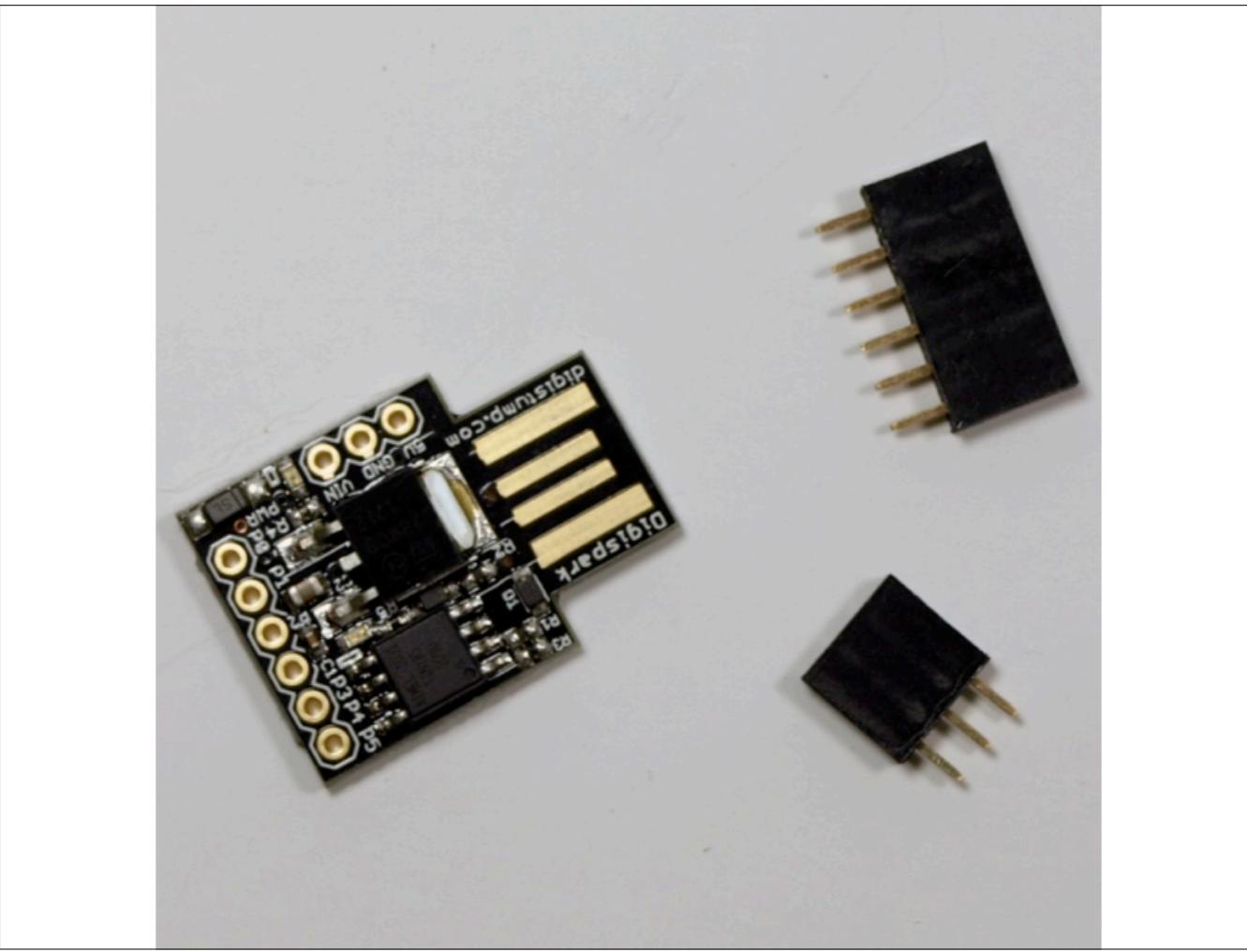
Skye



- Named after a character from Marvel's Agents of Shield



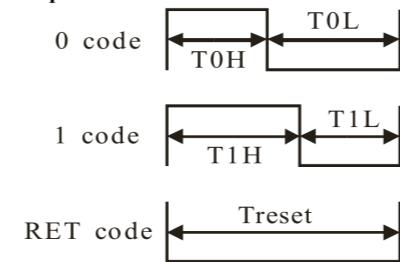
- Very simple circuit, I'm not very good at electronics
- Schematics based on the Digispark
- Learnt quite a lot from the Digispark circuit
- ATTiny85 because it's small



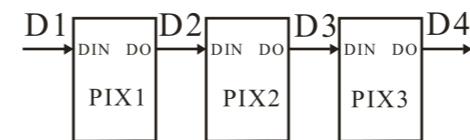
WS2812

- Individually addressable RGB LEDs
- Connected in a string
- There's new versions that are even more awesome (RGBW!)

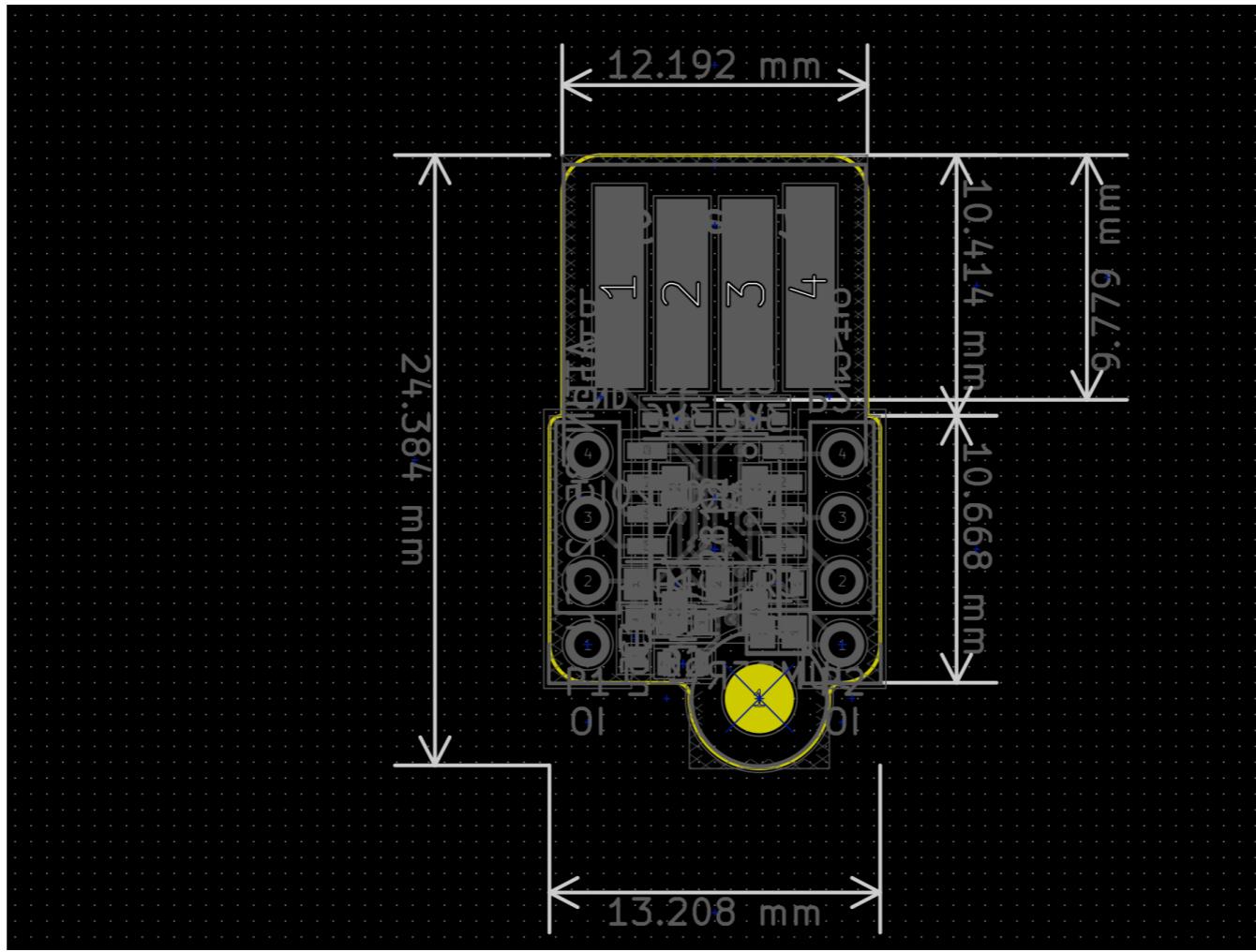
Sequence chart:

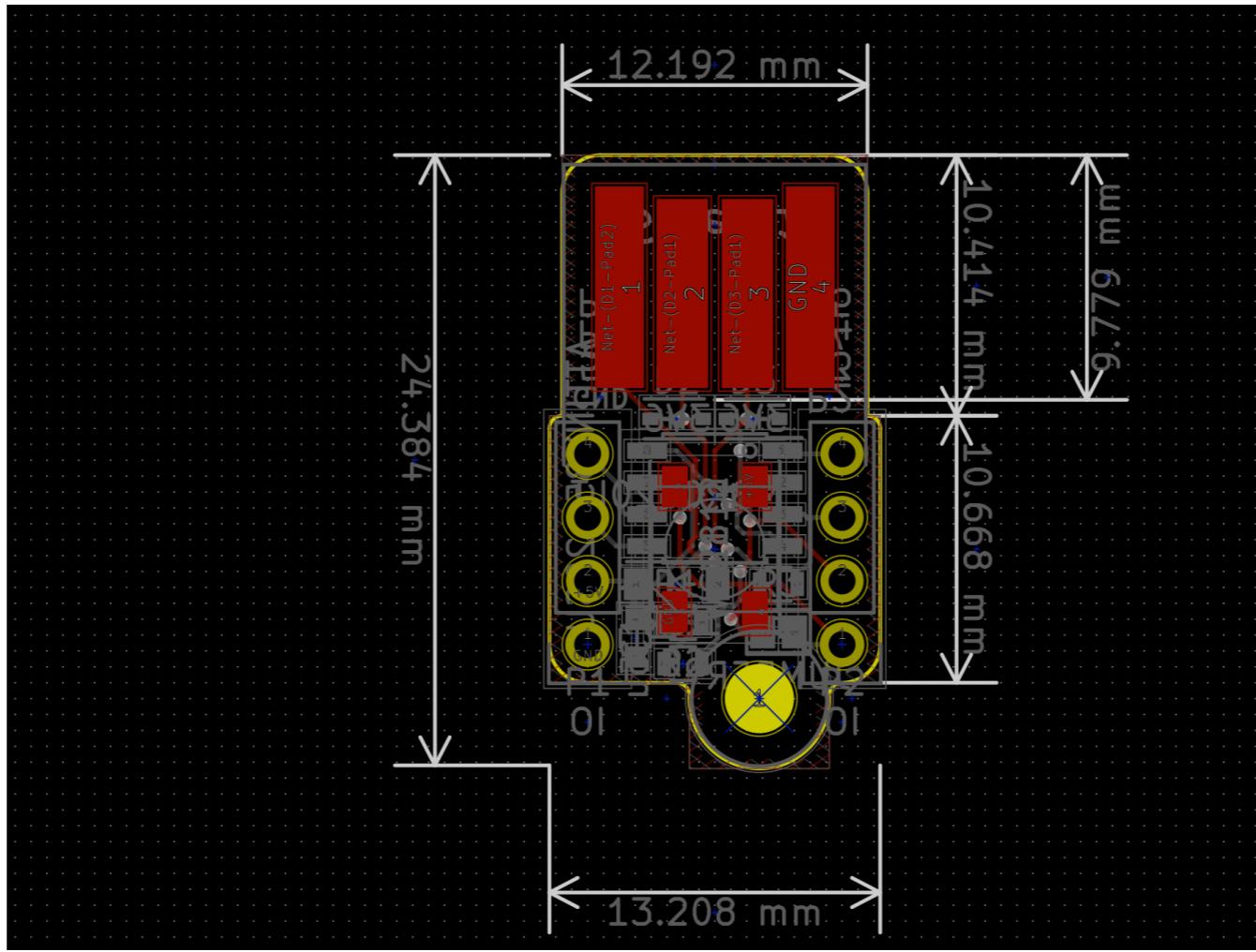


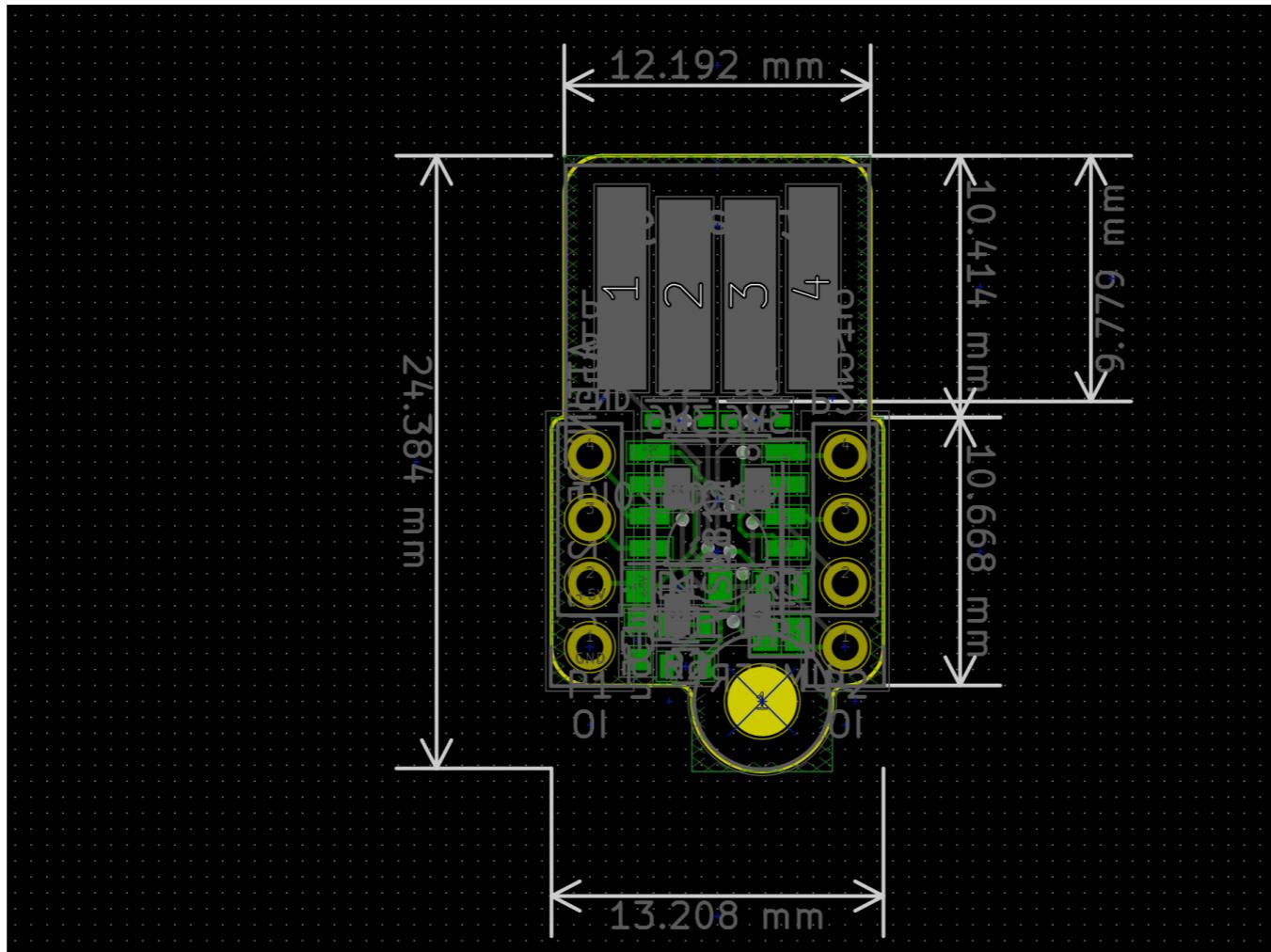
Cascade method:

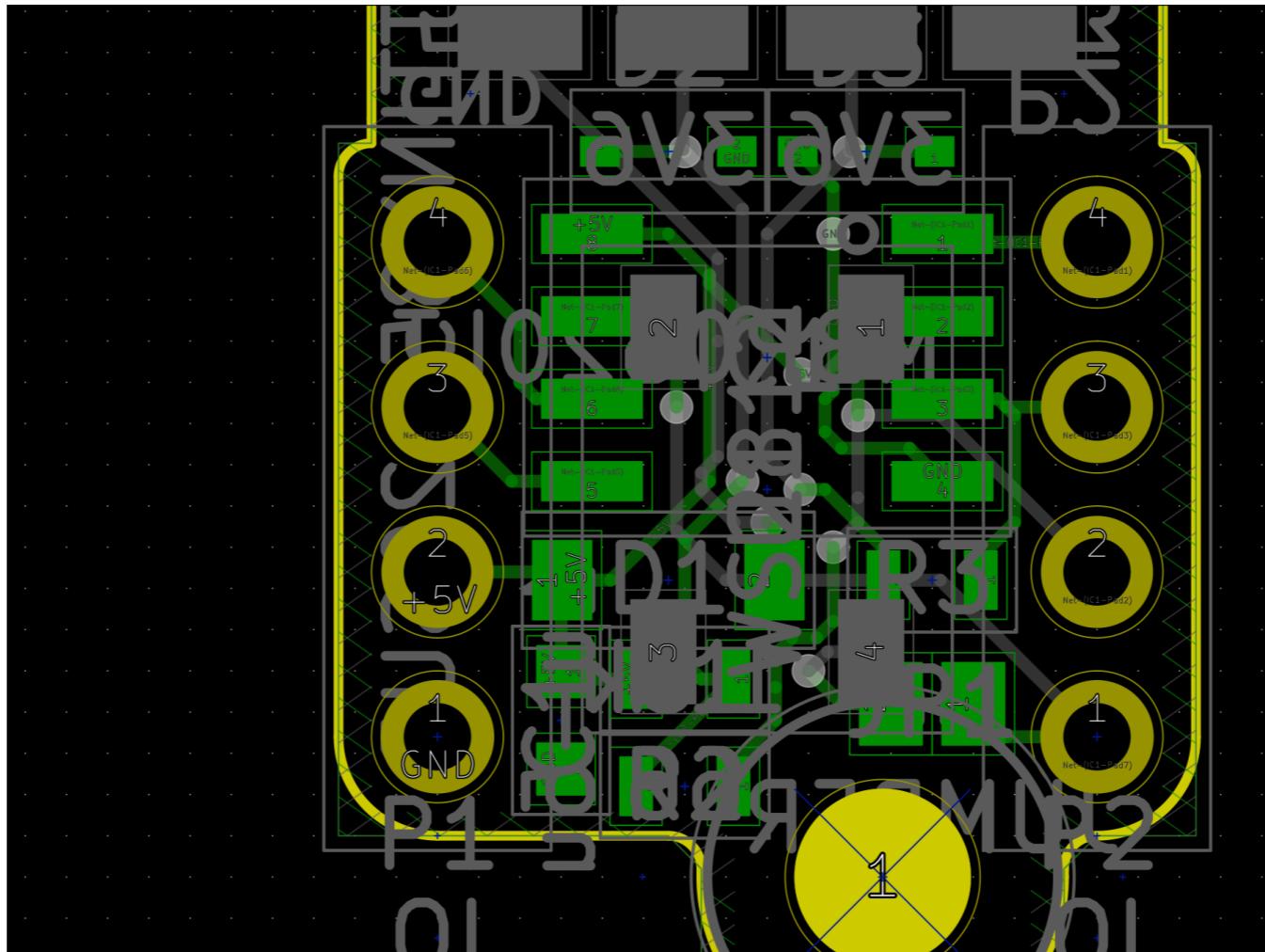


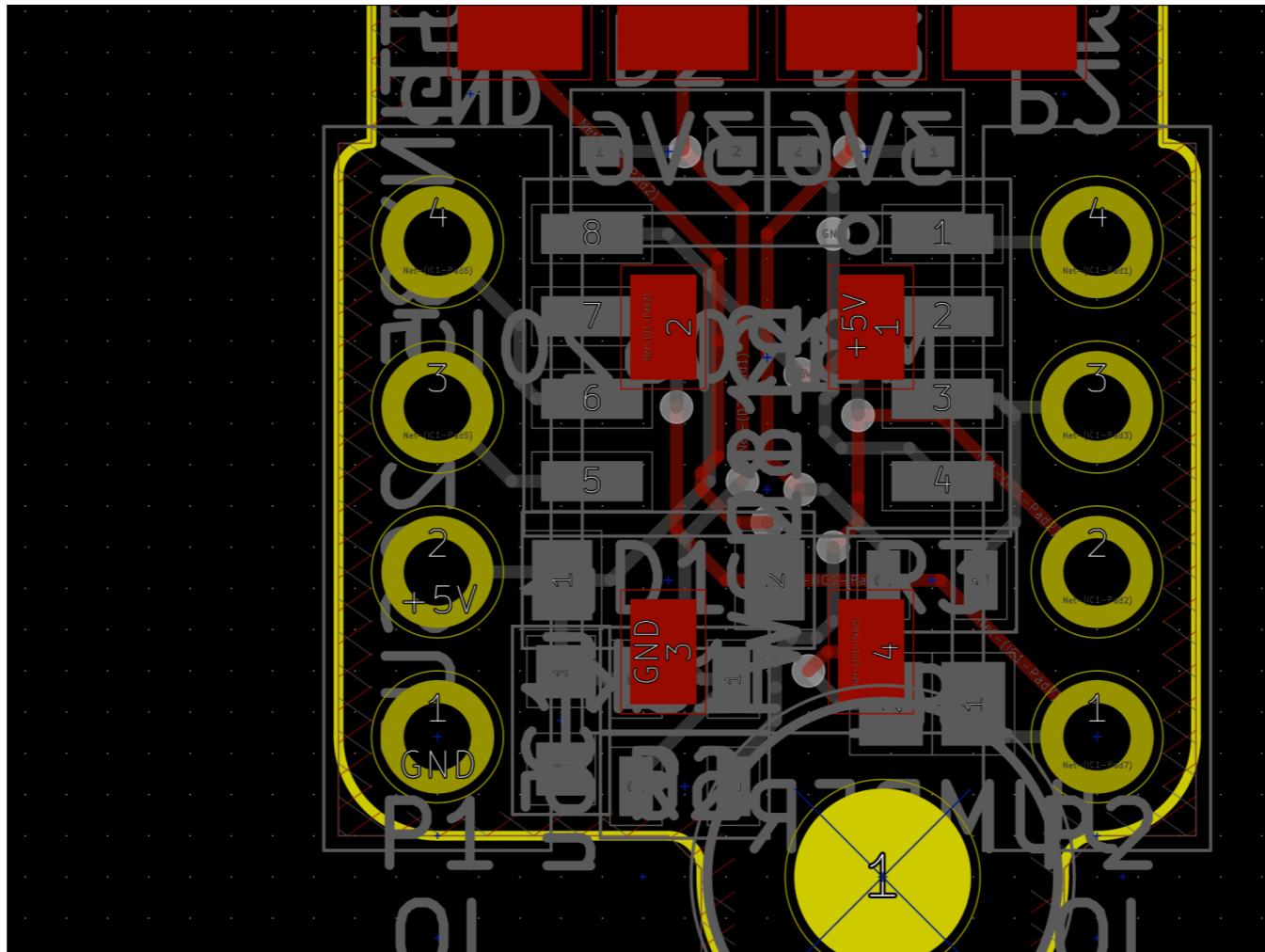
<http://www.world-semi.com>

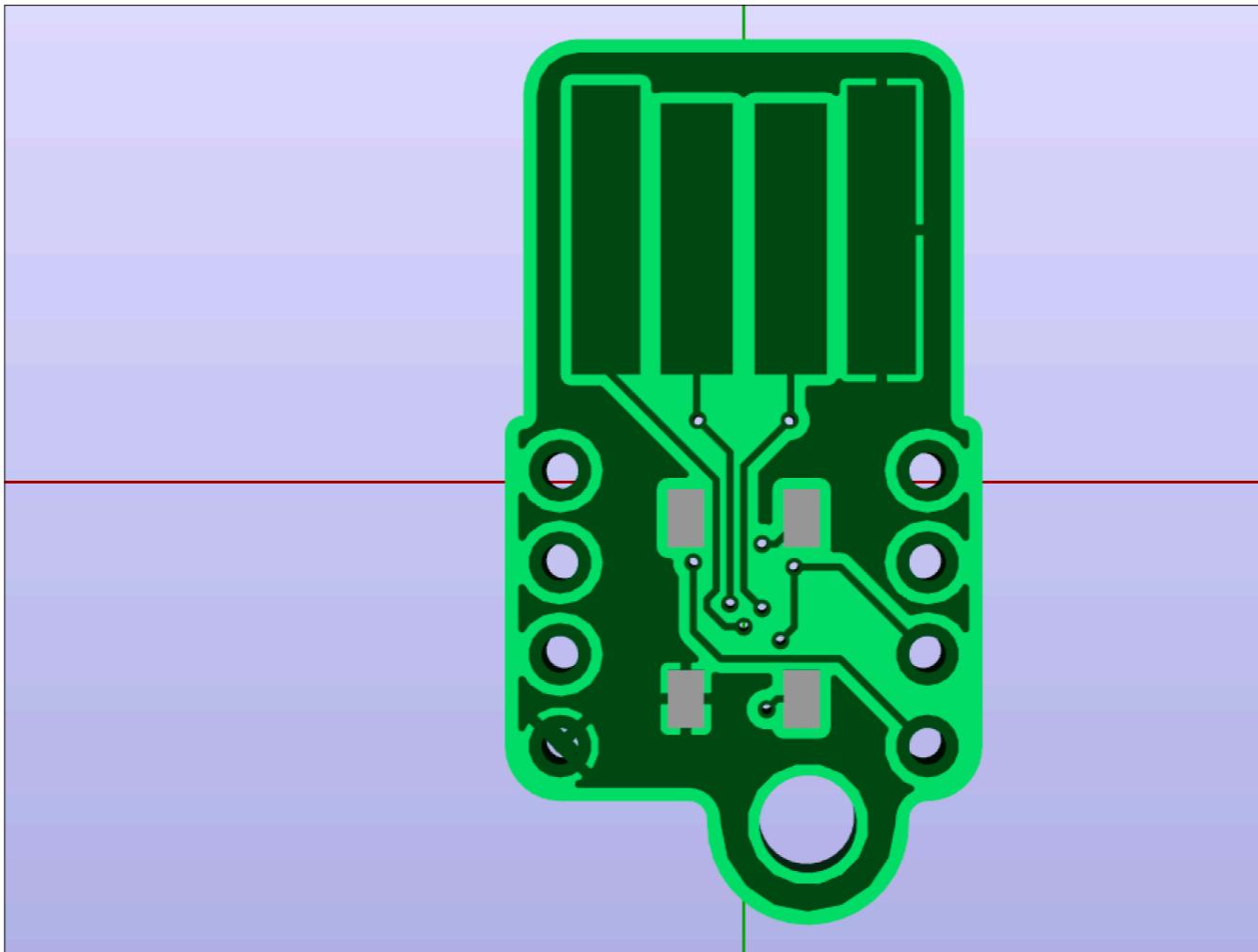


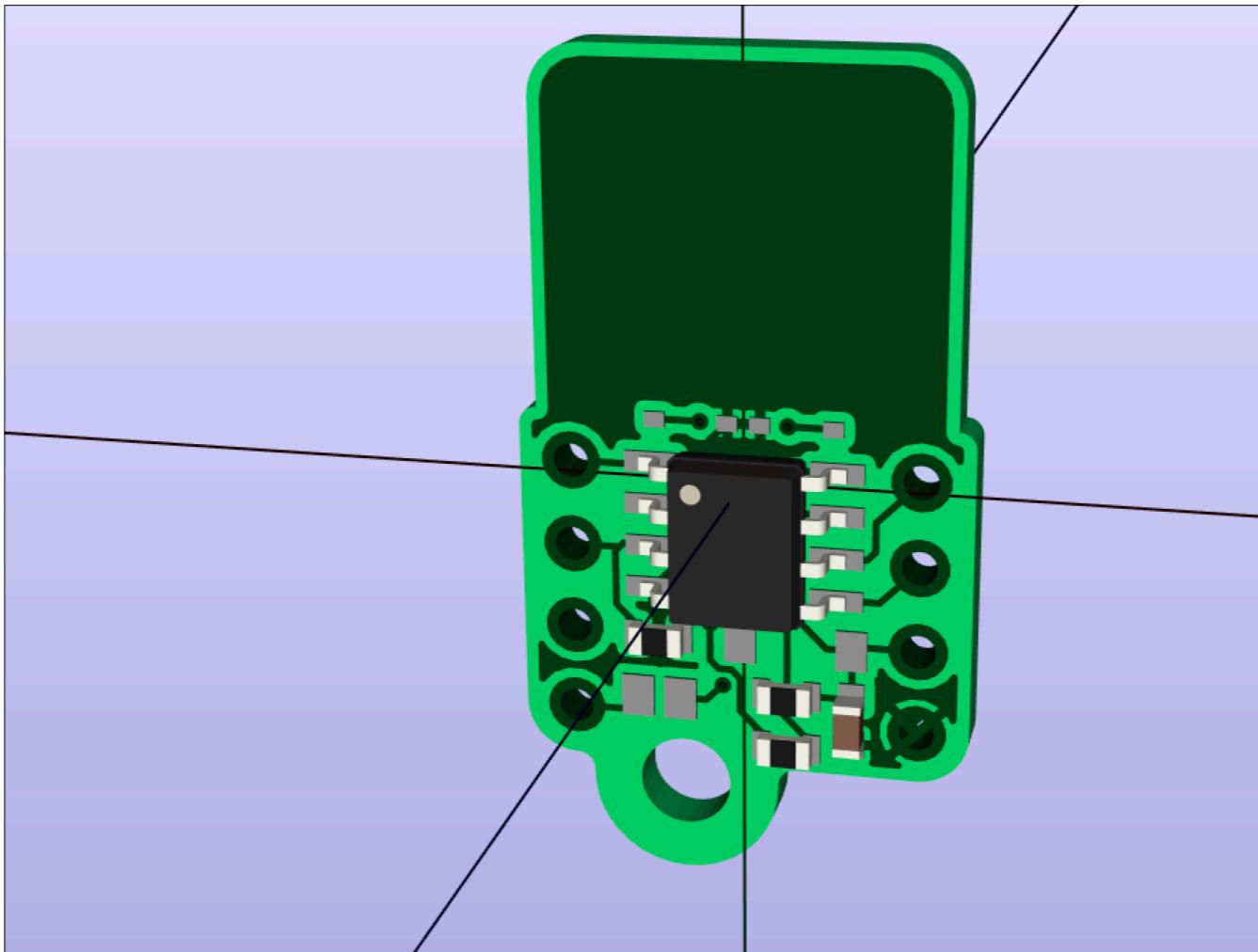


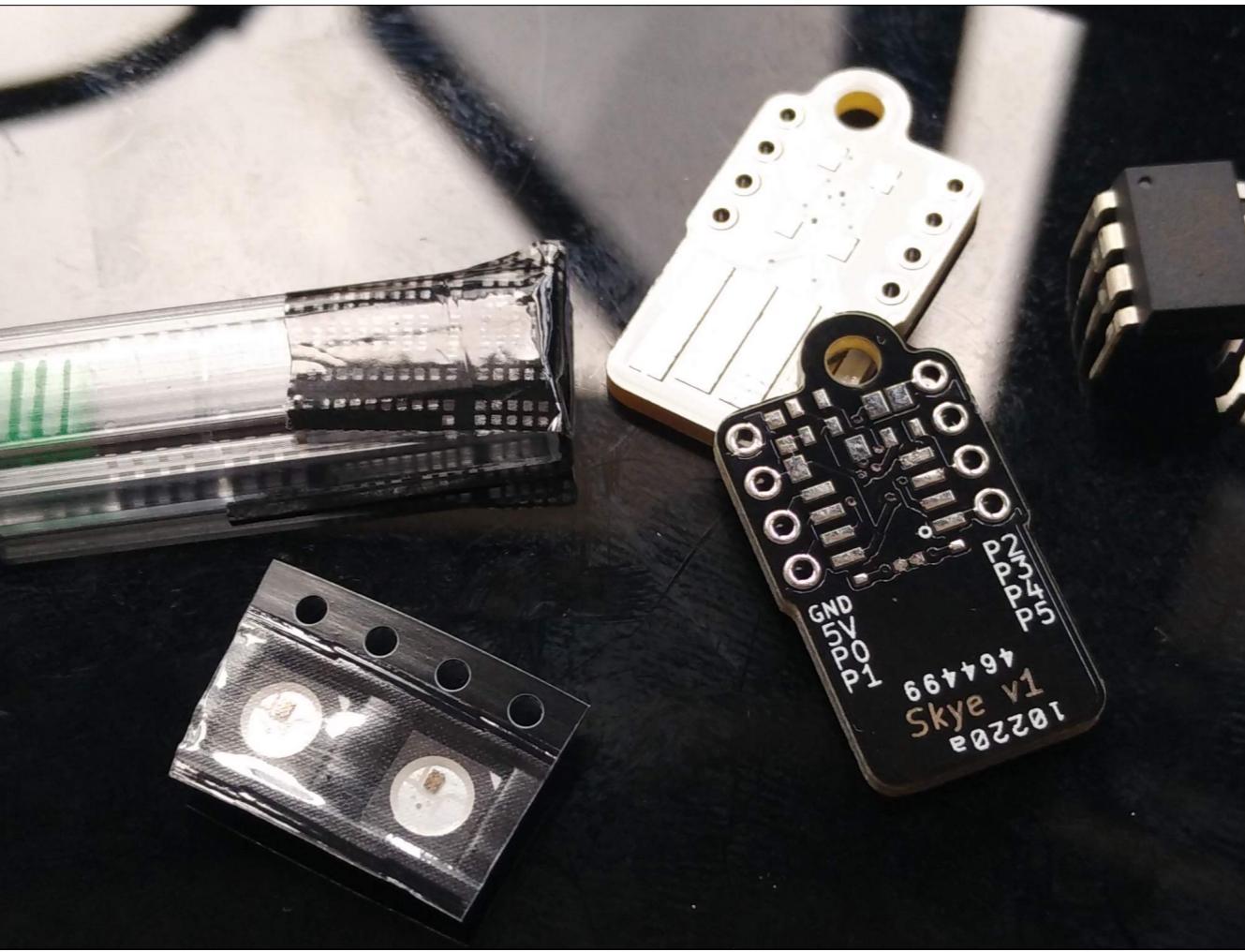




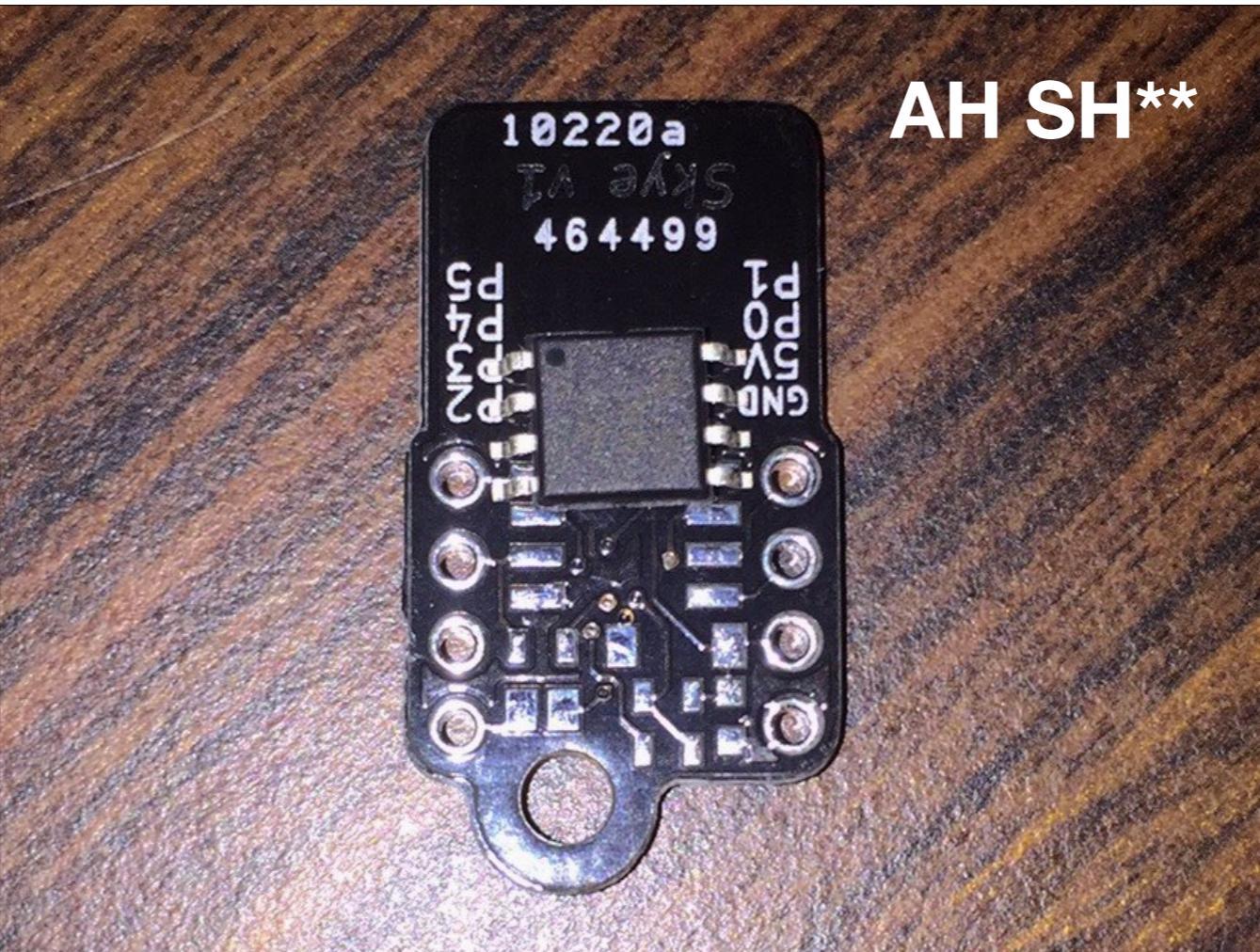








AH SH**





As a final grumble about the ATTiny.
Atmel/microchip are taking the piss with the
SOIC-8 package. It barely fits on a standard
footprint, it's considerably wider than most other
SOICs I have seen.

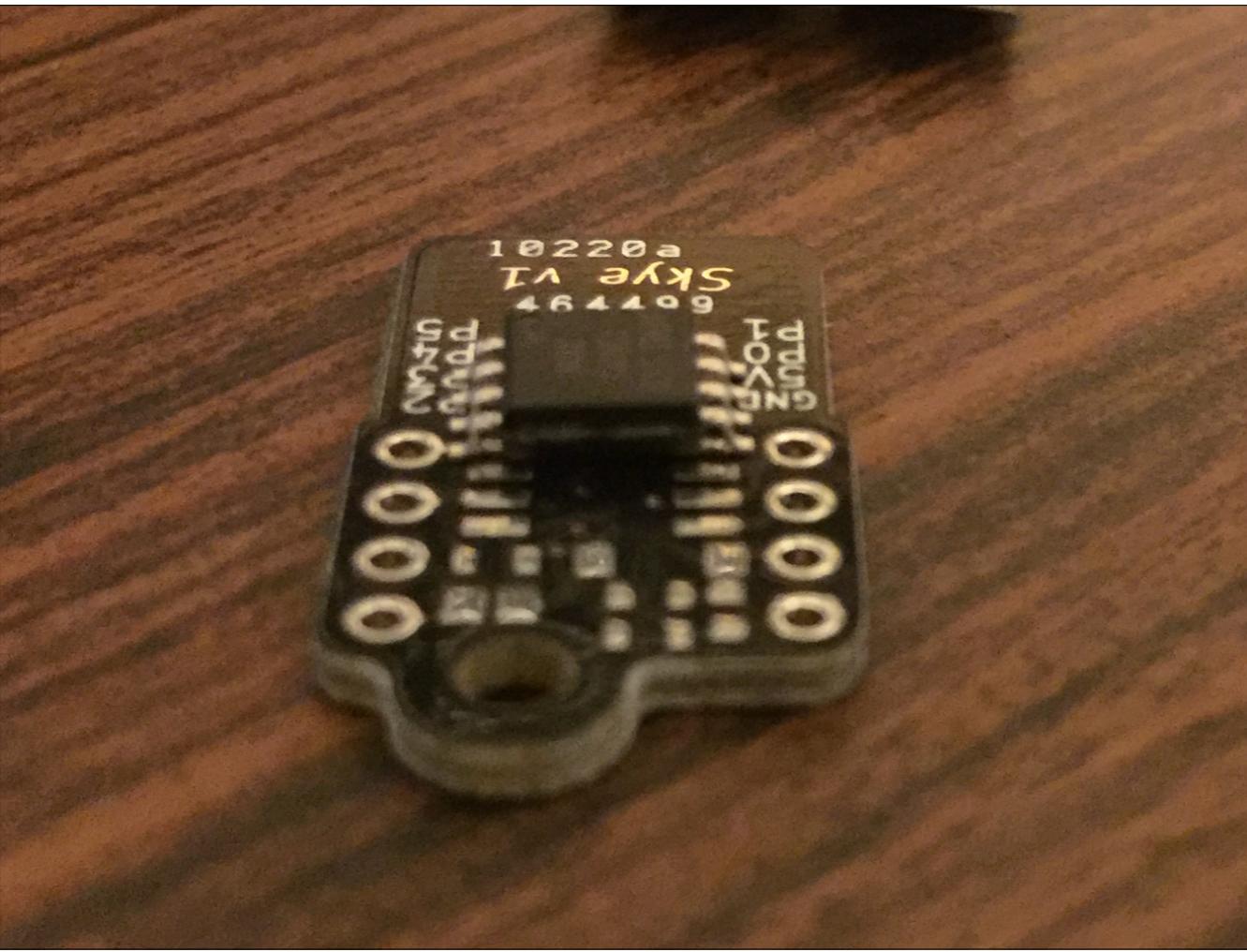
If you are thinking of making a PCB for one,
make sure and choose LONG pads.

« Last Edit: March 11, 2018, 02:24:01 am by paulca »

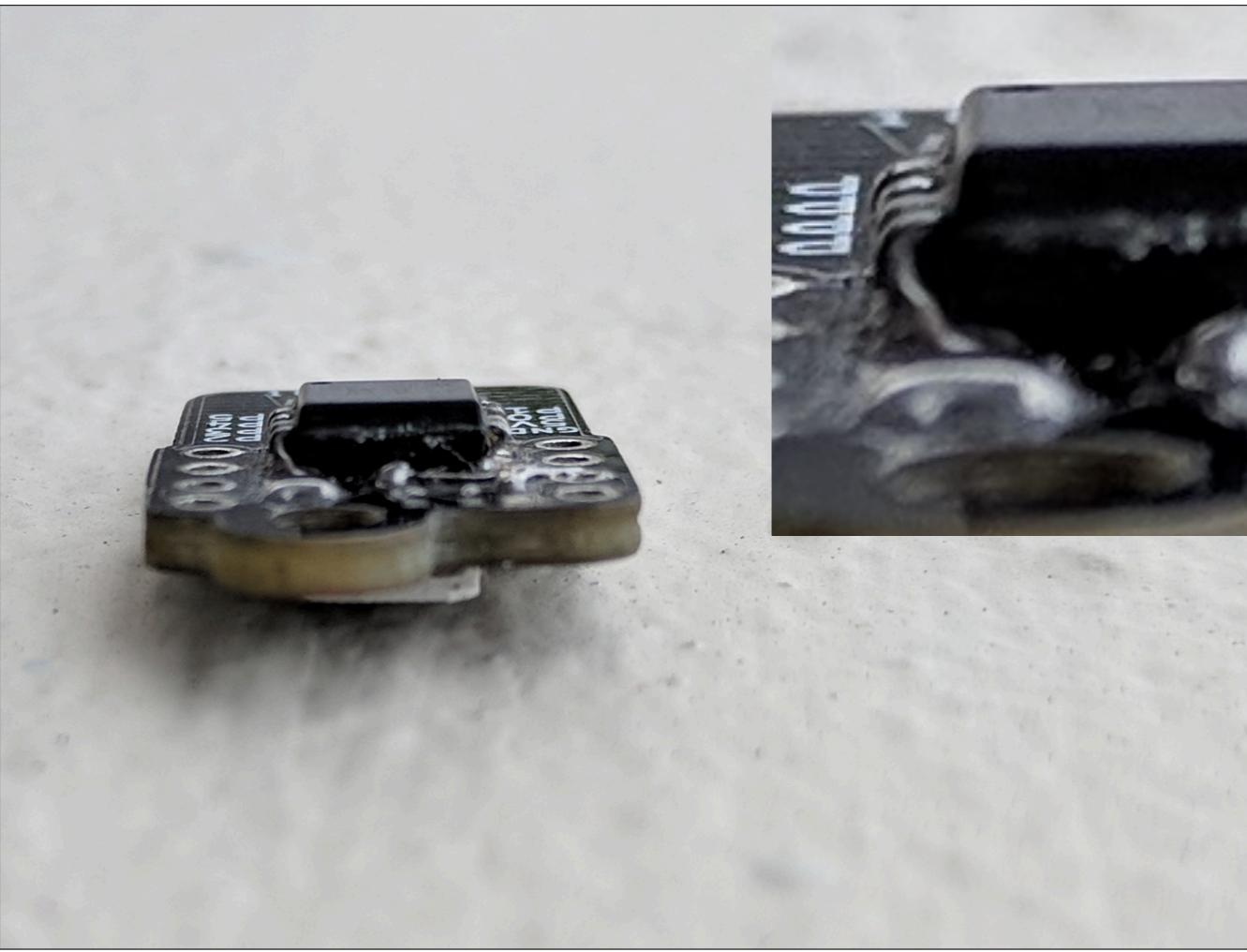
Logged

"What could possibly go wrong?"

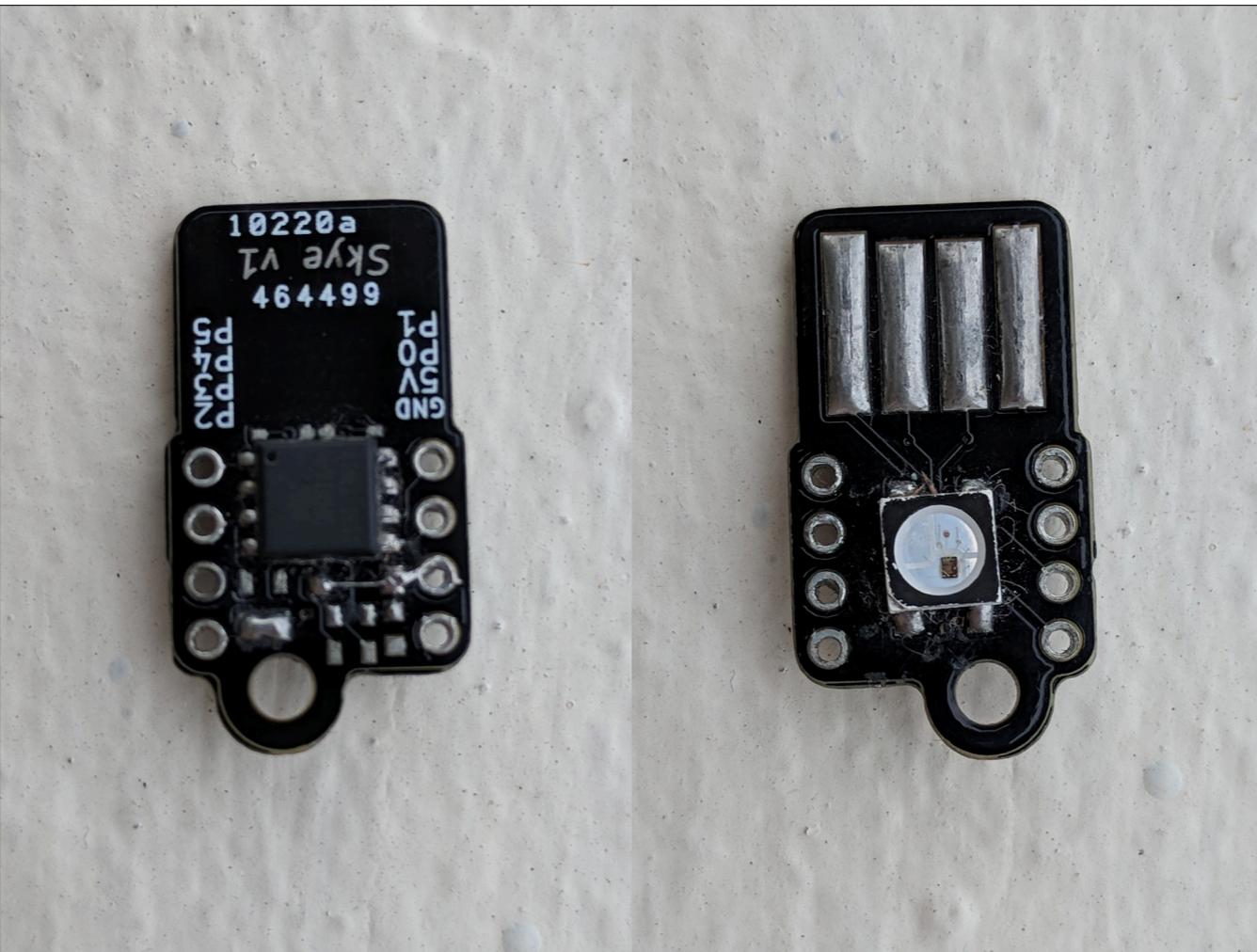
Current Open Projects: 3 Channel Audio mixer with DAC, BT,
pre-amps and h/phone amp, WS281x LED controller Version
2 5V/5A w/Atmega328, FY6600 Power supply, 5A DC Load
(Still!)



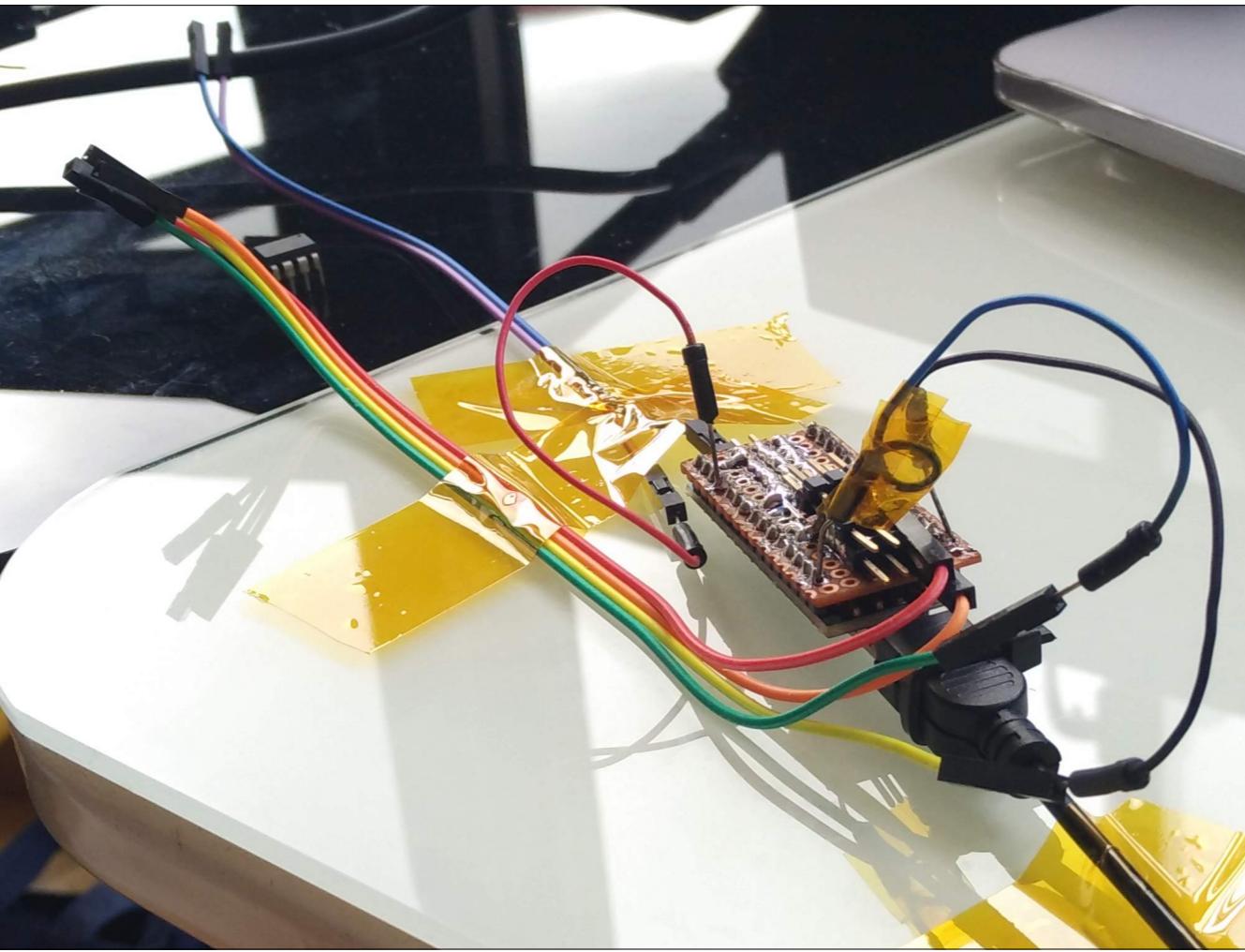
- Took the pins sticking out



- Bent them down with tweezers carefully
- Soldered the entire package down with a lot of solder
- Perfectly fine!



- Side effect of making this mistake: Smaller footprint than usually possible
- Soldered on WS2812B
- Have not bought the other components yet



- Test with ATTiny85 DIP, then held the 6 ICSP jumpers onto the entire Skye board

Yay!



My favourite kind of shopping!

- With the two essential parts working, I bought the rest of the parts from Element14
- Per board, it costs under \$5
- Bulk of the cost came from the ATtiny85 and PCB
- Receiving the parts soon!

Software

- TODO:
 - Flash micronucleus onto a board (same as the Digispark)
 - Write some sample programs to control the LED
 - I may face some issues with the amount of program space the ATtiny85 has, so I may have to optimise the RGB code



Thank you!