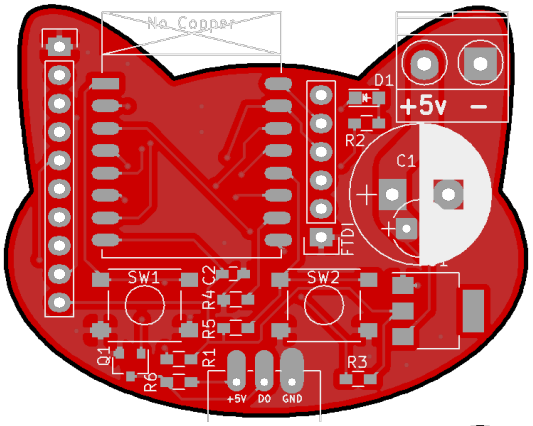
Partycat Light Controller Kit

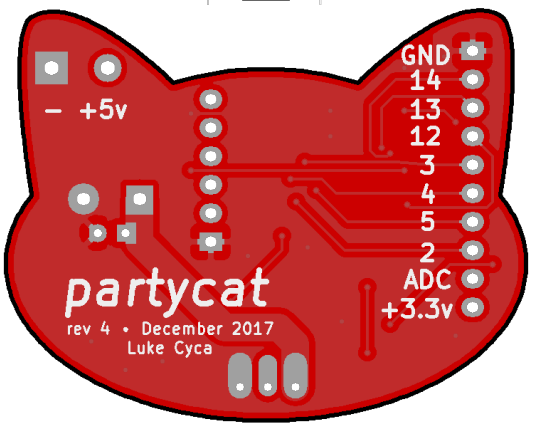
By Luke Cyca Nov 22, 2018 Revision 4

Congratulations on your purchase of the partycat light controller kit! This board uses a ESP8266 wifi-enabled microcontroller to control a string of WS2812-compatible RGB LEDs. Have fun!

Building

All components are on one side, so it's easy to populate, easy to bake, and easy to tape or hot-glue the finished board down with your LED strip.





R1: 10kΩ Resistor (red)
R2: 332Ω Resistor (green)
R3: 10kΩ Resistor (red)
R4: 10kΩ Resistor (red)
R5: 10kΩ Resistor (red)
R6: 4.7kΩ Resistor (blue)

C1: 1000μF 10V Electrolytic Capacitor
(accommodates two sizes of caps)
C2: 0.1μF Ceramic Capacitor (yellow)

U1: AP1117E33G-13
U2: ESP8266 Module 7/12/12E/12F

D1: Red LED
Q1: BC807 MOSFET

MISC:
2x Pushbuttons
1x Two-terminal screw terminal blocks
0.1" 6-pin FTDI programming header
A short string of two WS2812 GRBW LEDs
(included so you can test your board)

SMD Hand-Soldering Pro Tips

Start with the smallest components first.

For each component, put a bit of solder on one pad first. Then while keeping the solder hot with the soldering iron in one hand, place the component with tweezers to tack it in place. Solder a pin on the opposite side. Then go back and resolder the first, and all additional pins.

Use extra solder flux to help the solder flow freely.

Programming

To program this board you need a FTDI cable with 3.3v logic level, like this one from Sparkfun:
https://new.sparkfun.com/products/9717

The black wire is GND. Make sure you plug it in the right way around. Some other FTDI cables have a different pinout. Make sure yours is the same as the Sparkfun one:

RTS, RX, TX, 5V, CTS, GND

You can program it using the Arduino IDE along with the ESP8266 board add-on from:
http://github.com/esp8266/Arduino

To put the partycat into programming mode, hold down the PROGRAM button while pressing the RESET button. Then upload your sketch.

This board is set up to use the i²s output (pin 3) to control the lights with DMA, allowing relatively high frame rates without tying up the processor.

The recommended library for use with Partycat is NeoPixelBus because it supports DMA output on pin 3, and a wide range of pixel devices including RGBW.
https://github.com/Makuna/NeoPixelBus

A simple example sketch is available at
https://github.com/lukecyca/partycat-blinky

Since pin 3 is also used by the ESP8266 for UART RX, **unplug the FTDI cable after programming for best results driving the WS2812s.**

Schematic