Power

DC input and current monitor.
Current sensor for 12V Only.
Does not include for 5V NeoPixel option.

I2C Pullups

3.3V

U4
INA219AIDCNRSOIC

Max fuse 5A

12V DC Input

Option:
If using Particle Photon Battery Shield do not fit IC1.
5V rail comes from Photon Vin pin (3v7 - 5v range).

Option:
Replace IC1 with connector and use alternative 5V supply or LiPol battery.

5V PSU
IC1
Add heatsink when driving NeoPixels

12V Breakout

NeoPixel Supply.
Ext. 5V Supply for NeoPixels
LED Ext. 5V

Connect to use internal 5v.
Use only for low number of Neopixels.
H/t regulator with heatsink as needed.

NeoPixels use VIN line. Connect internal 5V to VIN to power from internal, otherwise provide external 5V

IC2
LM3526M-L

USB_VENABLE_A
USB_VENABLE_B
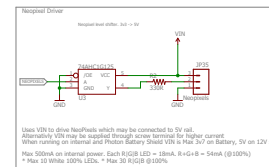
5V Out (USB B)
FN6/520-5
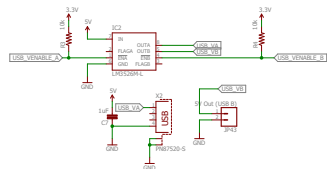
Lighting

Channel 1: Controls upto 6 lights. PWM able
Check polarity of lights before fitting.
Q2 FDD8451

Channel 2: Controls upto 6 lights. PWM able
Check polarity of lights before fitting.
Q3 FDD8451

Check polarity of lights before fitting.
Q4 FDD8451

Check polarity of lights before fitting.
Q5 FDD8451

Neopixel Driver

Neopixal level shifter. 3v3 -> 5V
74AHC1G125
U3
Neopixels

Uses VIN to drive NeoPixels which may be connected to 5V rail.
Alternatively VIN may be supplied through screw terminal for higher current.
When running on internal and Photon Battery Shield VIN is Max 3v7 on Battery, 5V on 12V supply.

Max 500mA on internal power. Each R/G/B LED = 18mA. R+G+B = 54mA (@100%)
* Max 10 White 100% LEDs. * Max 30 R/G/B @100%

CPU / Sensors

Photon

CHANNEL2
CHANNEL1
CURRENT_SENSOR
CHANNEL3
CHANNEL1
VIN_MONITOR
TEMPERATURE
LIGHT_LEVEL

Photon

BUTTON_LED
BUTTON
NEOPIXELS
USB_VENABLE_A
USB_VENABLE_B

A1 / DAC not 5v Tol.
PWM on D0,D1,D2,D3, A4, A5, WKP, Rx,Tx
A4 & D2 Share PWM
A4 & D2 Share PWM

1 Wire DS18B20+ Temperature Sensors

Temperature
TEMPERATURE

External Sensor(s)   On-board SO8C-8 sensor to monitor board temp.

Monitor +5V (Photon Vin) Level.
Tell if 3.7 LiPol or 5V
VIN_MONITOR

Optional: Leave R17/R18 empty for alternative A3 use

Button with LED.
BUTTON_LED
BUTTON
Button

External I2C sensors
Used by Battery Shield.
If used externally add 4k7 pull-ups
Can also be used as D0/D1

External light sensor
LIGHT_LEVEL
Light Sensor (e.g. TEMP6000)

5V PIR Sensor
PIR

Breakout

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TITLE: KitchenLightsController V2
Design by: S.Harrison
REV: 2.02
Date: 24/02/2016 03:06   Sheet: 1/1