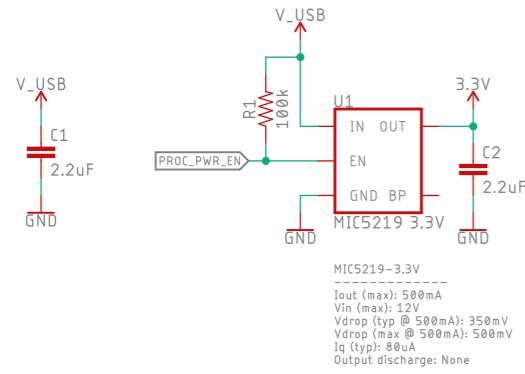
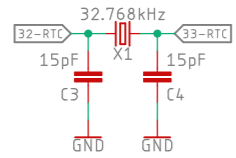


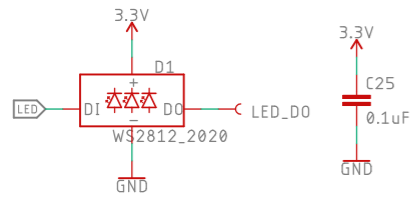
### Voltage Regulation



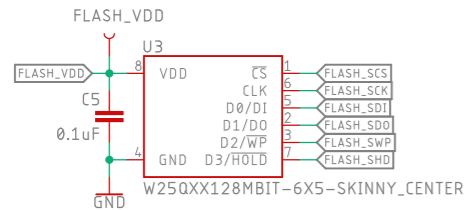
### 32.768kHz RTC Crystal



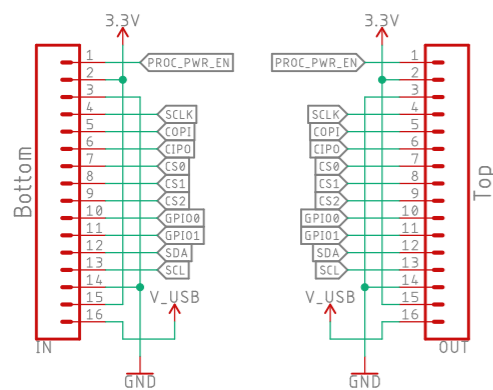
### RGB LED



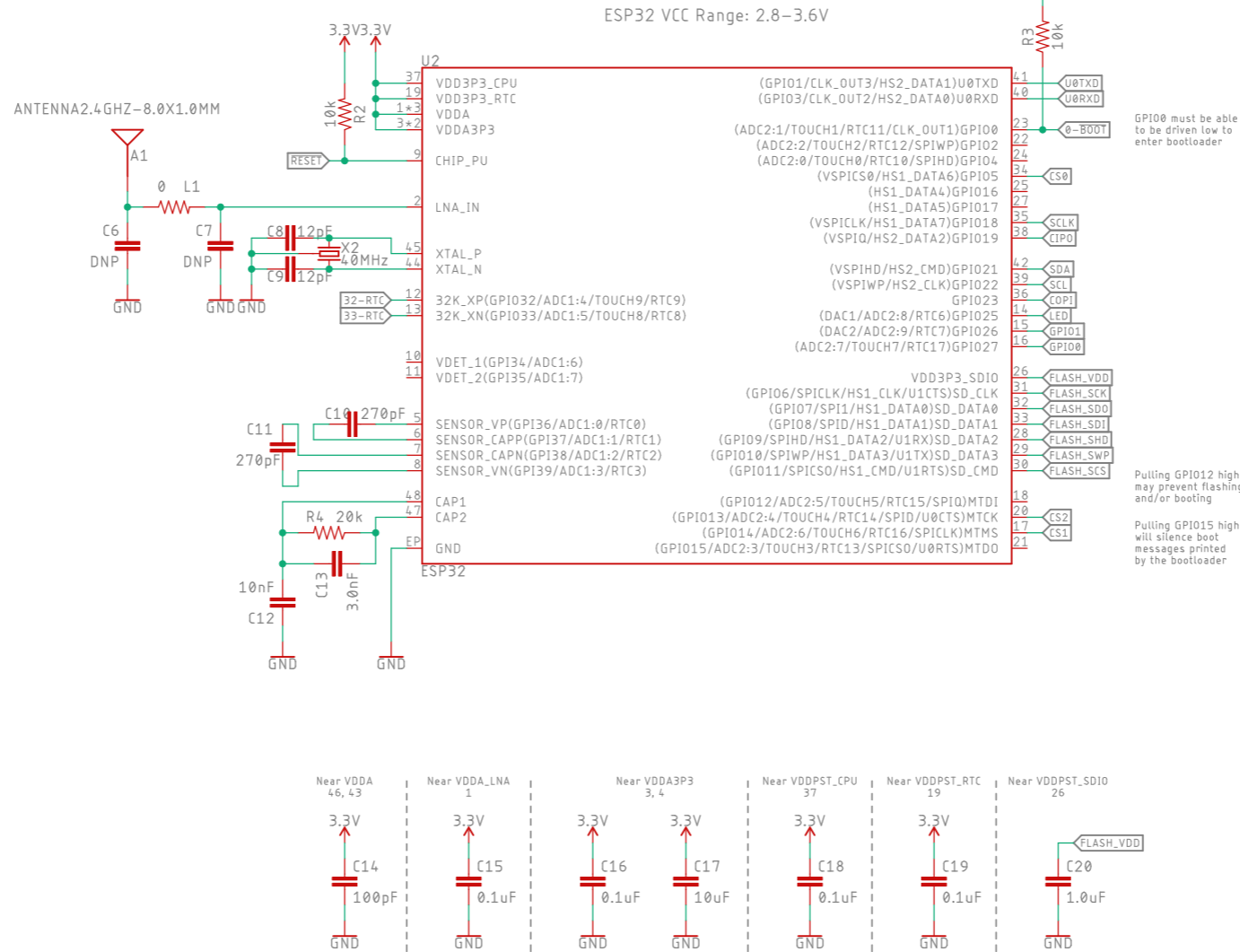
### 128Mb Flash



### smøl Connectors



### Espressif ESP32

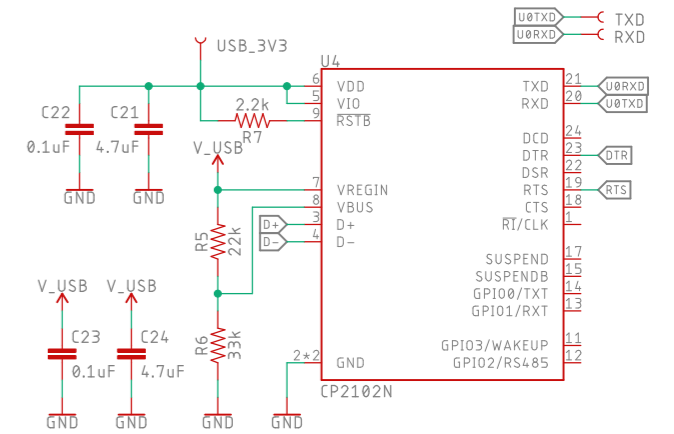


RF Track Impedance: Coplanar Waveguide with Ground Calculations  
<https://chemandy.com/calculators/coplanar-waveguide-with-ground-calculator.htm>

JLCPCB JLC7628 4-Layer 1.2mm Impedance Control Stackup (Er = 4.6)

Ground is on layer 2.  
 Prepreg thickness: 0.2mm  
 12 mil track with 4 mil gap = 49.5 Ohms

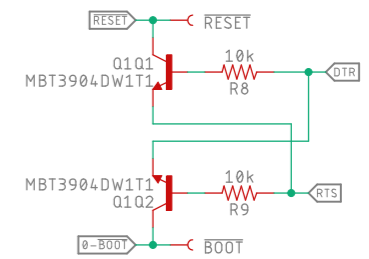
### CP2102N (USB-to-Serial Converter)



### Auto-Reset

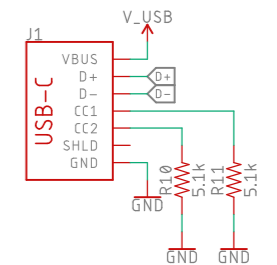
Boot Mode Configuration			
Pin	Default	Boot	Download
GPIO0	1	1	0
U0TXD	1	1	x
GPIO2	0	x	0
GPIO4	0	x	x
MTDO	1	x	x
GPIO5	1	1	x

If U0TXD, GPIO2, GPIO5 are floating, GPIO0 determines boot mode



If DTR is LOW, toggling RTS from HIGH to LOW resets to run mode.  
 If RTS is HIGH, toggling DTR from LOW to HIGH resets to bootloader.

### USB



smøl

open hardware

SPARK X

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TITLE: SparkX\_smøl\_ESP32

Design by: Paul Clark

REV: X02

Date: not saved!

Sheet: 1/1