

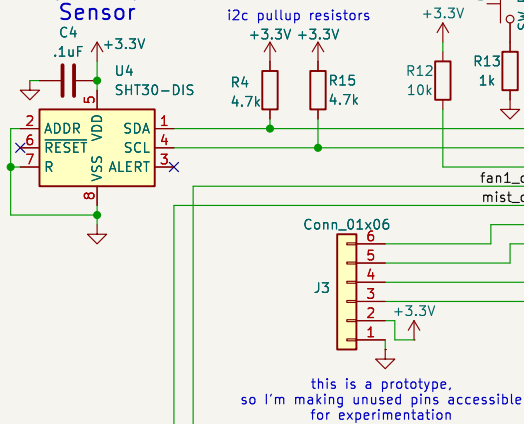
This board's job is to provide climate control for plants.
It has three main functions:
- lights: dimmable
- fans: move air throughout the enclosure
- mist: water the plants

Main microcontroller: esp32-c3

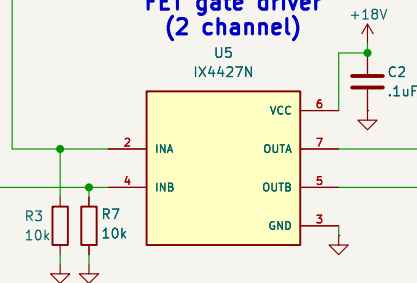
Info on auto-programming circuitry / strapping pins
https://dl.espressif.com/dl/schematics/esp32_devkitc_v4-sch-20180607a.pdf

strapping pins:
* io2, io8 should be pulled high
* io9 low = programming mode, high = normal boot
* io9 has a weak internal pull-up

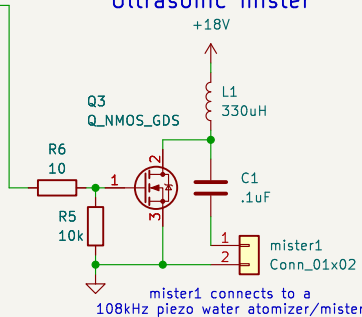
Humidity+Temperature Sensor



FET gate driver (2 channel)



Ultrasonic mister

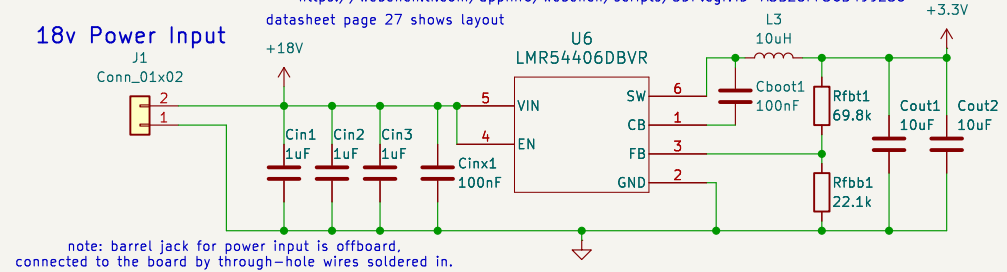


mister1 connects to a 108kHz piezo water atomizer/mister
based on <https://www.instructables.com/Make-Your-Own-Super-Simple-Ultrasonic-Mist-Maker/>

18v -> 3.3v for microcontroller

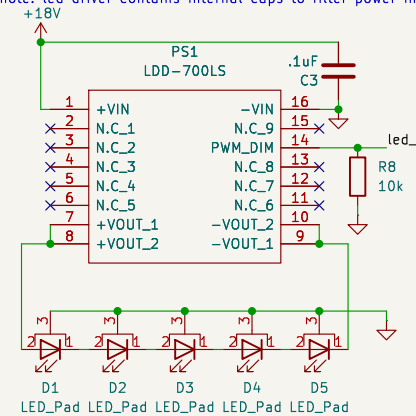
voltage converter circuit based on:
<https://webench.ti.com/appinfo/webench/scripts/SDP.cgi?ID=A3B25FF3CB499236>
datasheet page 27 shows layout

18v Power Input



LED Driver

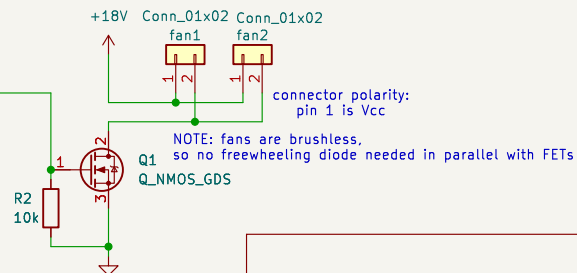
powers 5 Cree XT-E LEDs and allows dimming
note: led driver contains internal caps to filter power input



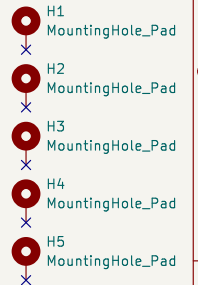
USB for programming

notes:
- this board design leaves the input voltage line from USB *disconnected*
- power input from the usb is not used for anything on the board
- to program the esp32, you must plug in usb to the computer *and* 18v wall power

Fans



Mounting Holes



Sheet: /
File: pcb.kicad_sch

Title: Terrarium Control Board

Size: A4 Date: 2024-07-18

KiCad E.D.A. 9.0.0

Rev: v0.2

Id: 1/1