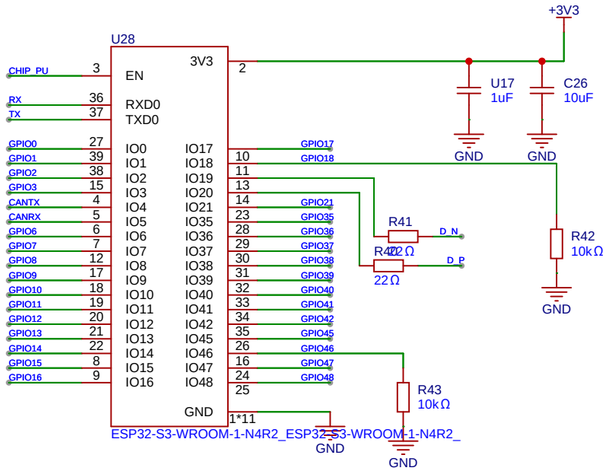
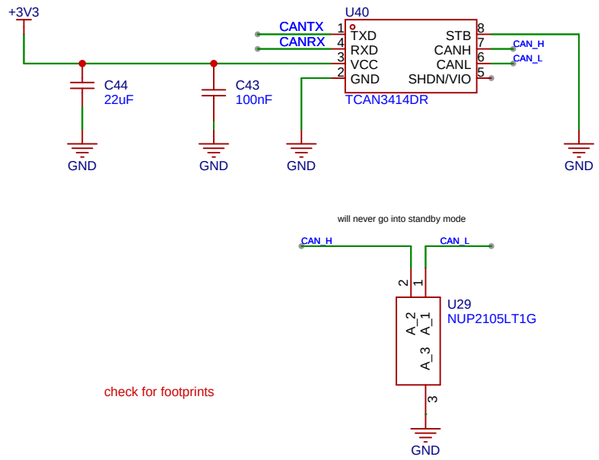
MCU



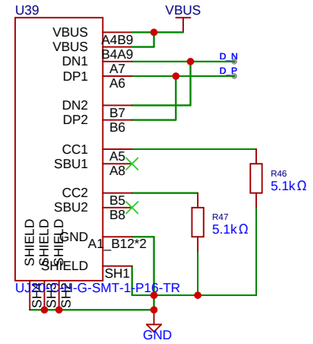
Pull down resistor on GPIO46, to ensure joint download boot mode is reached. May not need to populate. Pull down resistor on GPIO18 due to high level glitch.

add pull down resistors on gpios that glitch to a high value

CAN Transceiver



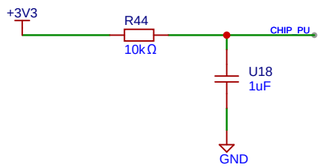
USBC



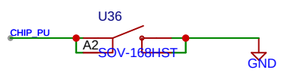
Mounting Holes

Reset & Boot

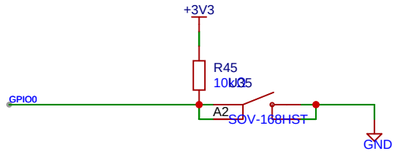
ESP32-S3 ' s CHIP_PU pin can enable the chip when it is high and reset the chip when it is low



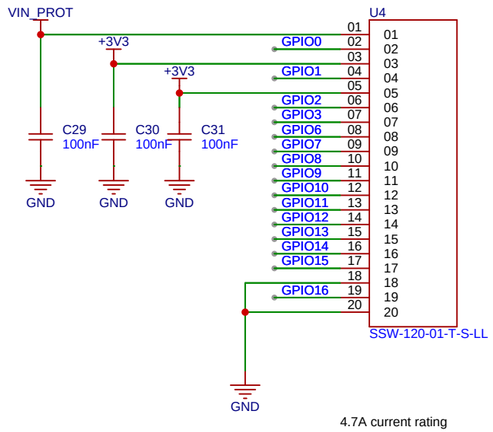
GPIO0 and GPIO46 control the boot mode after the reset is released.
Download Boot (USB): GPIO0 = 0 and GPIO46 = 0
SPI Boot (executing flash): GPIO0 = 1 and GPIO46 = Any



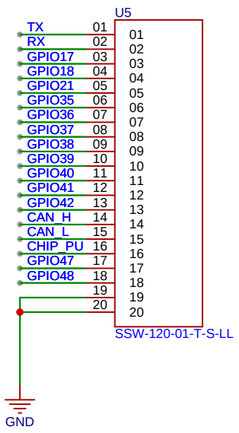
Hold bootloader button and press Reset button to program ESP



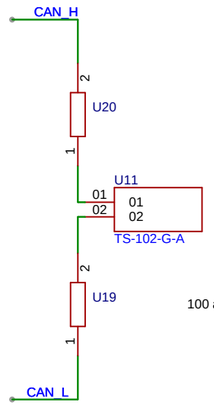
Header Pins



4.7A current rating



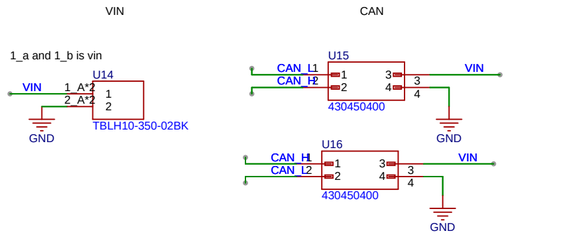
Termination Resistor



100 and 20 ohm

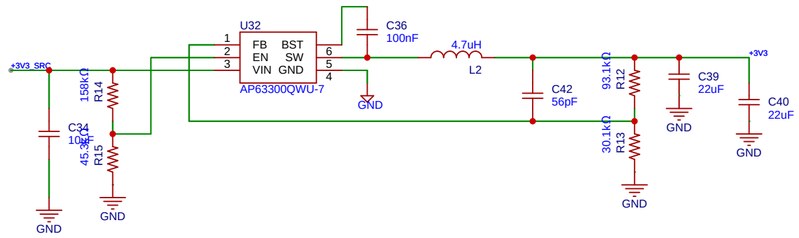
add jumper cap to short these two for EOL 120 ohm termination.

PORTS



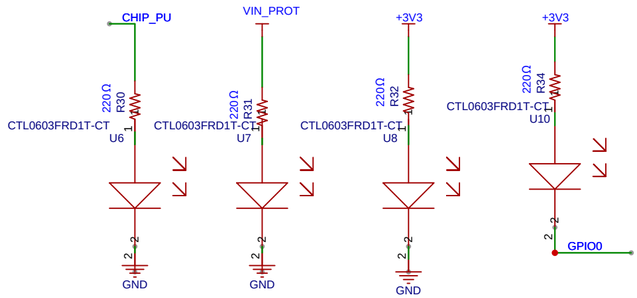
https://www.wireandcableyourway.com/20-awg-2-pair-instrumentation-cable-pltc-individual-overall-shield-300v/?srsltid=AfmBOoofDcLrTp--XLnAUubVRAiQDPeCySAygUAEyqLPig95Ot1aeKmW

Buck

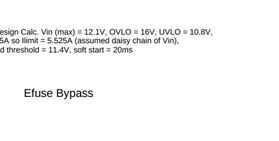


UVLO
Falling threshold : Vin < 4V turn off
Rising Threshold : Vin > 4.7V turn on
R3 = (.924*(Von-Voff))/4.114uA = 157181,
R4 = (1.09*R3)/(Voff-1.09+5.5uA*R3) = 45390

LEDs

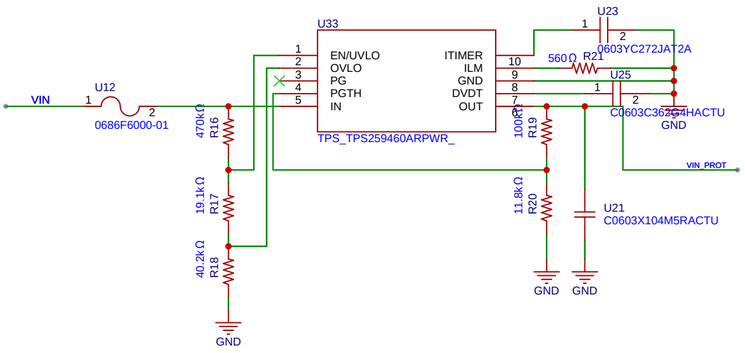


Power Select



MCU can be powered from USB-C and 12V input

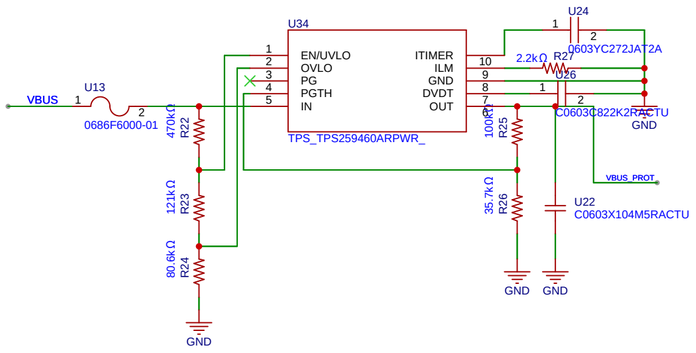
Efuse



Used Design Calc. Vin (max) = 12.1V, OVLO = 16V, UVLO = 10.8V,
Imax = 5A so Ilimit = 5.525A (assumed daisy chain of Vin),
PG good threshold = 11.4V, soft start = 20ms

Efuse Bypass

USB Efuse



Used Design Calc. Vin (max) = 5.1V, OVLO = 10V, UVLO = 4V,
Imax = 1.5A so Ilimit = 1.658A (assumed daisy chain of Vin),
PG good threshold = 4.6V, soft start = 20ms

USB Efuse Bypass