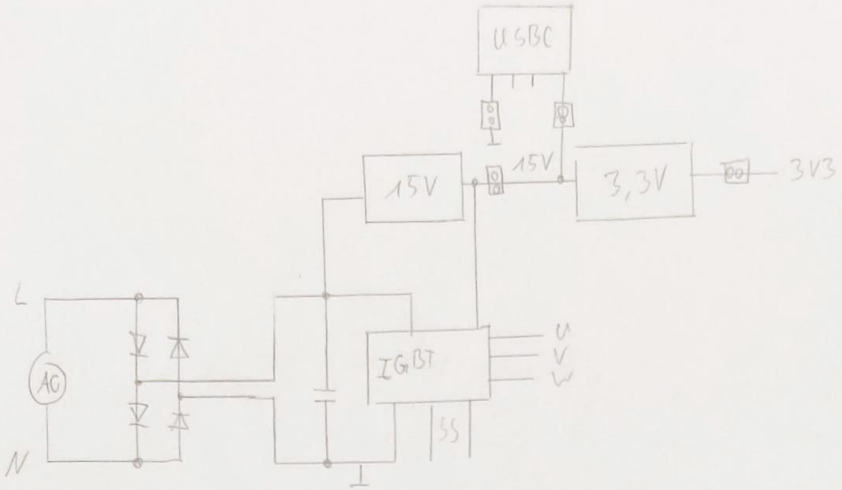

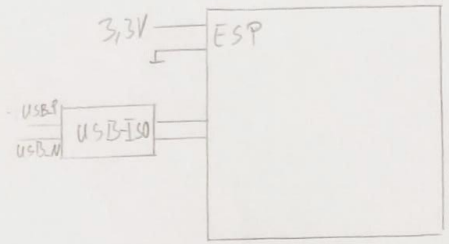

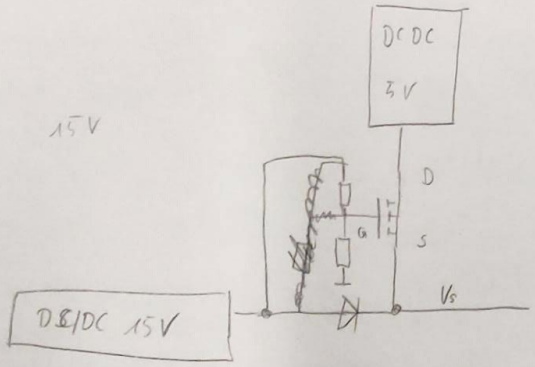

Auslegung Komponenten

IGBT

$$C_{BS} = \frac{I_{max} \times \Delta t}{\Delta V} = \frac{16A \times 0,1ms}{12,5V} -> 128 uF$$

DCDC

4 - 6 kV 6mm

reinforced

ADC - Berechung

3,3V 4336 -> 2,48 · 1,33 1E332

5,63

$$U = \frac{3,3}{65536} \cdot \frac{10k}{10k+3,3k}$$

$$U_{3,3} = 1,33 \cdot \frac{x}{65536} \cdot 3,3 = 3,28$$

44704

$$U_{15} = \frac{11,8k}{1,8k} \cdot \frac{x}{65536} \cdot 3,3 = 14,76$$

$$U_{130} = \frac{39,820k}{820} \cdot \frac{x}{65536} \cdot 3,3 =$$

Stromversorgung

- 15 V
- 3V3

Steuerung (ESP)

- ESP
- USB-C-Schnittstelle
- (USB- ESD Schutz)
- USB- Isolator
- Kommunikationsschnittstelle

Leistung

- Gleichrichter
- Strombegrenzung
- Kondensator
- IGBT

User Interface

- Display
- 3 Taster
- Potenzumeter
- LED - RGB
- RS485

Sensor

- Kühlkörpersensor
- 4x Stromsensor
- 4x Spannungssensor

- Lüftersteuerung

- RS485
- RS232
- UART
- CAN
- PWM

TO DO

- ISO

Featur

- Prüfpins
- Reset

- 3,3V
- 15 V
- Zwischenkreis
- GND

- I2C
- SPI
- UART

- IGBT Pin

Trennstellen

- nach 15V
- nach 3V3
- USB Stromversorgung

Überlegung

- Erdung
- USB -LED

Zu klären

- Größe Platine

kühlung - kühlkörper

- IGBT
- Gleichrichter
-

Platine

- 15V
- 3V3
- ESP32

Komponentenliste

- ESP32 ✓
- IGBT ✓
- Relais ✓
- Gleichrichter ✓
- 15V - Spannungswandler ✓
- 3V3 - " - ✓
- LED RGB ✓
- Anschlussterminal ✓
- USB-C Anschluss ✓
- USB-C Isolator ✓
- Stecker Display ✓
- Stecker Lüfter ✓
- Taster ✓

- Potentiometer ✓
- Strom/Spannungs Sensor
- Signal schraubterminal
- RS 485 Treiber
- Relay Mosfet ✓
- Lüfter Mosfet ✓

- Strom - Hallsensor ✓
- Spannungsversorgung ✓
- Referenz
- Interface IGBT