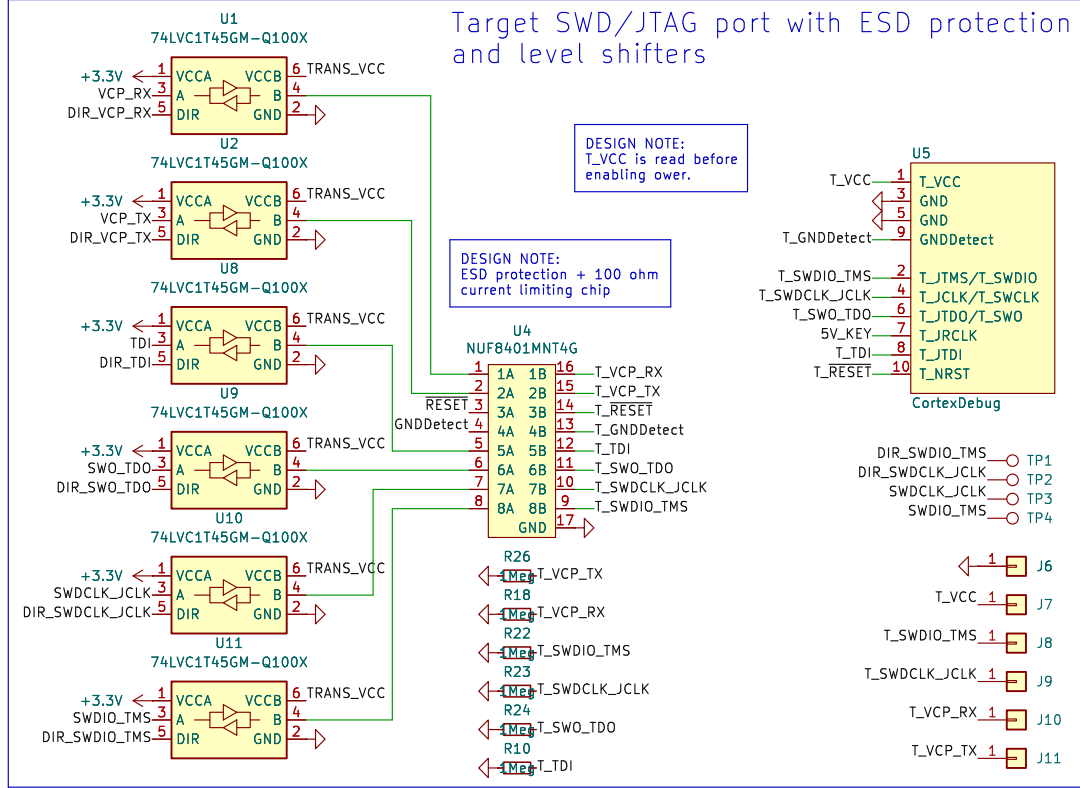


# Decoupling capacitors and SWD header

The diagram illustrates the placement of decoupling capacitors and the SWD header connections on a PCB. The layout is organized into three main sections:

- Top Section:** A horizontal bus connected to a +3.3V supply. It includes a series of decoupling capacitors labeled C1 through C20. C1 is a 0.1uF capacitor. C3, C6, and C9 are 2.2uF capacitors. C11, C12, C13, C14, C18, C19, and C20 are 0.1uF capacitors. C2, C4, C5, C7, C8, C10, C15, C16, C17, and C18 are also 0.1uF capacitors.
- Middle Section:** A horizontal bus connected to a +1V1 supply. It includes decoupling capacitors C4 (2.2uF), C7 (0.1uF), and C10 (0.1uF).
- Bottom Section:** A horizontal bus labeled TRANS\_VCC. It includes decoupling capacitors C15 (0.1uF), C16 (0.1uF), and C17 (0.1uF).
- SWD Header:** A 6-pin header labeled J5. The pins are connected as follows:
  - Pin 1: +3.3V
  - Pin 2: VCC
  - Pin 3: SWDIO
  - Pin 4: RESET
  - Pin 5: SWCLK
  - Pin 6: GND

The diagram also shows the connection of the SWD header to the SWO pin of the microcontroller.



# Board-edge castellated vias

[illegible][illegible]

# Transfer voltage feedback with PWM DAC control

The top diagram shows a circuit for a motor driver. The DAC output is labeled ADJ2\_T. It is connected to the VS2\_T input of the motor driver. The circuit includes resistors R12 (47k) and R27 (47k) in series with the DAC output. The DAC output is also connected to ground through a resistor R13 (17.4k). The motor driver input is connected to ground through a resistor R15 (17.4k). The motor driver output is labeled VS2\_T.

The bottom diagram shows a similar circuit for a motor driver. The DAC output is labeled ADJ1\_T. It is connected to the VS\_T input of the motor driver. The circuit includes resistors R14 (47k) and R16 (47k) in series with the DAC output. The DAC output is also connected to ground through a resistor R15 (17.4k). The motor driver input is connected to ground through a resistor R15 (17.4k). The motor driver output is labeled VS\_T.

To see the DAC vs Output voltage,  
see [math/find\\_resistors.m](#)

### USB-C port with ESD protection

The diagram illustrates the connection of a USB-C port (J1) to an ESD protection IC (U7, NUF2042XV6T1G). The IC is connected to a +5V supply and ground. The USB-C connector pins are labeled: VBUS (A4), CC1 (A5), CC2 (A8), D- (B7), D+ (A6), D\_P (B6), D\_N (B7), SBU1 (A8), SBU2 (B8), GND (A1), and SHIELD (S1).

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File: rs-probe.kicad_sch		
<b>Title: The Rusty Probe</b>		
Size: A3	Date: 2022-11-28	Rev: 0
KiCad E.D.A. 8.0.3		Id: 1/1