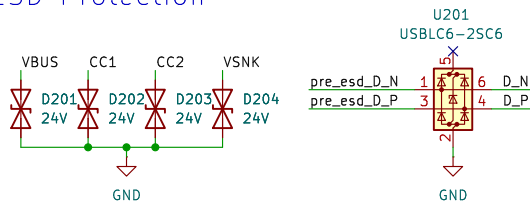
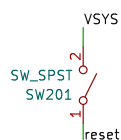


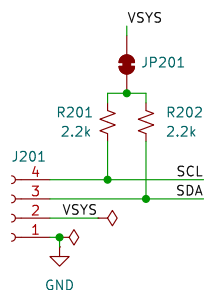
## ESD Protection



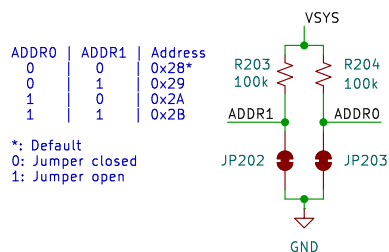
## Reset Switch



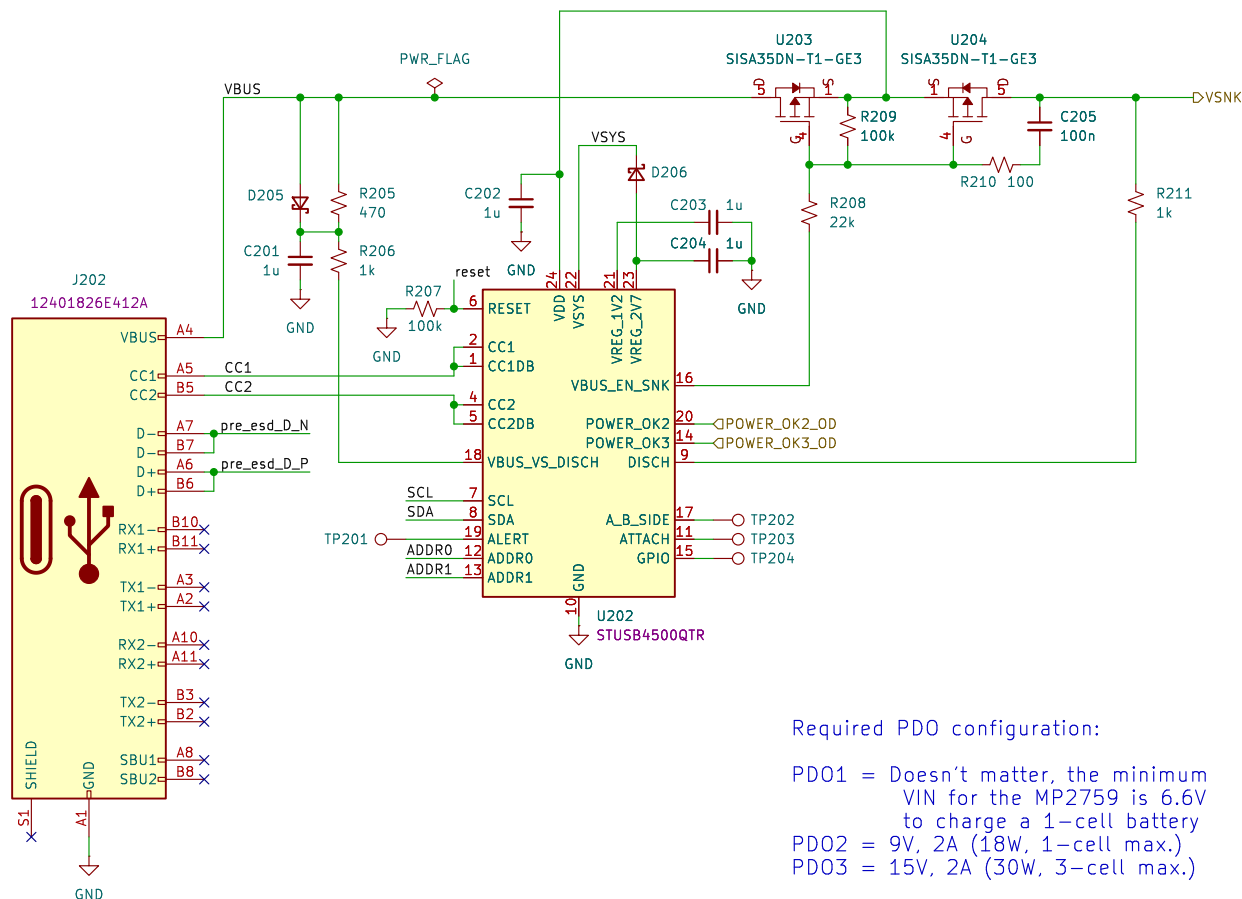
## I2C Connector and Pull-ups



## I2C Address Selection



## USB-C PD Controller

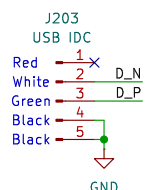


Required PDO configuration:

PDO1 = Doesn't matter, the minimum VIN for the MP2759 is 6.6V to charge a 1-cell battery  
 PDO2 = 9V, 2A (18W, 1-cell max.)  
 PDO3 = 15V, 2A (30W, 3-cell max.)

\*\*Make sure to set the charger ILIM to the lowest current of PDO2 and PDO3\*\*

## USB Header



Nicholas Loehrke  
 University of Wisconsin-Platteville

Sheet: /USB-C PD/  
 File: usb\_c\_pd.kicad\_sch

Title:

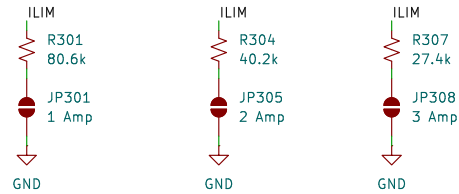
Size: A4 Date: 2024-10-27

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Rev: 0.1.0

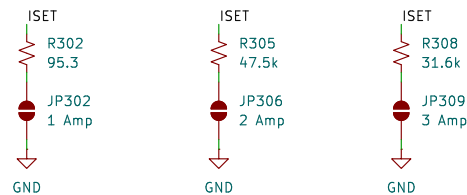
Id: 2/7

## Input Current Limit Setting



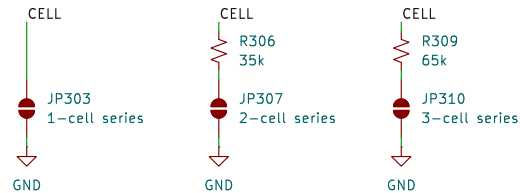
Note: Bridge only the desired current limit's jumper

## Charging Current Setting



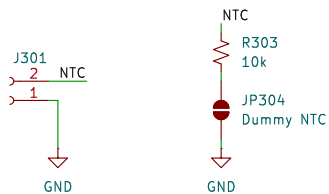
Note: Bridge only the desired current limit's jumper

## Cell Count Setting



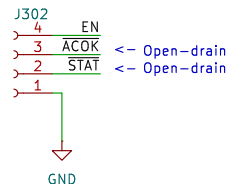
Note: Bridge only the desired cell count's jumper

## Thermister Setting and Connector

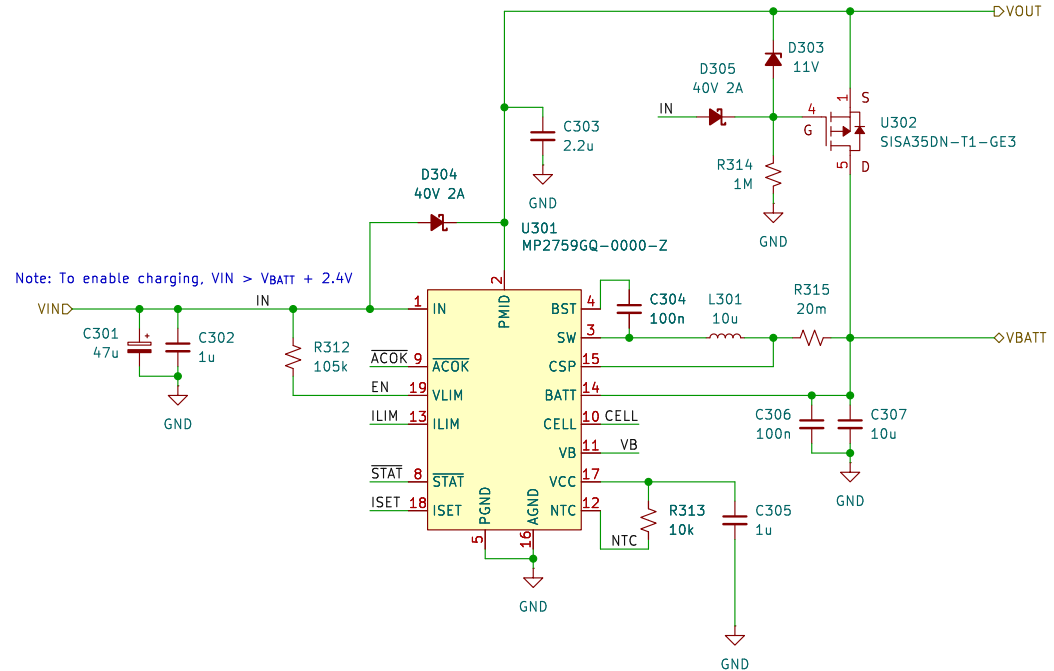


Note: Bridge 'Dummy NTC' when not using a thermistor

## IO Connector

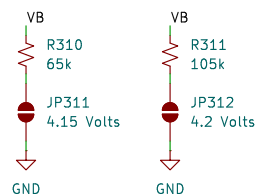


## Charger



Note: To enable charging,  $V_{IN} > V_{BATT} + 2.4V$

## Charge Voltage Setting



Note: Bridge only the desired charge voltage's jumper

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University of Wisconsin-Platteville

Sheet: /Charger/  
File: charger.kicad\_sch

### Title:

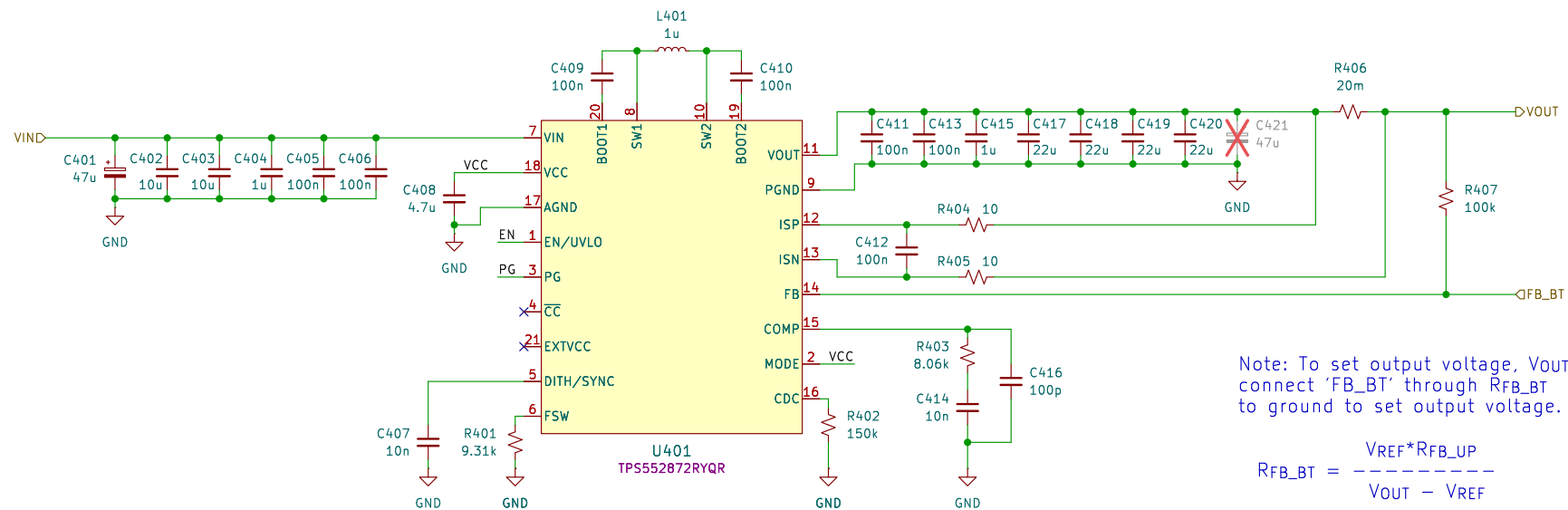
Size: A4

Date: 2024-10-27

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Rev: 0.1.0

Id: 3/7



Note: To set output voltage, Vout, connect 'FB\_BT' through RFB\_BT to ground to set output voltage.

$$R_{FB\_BT} = \frac{V_{REF} \cdot R_{FB\_UP}}{V_{OUT} - V_{REF}}$$

$$R_{FB\_BT} = \frac{1.2 \cdot 100k}{V_{OUT} - 1.2}$$

ex. Vout = 12V, RFB\_BT = 11.1k

Sheet: /Buck-Boost/  
File: buck\_boost.kicad\_sch

**Title:**

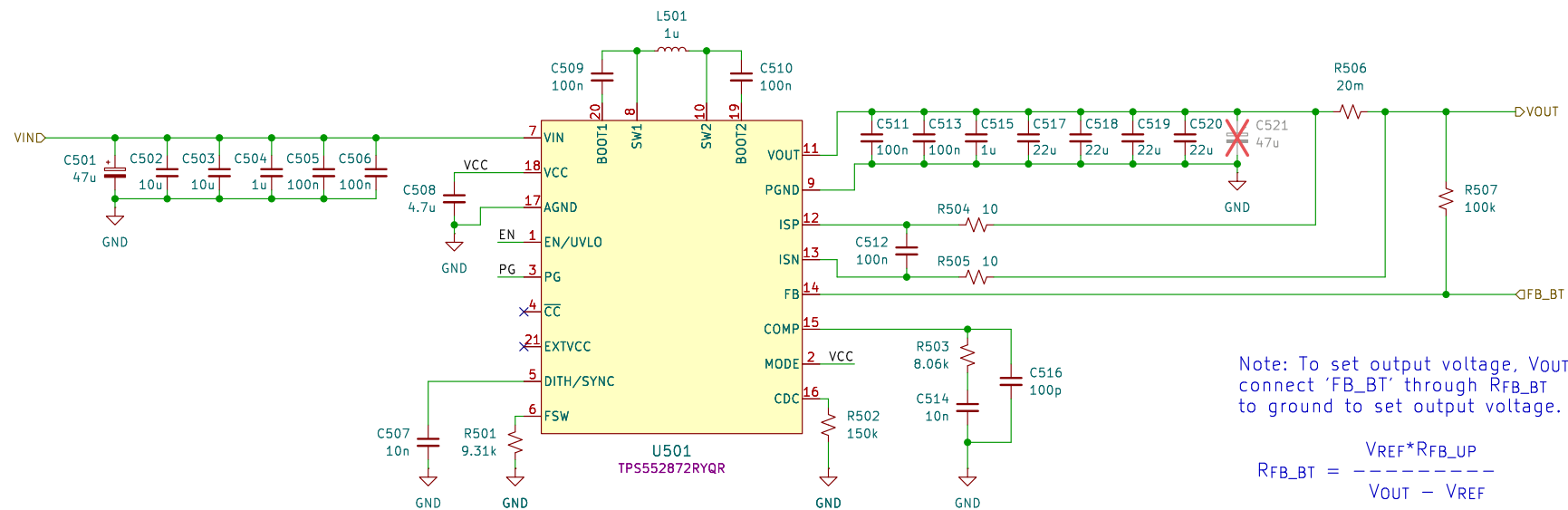
Size: A4

Date:

KiCad E.D.A. 8.0.6

**Rev:**

Id: 4/7



Note: To set output voltage, VOUT, connect 'FB\_BT' through RFB\_BT to ground to set output voltage.

$$R_{FB\_BT} = \frac{V_{REF} \cdot R_{FB\_UP}}{V_{OUT} - V_{REF}}$$

$$R_{FB\_BT} = \frac{1.2 \cdot 100k}{V_{OUT} - 1.2}$$

ex. VOUT = 12V, RFB\_BT = 11.1k

Sheet: /Buck-Boost1/  
File: buck\_boost.kicad\_sch

**Title:**

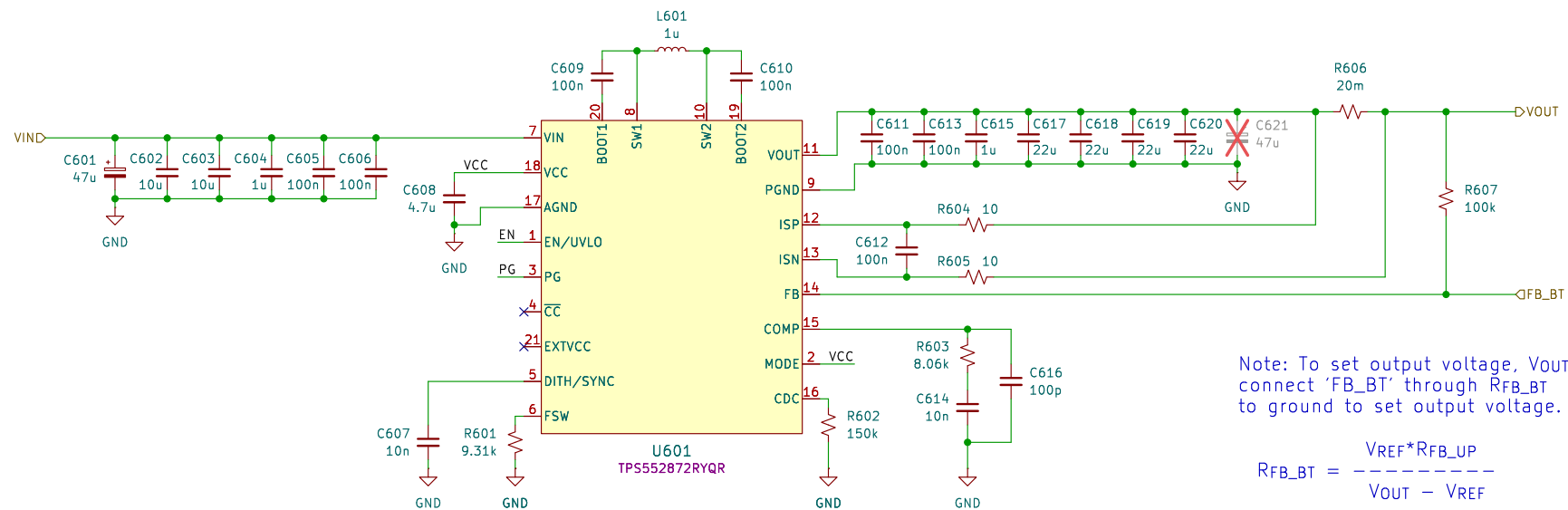
Size: A4

Date:

KiCad E.D.A. 8.0.6

**Rev:**

Id: 5/7



Note: To set output voltage, VOUT, connect 'FB\_BT' through RFB\_BT to ground to set output voltage.

$$R_{FB\_BT} = \frac{V_{REF} \cdot R_{FB\_UP}}{V_{OUT} - V_{REF}}$$

$$R_{FB\_BT} = \frac{1.2 \cdot 100k}{V_{OUT} - 1.2}$$

ex. VOUT = 12V, RFB\_BT = 11.1k

Sheet: /Buck-Boost2/  
File: buck\_boost.kicad\_sch

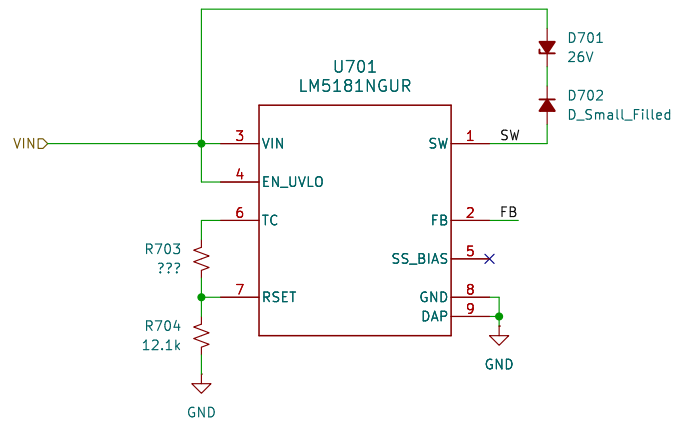
# **Title:**

Size: A4  
KiCad E.D.A. 8.0.6

Date:

Rev:

Id: 6/7



Id: 7/7