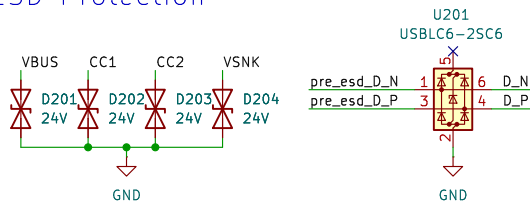
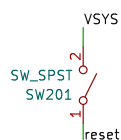


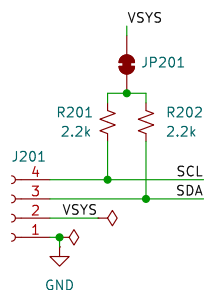
ESD Protection



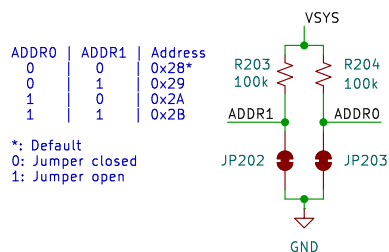
Reset Switch



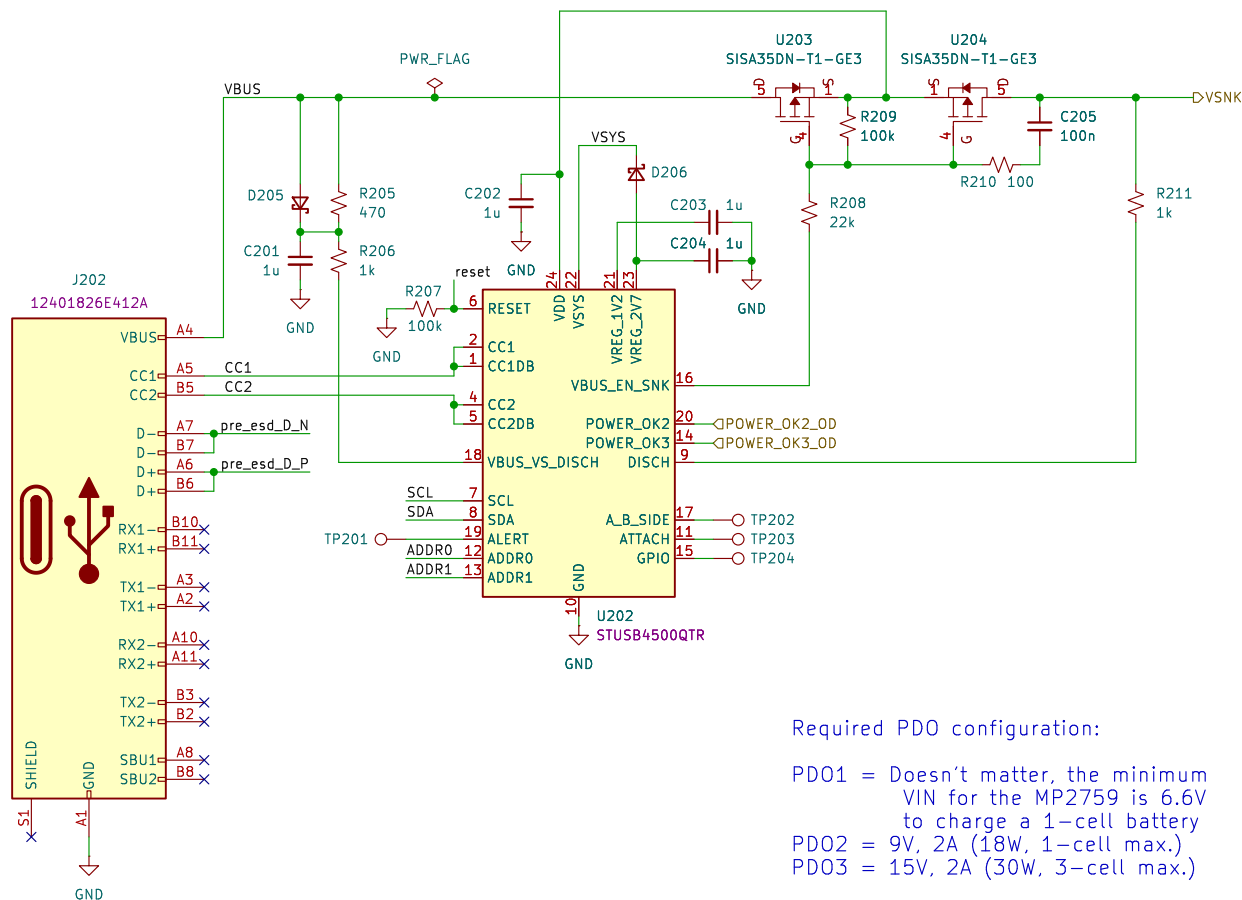
I2C Connector and Pull-ups



I2C Address Selection



USB-C PD Controller

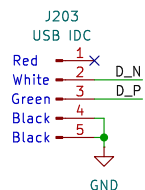


Required PDO configuration:

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:

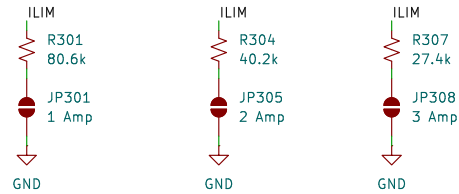
Size: A4 Date: 2024-10-27

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Rev: 0.1.0

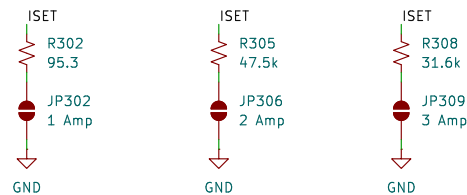
Id: 2/7

Input Current Limit Setting



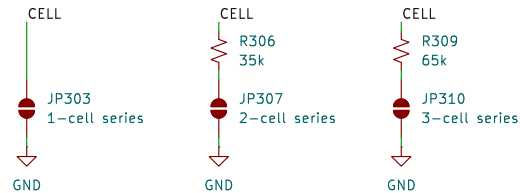
Note: Bridge only the desired current limit's jumper

Charging Current Setting



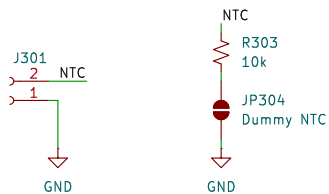
Note: Bridge only the desired current limit's jumper

Cell Count Setting



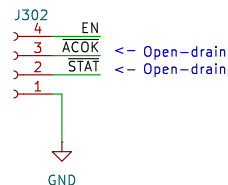
Note: Bridge only the desired cell count's jumper

Thermister Setting and Connector

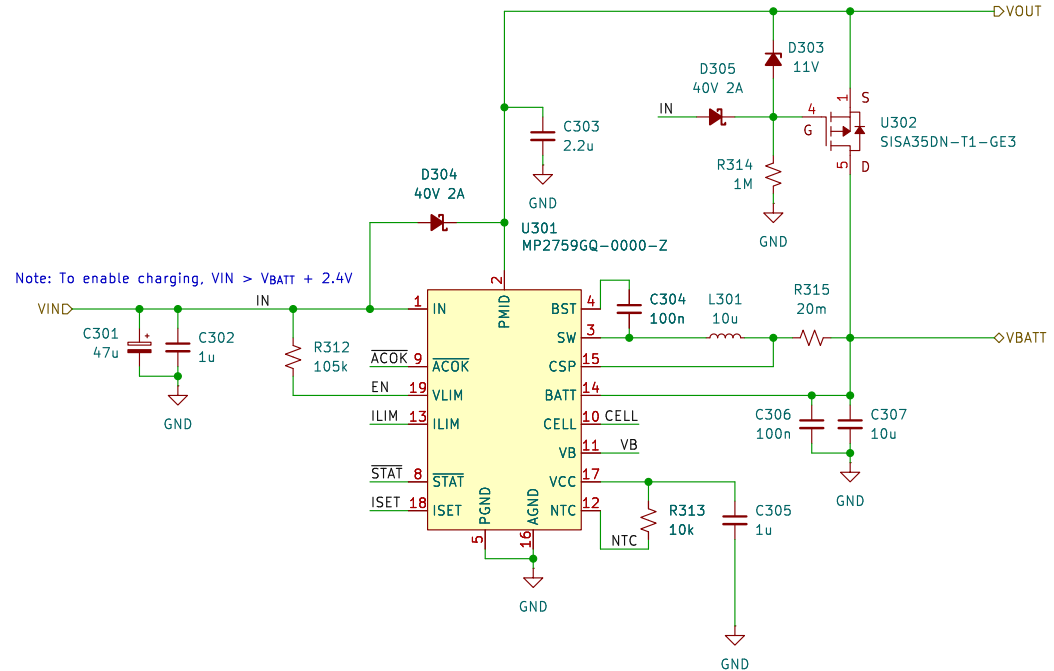


Note: Bridge 'Dummy NTC' when not using a thermistor

IO Connector

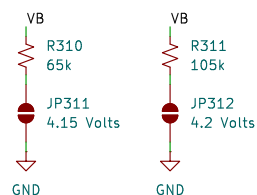


Charger



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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Sheet: /Charger/
File: charger.kicad_sch

Title:

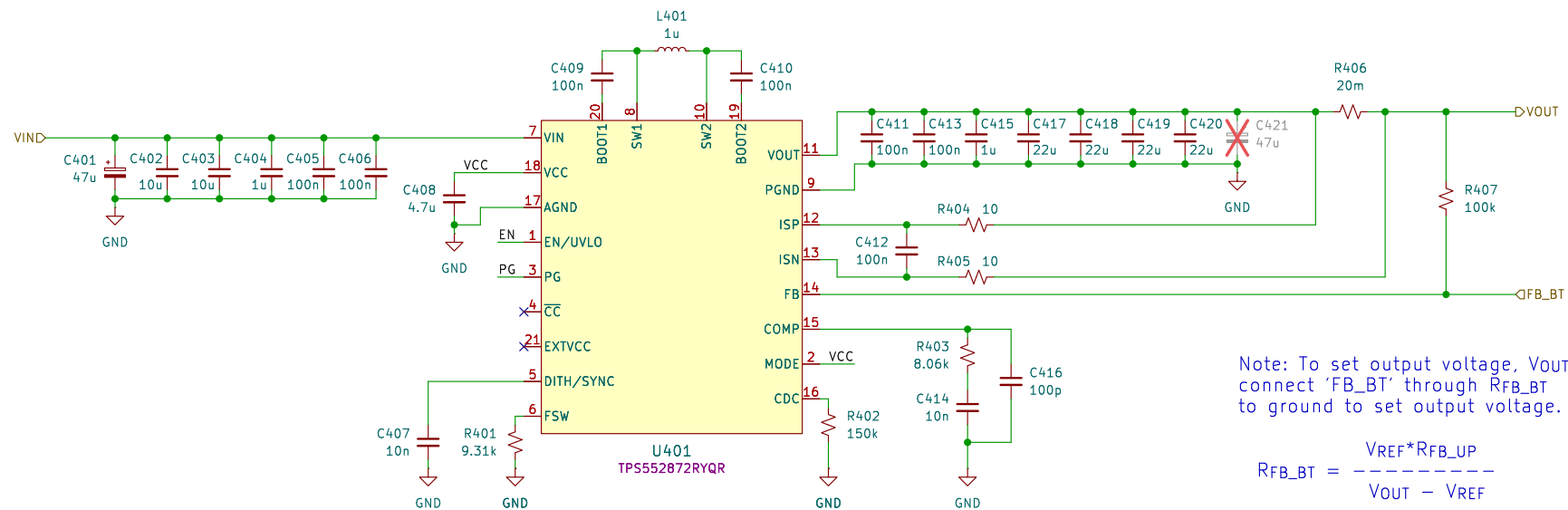
Size: A4

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

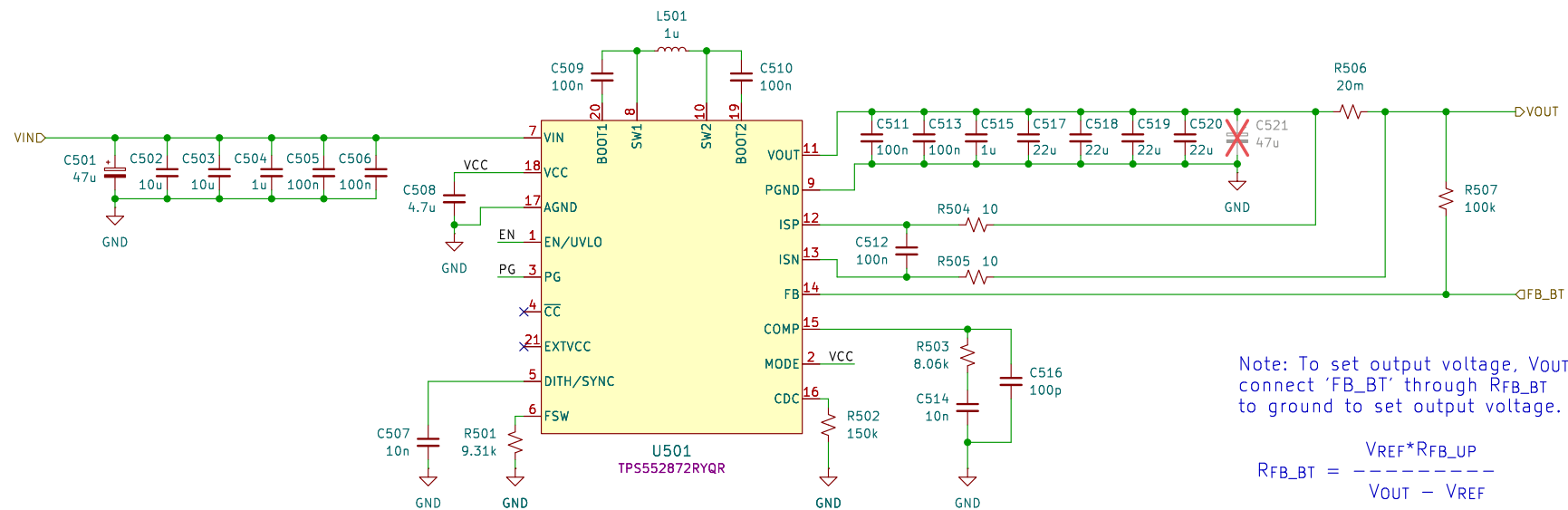
Title:

Size: A4
KiCad E.D.A. 8.0.6

Date:

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:

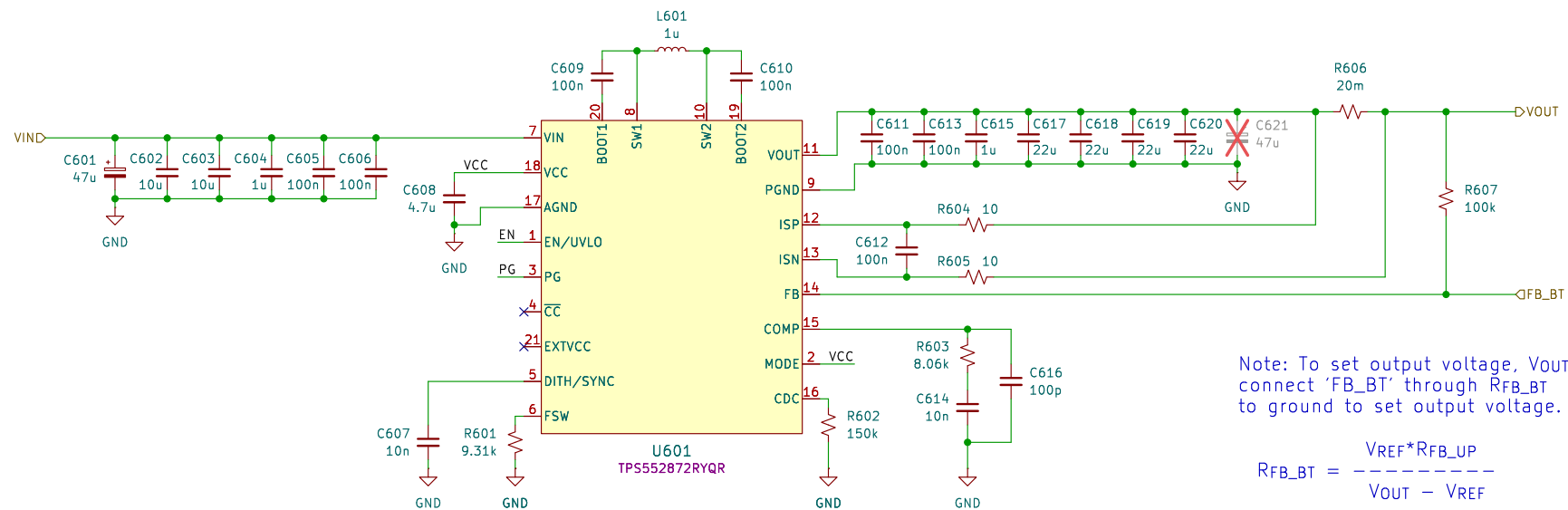
Size: A4

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:

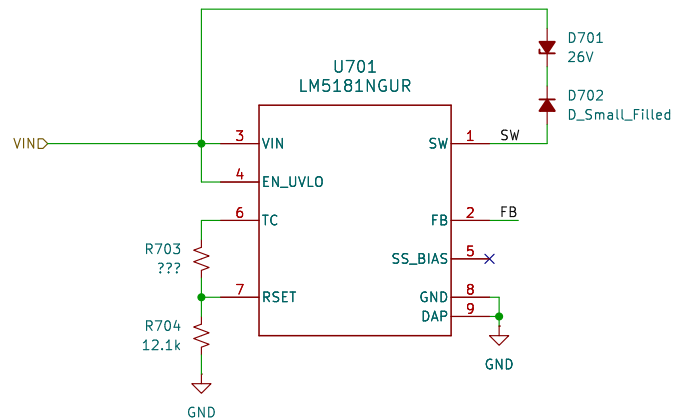
Size: A4

Date:

KiCad E.D.A. 8.0.6

Rev:

Id: 6/7



Id: 7/7