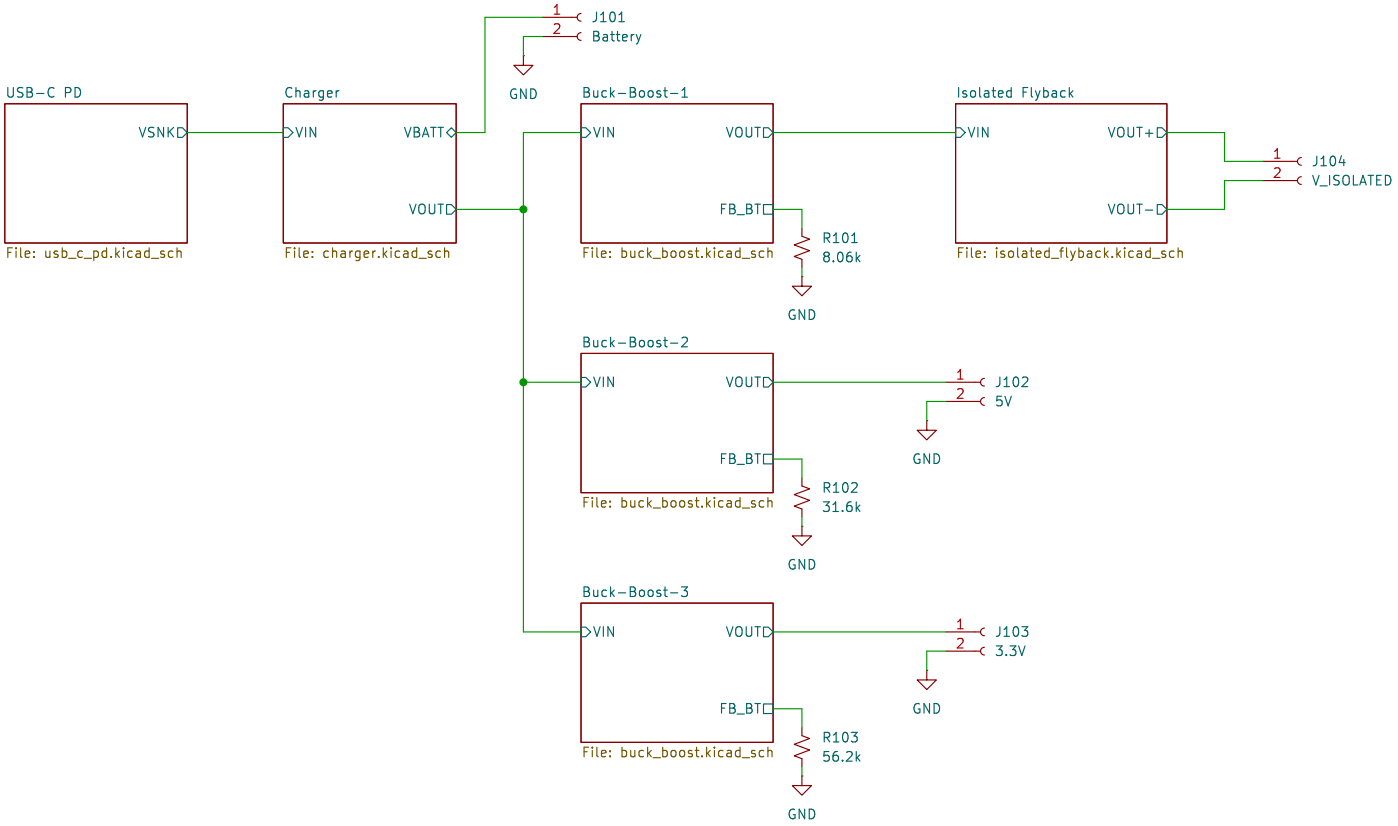

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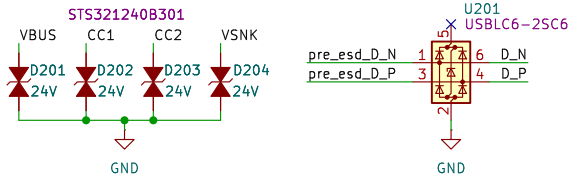
University of Wisconsin-Platteville

Sheet: /
File: power_supply.kicad_sch

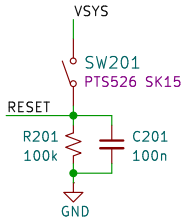
Title: Power Supply

Size: A4	Date: 2024-10-27	**Rev: 0.1.0**
KiCad E.D.A. 8.0.6		Id: 1/7

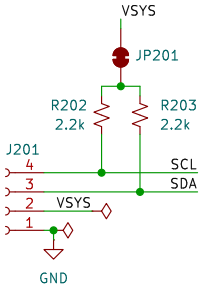
ESD Protection



Reset Switch



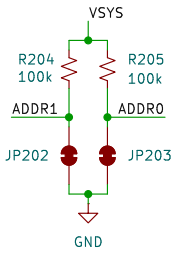
I2C Connector and Pull-ups



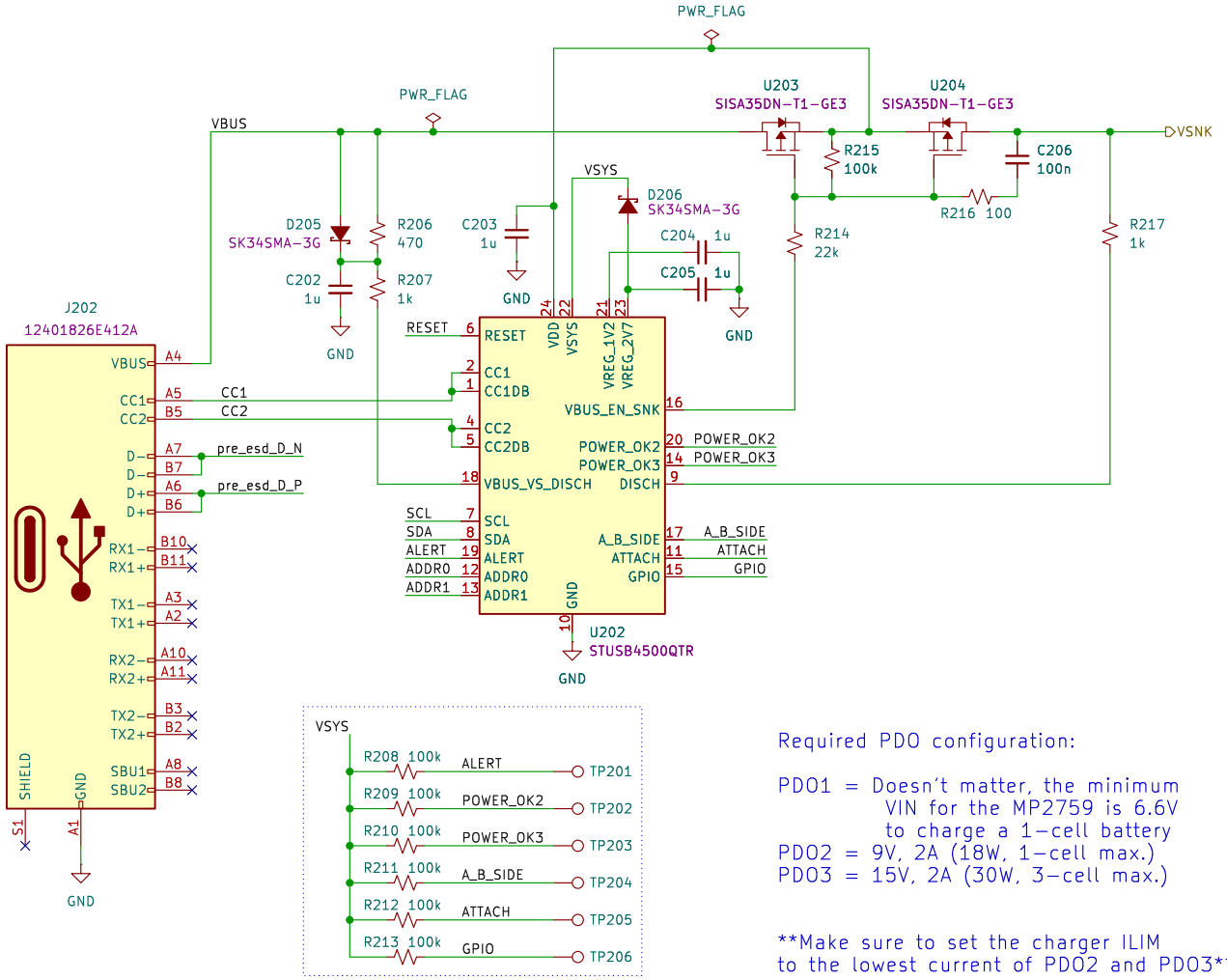
I2C Address Selection

ADDR0	ADDR1	Address
0	0	0x28*
0	1	0x29
1	0	0x2A
1	1	0x2B

*: Default
0: Jumper closed
1: Jumper open



USB-C PD Controller

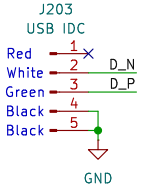


Required PDO configuration:

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



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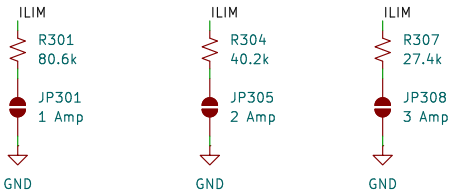
Sheet: /USB-C PD/
File: usb_c_pd.kicad_sch

Title:

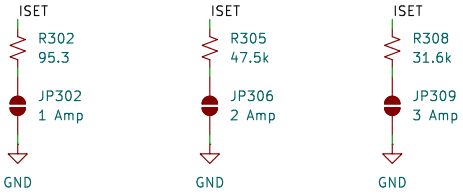
Size: A4	Date: 2024-10-27	**Rev: 0.1.0**
KiCad E.D.A. 8.0.6		Id: 2/7

Input Current Limit Setting



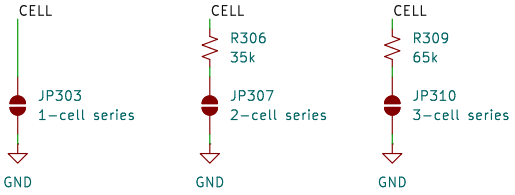
Note: Bridge only the desired current limit's jumper

Charging Current Setting



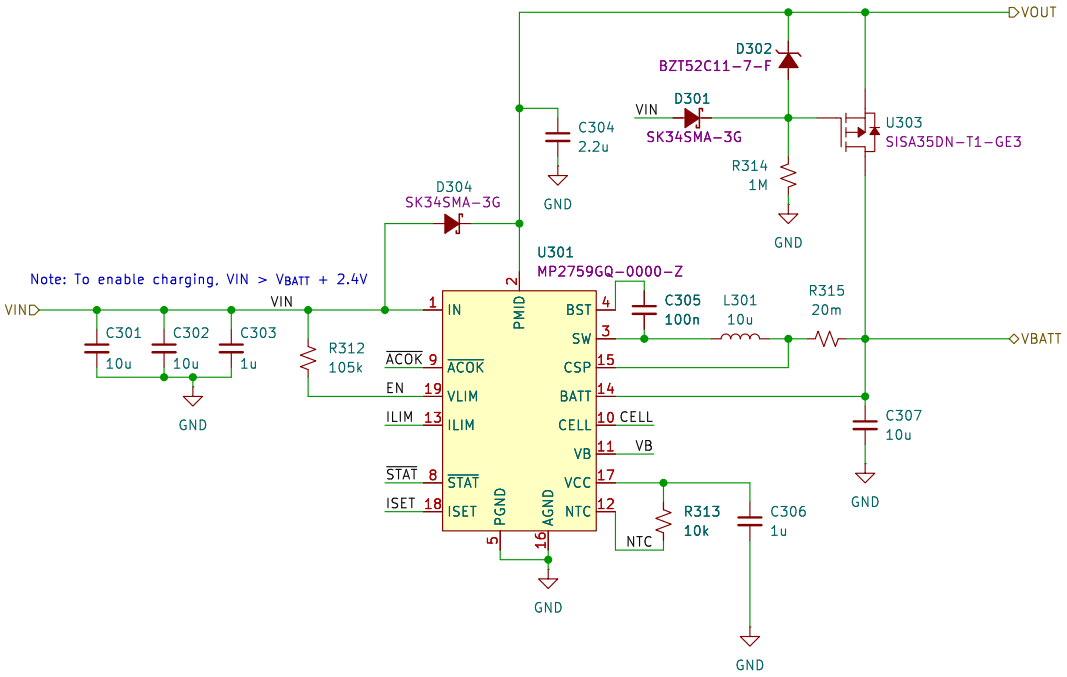
Note: Bridge only the desired current limit's jumper

Cell Count Setting

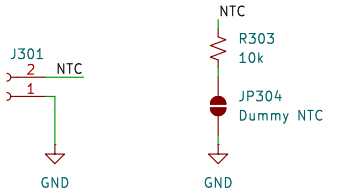


Note: Bridge only the desired cell count's jumper

Charger

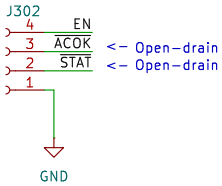


Thermister Setting and Connector

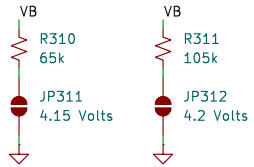


Note: Bridge 'Dummy NTC' when not using a thermistor

IO Connector



Charge Voltage Setting



Note: Bridge only the desired charge voltage's jumper

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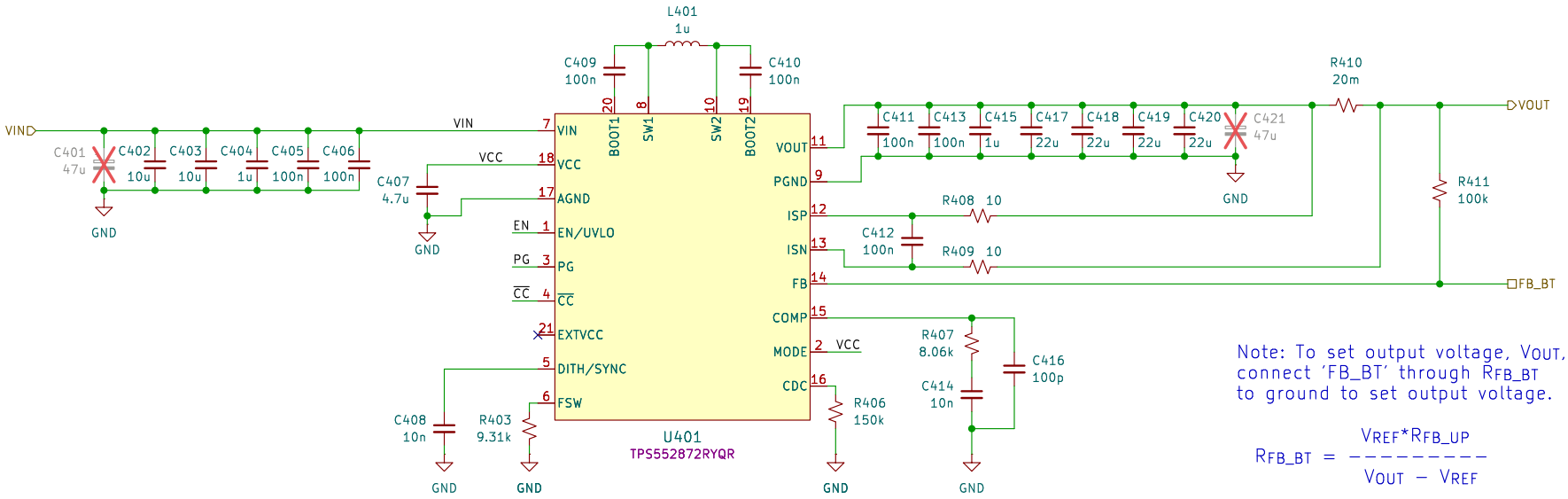
Sheet: /Charger/
File: charger.kicad_sch

Title:

Size: A4	Date: 2024-10-27	**Rev: 0.1.0**
KiCad E.D.A. 8.0.6		Id: 3/7

Buck-Boost Converter



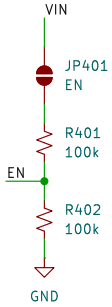
Note: To set output voltage, V_{OUT}, connect 'FB_BT' through R_{FB_BT} to ground to set output voltage.

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

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

ex. V_{OUT} = 12V, R_{FB_BT} = 11.1k

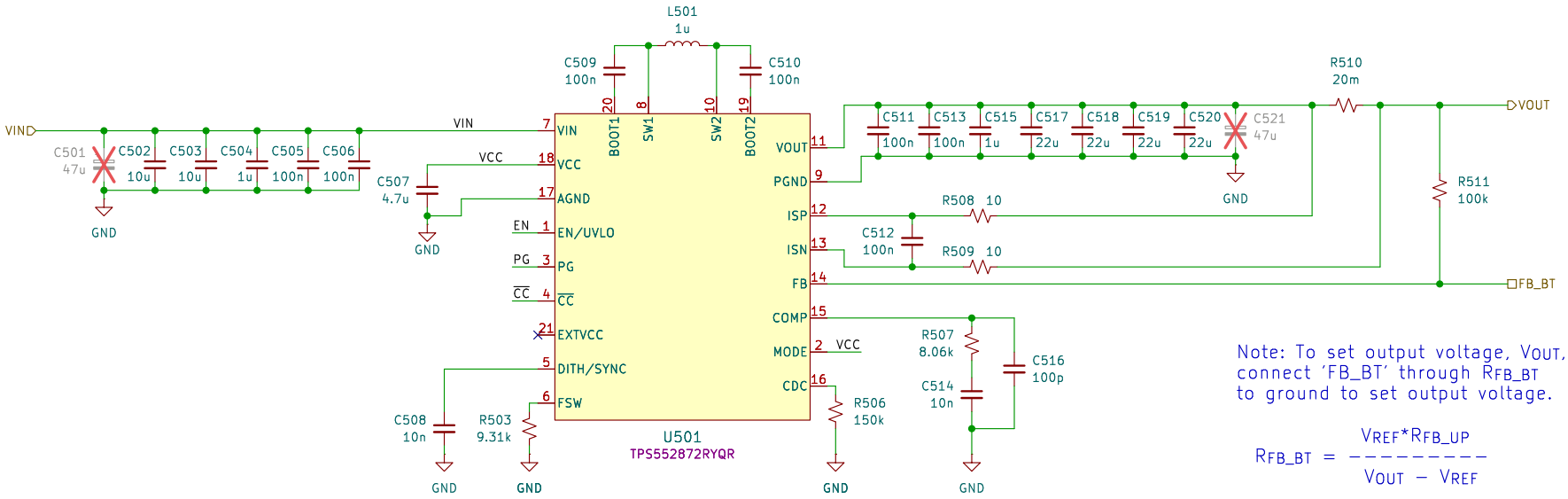
Enable



Test Points

Sheet: /Buck-Boost-1/		
File: buck_boost.kicad_sch		
Title:		
Size: A4	Date:	**Rev:**
KiCad E.D.A. 8.0.6		Id: 4/7

Buck–Boost Converter



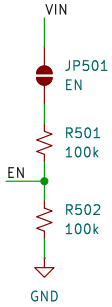
Note: To set output voltage, V_{OUT}, connect 'FB_BT' through R_{FB_BT} to ground to set output voltage.

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

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

ex. V_{OUT} = 12V, R_{FB_BT} = 11.1k

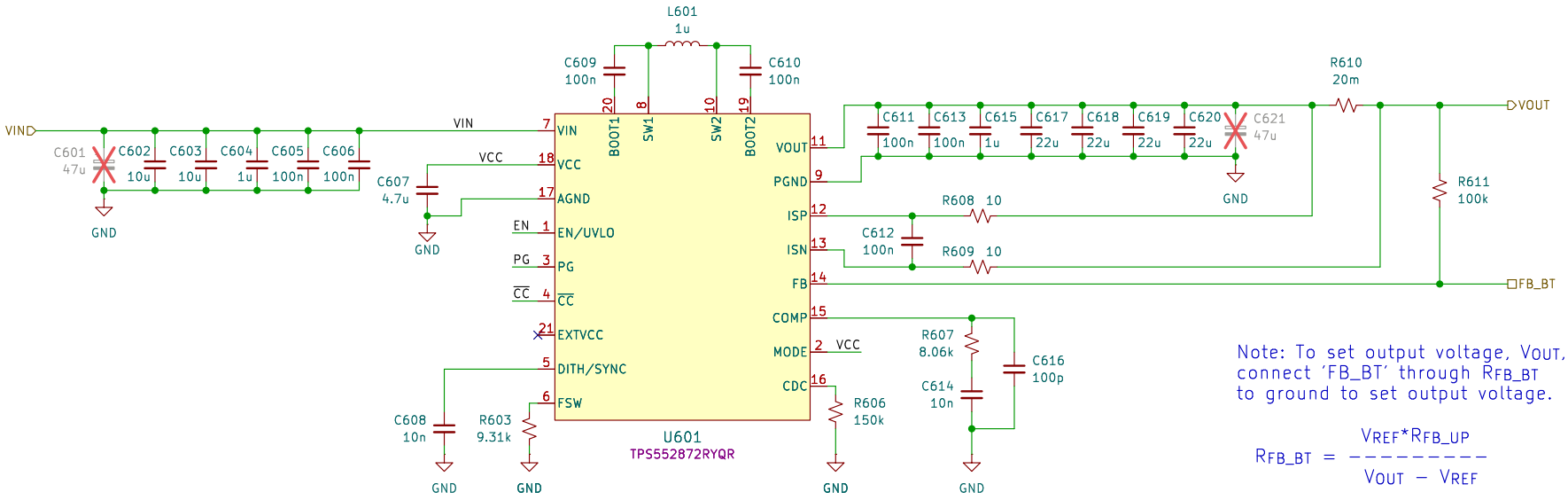
Enable



Test Points

Sheet: /Buck–Boost–2/		
File: buck_boost.kicad_sch		
Title:		
Size: A4	Date:	**Rev:**
KiCad E.D.A. 8.0.6		Id: 5/7

Buck-Boost Converter



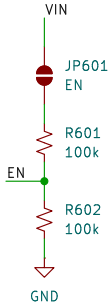
Note: To set output voltage, V_{OUT}, connect 'FB_BT' through R_{FB_BT} to ground to set output voltage.

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

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

ex. V_{OUT} = 12V, R_{FB_BT} = 11.1k

Enable

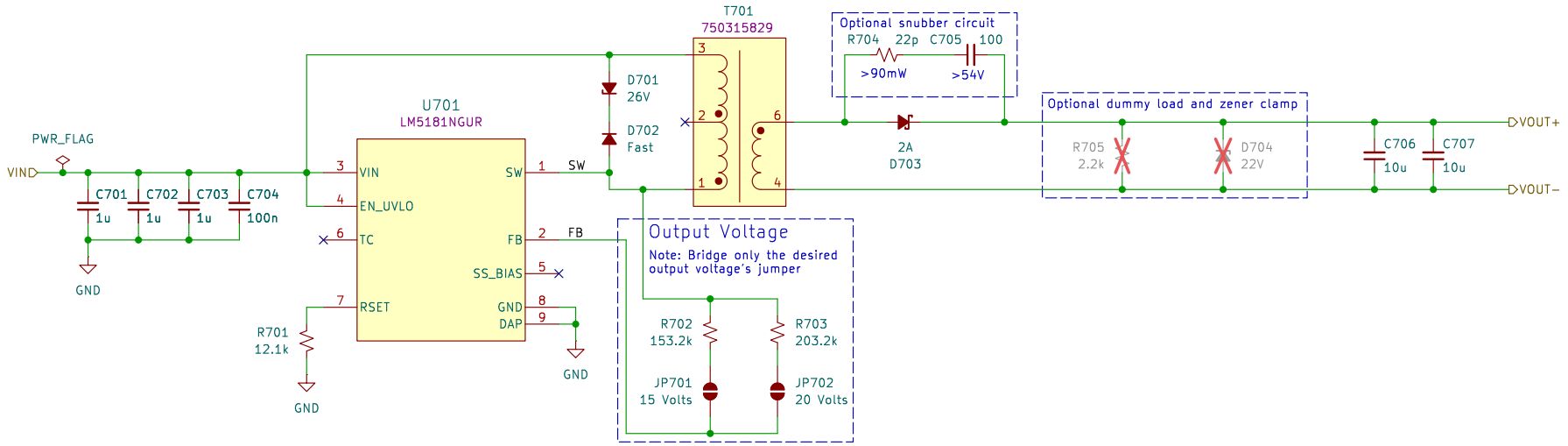


Test Points

Sheet: /Buck-Boost-3/
File: buck_boost.kicad_sch

Title:

Size: A4	Date:	**Rev:**
KiCad E.D.A. 8.0.6		Id: 6/7



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Sheet: /Isolated Flyback/
File: isolated_flyback.kicad_sch

Title: Power Supply

Size: A4	Date: 2024-10-27	**Rev: 0.1.0**
KiCad E.D.A. 8.0.6		Id: 7/7