

Nicholas Loehrke
University of Wisconsin-Platteville

Sheet: /
File: power_supply.kicad_sch

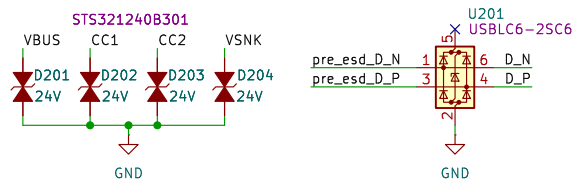
Title: Power Supply

Size: A4 Date: 2024-10-27

KiCad E.D.A. 8.0.7

Rev: 0.1.0

Id: 1/7



Reset Switch

VSYS

SW201

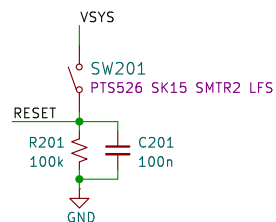
PTS526 SK15 SMTR2 LFS

RESET

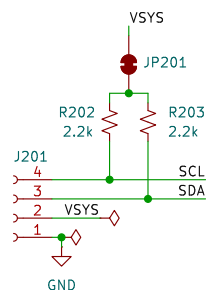
R201 100k

C201 100n

GND



I2C Connector and Pull-ups



I2C Address Selection

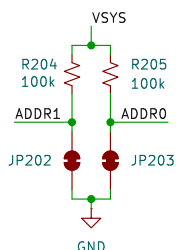
ADDR0	ADDR1	Address
0	0	0x28*
0	1	0x29
1	0	0x2A
1	1	0x2B

*: Default
0: Jumper closed
1: Jumper open

The diagram illustrates the hardware configuration for selecting the I2C address. It features a voltage divider network where VSYS is connected to a 100k resistor (R204). The output of this resistor is connected to ADDR1. A second 100k resistor (R205) is connected between ADDR1 and ADDR0. ADDR0 is connected to JP203, and ADDR1 is connected to JP202. Both JP202 and JP203 are shown as closed jumpers, indicating that the default address 0x28 is selected.

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

- *: Default
- 0: Jumper closed
- 1: Jumper open

[illegible]

Required PDO configuration:

PD01 = Doesn't matter, the minimum VIN for the MP2759 is 6.6V to charge a 1-cell battery

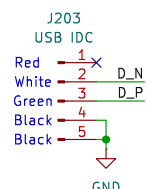
PD02 = 9V, 2A (18W, 1-cell max.)
PD03 = 15V, 2A (30W, 3-cell max.)

****Make sure to set the charger ILIM to the lowest current of PD02 and PD03****

USB Header

Diagram illustrating the USB Header connection:

- Red wire (Pin 1) is connected to D_N.
- White wire (Pin 2) is connected to D_P.
- Green wire (Pin 3) is connected to D_P.
- Black wire (Pin 4) is connected to GND.
- Black wire (Pin 5) is connected to GND.



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

Title:

Size: A4

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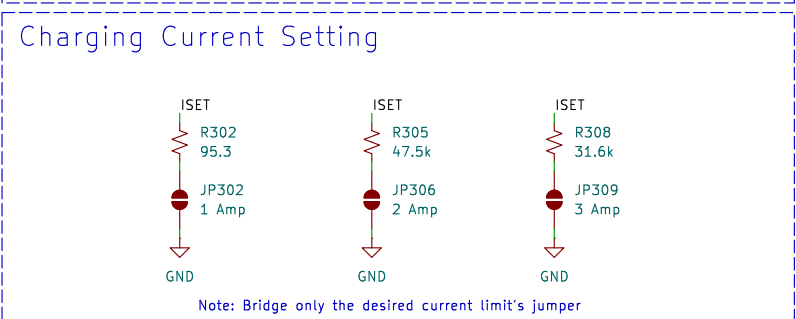
Id: 2/7

Input Current Limit Setting

Diagram illustrating the Input Current Limit Setting for a power supply. The circuit shows three configurations for setting the current limit using a resistor (R301, R304, or R307) and a jumper (JP301, JP305, or JP308).

Resistor	Value	Jumper	Current Limit
R301	80.6k	JP301	1 Amp
R304	40.2k	JP305	2 Amp
R307	27.4k	JP308	3 Amp

Note: Bridge only the desired current limit's jumper

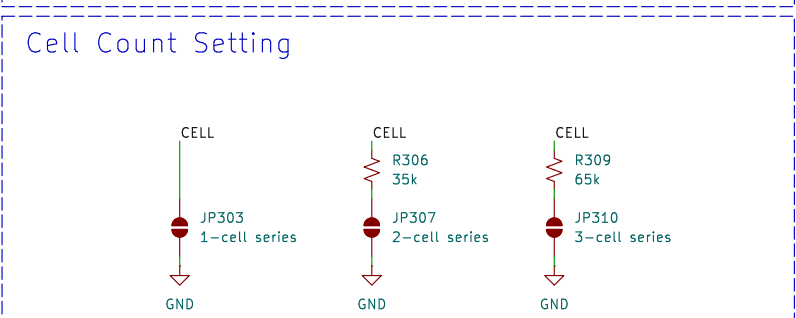


Charging Current Setting

The diagrams illustrate three different charging current settings for a battery pack. Each setting is represented by a circuit diagram with a resistor (R302, R305, or R308) connected to a jumper (JP302, JP306, or JP309) which is then connected to ground (GND).

- Setting 1:** Resistor R302 (95.3) connected to jumper JP302 (1 Amp).
- Setting 2:** Resistor R305 (47.5k) connected to jumper JP306 (2 Amp).
- Setting 3:** Resistor R308 (31.6k) connected to jumper JP309 (3 Amp).

Note: Bridge only the desired current limit's jumper



Cell Count Setting

CELL

JP303
1-cell series

GND

CELL

R306
35k

JP307
2-cell series

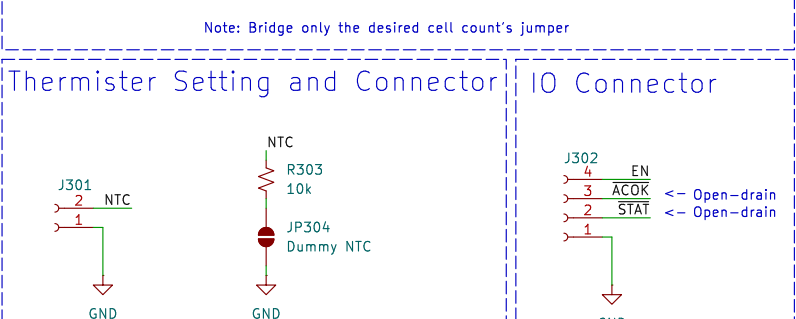
GND

CELL

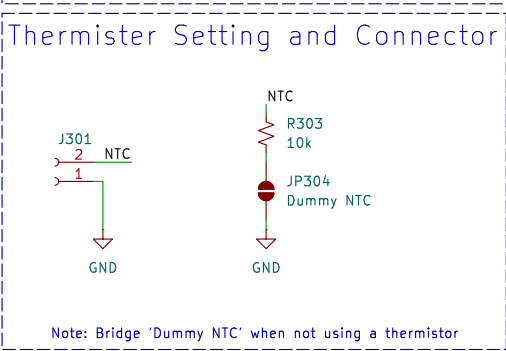
R309
65k

JP310
3-cell series

GND



Thermistor Setting and Connector



Thermistor Setting and Connector

I/O Connector

J302

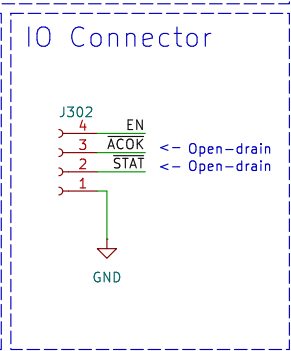
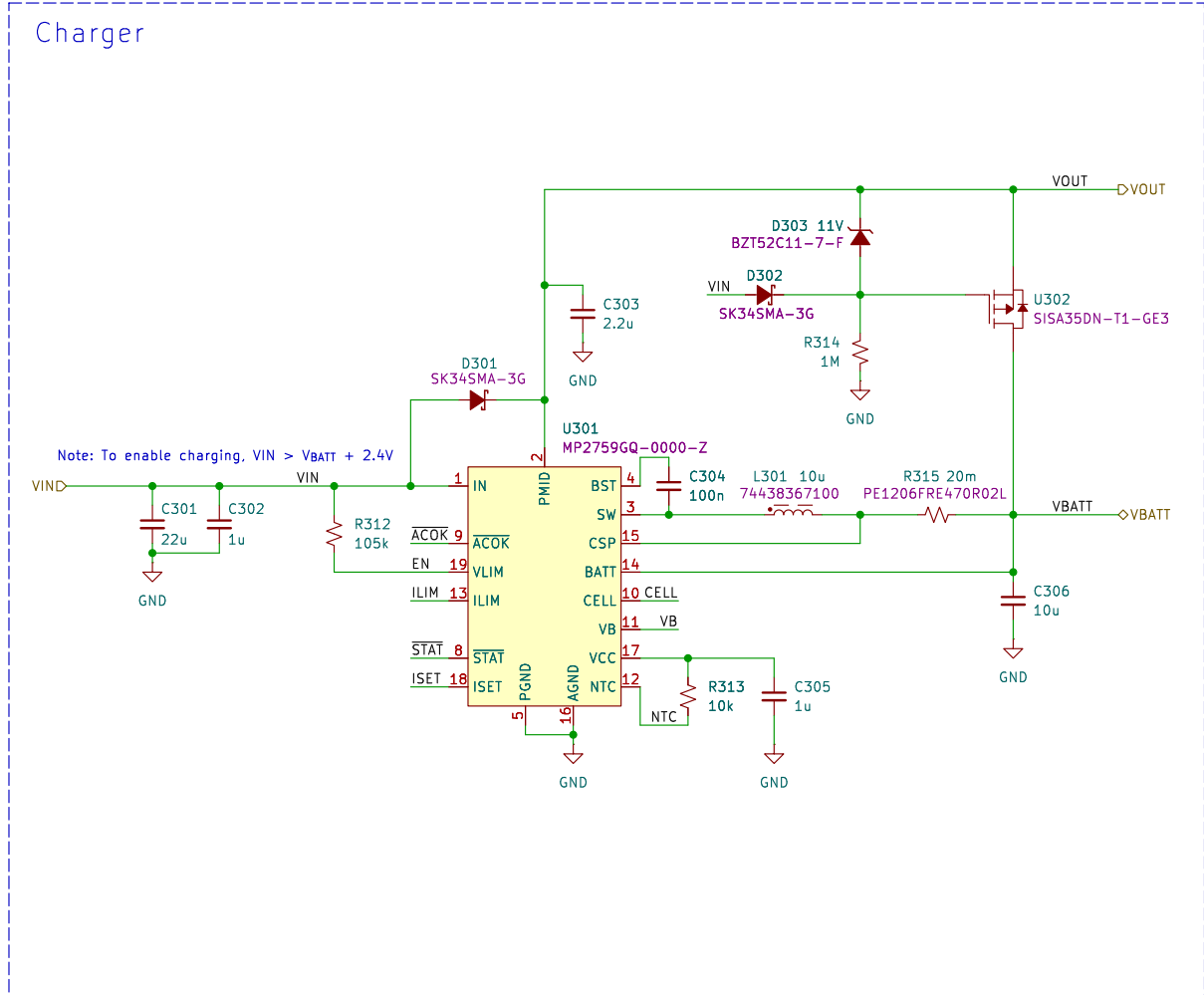
4 EN

3 ACOK <- Open-drain

2 STAT <- Open-drain

1

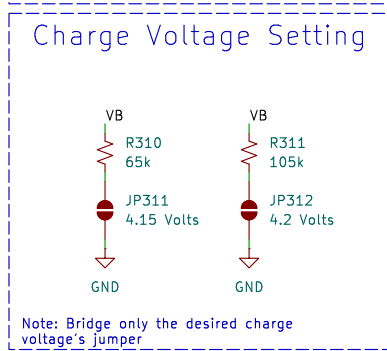
GND

[illegible]

Charge Voltage Setting

The image displays two circuit diagrams side-by-side, each representing a different charge voltage setting. Both diagrams show a red resistor connected to a green terminal labeled 'VB' at the top and a red terminal labeled 'GND' at the bottom. A red jumper is connected to the resistor. In the left diagram, the resistor is labeled 'R310 65k' and the jumper is labeled 'JP311 4.15 Volts'. In the right diagram, the resistor is labeled 'R311 105k' and the jumper is labeled 'JP312 4.2 Volts'.

Note: Bridge only the desired charge voltage's jumper



Charge Voltage Setting

The image displays two circuit diagrams side-by-side, each representing a different charge voltage setting. Both diagrams show a red resistor connected to a green terminal labeled 'VB' at the top and a red terminal labeled 'GND' at the bottom. A red jumper is connected to the resistor. In the left diagram, the resistor is labeled 'R310 65k' and the jumper is labeled 'JP311 4.15 Volts'. In the right diagram, the resistor is labeled 'R311 105k' and the jumper is labeled 'JP312 4.2 Volts'.

Note: Bridge only the desired charge voltage's jumper

Sheet: /Charger/		D
File: charger.kicad_sch		
Title:		
Size: A4	Date: 2024-10-27	
KiCad E.D.A. 8.0.7	Rev: 0.1.0	
	Id: 3/7	

Sheet: /Charger/
File: charger.kicad_sch

Title:	
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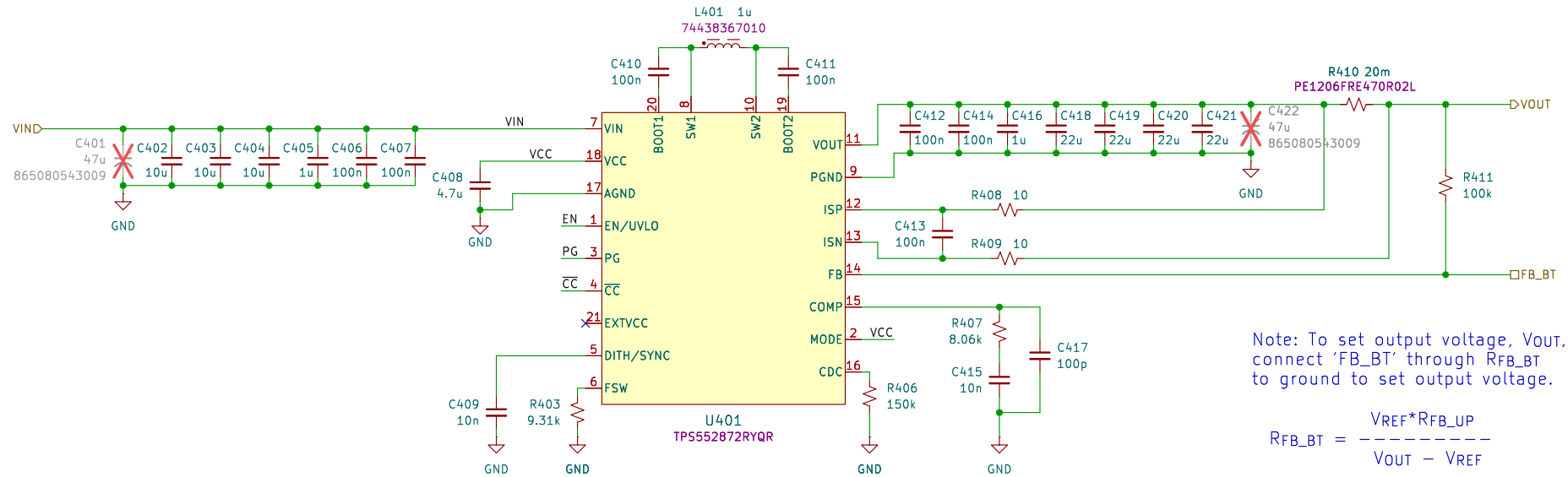
Size: A4	Date: 2024-10-27	Rev: 0.1.0
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KiCad E.D.A. 8.0.7	Id: 3/7
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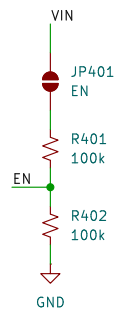
Size: A4	Date: 2024-10-27	Rev: 0.1.0
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KiCad E.D.A. 8.0.7	Id: 3/7
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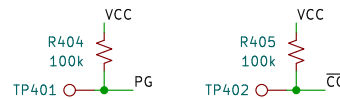
Buck-Boost Converter



Enable



Test Points



Sheet: /Buck-Boost-1/
File: buck_boost.kicad_sch

Title:

Size: A4

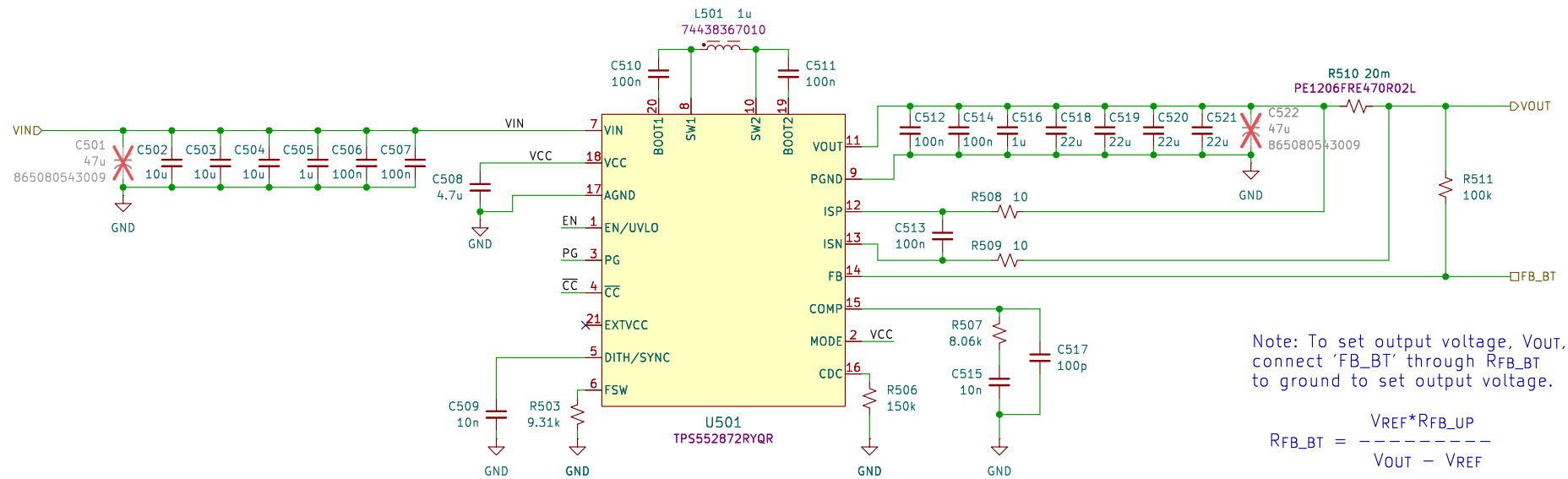
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KiCad E.D.A. 8.0.7

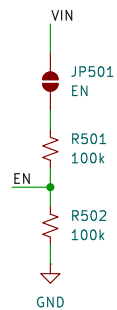
Rev:

Id: 4/7

Buck-Boost Converter



Enable



Test Points



Sheet: /Buck-Boost-2/
File: buck_boost.kicad_sch

Title:

Size: A4

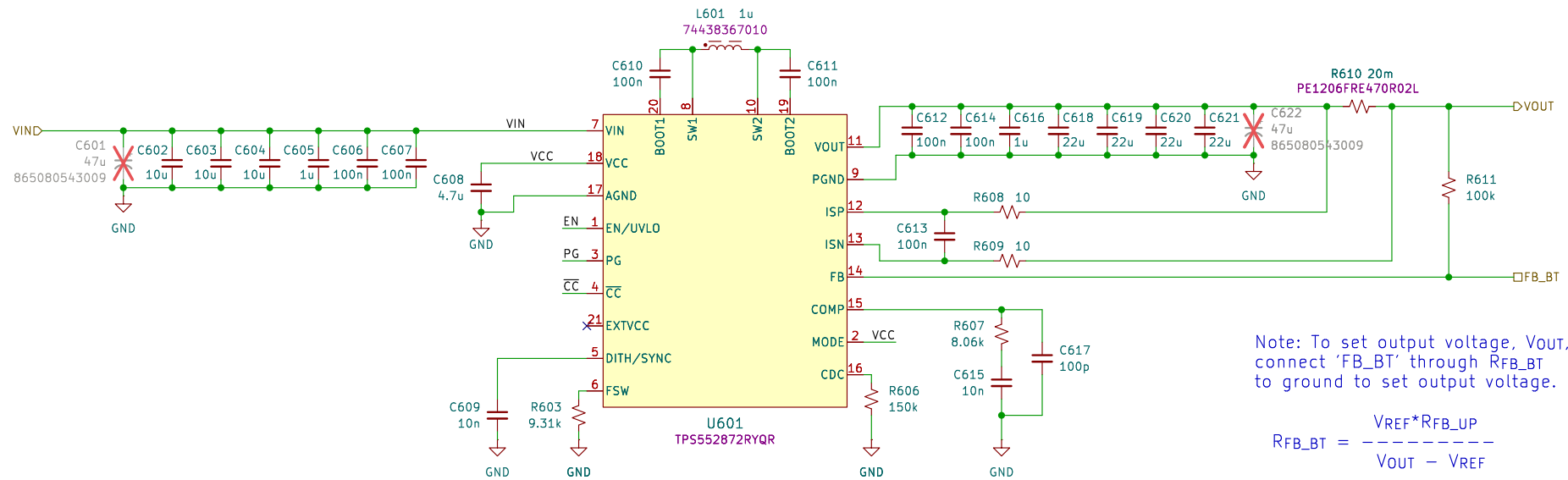
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KiCad E.D.A. 8.0.7

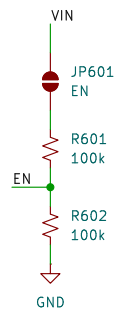
Rev:

Id: 5/7

Buck-Boost Converter



Enable



Test Points



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

Title:

Size: A4
KiCad E.D.A. 8.0.7

Date:

Rev:
Id: 6/7

