

Nicholas Loehrke
University of Wisconsin-Platteville

Sheet: /
File: power_supply.kicad_sch

Title: Power Supply

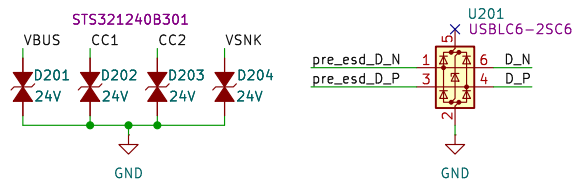
Size: A4 Date: 2024-10-27

KiCad E.D.A. 8.0.6

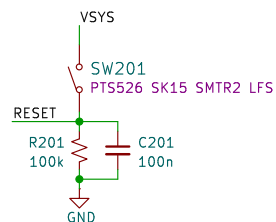
Rev: 0.1.0

Id: 1/7

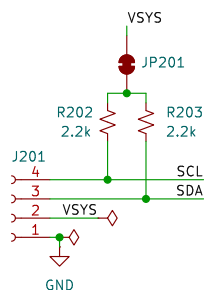
ESD Protection



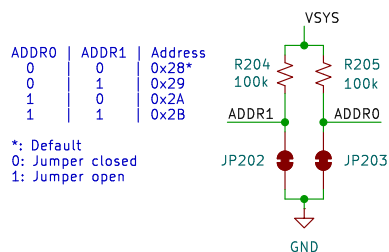
Reset Switch



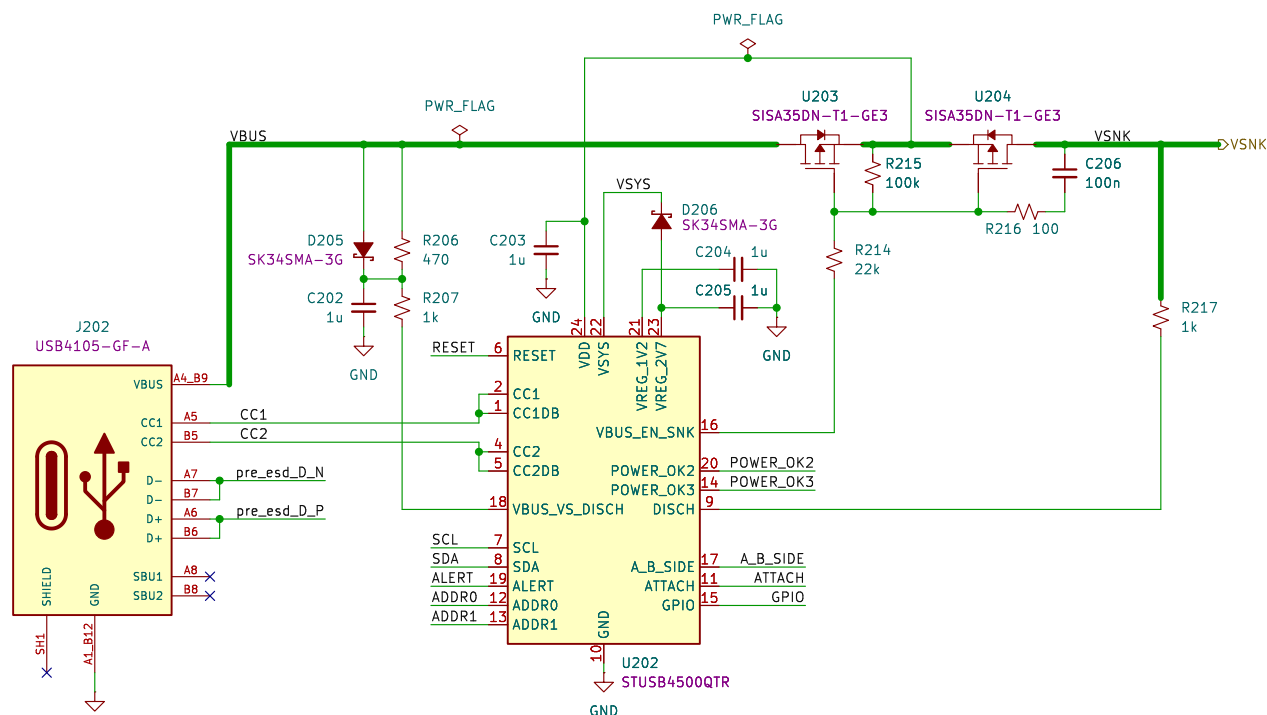
I2C Connector and Pull-ups



I2C Address Selection



USB-C PD Controller

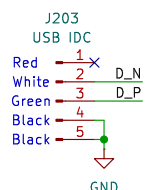


Required PDO configuration:

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

KiCad E.D.A. 8.0.6

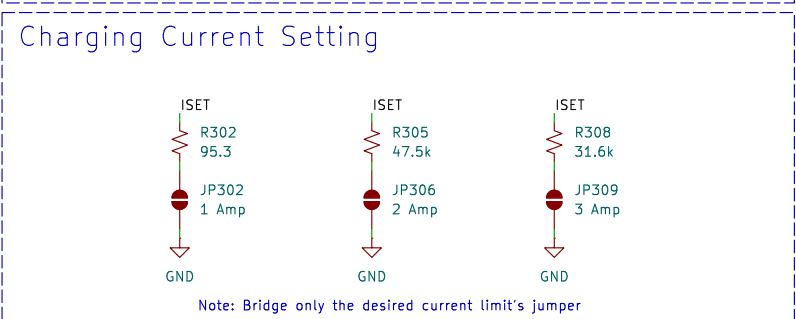
Rev: 0.1.0
Id: 2/7

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

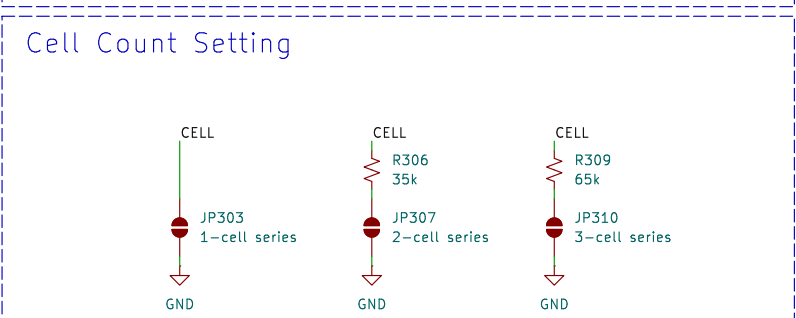


Charging Current Setting

The diagrams illustrate three different charging current settings:

- Setting 1:** Resistor R302 (95.3) and Jumper JP302 (1 Amp).
- Setting 2:** Resistor R305 (47.5k) and Jumper JP306 (2 Amp).
- Setting 3:** Resistor R308 (31.6k) and 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

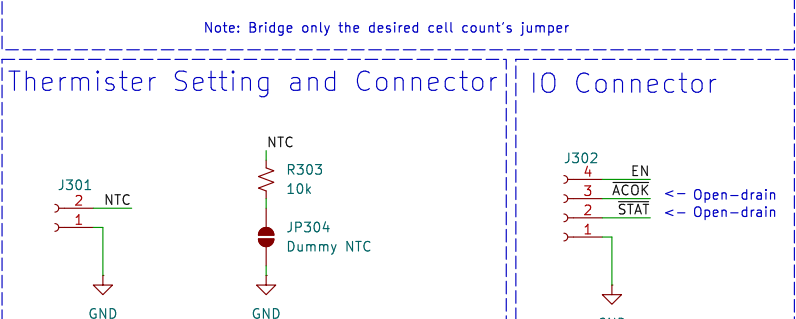
GND

CELL

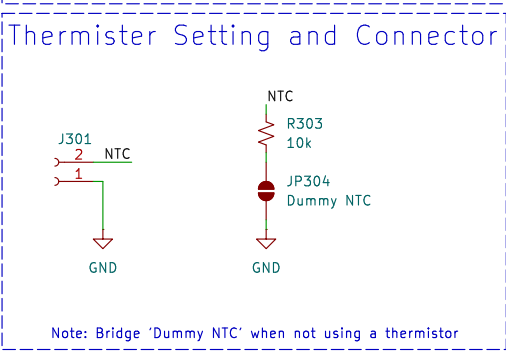
R309
65k

JP310
3-cell series

GND



Thermistor Setting and Connector



Thermistor Setting and Connector

I/O Connector

J302

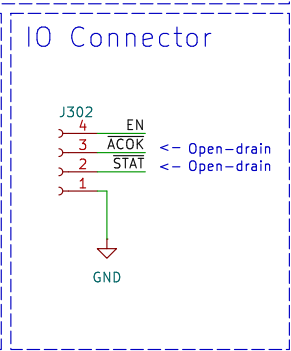
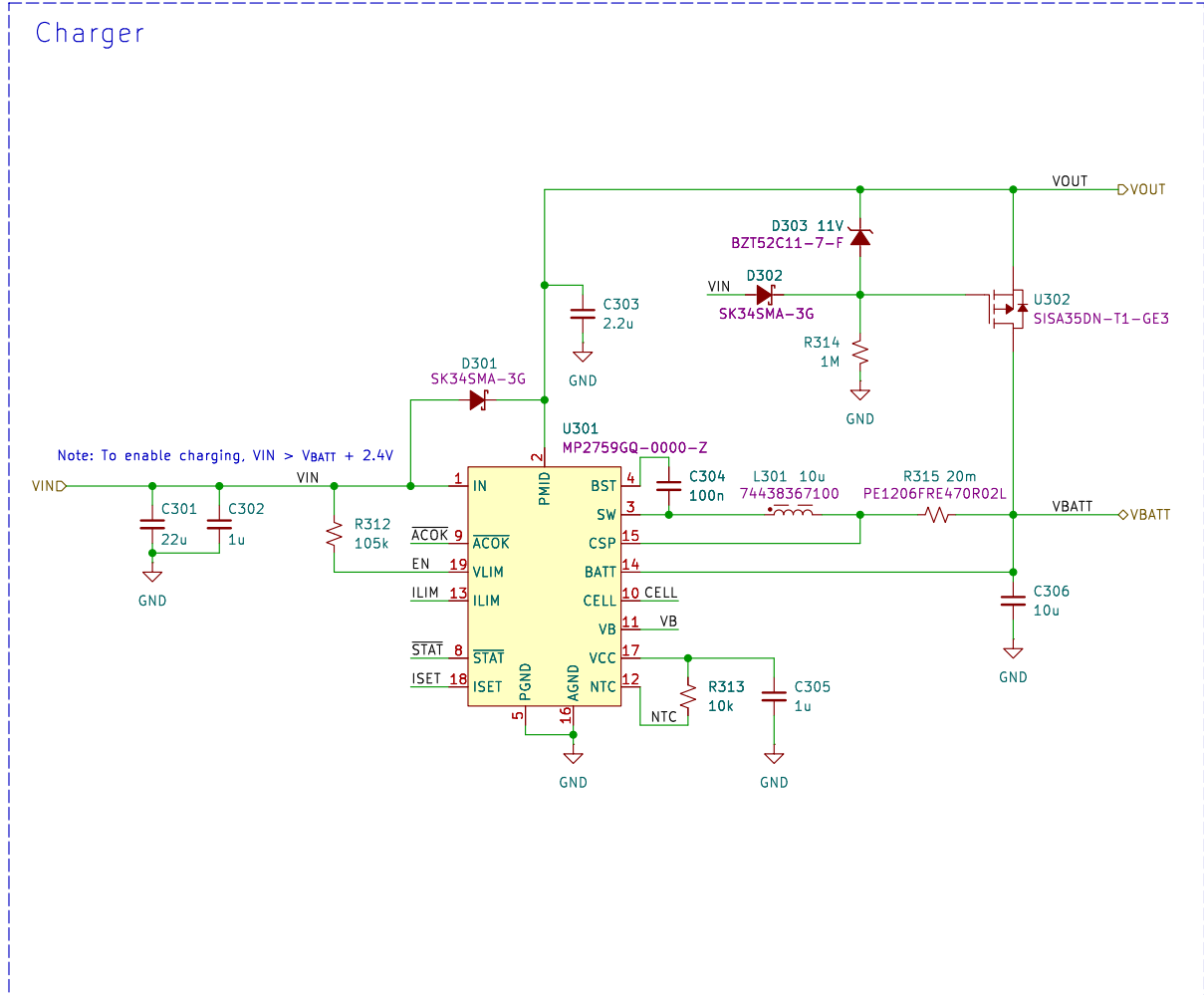
4 EN

3 ACOK <- Open-drain

2 STAT <- Open-drain

1

GND

[illegible]

Charge Voltage Setting

VB

R310
65k

JP311
4.15 Volts

GND

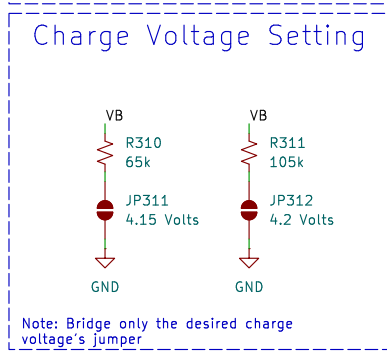
VB

R311
105k

JP312
4.2 Volts

GND

Note: Bridge only the desired charge voltage's jumper



Charge Voltage Setting

VB

R310
65k

JP311
4.15 Volts

GND

VB

R311
105k

JP312
4.2 Volts

GND

Note: Bridge only the desired charge voltage's jumper

Sheet: /Charger/		D
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

Sheet: /Charger/
File: charger.kicad_sch

Title:	
---------------	--

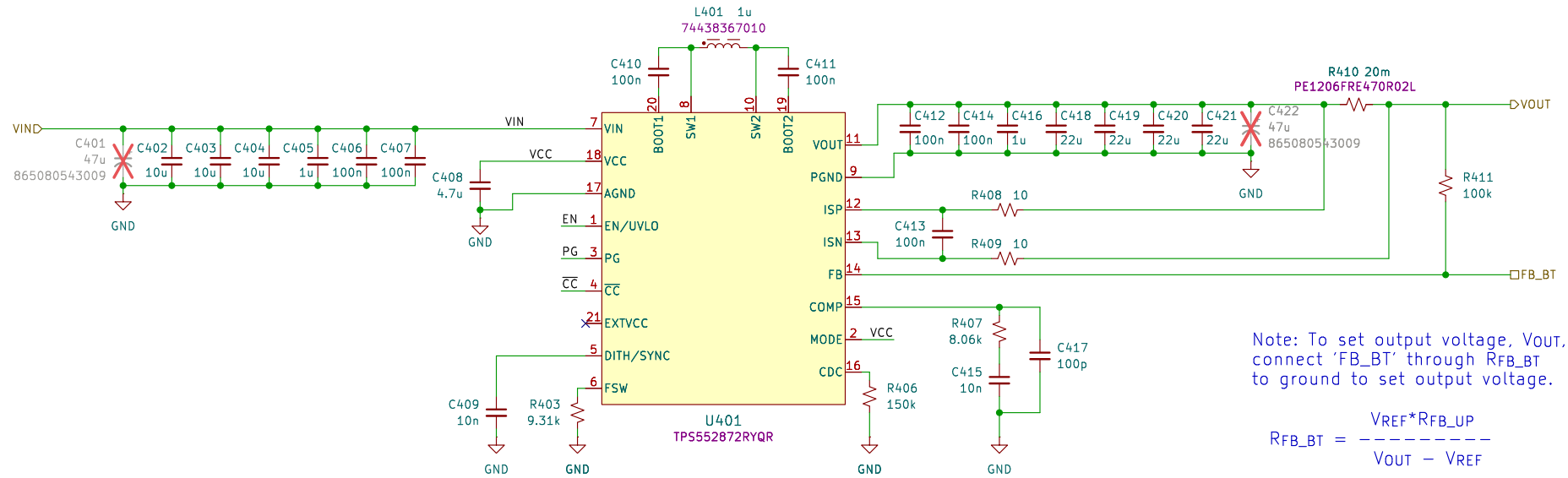
Size: A4	Date: 2024-10-27	Rev: 0.1.0
----------	------------------	------------

KiCad E.D.A. 8.0.6	Id: 3/7
--------------------	---------

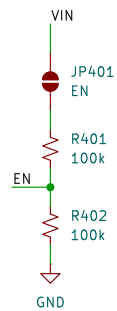
Size: A4	Date: 2024-10-27	Rev: 0.1.0
----------	------------------	------------

KiCad E.D.A. 8.0.6	Id: 3/7
--------------------	---------

Buck-Boost Converter



Enable



Test Points



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

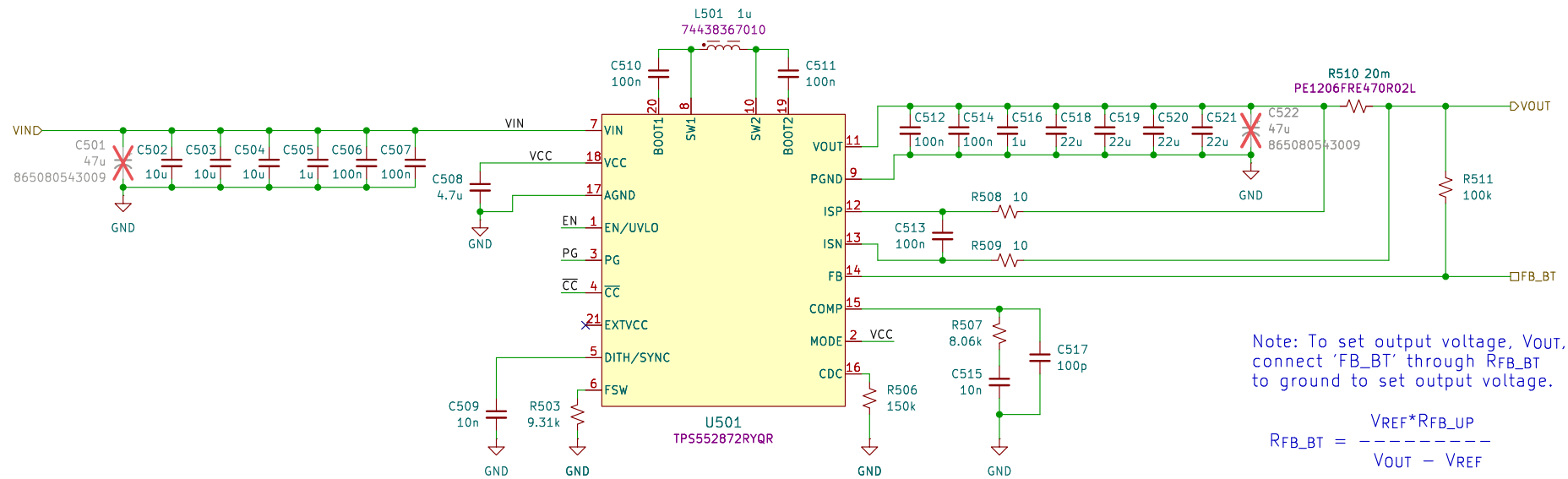
Title:

Size: A4
KiCad E.D.A. 8.0.6

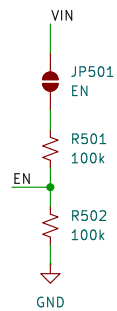
Date:

Rev:
Id: 4/7

Buck-Boost Converter



Enable



Test Points



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

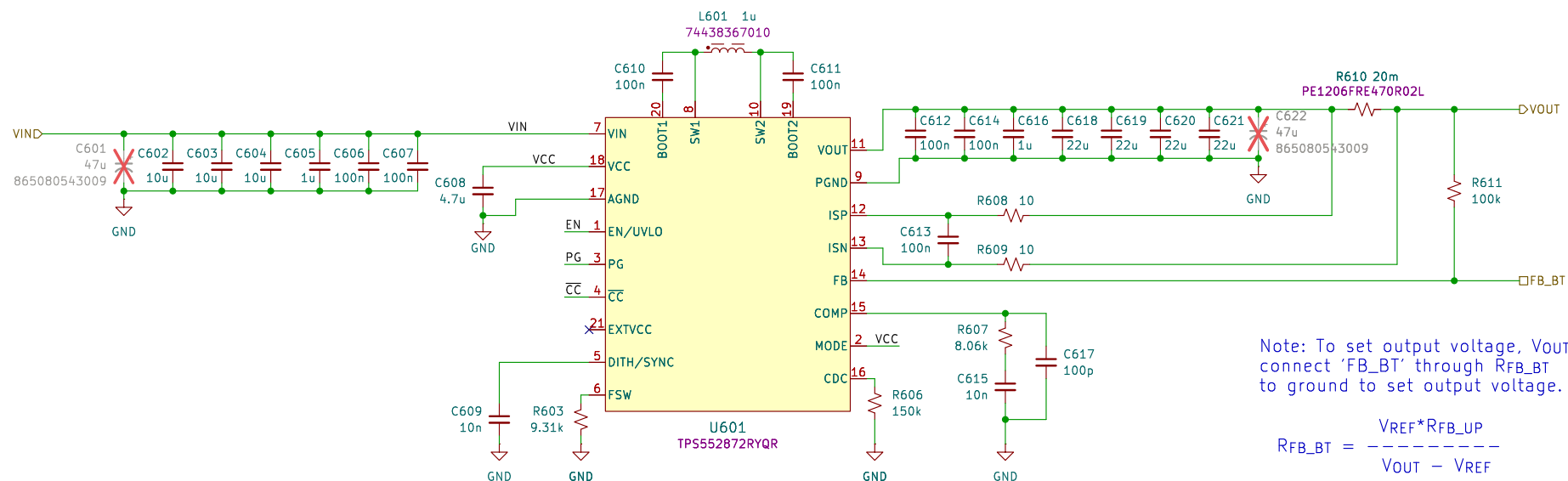
Title:

Size: A4
KiCad E.D.A. 8.0.6

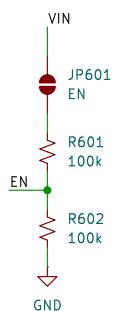
Date:

Rev:
Id: 5/7

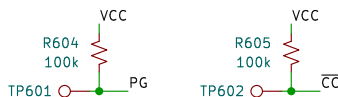
Buck-Boost Converter



Enable



Test Points



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

Title:

Size: A4 Date:

KiCad E.D.A. 8.0.6

Rev:

Id: 6/7

