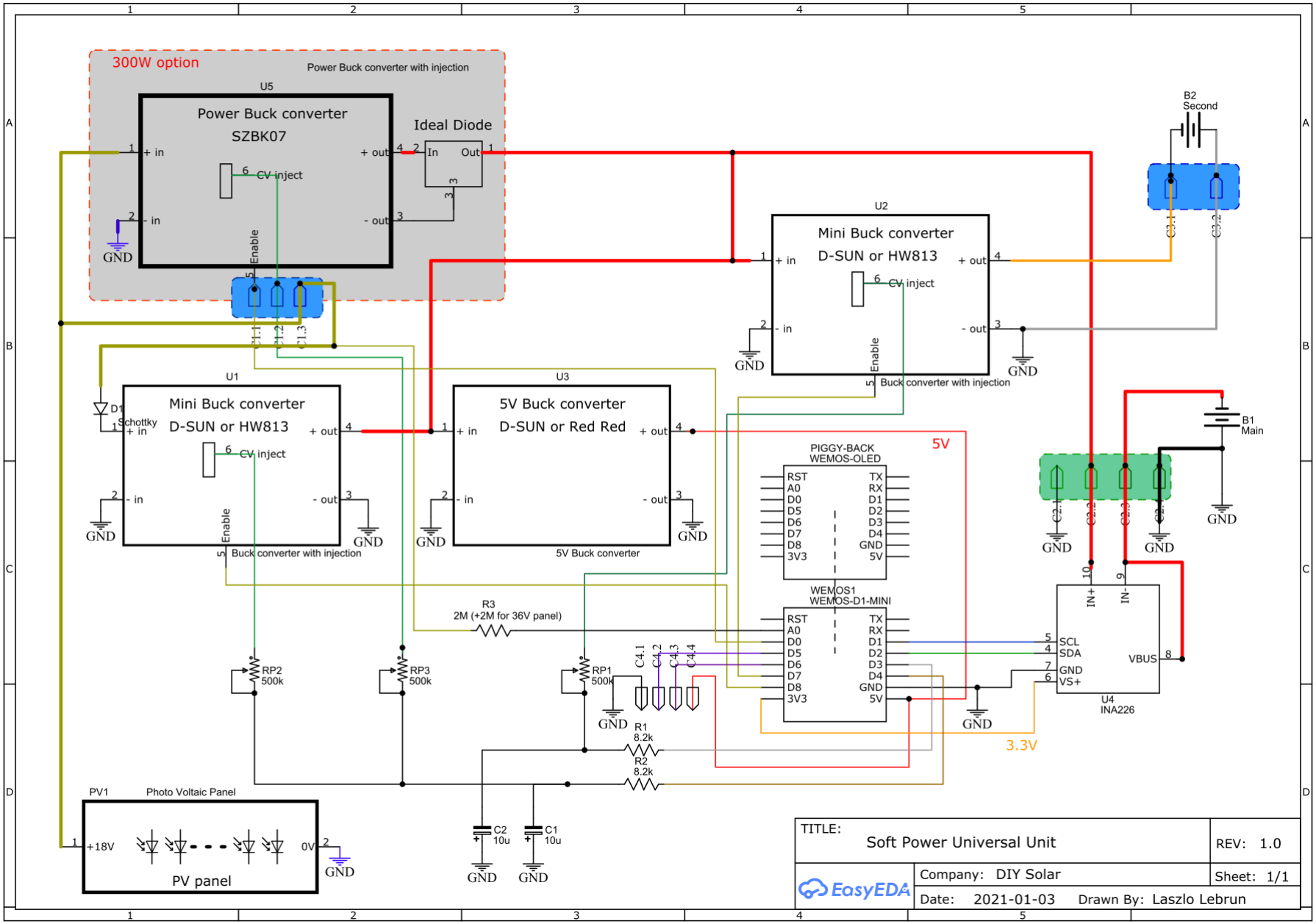
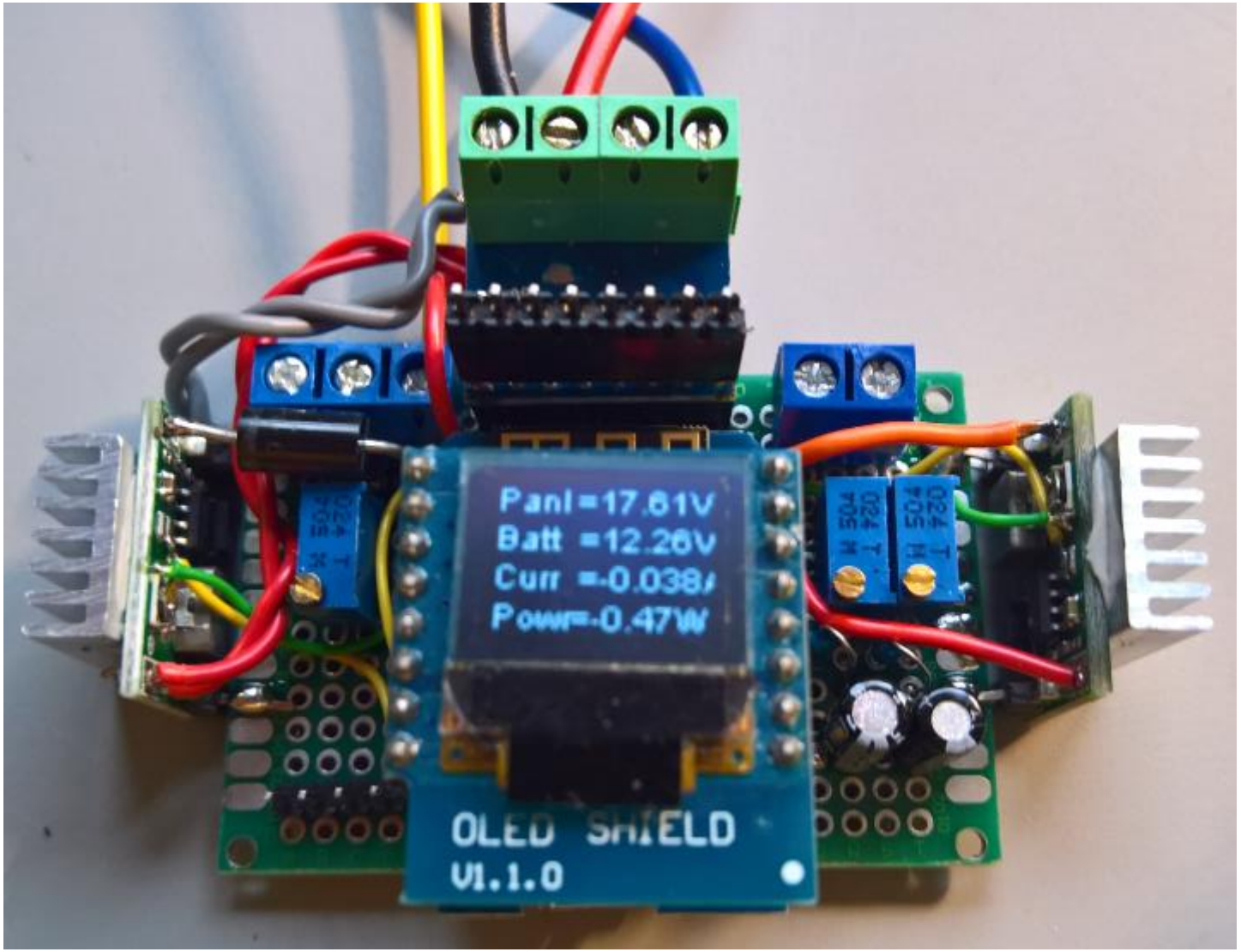
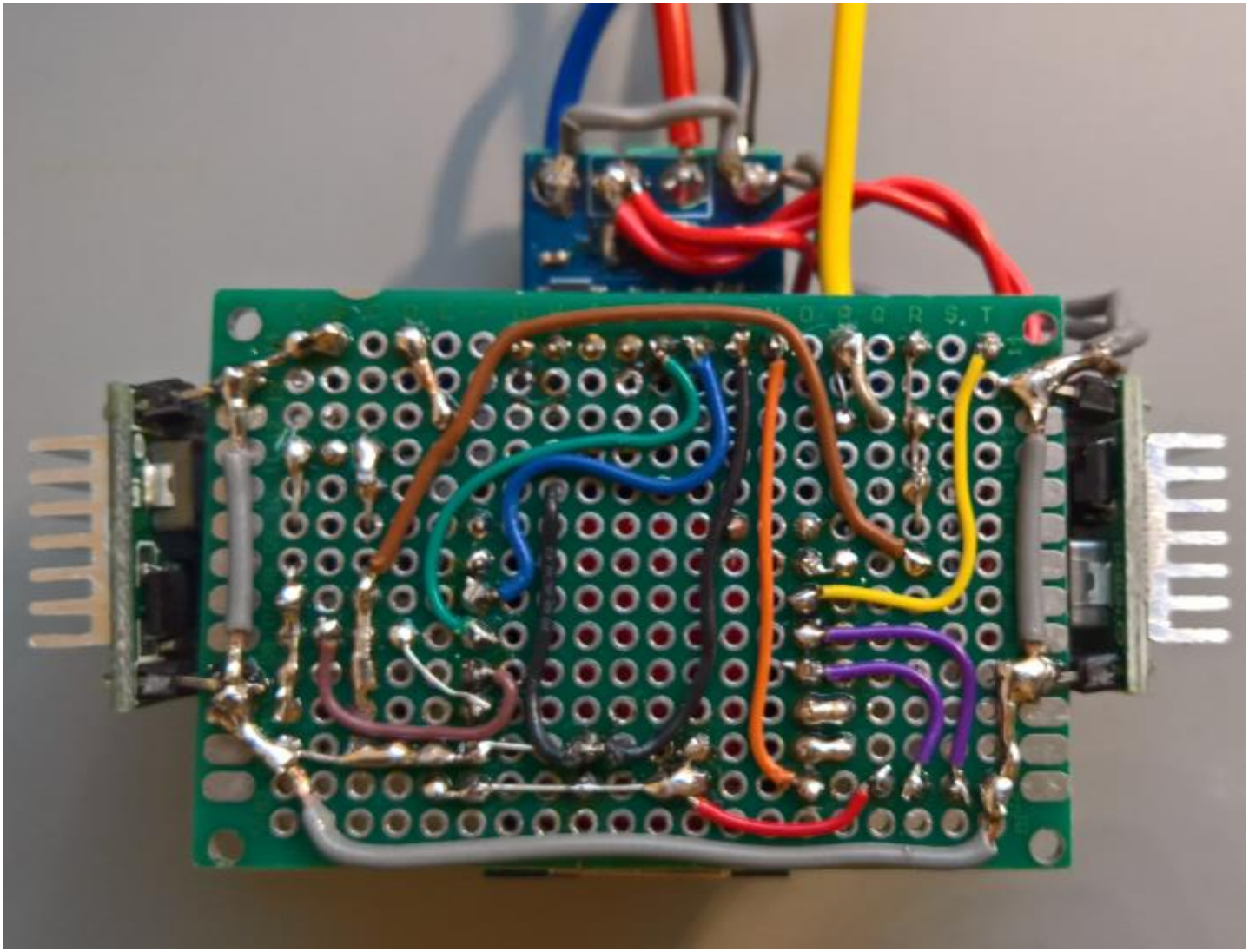
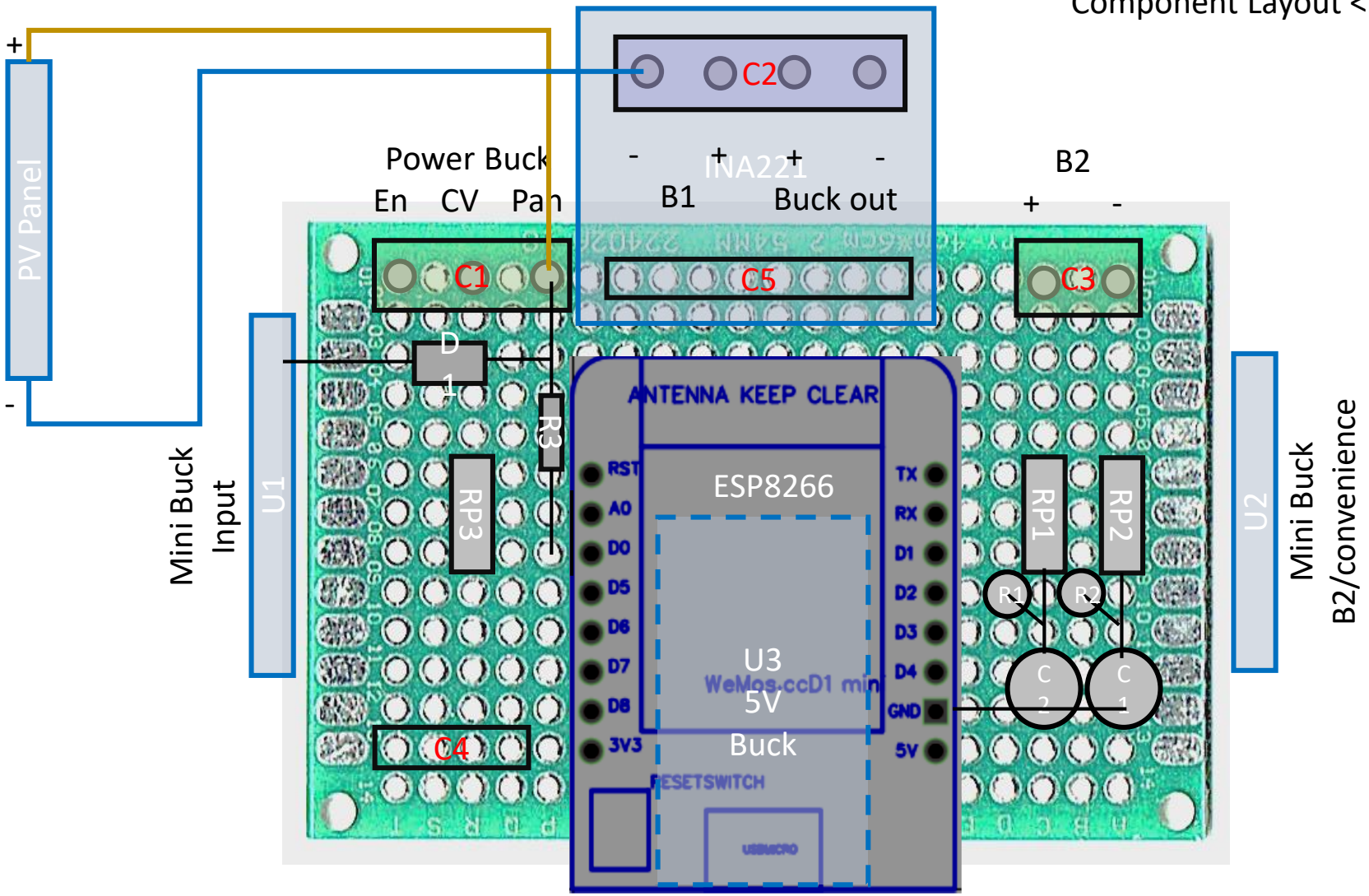

300W option
Power Buck converter with injection
U5
Power Buck converter
SZBK07
+ in
- in
CV inject
+ out
- out
Enable
GND
Ideal Diode
In
Out
J1.1
J1.2
J1.3
B2
Second
C3.1
C3.2
U2
Mini Buck converter
D-SUN or HW813
Buck converter with injection
U1
D1
Schottky
U3
5V Buck converter
D-SUN or Red Red
5V Buck converter
5V
B1
Main
C2.1
C2.2
C2.3
C2.4
PIGGY-BACK
WEMOS-OLED
RST
A0
D0
D5
D6
D7
D8
3V3
TX
RX
D1
D2
D3
D4
GND
5V
WEMOS1
WEMOS-D1-MINI
R3
2M (+2M for 36V panel)
RP1
500k
RP2
500k
RP3
500k
C4.1
C4.2
C4.3
C4.4
R1
8.2k
R2
8.2k
IN+
IN-
SCL
SDA
VBUS
VS+
U4
INA226
3.3V
PV1
Photo Voltaic Panel
+18V
0V
PV panel
C2
10u
C1
10u
TITLE:
Soft Power Universal Unit
REV: 1.0
EasyEDA
Company: DIY Solar
Sheet: 1/1
Date: 2021-01-03
Drawn By: Laszlo Lebrun

Prototype

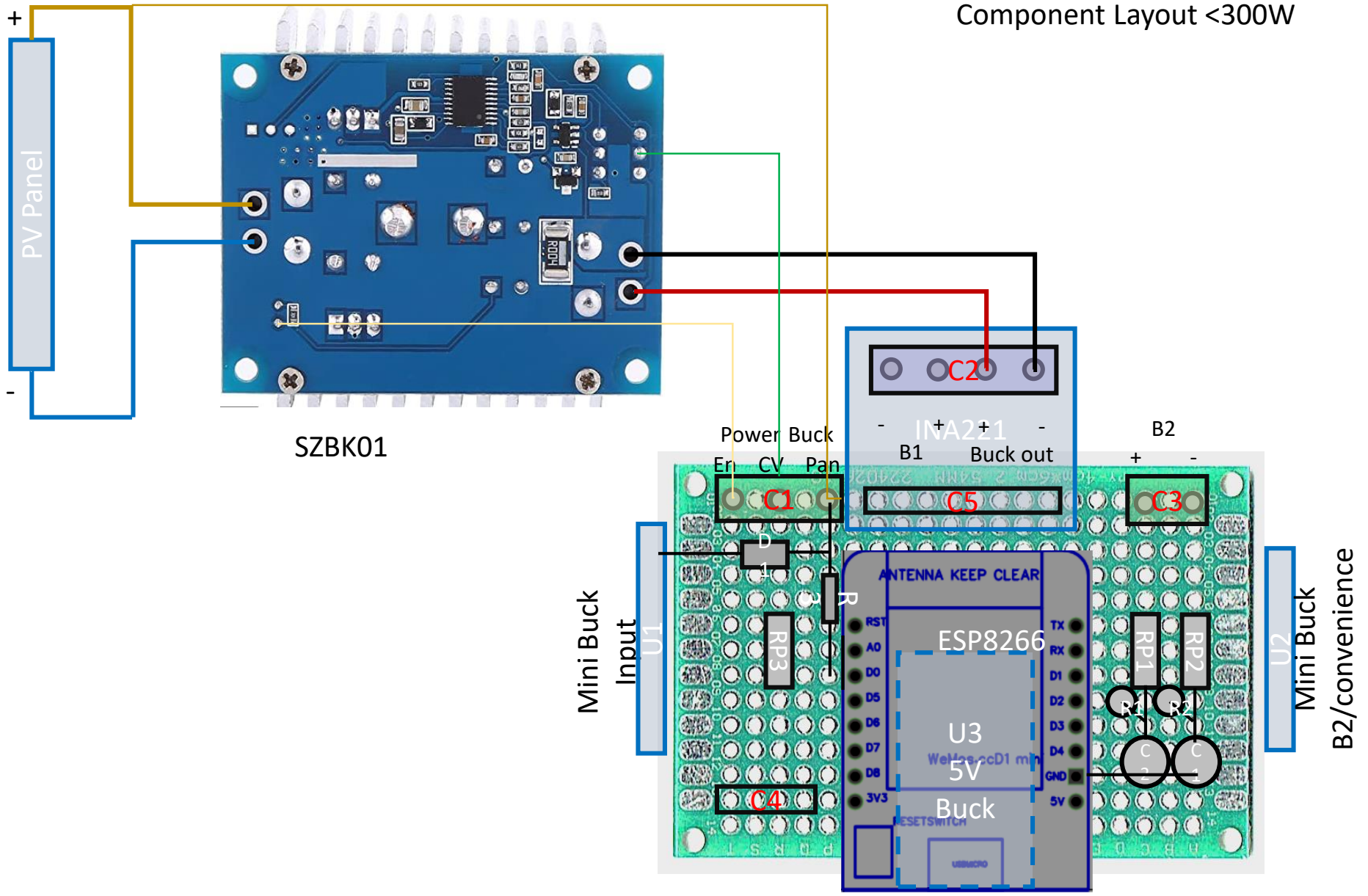


Prototype




Component Layout <21W
PV Panel
+
-
C2
INA221
Power Buck
En CV Pan
- + + -
B1
Buck out
B2
+ -
C1
C5
C3
D1
R3
RP3
RP1
RP2
R1
R2
C2
C1
U1
U2
Mini Buck
Input
Mini Buck
B2/convenience
ANTENNA KEEP CLEAR
ESP8266
RST
A0
D0
D5
D6
D7
D8
3V3
TX
RX
D1
D2
D3
D4
GND
5V
U3
WeMos ccD1 min
5V
Buck
C4
RESETSWITCH
USBMICRO

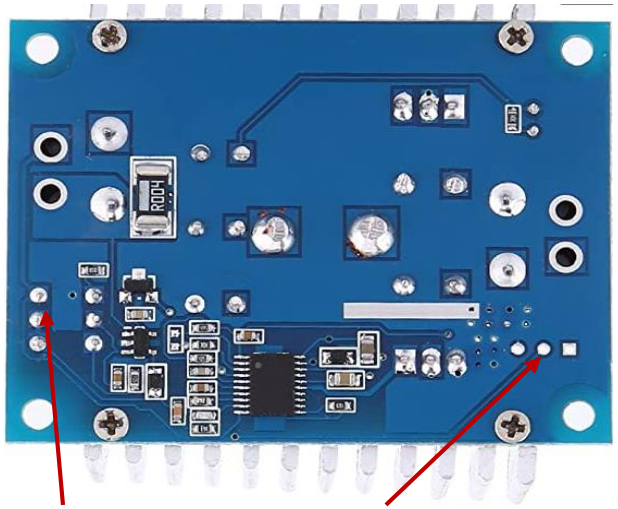
Component Layout <300W



SZBK07 300W 15A 6-40V -> 1.2-36V

LM25116 synchronous chip
FB=1,215V 350Khz progr.

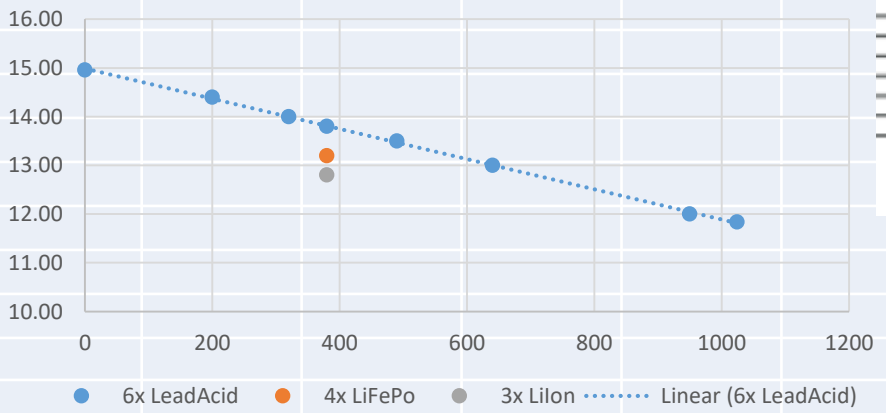
No load current buck converter 40 mA
Low load current +MPPT + WiFi 34 mA
Efficiency @ 0,5W 45%
Efficiency @ 10 W 94%
Efficiency @ 25 W 96%
Efficiency @ 75 W 96%
Max current 1 A @ 22°C
Neutral injection PWM=250

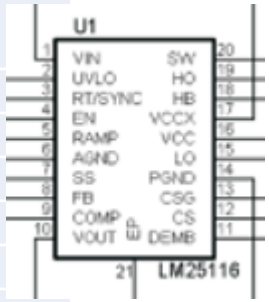


PWM	6x LeadAcid	4x LiFePo	3x LiIon
0	14.96		
200	14.40		
320	14.00		
380	13.80	13.20	12.80
490	13.50		
640	13.00		
950	12.00		
1024	11.84		

Tested 2A.

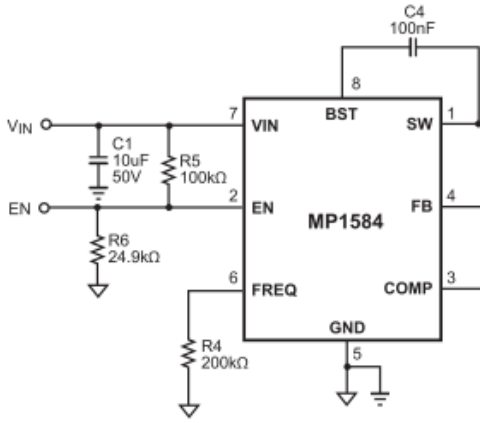
Low-pass 6,8KΩ/330nF
Injection 330KΩ

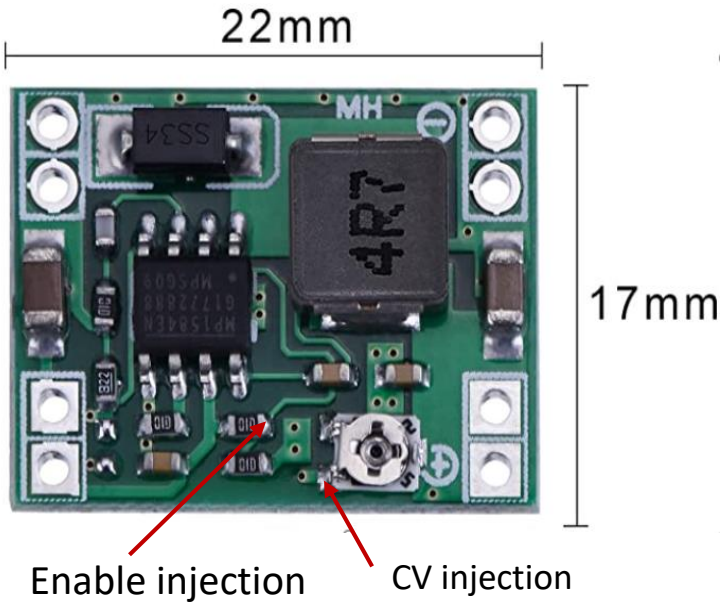




D-SUN 1A 6-40V -> 1.2-36V

MP1584 asynchronous chip
FB=0,8V 350Khz



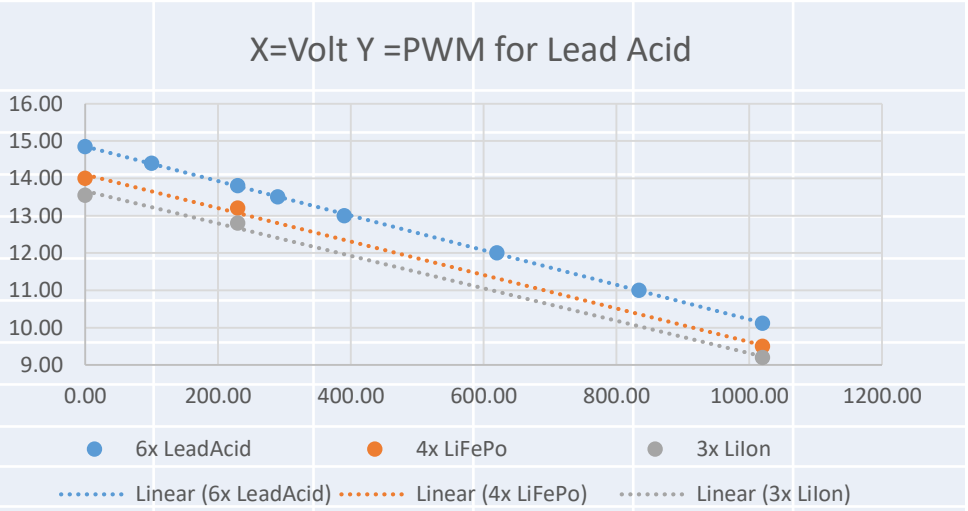


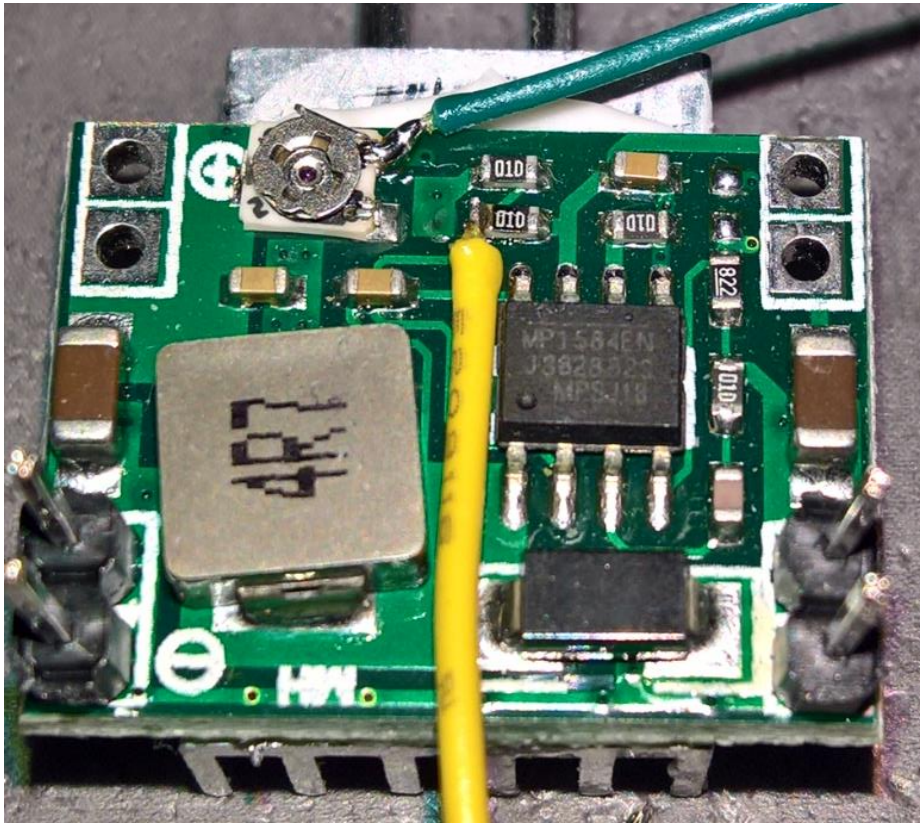
No load current buck converter 0,1mA
Low load current +MPPT + WiFi ~7mA
Efficiency @ 0,5W 86%
Efficiency @ 10 W 96%
Efficiency @ 15 W 94%
Max current 1 A @ 22°C
Neutral injection PWM=250
Convenience output e.g 8.5-12.6V for 3*LiPo (11.6@230)

PWM	6x LeadAcid	4x LiFePo	3x LiIon
0.00	14.85	14.00	13.55
100.00	14.40		
230.00	13.80	13.20	12.80
290.00	13.50		
390.00	13.00		
620.00	12.00		
834.00	11.00		
1020.00	10.12	9.50	9.20

Tested max 1,5A.

Low-pass 6,8KΩ/330nF
Injection 82KΩ





Preparation D-SUN

Green wire = CV injection
Yellow wire = Enable

Heat sink at the bottom
Pins soldered at 0V Input / Output