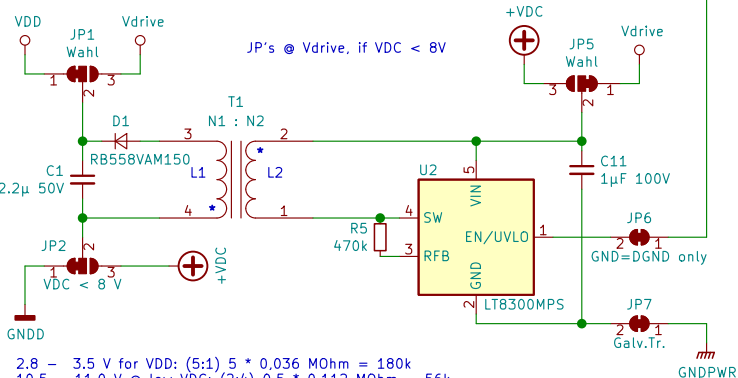


Spannungsteiler  
 Pin FB @ 1.233 V  
 Inbetween 1M and 100k:  $2.466 V$   
 $1M / (200k / 3) = 15$   
 If  $Up3.3 = 0 V$ :  
 $U_{out} = 15 * (2.466 V - 0 V) + 2.466 V = 39.5 V$   
 If  $Up3.3 > 2.63 V$ :  
 $U_{out} = 15 * (2.466 V - 2.6304 V) + 2.466 V = 0 V$

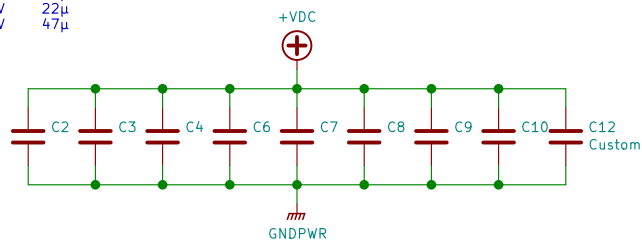
Isolated Flyback Converter  
 Direct input range: 6 - 100 V  
 1) From +VDC, Vdrive, external supply  
 2) Isolated from any DC, especially from any powered bus  
 3) With a start up, can add a value to any low voltage source like a single accu  
 4) GND can be different from DGND/PGND or isolated  
 5) 1S LiFePo 3.2 V + 2.8 = 6 V as Input, or 2S \* 1.5 V...  
 6) Single 1.2 V supply can function, but should not.  
 Output:  
 1) It can be single output, but should not  
 2) Outputs for VDD (3,6 V) and Vdrive (15 V) should be connected via trafo by user  
 3) The output of around 38 V can source LM6165 or DRV8876 directly



2.8 - 3.5 V for VDD: (5:1)  $5 * 0.036 M\Omega = 180k$   
 10.5 - 11.0 V @ low VDC: (2:4)  $0.5 * 0.112 M\Omega = 56k$   
 11.0 - 11.6 V for Vdrive: (4:1)  $4 * 0.1175 M\Omega = 470k$   
 33.2 - 33.9 V maximum: (4:2)  $2 * 0.340 M\Omega = 680k$   
 $V_f = 0.1 - 0.8 V$   
 VDD: 7.4 - 8.0 V: 19.2 - 19.9 V: (22:22:9:4:4)  $5.5 * 0.0364 M\Omega = 200k$

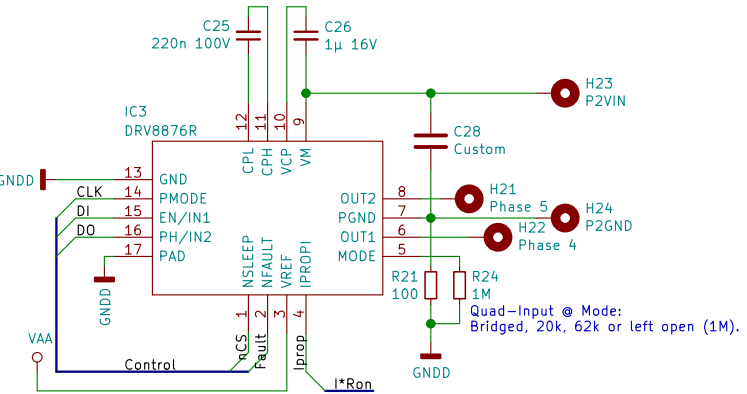
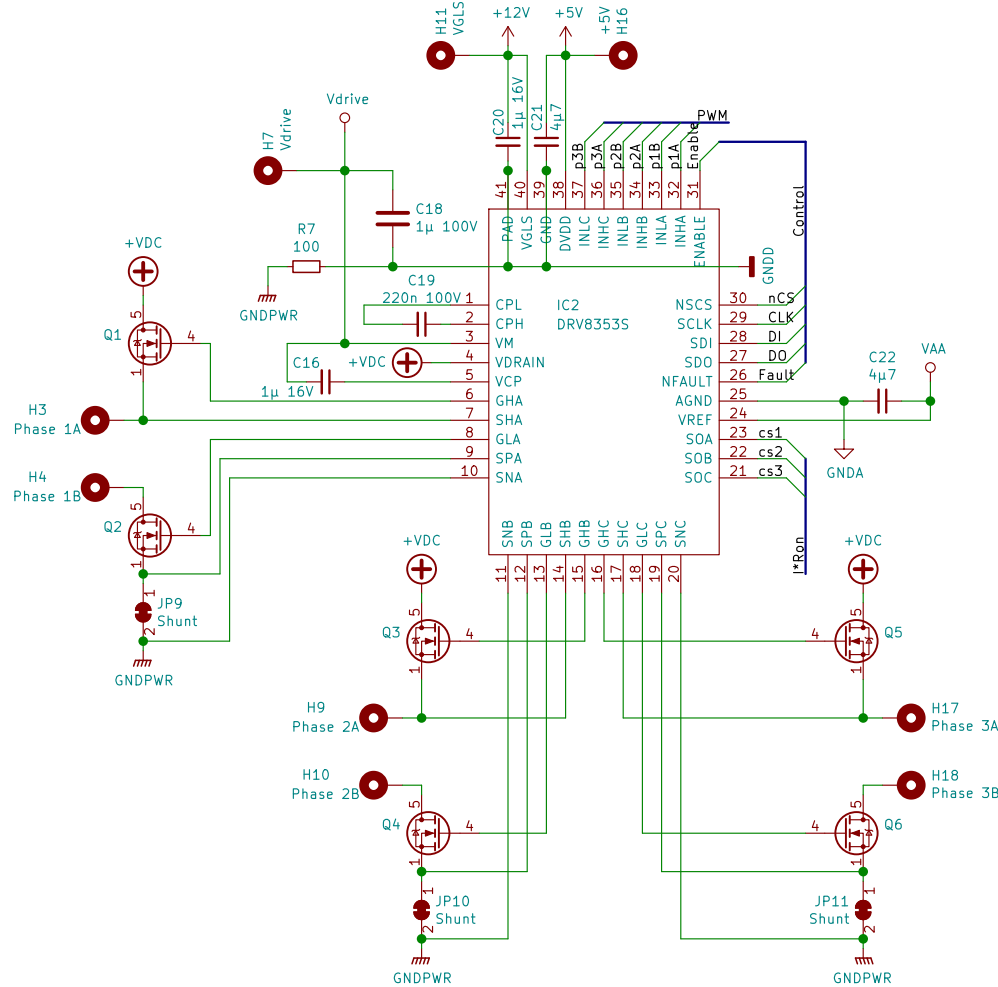
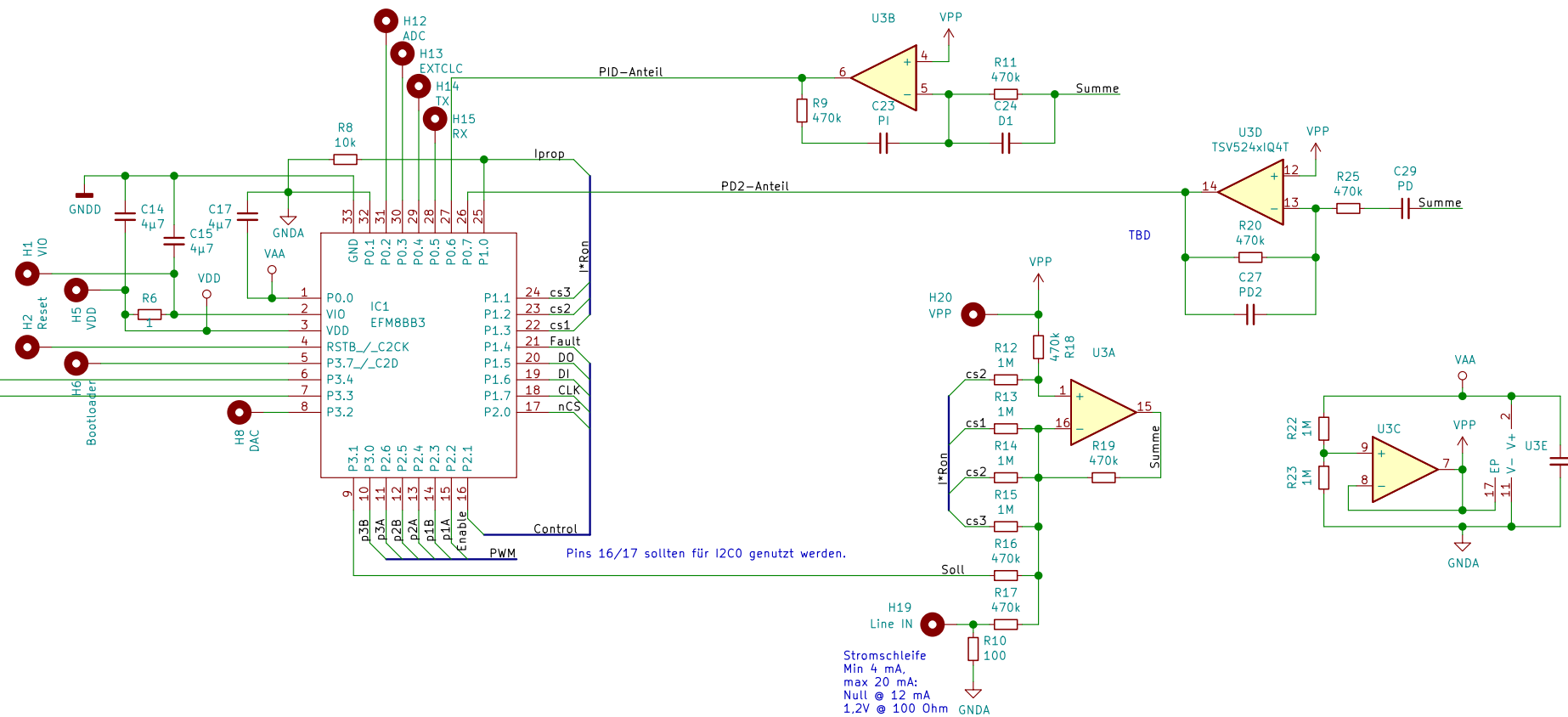
Kondensatoren 1206 (3216) custom values (approx. 1 € p.p.):

- 100V 4.7μ
- 50V 10μ
- 25V 22μ
- 16V 47μ



Transistoren (Low Ron, max 175 °C) custom values (approx. 2.60 € p.p.):  
 - 200 V, 33 (36) A, 24 mΩ, TPW2900ENH, 8.2 nC, 150 A, max 150 °C  
 - 100 V, 90 (150) A, 3.1 mΩ, TPW3R70APL, 21 nC, 500 A  
 - 80 V, 116 (440) A, 3.3 mΩ, TPW4R00BNH, 18 nC, 500 A  
 \* 60 V, 100 (260) A, 0.95 mΩ, TPW1R306PL, 22 nC, 500 A  
 - 45 V, 150 (300) A, 0.75 mΩ, TPW1R005PL, 34 nC, 500 A  
 - 40 V, 150 (340) A, 0.65 mΩ, TPWR8004PL, 23 nC, 500 A  
 \* 30 V, 150 (420) A, 0.36 mΩ, TPWR6003PL, 30 nC, 500 A

- 100 V, 100A, 16A, 5.3 mΩ, CSD19531Q5A, 37 nC, 337 A
- 25 V, 100 A, 59 A, 0.49 mΩ, CSD16570Q5B, 95 nC, 400 A



Widerstände  
 0402 (1005): 1 MΩ, nicht gekennzeichnet, automatisch bestückt  
 0603 (1608): 100 kΩ und 470 kΩ sind vorbelegt, von Hand noch zu läthen  
 0805 (2012): gut erkennbar, beschriftet, 100 Ω nicht bestückt

Kondensatoren  
 0402 (1005) @ 2 pins with 0.5 mm pitch:  
 - 6.3 V 4.7 μF  
 - 16 V 1 (max 2.2) μF  
 0603 (1608):  
 (6.3 V) 47 μF Walsin  
 (16 V) 10 μF Walsin  
 - 50 V 1 μF Yageo, Taiyo Yuden  
 - 100 V 220 nF  
 0805 (2012):  
 - 100 V 1 μF

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Sheet: /  
 File: LoopController.sch

**Title: Reglermodul für mechatronische Systeme**

Size: A3 Date: 2020-01-23  
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Rev: 2  
 Id: 1/1