DIB isolators, EEPROM, ADC, MCU

File: DIB_EEPROM_ADC_MCU.kicad_sch

DAC, OE, Vref, IOEXP, Temp

File: DAC_Vref_IOEXP_Temp.kicad_sch

Power pre-regulator

File: Power_pre-regulator.kicad_sch

Bias power

File: Bias_power.kicad_sch

Post-regulator

File: Post-regulator.kicad_sch

Rsense protection, power output, Rprog

File: Rsense_protection_power_output.kicad_sch

Mode detection, OVP

File: CC_CV_OVP.kicad_sch

KK1
PCB-MB-01

KK2
PCB-MB-01

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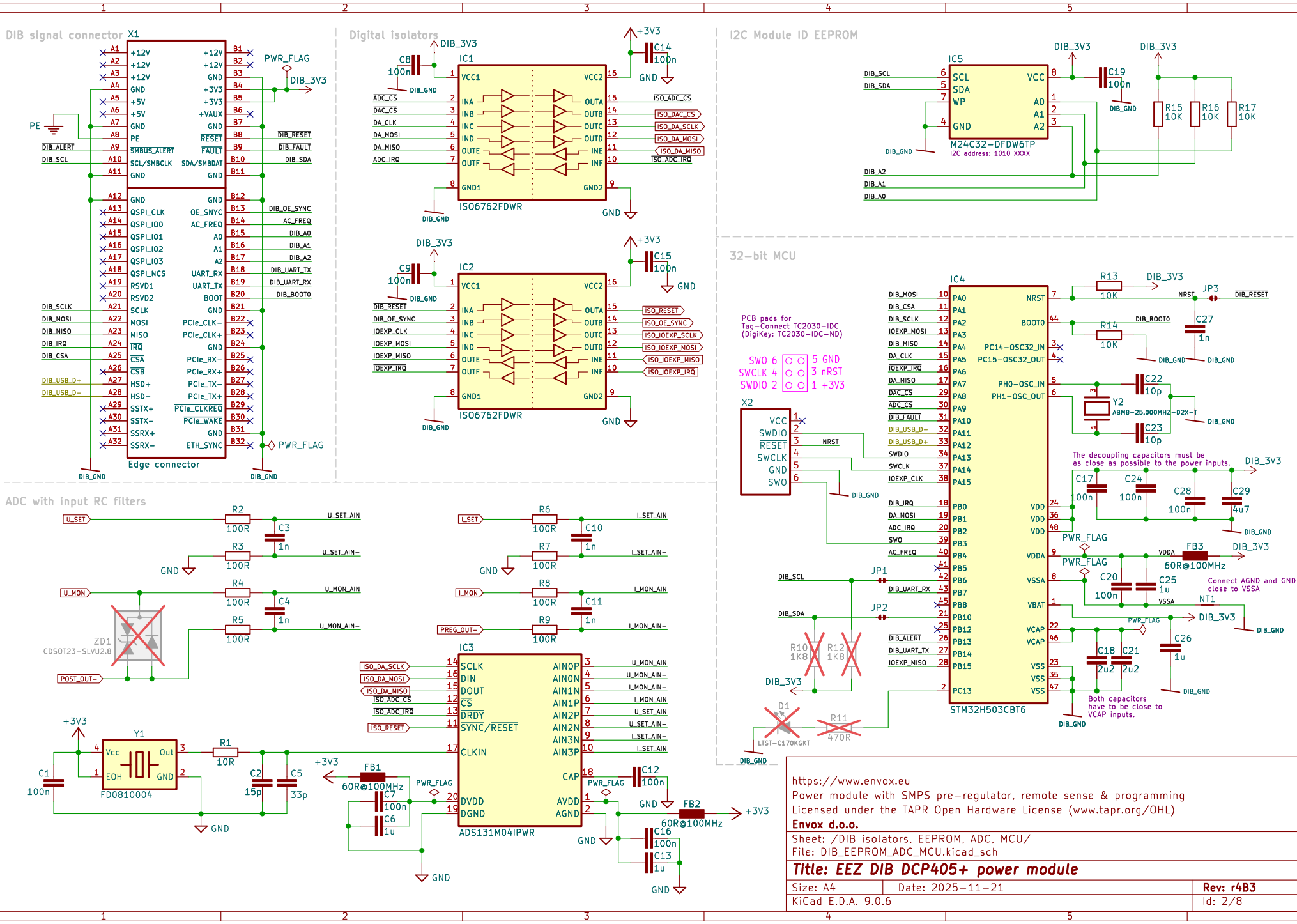
Sheet: /
File: EEZ DIB DCP405plus.kicad_sch

Title: EEZ DIB DCP405+ power module

Size: A4	Date: 2025-11-21	**Rev: r4B3**
KiCad E.D.A. 9.0.6		Id: 1/8


DIB signal connector X1
Edge connector
Digital isolators
IC1
IC2
ISO6762FDWR
I2C Module ID EEPROM
IC5
M24C32-DFDW6TP
I2C address: 1010 XXXX
32-bit MCU
IC4
STM32H503CBT6
PCB pads for Tag-Connect TC2030-IDC (DigiKey: TC2030-IDC-ND)
X2
ADC with input RC filters
IC3
ADS131M04IPWR
Y1
FD0810004
ZD1
CDSOT23-SLVU2.8
D1
LTST-C170KGKT
Y2
ABM8-25.000MHZ-D2X-T
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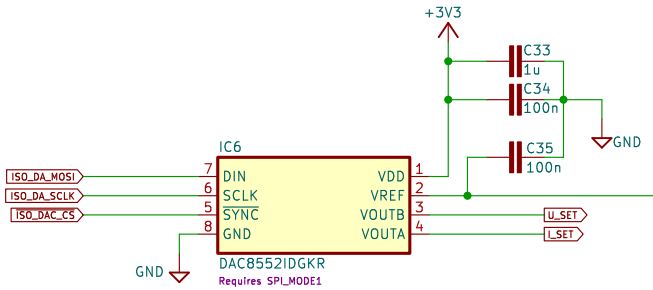
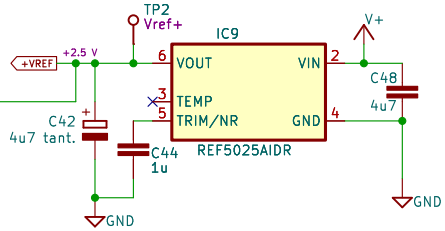
Sheet: /DIB isolators, EEPROM, ADC, MCU/
File: DIB_EEPROM_ADC_MCU.kicad_sch
Title: EEZ DIB DCP405+ power module
Size: A4
Date: 2025-11-21
Rev: r4B3
KiCad E.D.A. 9.0.6
Id: 2/8

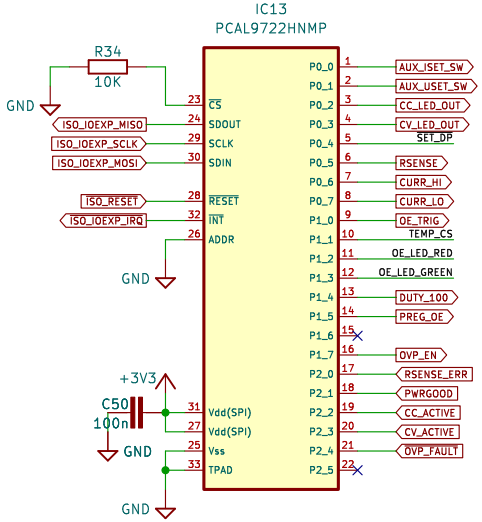
16-bit DAC (set voltage and current)



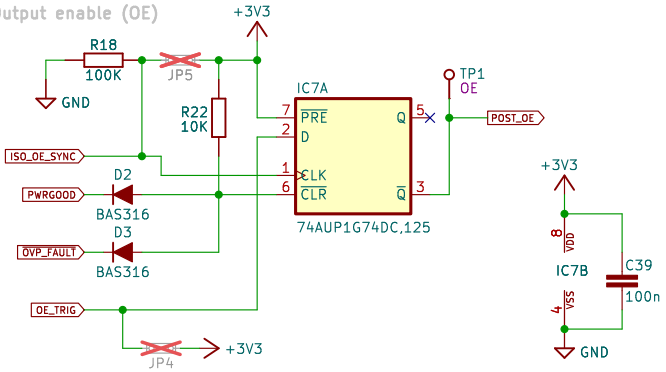
Voltage reference



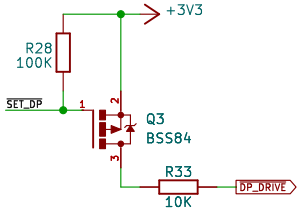
SPI 22-bit I/O Expander



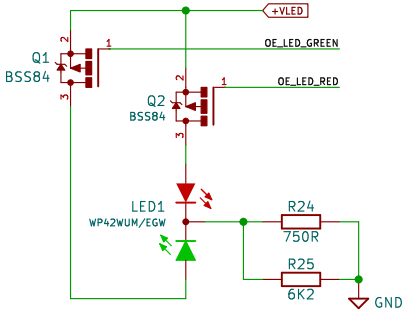
Output enable (OE)



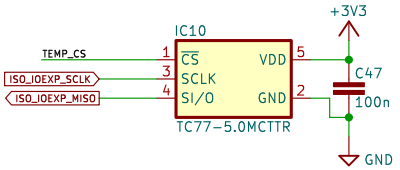
Down-programmer



OE indicator



SPI Temperature sensor



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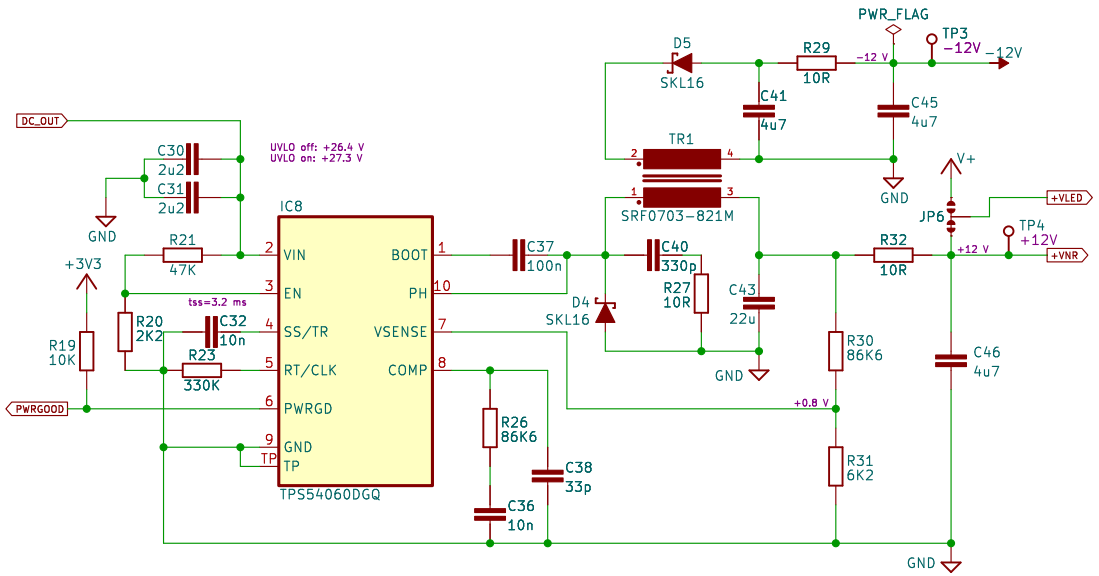
Sheet: /DAC, OE, Vref, IOEXP, Temp/
File: DAC_Vref_IOEXP_Temp.kicad_sch

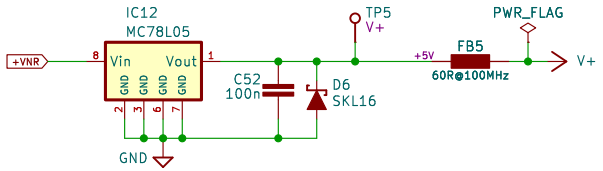
Title: EEZ DIB DCP405+ power module

Size: A4	Date: 2025-11-21	**Rev: r4B3**
KiCad E.D.A. 9.0.6		Id: 3/8

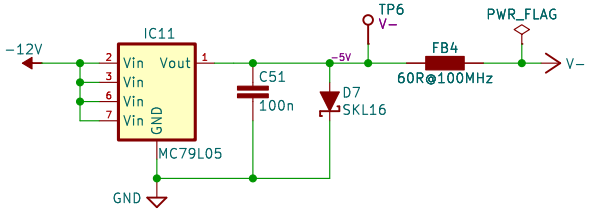
Bias power supply



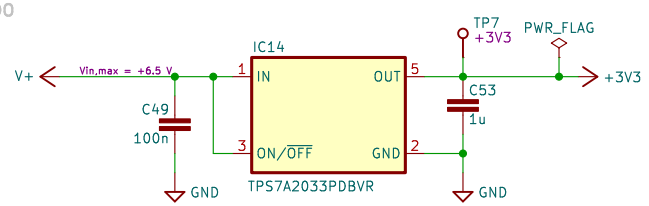
+5V LDO



−5V LDO



+3V3 LDO



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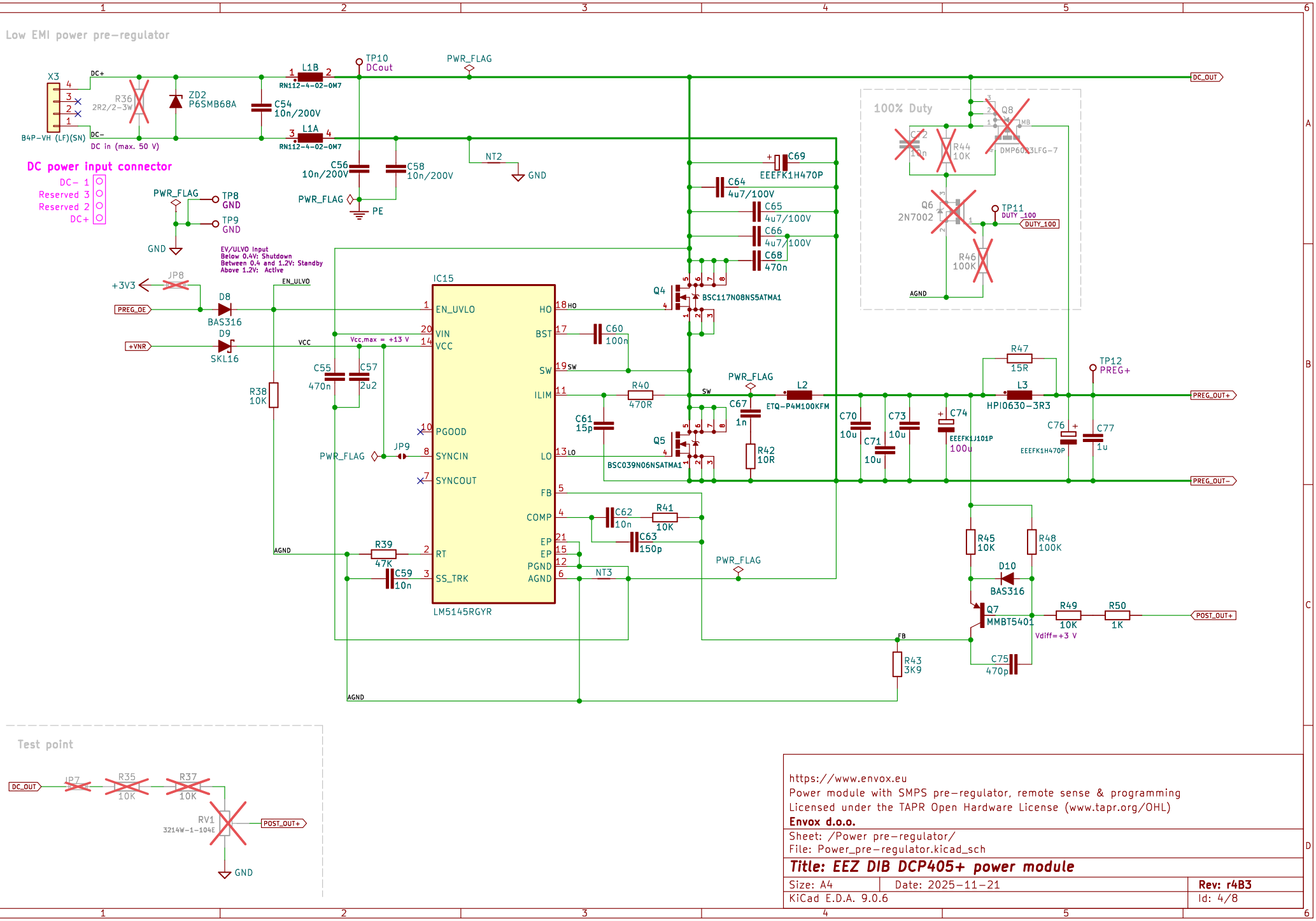
Sheet: /Bias power/
File: Bias_power.kicad_sch

Title: EEZ DIB DCP405+ power module

Size: A4	Date: 2025−11−21	**Rev: r4B3**
KiCad E.D.A. 9.0.6		Id: 3/8



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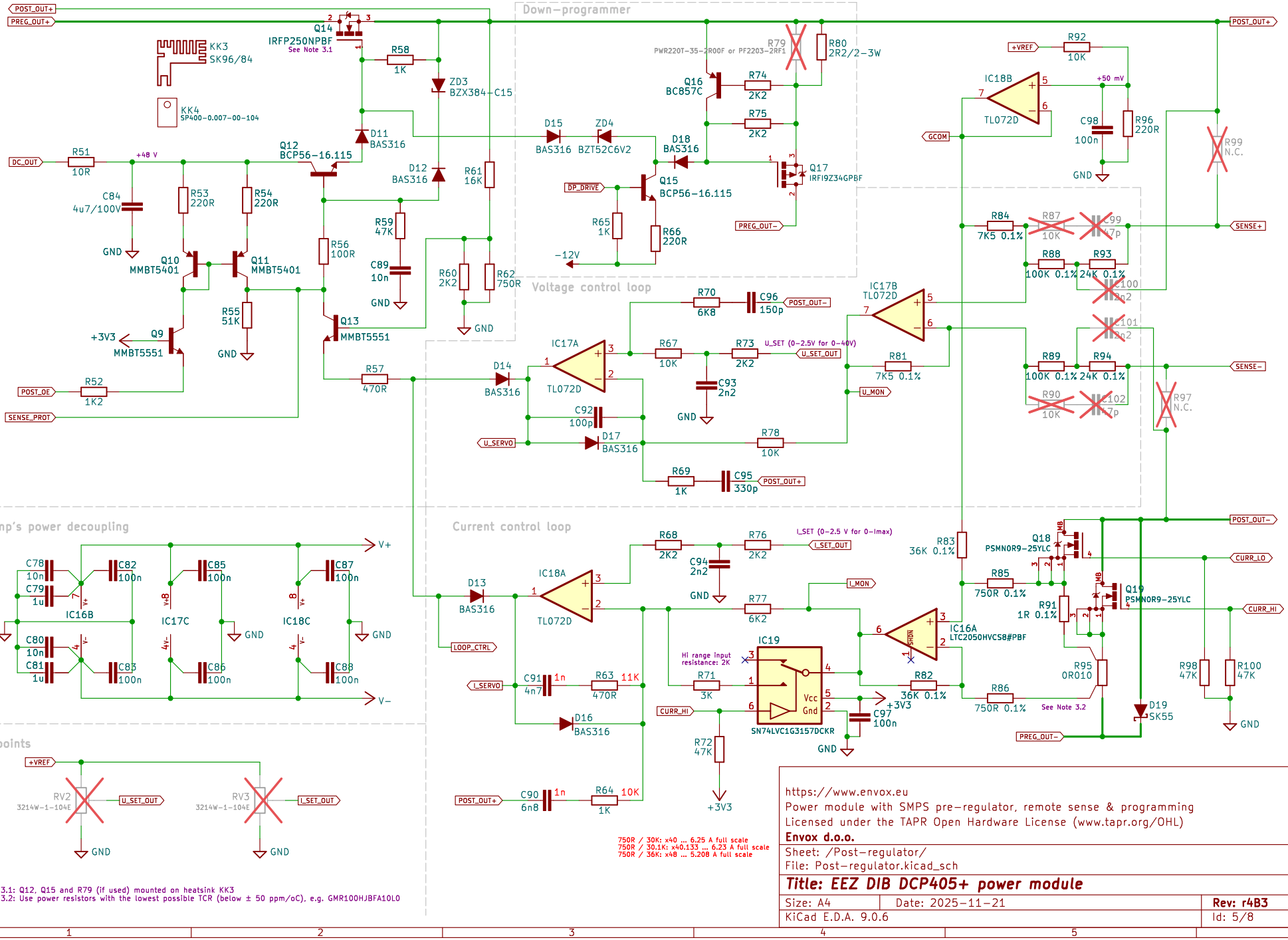
Sheet: /Power pre-regulator/
File: Power_pre-regulator.kicad_sch

Title: EEZ DIB DCP405+ power module

Size: A4	Date: 2025-11-21	**Rev: r4B3**
KiCad E.D.A. 9.0.6		Id: 4/8


Down-programmer
Voltage control loop
Current control loop
Op amp's power decoupling
Test points
POST_OUT+
PREG_OUT+
DC_OUT
+48 V
Q14
IRFP250NPBF
See Note 3.1
KK3
SK96/84
KK4
SP400-0.007-00-104
R58
1K
ZD3
BZX384-C15
D11
BAS316
Q12
BCP56-16.115
D12
BAS316
R51
10R
C84
4u7/100V
R53
220R
R54
220R
Q10
MMBT5401
Q11
MMBT5401
R56
100R
R59
47K
C89
10n
R61
16K
R60
2K2
R62
750R
R55
51K
Q9
MMBT5551
+3V3
POST_OE
R52
1K2
SENSE_PROT
Q13
MMBT5551
R57
470R
D15
BAS316
ZD4
BZT52C6V2
D18
BAS316
DP_DRIVE
Q15
BCP56-16.115
R65
1K
R66
220R
-12V
R79
PWR220T-35-2R00F or PF2203-2RF1
R80
2R2/2-3W
Q16
BC857C
R74
2K2
R75
2K2
Q17
IRFI9Z34GPBF
PREG_OUT-
R70
6K8
C96
150p
IC17A
TL072D
R67
10K
R73
2K2
U_SET (0-2.5V for 0-40V)
U_SET_OUT
C93
2n2
D14
BAS316
C92
100p
U_SERVO
D17
BAS316
R78
10K
R69
1K
C95
330p
IC17B
TL072D
R81
7K5 0.1%
U_MON
+VREF
R92
10K
IC18B
TL072D
+50 mV
C98
100n
R96
220R
GCOM
R99
N.C.
R84
7K5 0.1%
R87
10K
C99
47p
R88
100K 0.1%
R93
24K 0.1%
C100
2n2
C101
2n2
R89
100K 0.1%
R94
24K 0.1%
R90
10K
C102
47p
R97
N.C.
SENSE+
SENSE-
Op amp's power decoupling
C78
10n
C79
1u
C80
10n
C81
1u
C82
100n
C83
100n
C85
100n
C86
100n
C87
100n
C88
100n
IC16B
IC17C
IC18C
V+
V-
GND
Current control loop
D13
BAS316
IC18A
TL072D
R68
2K2
C94
2n2
R76
2K2
I_SET (0-2.5 V for 0-Imax)
I_SET_OUT
R77
6K2
I_MON
LOOP_CTRL
I_SERVO
C91
4n7
1n
R63
470R
11K
D16
BAS316
C90
6n8
1n
R64
1K
10K
POST_OUT+
IC19
SN74LVC1G3157DCKR
Hi range input resistance: 2K
R71
3K
CURR_HI
R72
47K
C97
100n
+3V3
IC16A
LTC2050HVCS8#PBF
R83
36K 0.1%
R82
36K 0.1%
R85
750R 0.1%
R86
750R 0.1%
See Note 3.2
Q18
PSMN0R9-25YLC
Q19
PSMN0R9-25YLC
R91
1R 0.1%
R95
0R010
D19
SK55
R98
47K
R100
47K
CURR_LO
CURR_HI
POST_OUT-
PREG_OUT-
750R / 30K: x40 ... 6.25 A full scale
750R / 30.1K: x40.133 ... 6.23 A full scale
750R / 36K: x48 ... 5.208 A full scale
Test points
+VREF
RV2
3214W-1-104E
U_SET_OUT
RV3
3214W-1-104E
I_SET_OUT
GND
Note 3.1: Q12, Q15 and R79 (if used) mounted on heatsink KK3
Note 3.2: Use power resistors with the lowest possible TCR (below ± 50 ppm/oC), e.g. GMR100HJBFA10L0
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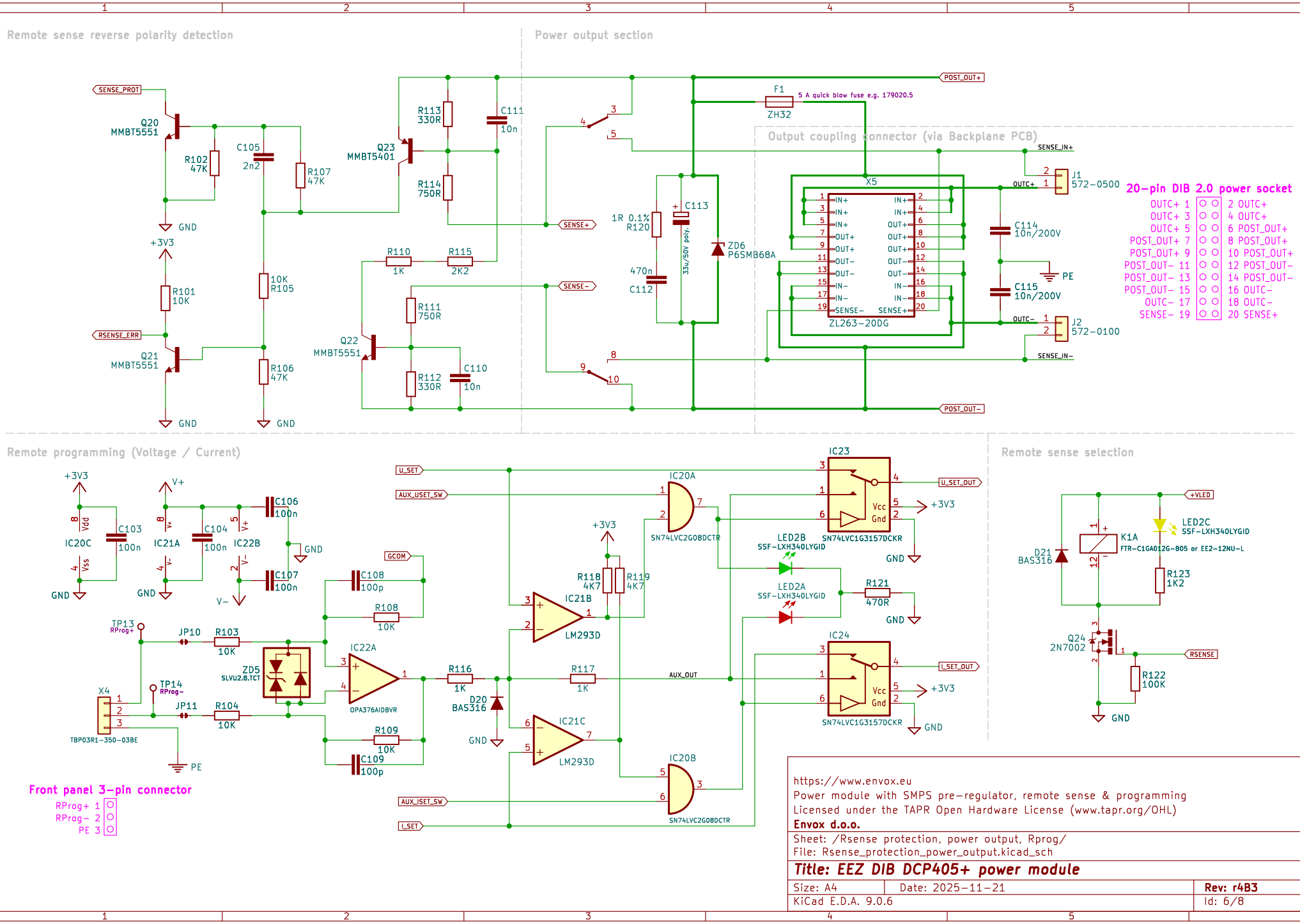
Sheet: /Post-regulator/
File: Post-regulator.kicad_sch
Title: EEZ DIB DCP405+ power module
Size: A4
Date: 2025-11-21
Rev: r4B3
KiCad E.D.A. 9.0.6
Id: 5/8



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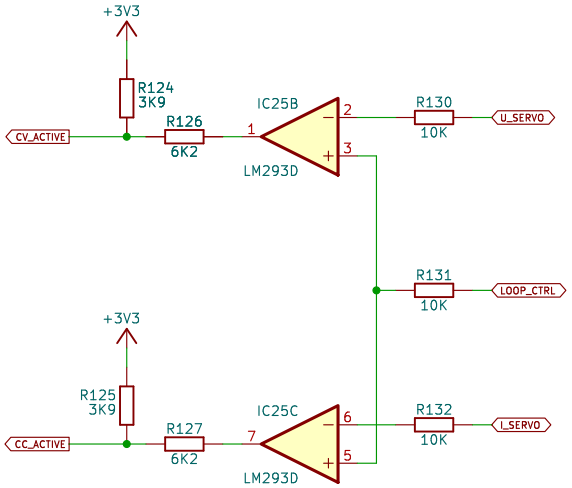
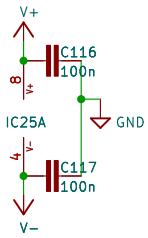
Sheet: /Rsense protection, power output, Rprog/
File: Rsense_protection_power_output.kicad_sch

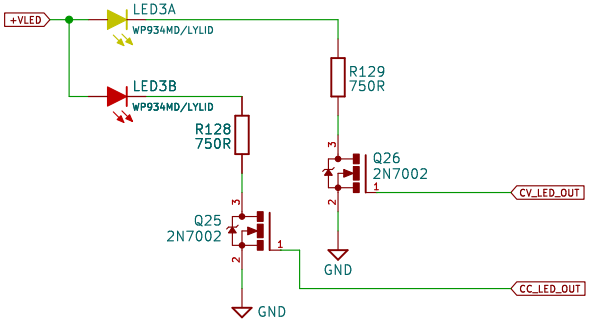
Title: EEZ DIB DCP405+ power module

Size: A4	Date: 2025−11−21	**Rev: r4B3**
KiCad E.D.A. 9.0.6		Id: 6/8

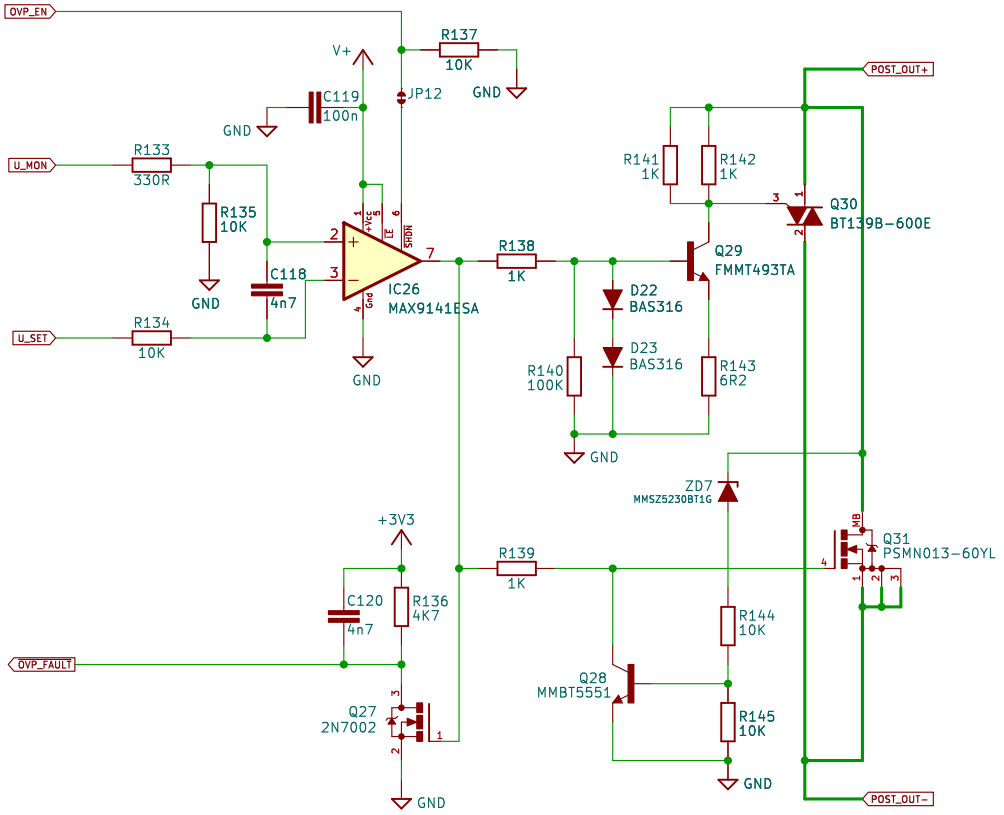
Constant Voltage (CV) and Constant Current (CC) mode detection and indication







Over-voltage protection (OVP)



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Sheet: /Mode detection, OVP/
File: CC_CV_OVP.kicad_sch

Title: EEZ DIB DCP405+ power module

Size: A4	Date: 2025-11-21	**Rev: r4B3**
KiCad E.D.A. 9.0.6		Id: 7/8