

FIRST PAGE

C1471n

R1691M

FID

FID

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FID

Holes

H1H2H3H4H5H6H7

VUT FEKT

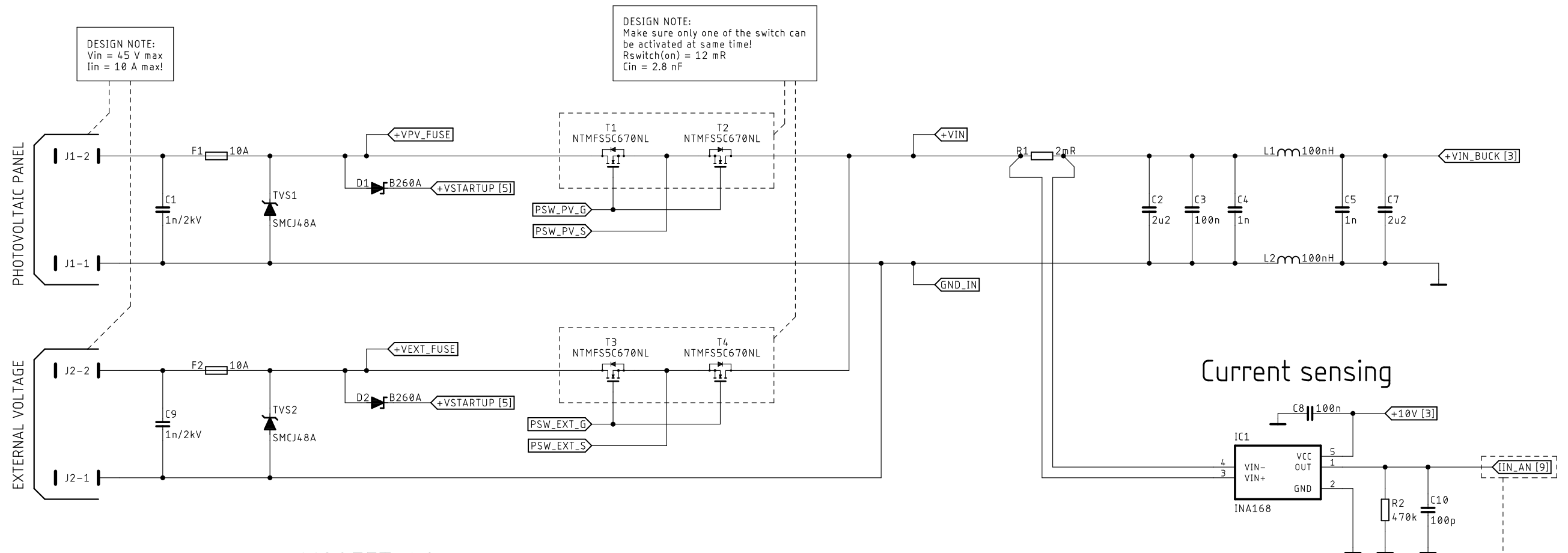
FILENAME:MEC_CTRL_v1

VARIANT:

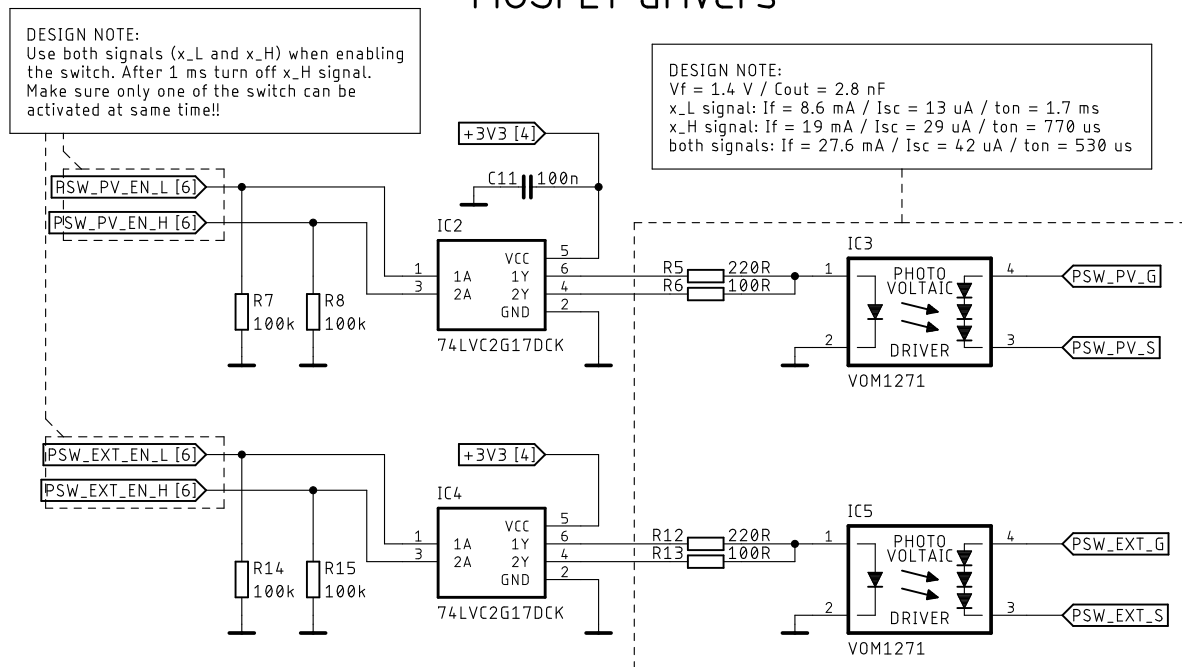
AUTHOR:MARCEL UHLIR

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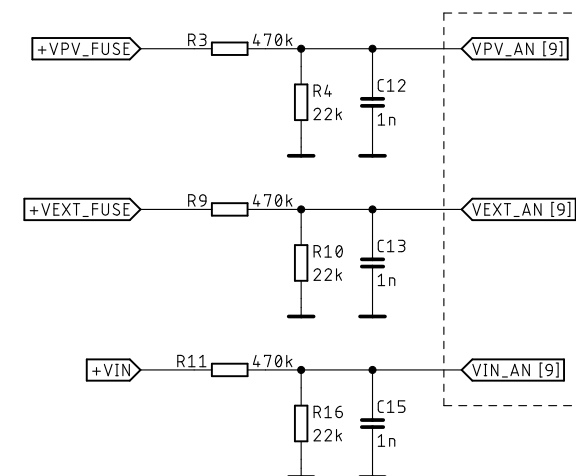
POWER INPUTS



MOSFET drivers



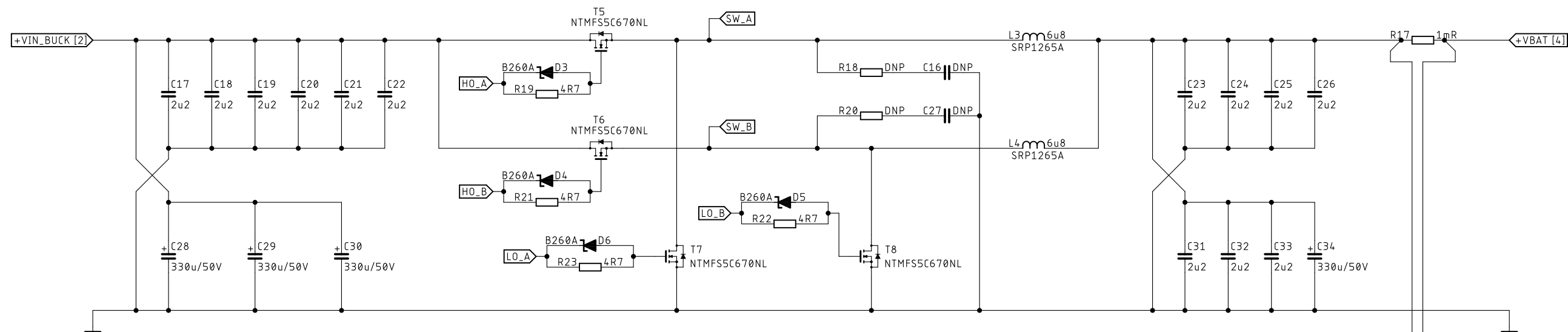
Voltage sensing



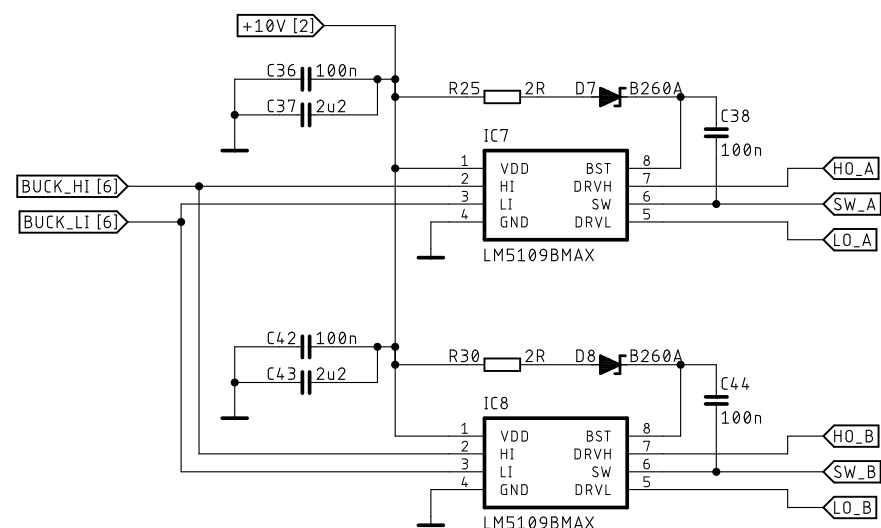
DESIGN NOTE:
 $V_{sense} = (492/22) \times V_{out}$
Rout = 25.5 k
fc = 6.2 kHz

VUT FEKT	
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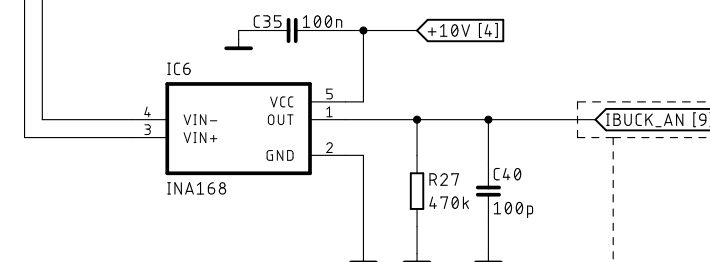
POWER BUCK CONVERTER



Gate drivers



Current sensing

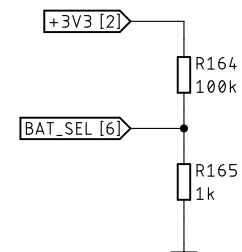
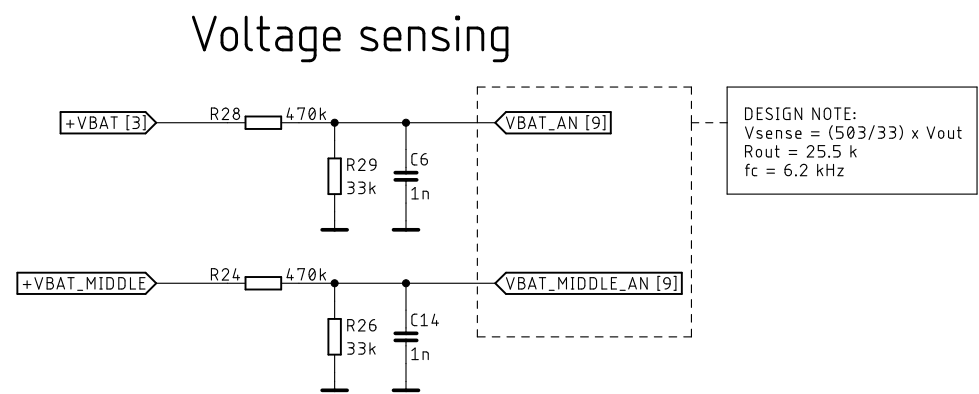
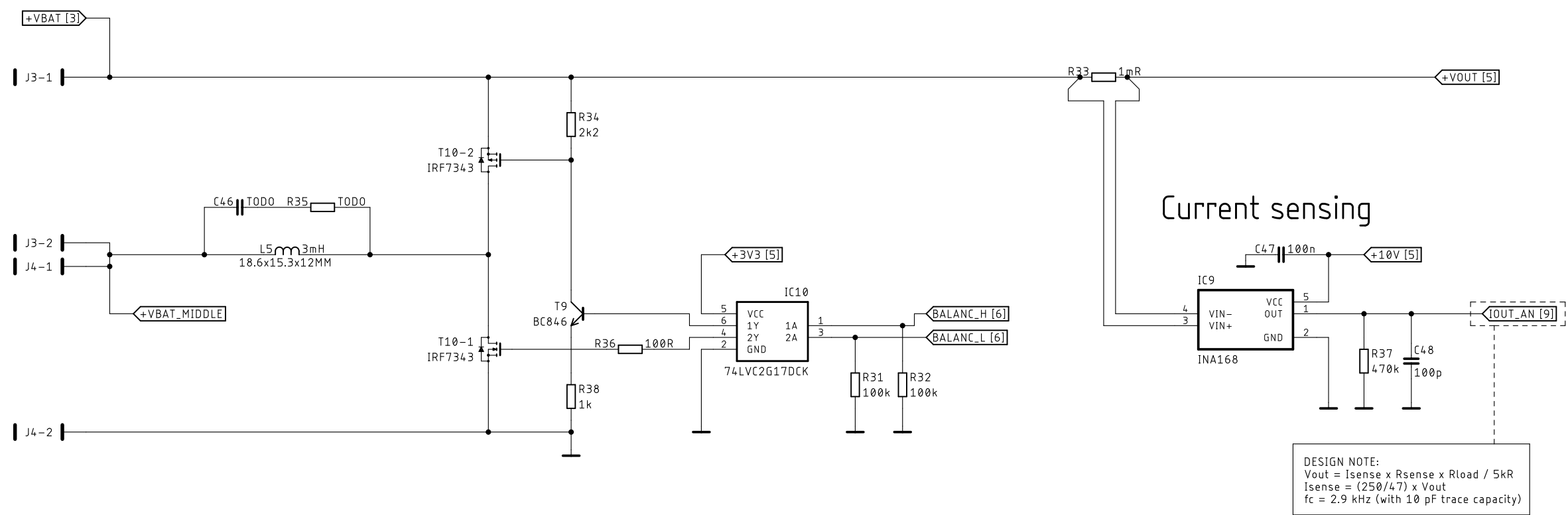


DESIGN NOTE:
 $V_{out} = I_{sense} \times R_{sense} \times R_{load} / 5kR$
 $I_{sense} = (250/47) \times V_{out}$
 $f_c = 2.9 \text{ kHz (with } 10 \text{ pF trace capacity)}$

VUT FEKT

FILENAME: MEC_CTRL_v1
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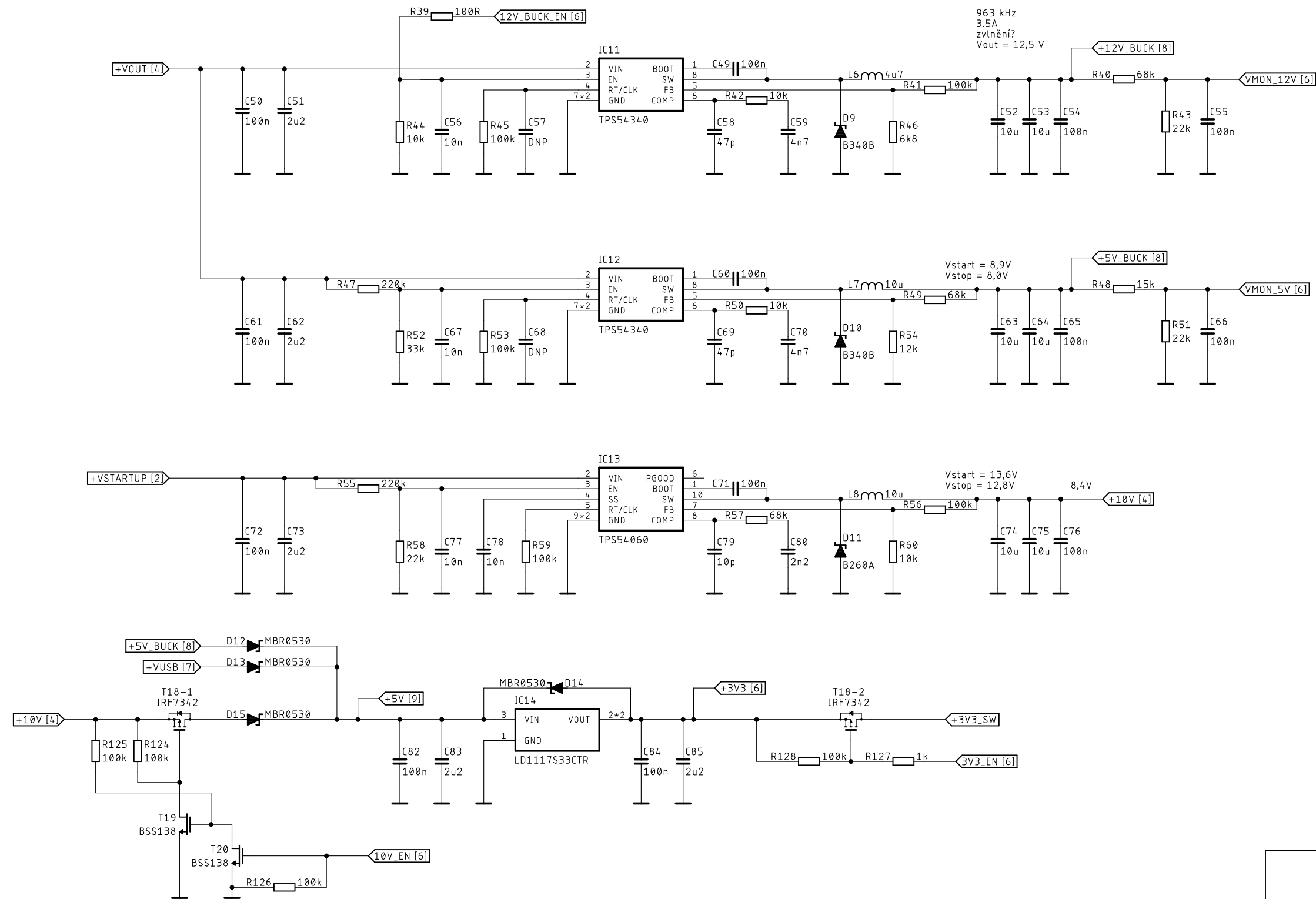
BATTERY MANAGEMENT



VUT FEKT

FILENAME:	MEC_CTRL_v1
VARIANT:	
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POWER DISTRIBUTION



VUT FEKT

FILENAME:	MEC_CTRL_v1
VARIANT:	
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1 2 3 4

A

B

C

D

MCU

IC16

ARM Cortex M4
32-bit MCU
168MHz
192kB SRAM
512kB FLASH

STM32F407VE

PH0/OSC_IN

PH1/OSC_OUT

Q1 25MHz

FB14 120R

FB15 120R

FB16 120R

FB17 120R

FB18 120R

FB19 120R

FB20 120R

FB21 120R

FB22 120R

FB23 120R

FB24 120R

FB25 120R

FB26 120R

FB27 120R

FB28 120R

FB29 120R

FB30 120R

FB31 120R

FB32 120R

FB33 120R

FB34 120R

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FB283 120R

FB284 120R

FB285 120R

FB286 120R

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FB291 120R

FB292 120R

FB293 120R

FB294 120R

FB295 120R

FB296 120R

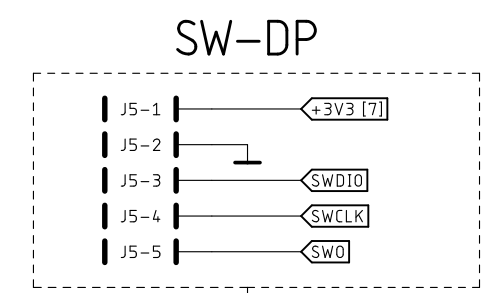
FB297 120R

FB298 120R

FB299 120R

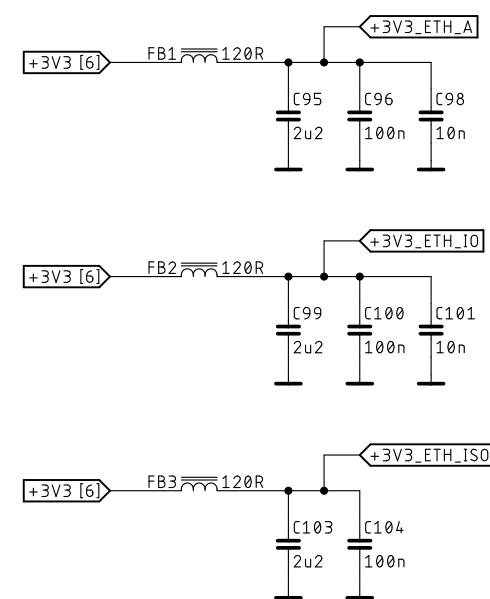
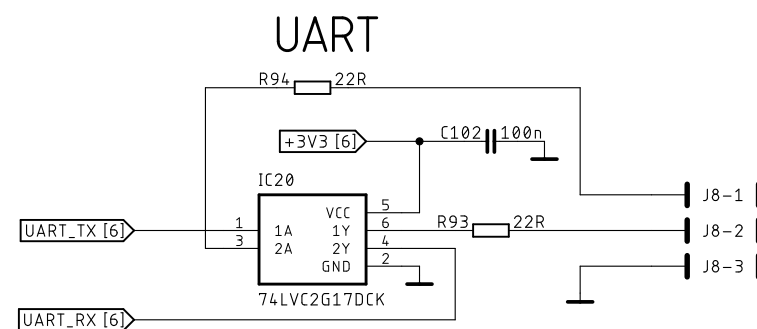
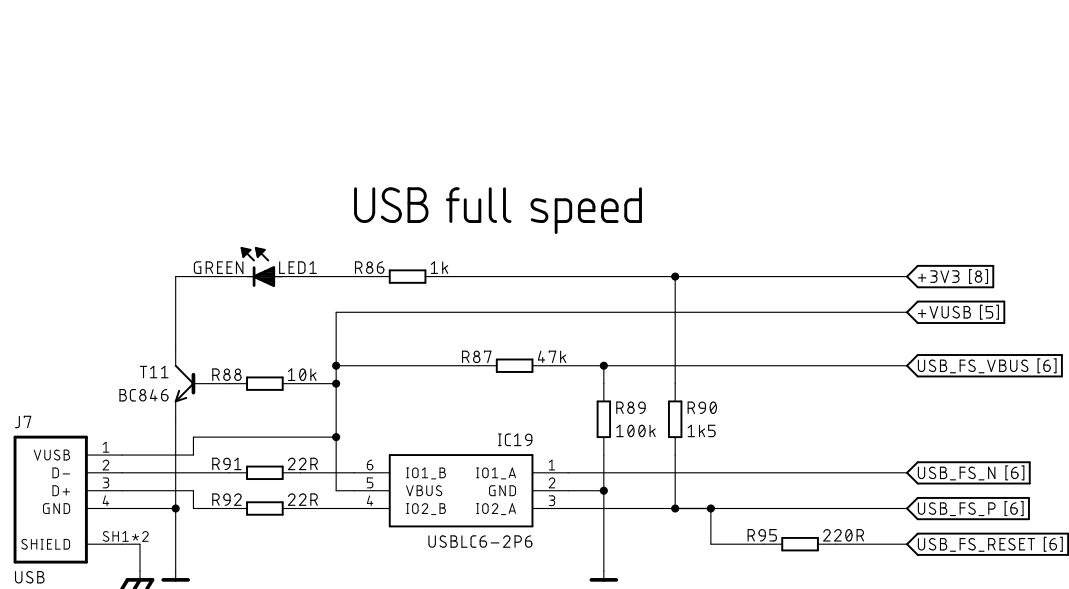
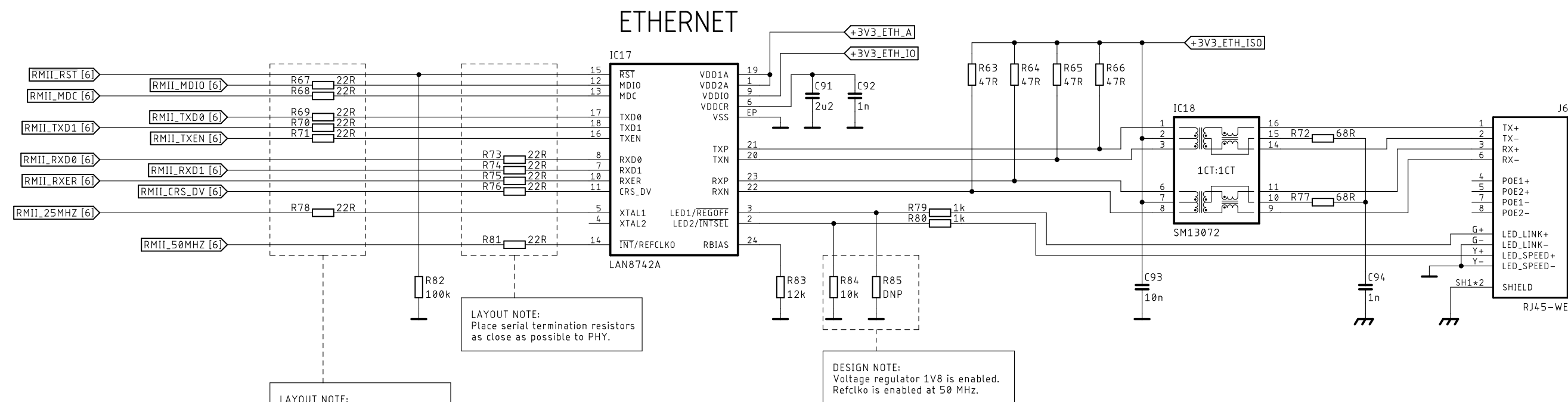
FB300 120R

FB301 120R



VUT FEKT	
FILENAME:	MEC_CTRL_v1
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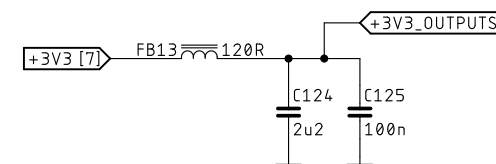
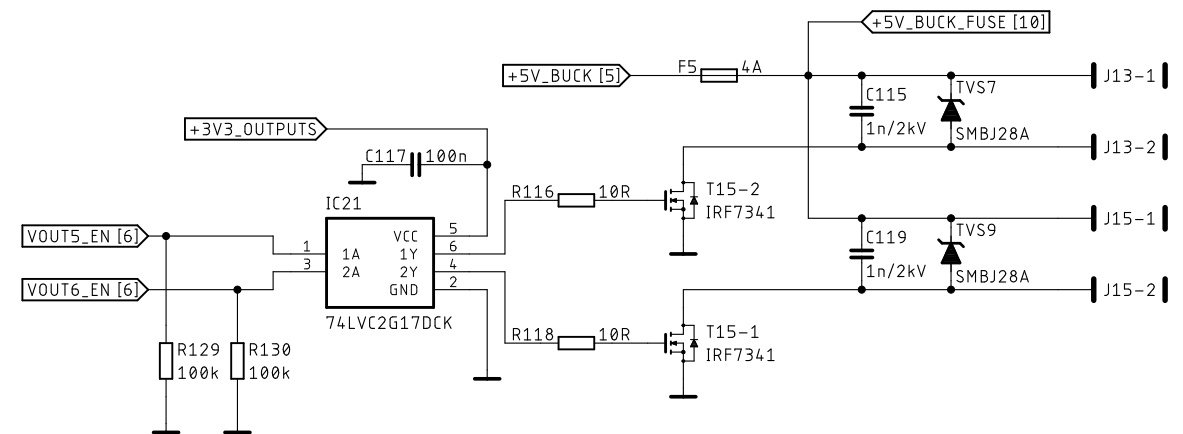
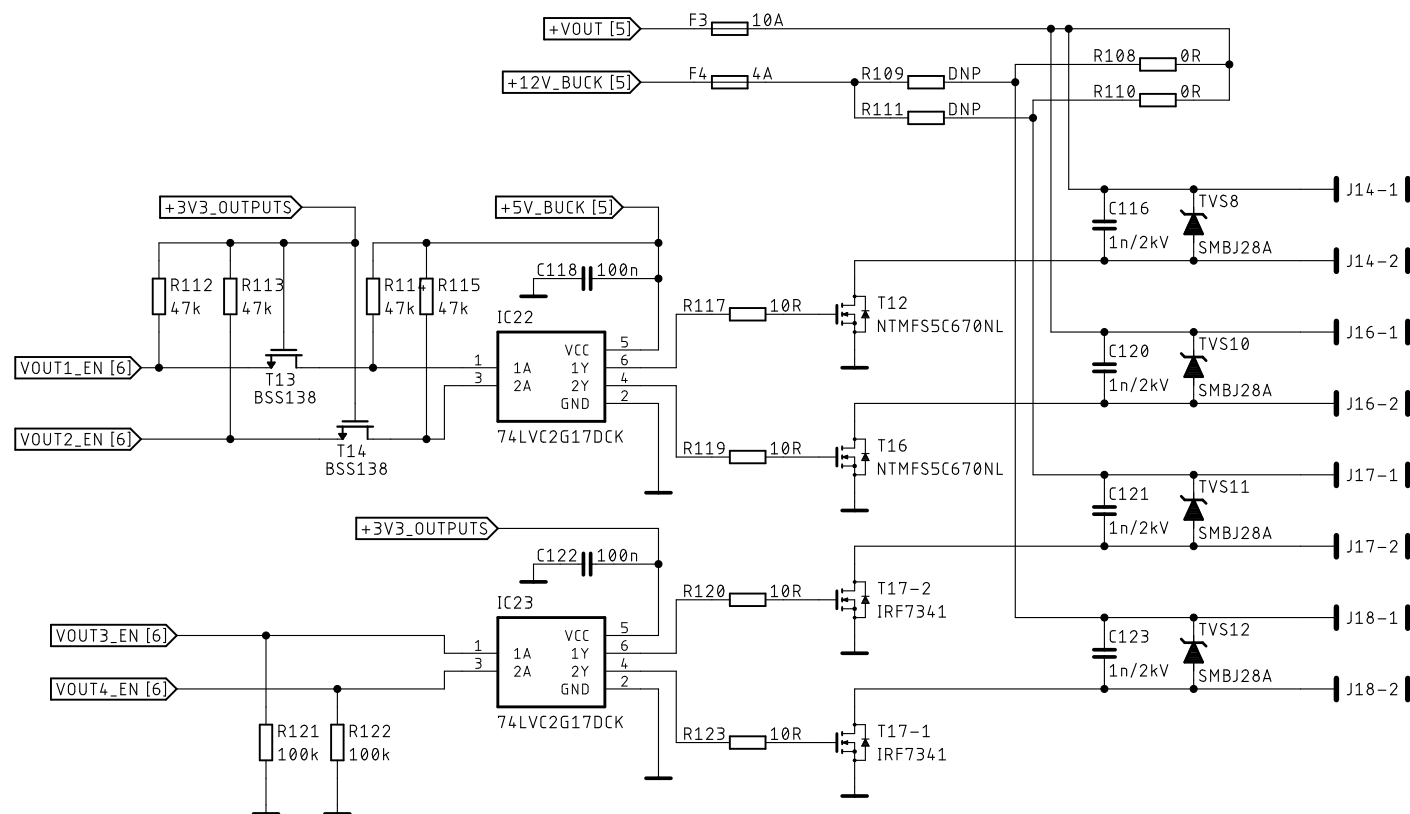
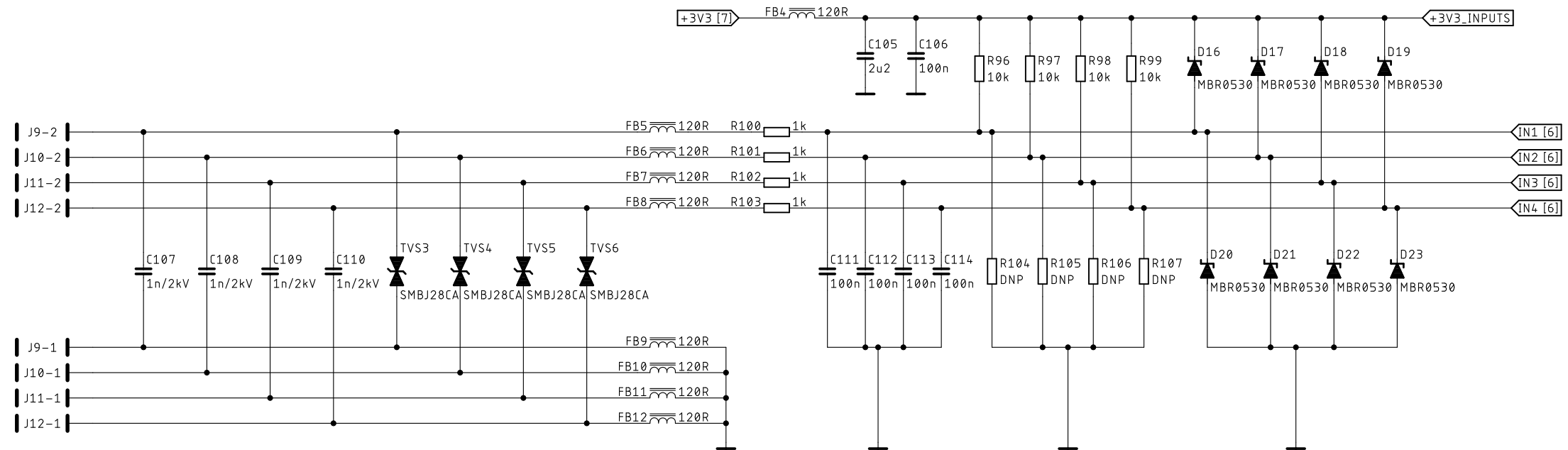
ETHERNET, USB, UART



VUT FEKT

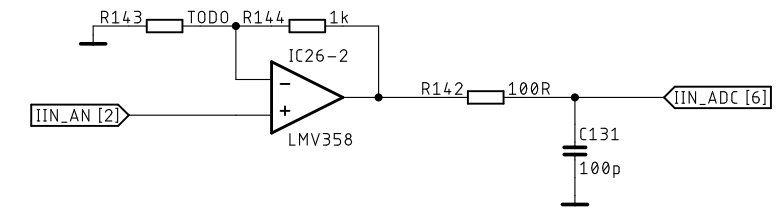
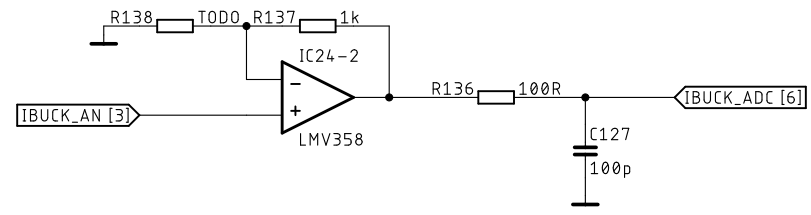
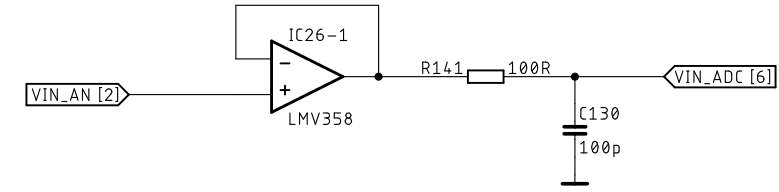
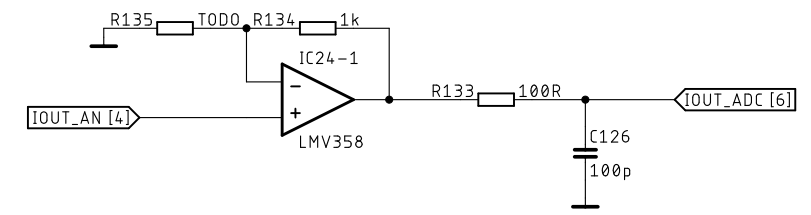
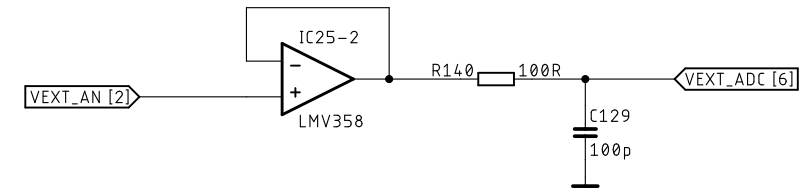
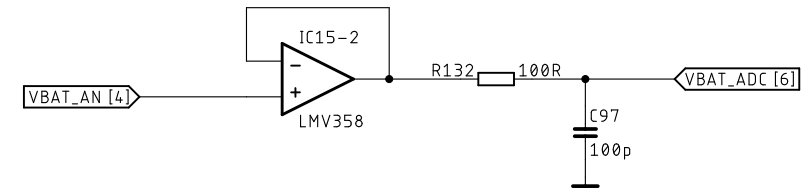
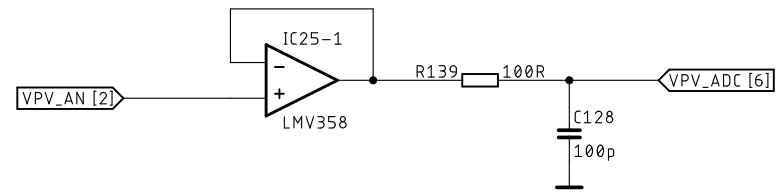
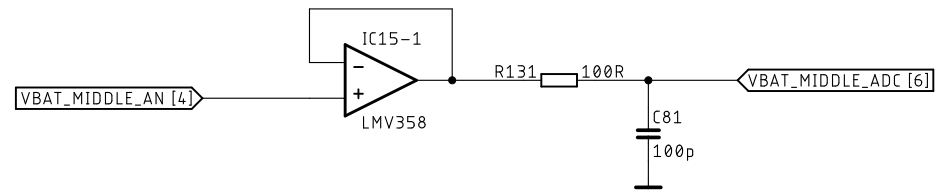
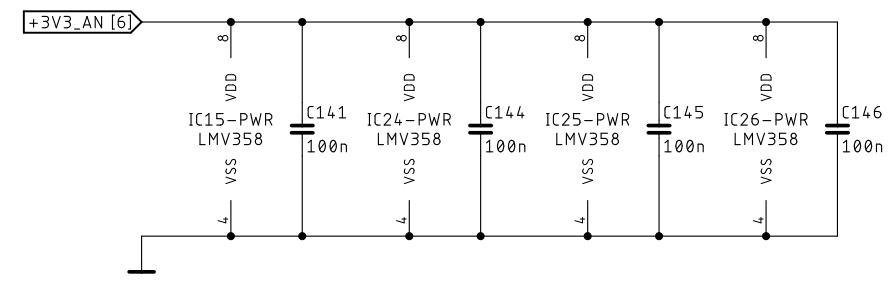
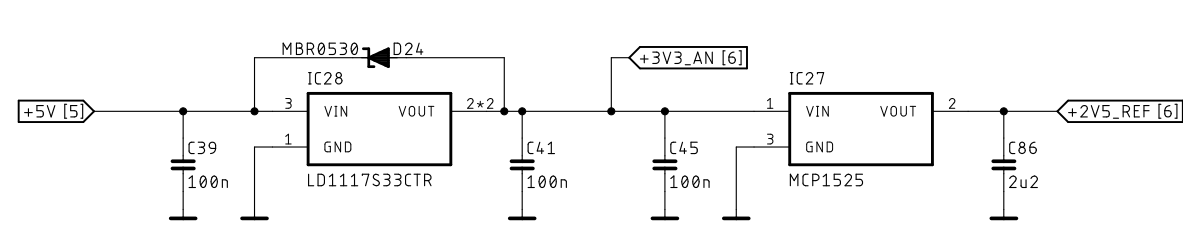
FILENAME: MEC_CTRL_v1
VARIANT:
AUTHOR: MARCEL UHLIR
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INPUTS, OUTPUTS



VUT FEKT	
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VARIANT:	
AUTHOR:	MARCEL UHLIR
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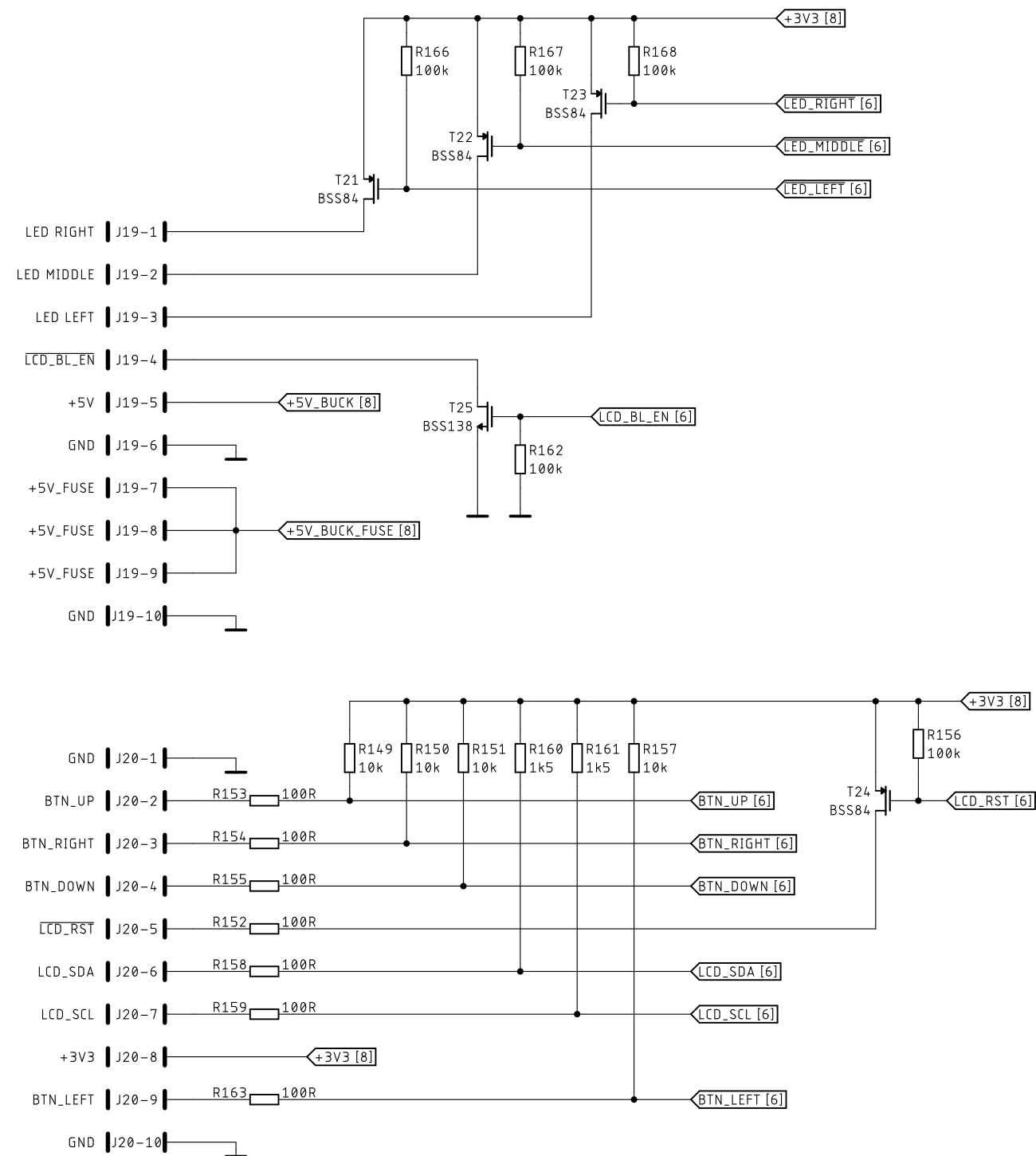
ANALOG



VUT FEKT

FILENAME:	MEC_CTRL_v1
VARIANT:	
AUTHOR:	MARCEL UHLIR
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FRONT END PANEL



VUT FEKT

FILENAME: MEC_CTRL_v1
VARIANT:
AUTHOR: MARCEL UHLIR
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