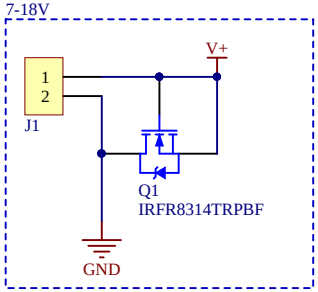
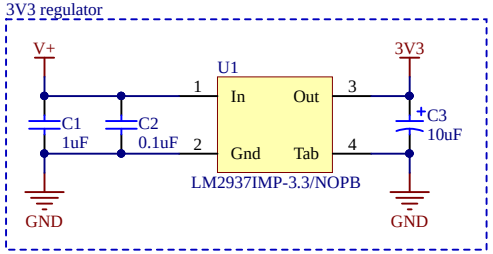
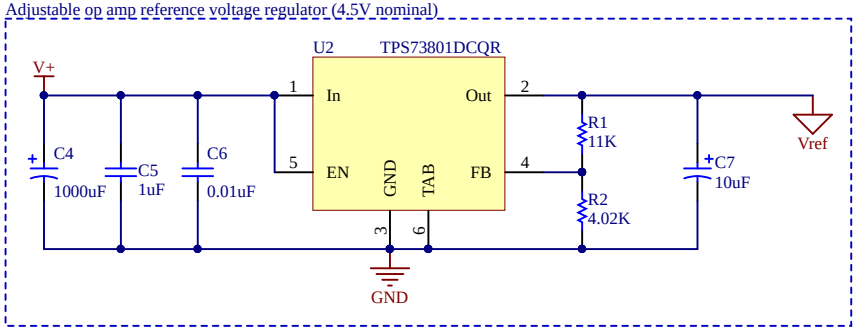
Power input and reverse voltage protection
7-18V

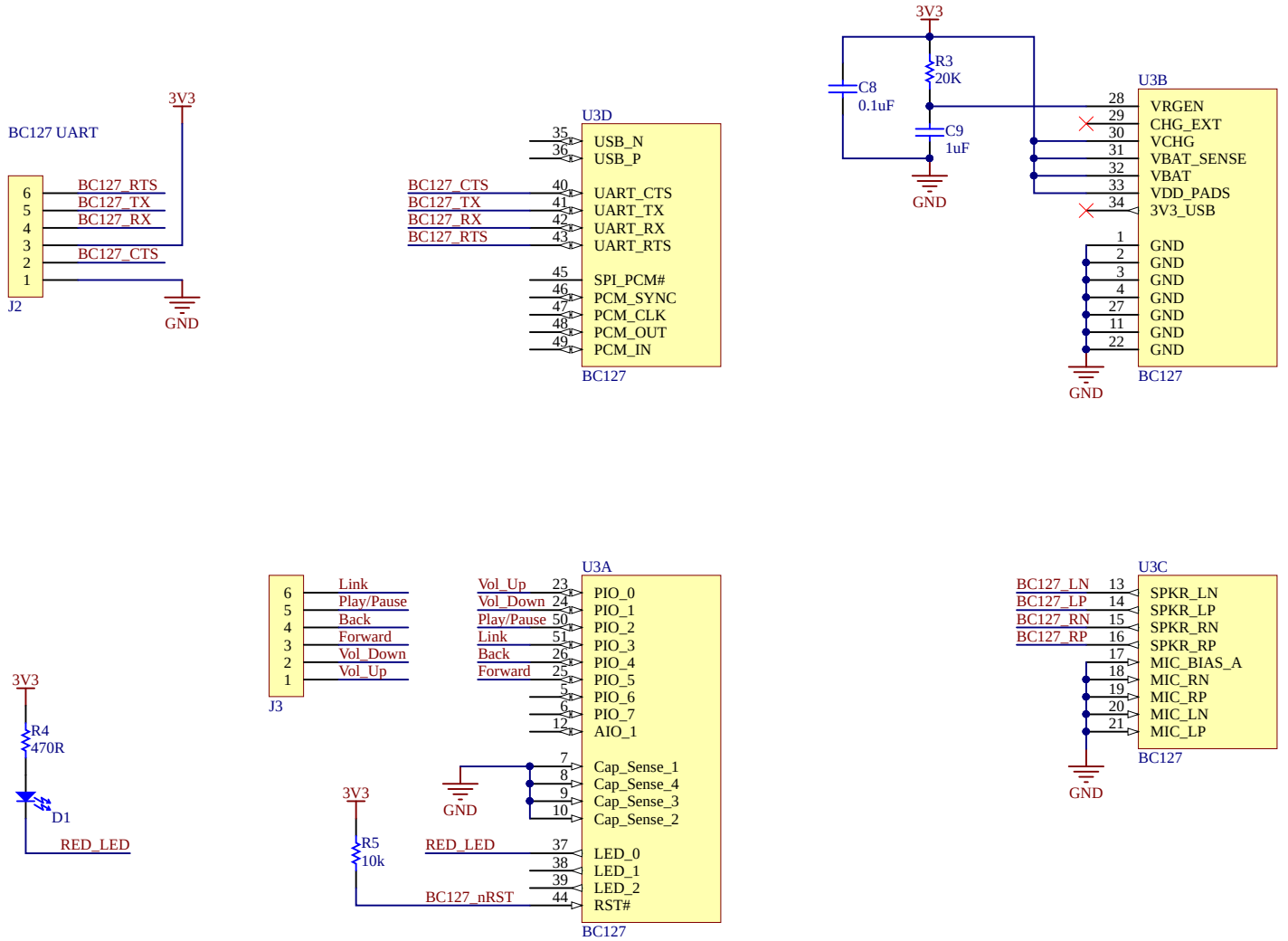


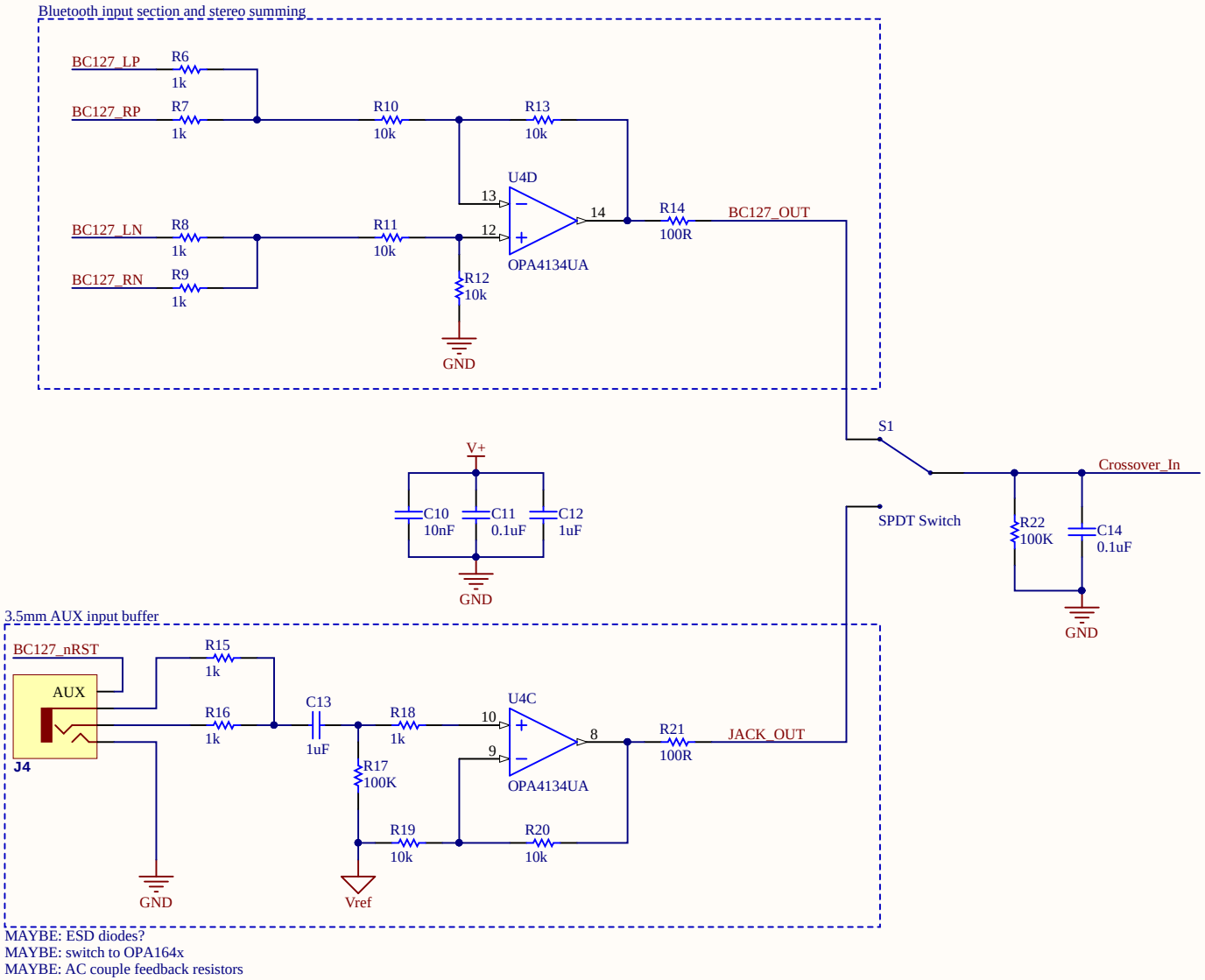
3V3 regulator

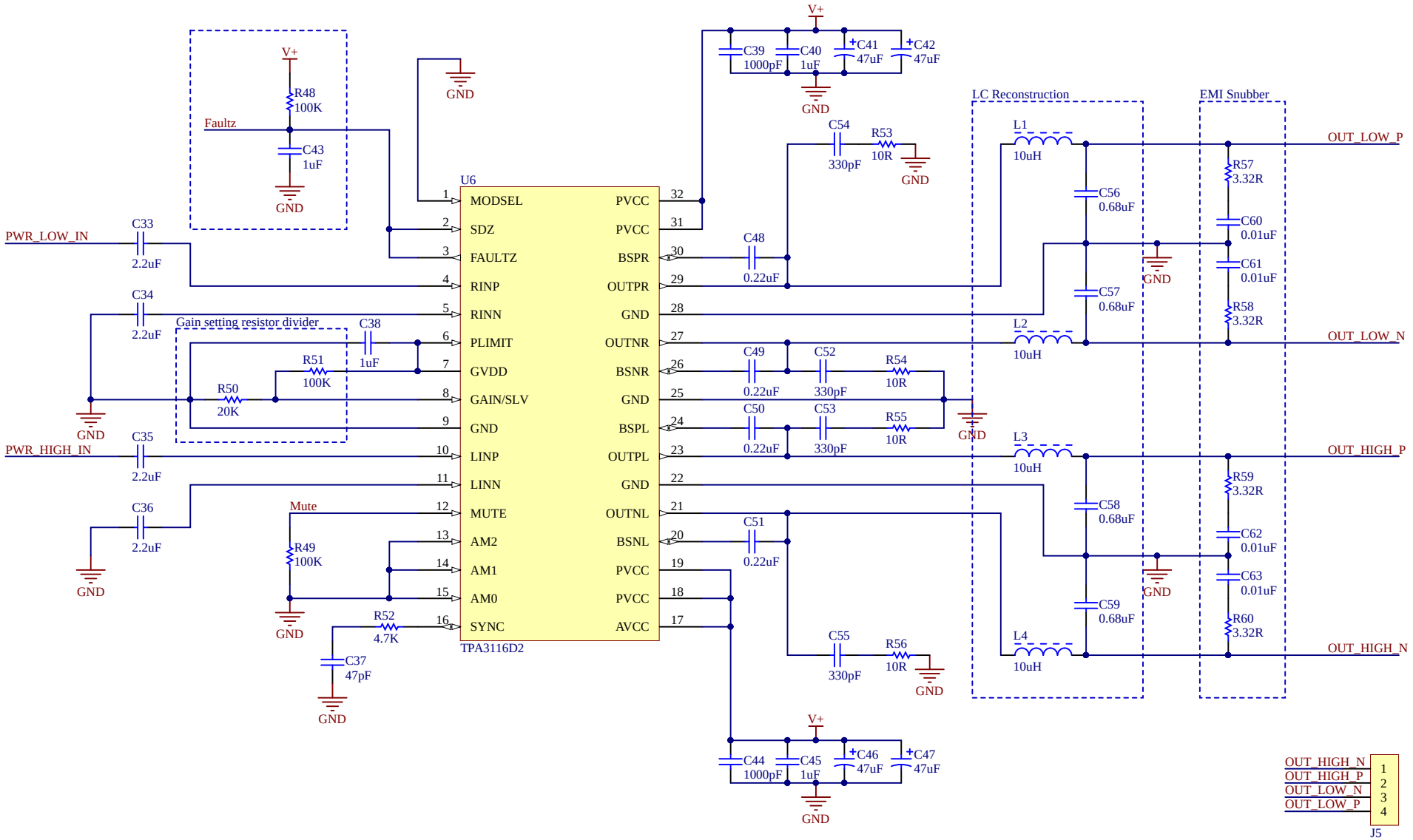


Adjustable op amp reference voltage regulator (4.5V nominal)




BC127 UART
3V3
BC127_RTS
BC127_TX
BC127_RX
BC127_CTS
GND
J2
U3D
USB_N
USB_P
UART_CTS
UART_TX
UART_RX
UART_RTS
SPI_PCM#
PCM_SYNC
PCM_CLK
PCM_OUT
PCM_IN
BC127
R3
20K
C8
0.1uF
C9
1uF
U3B
VRGEN
CHG_EXT
VCHG
VBAT_SENSE
VBAT
VDD_PADS
3V3_USB
Link
Play/Pause
Back
Forward
Vol_Down
Vol_Up
J3
U3A
PIO_0
PIO_1
PIO_2
PIO_3
PIO_4
PIO_5
PIO_6
PIO_7
AIO_1
Cap_Sense_1
Cap_Sense_4
Cap_Sense_3
Cap_Sense_2
LED_0
LED_1
LED_2
RST#
R4
470R
D1
RED_LED
R5
10k
BC127_nRST
U3C
BC127_LN
BC127_LP
BC127_RN
BC127_RP
SPKR_LN
SPKR_LP
SPKR_RN
SPKR_RP
MIC_BIAS_A
MIC_RN
MIC_RP
MIC_LN
MIC_LP


Bluetooth input section and stereo summing
BC127_LP
R6
1k
BC127_RP
R7
1k
R10
10k
R13
10k
U4D
13
14
R14
100R
BC127_OUT
BC127_LN
R8
1k
R11
10k
12
OPA4134UA
BC127_RN
R9
1k
R12
10k
GND
S1
V+
C10
10nF
C11
0.1uF
C12
1uF
GND
SPDT Switch
Crossover_In
R22
100K
C14
0.1uF
GND
3.5mm AUX input buffer
BC127_nRST
AUX
J4
R15
1k
R16
1k
C13
1uF
R18
1k
U4C
10
9
8
R21
100R
JACK_OUT
R17
100K
OPA4134UA
R19
10k
R20
10k
GND
Vref
MAYBE: ESD diodes?
MAYBE: switch to OPA164x
MAYBE: AC couple feedback resistors


U6
MODSEL
SDZ
FAULTZ
RINP
RINN
PLIMIT
GVDD
GAIN/SLV
GND
LINP
LINN
MUTE
AM2
AM1
AM0
SYNC
PVCC
PVCC
BSPR
OUTPR
GND
OUTNR
BSNR
GND
BSPL
OUTPL
GND
OUTNL
BSNL
PVCC
PVCC
AVCC
TPA3116D2
V+
R48 100K
Faultz
C43 1uF
GND
C39 1000pF
C40 1uF
C41 47uF
C42 47uF
C54 330pF
R53 10R
C48 0.22uF
PWR_LOW_IN
C33 2.2uF
C34 2.2uF
Gain setting resistor divider
C38 1uF
R51 100K
R50 20K
PWR_HIGH_IN
C35 2.2uF
C36 2.2uF
Mute
R49 100K
R52 4.7K
C37 47pF
C49 0.22uF
C52 330pF
R54 10R
C50 0.22uF
C53 330pF
R55 10R
C51 0.22uF
C55 330pF
R56 10R
C44 1000pF
C45 1uF
C46 47uF
C47 47uF
LC Reconstruction
L1 10uH
L2 10uH
L3 10uH
L4 10uH
C56 0.68uF
C57 0.68uF
C58 0.68uF
C59 0.68uF
EMI Snubber
R57 3.32R
C60 0.01uF
C61 0.01uF
R58 3.32R
R59 3.32R
C62 0.01uF
C63 0.01uF
R60 3.32R
OUT_LOW_P
OUT_LOW_N
OUT_HIGH_P
OUT_HIGH_N
J5

Note for LR4:
Fp = 1/(2.83*pi*R*C)
R = 10K
C = 2200pF

LR4 Low Pass at ~5KHz

C18 4700pF
C19 4700pF
R23 10k
R24 10k
R25 10k
R26 10k
R27 100R
R28 100K
C20 2200pF
C21 2200pF
U5A
U5D
OPA4134UA
LR4_OUT_LOW
GND

V+
C15 10nF
C16 0.1uF
C17 1uF
GND

Linkwitz Transform bypass jumpers
Put jumper by default on pins 1 and 2

JP1
1
2
3
LR4_OUT_LOW
LT_IN
Vref

JP2
1
2
3
LT_OUT
PRE_LOW_OUT
LR4_OUT_LOW

CROSSOVER_IN

Butterworth High Pass at 55Hz

R30 26.1K
C22 0.1uF
C23 0.056uF
R29 56.2K
U5C
OPA4134UA
R31 100R
R32 100K
C24 1uF
R33 100K
LT_IN
GND
Vref

Linkwitz Transform

R37 13k
C28 0.068uF
R38 35K
R39 35K
C27 0.1uF
R34 13k
C26 0.068uF
R35 8.06K
R36 8.06K
C25 0.39uF
U5B
OPA4134UA
R40 100R
R41 100K
LT_OUT
GND
Vref

PRE_LOW_OUT
VR1 20K
MUTE
PWR_LOW_IN
GND

Reduces extreme low frequencies to prevent speaker damage and op amp saturation in Linkwitz Transform

LR4 High Pass at 5Khz

R43 10k
R45 10k
C29 2200pF
C30 2200pF
C31 2200pF
C32 2200pF
R42 20K
R44 20K
U4B
U4A
OPA4134UA
R46 100R
R47 100K
PRE_HIGH_OUT
GND

VR2 20K
FAULTz
PWR_HIGH_IN
GND

Note:
Potentiometers are connected to 4 pin JST-PH connectors
4th pin is unused by potentiometers, used as auxiliary IO pins for power amp