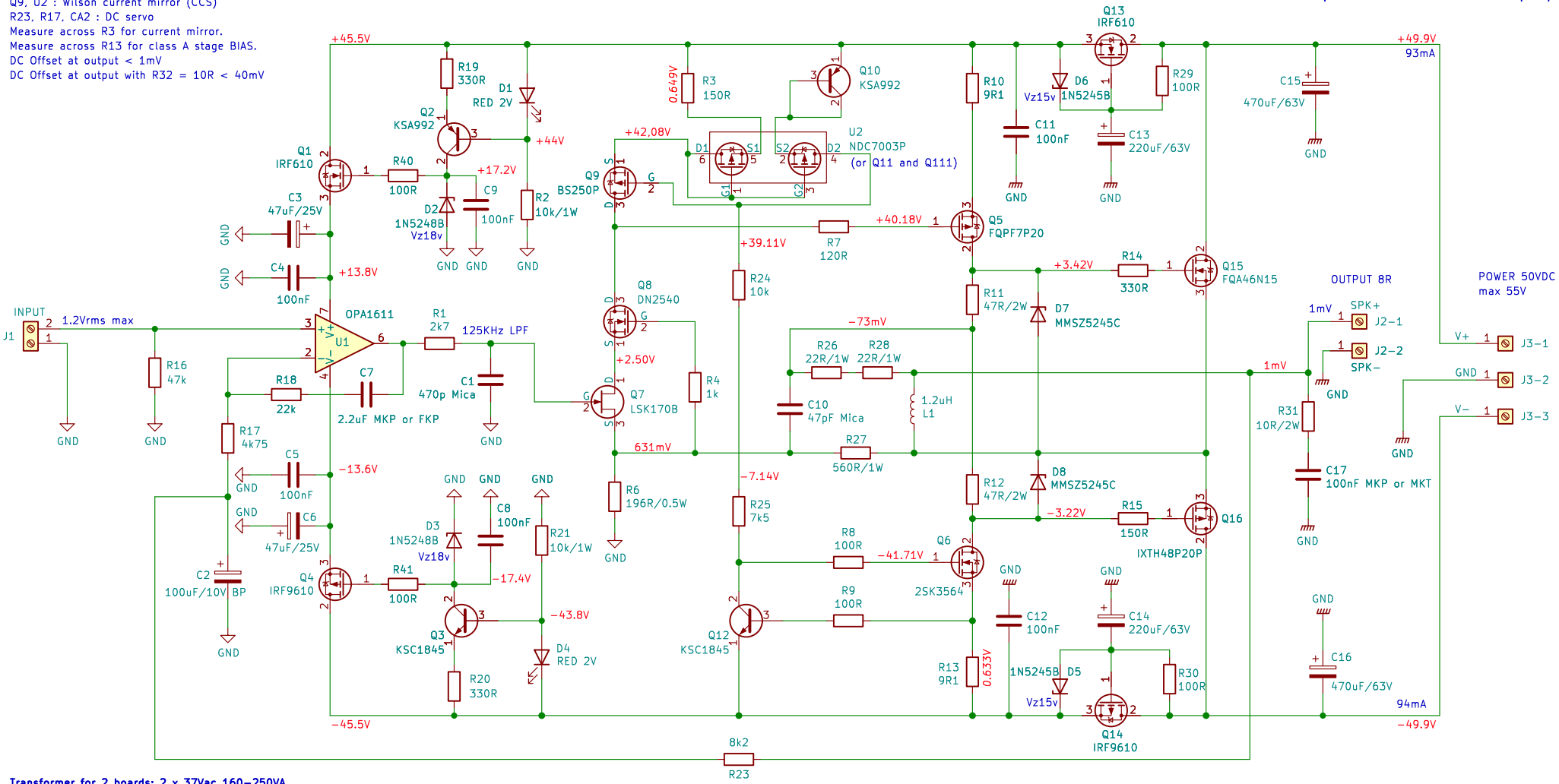

Transformer for 2 boards: 2 x 37Vac 160−250VA

L1 : 19.5 turns of a 1mm diameter copper insulated wire wound around a 8mm tube.
This will give you a coil of 10x20mm (see picture on github repository).

You may need to pair Q11 and Q11 transistors to have same Vbe or Vgs at 5mA. This improves the accuracy of the CCS+ current mirror.

U1 : OPA1611 (BIPOLAR) or OPA1641 (JFET)
U2: NDC7003P or PJS6839
Q1, Q13 : IRF610
Q2, Q10 : KSA992
Q3, Q12 : KSC1845
Q4, Q14 : IRF9610
Q5 : FQP3P20, FQPF7P20 or IRF9610 (isolator)
Q6 : FQP3N30, 2SK3564 or IRF610 (isolator)
Q7 : LSK170B (TH) or JFE150 (SMD SOT23−5)
Q8 : DN2540 or DN2535
Q9, Q11, Q111 : BS250P or ZVP2106A
Q15 : FQA46N15, IXTQ50N20P or IRFP240 (isolator)
Q16 : FQA36P15, IXTH48P20P or IRFP9240 (isolator)

TO−220 thermal pad : Aavid 4171G
TO−247 thermal pad : Aavid 4180G
100nF capacitor : Wima MKS2
1W resistor : Vishay PR01
2W resistor : Vishay CCF02 or PR02
D1, D4 : LED RED 2V TLHR5400
D2, D3 : 1N5248B
D5, D6 : 1N5245B
C3, C6 : Nichicon UKZ1E470MPM
C13, C14 : Panasonic EEU−FC1J221S
J1: KF127 or JST B2B−XH−A−GU

For resistor < 150R : sort then or use 1% range.
0.25W, 0.5W resistor : Vishay MRS25 or CCF07 or MB
R27 : 560R 1W 1% Ohmite WNB560FET or Vishay CMF60560R00JKR6
For R27 use a good quality low noise 1W resistor.
R26, R28 : 22R 1% 1W TE Connectivity H4P22RFZA
C1 : 470pF CDE CD15FD471JO3F or polystyrene capacitor.
C2 : Non polar capacitor Nichicon Muse UES1A101MPM.
C7 : 2.2uF Wima MKP4D042205I00KSSD or Vishay MKP1839522164
C10 : 47pF Mica CDE CD15ED470JO3 or ceramic NP0.
C15, C16 : 470uF 63v Panasonic EEU−FC1J471B
C17 : 100nF capacitor FKP3C031004C00JSSD or MKT1822410255.
C18, C19 : 0.1uF/160V MKP Vishay MKP1839410164
J2 and J3: FASTON 250 PCB connector (TE Connectivity 63849−1)

Opamp input gain = 1+R18/R17 (gain > 4 minimum)
Global gain = ((R17+R18)/R17)x((R27+R6)/R6)
For input sensibility at 1.2Vrms (+4dBu): R17=4k75 and R6=196R (LSK170B) or R6=182R (JFE150).
For input sensibility at 0.7Vrms (0dBu): R17=5k1
The value of R25 depends on the input voltage (42v=2K7, 50v=7K5, 58−60v=8k2).

Q17 a QUAD405 audiophile approach

Modified by Stef for the Q17−Mini project
Principe circuit by Tiberiu Vicol

Sheet: /
File: Q17−Mini.kicad_sch

Title: Q17−Mini Amplifier

Size: A4	Date: 2024−07−28	**Rev: 2.3.3**
KiCad E.D.A. 8.0.4		Id: 1/1