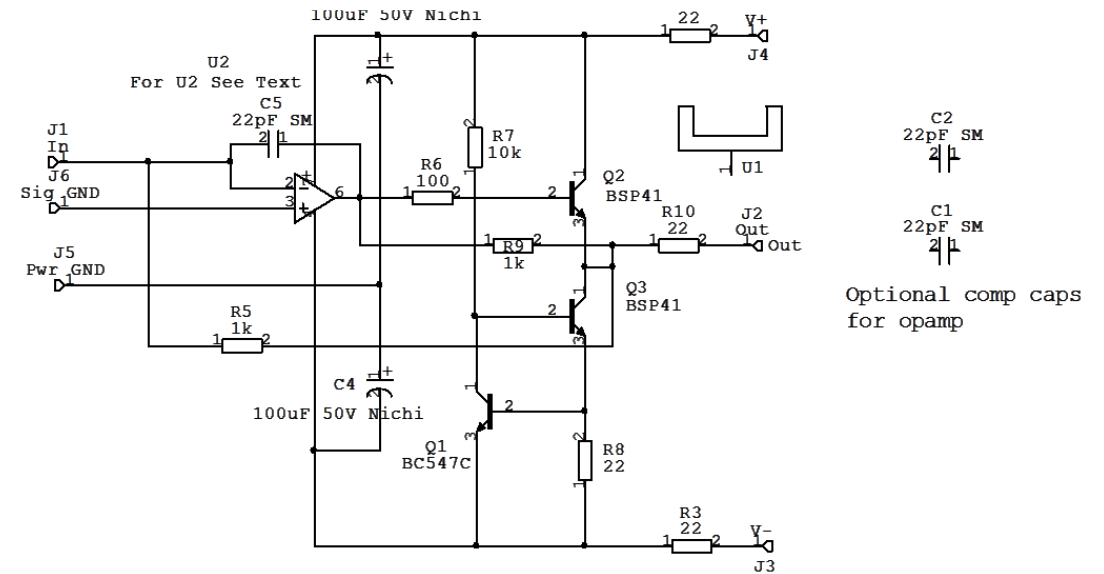
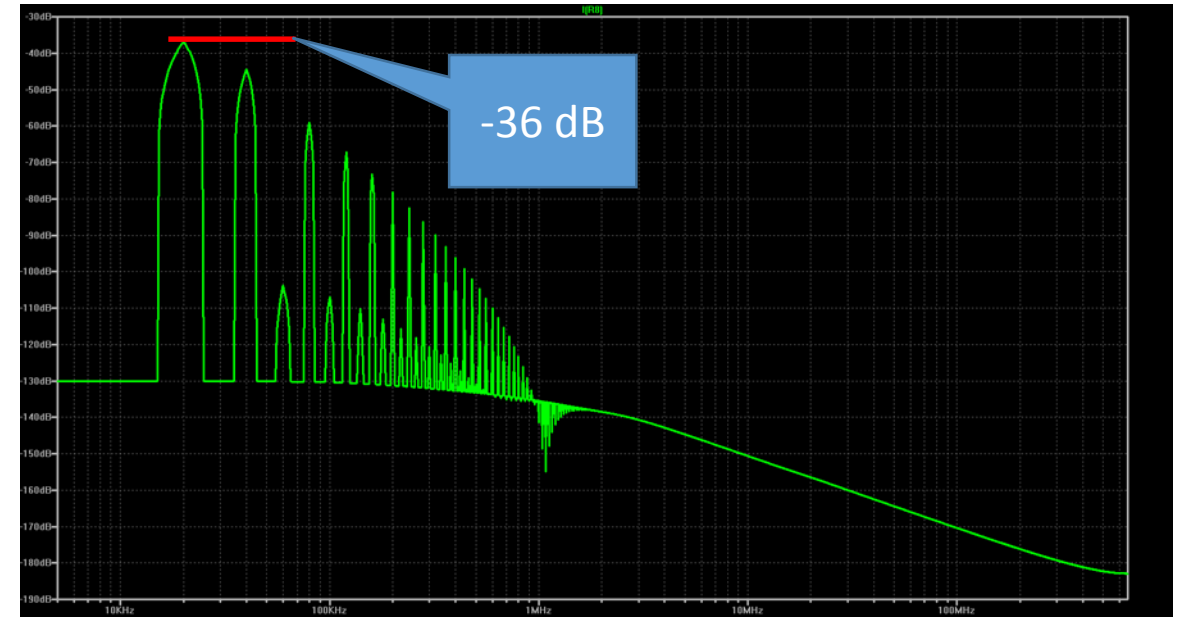
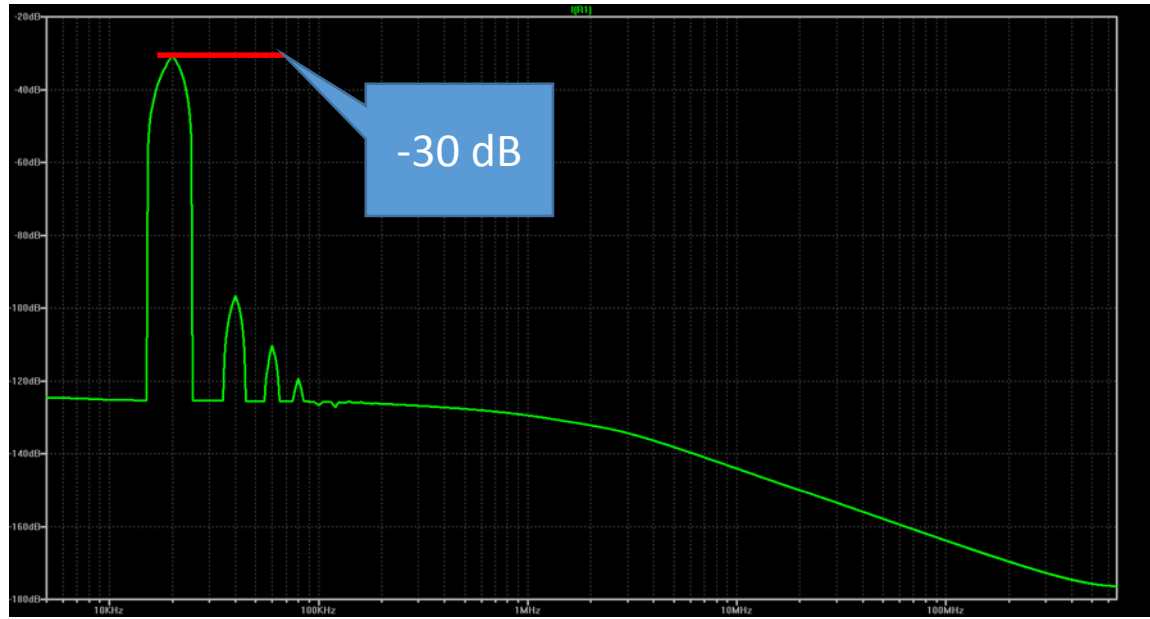


Non-inverting



Inverting

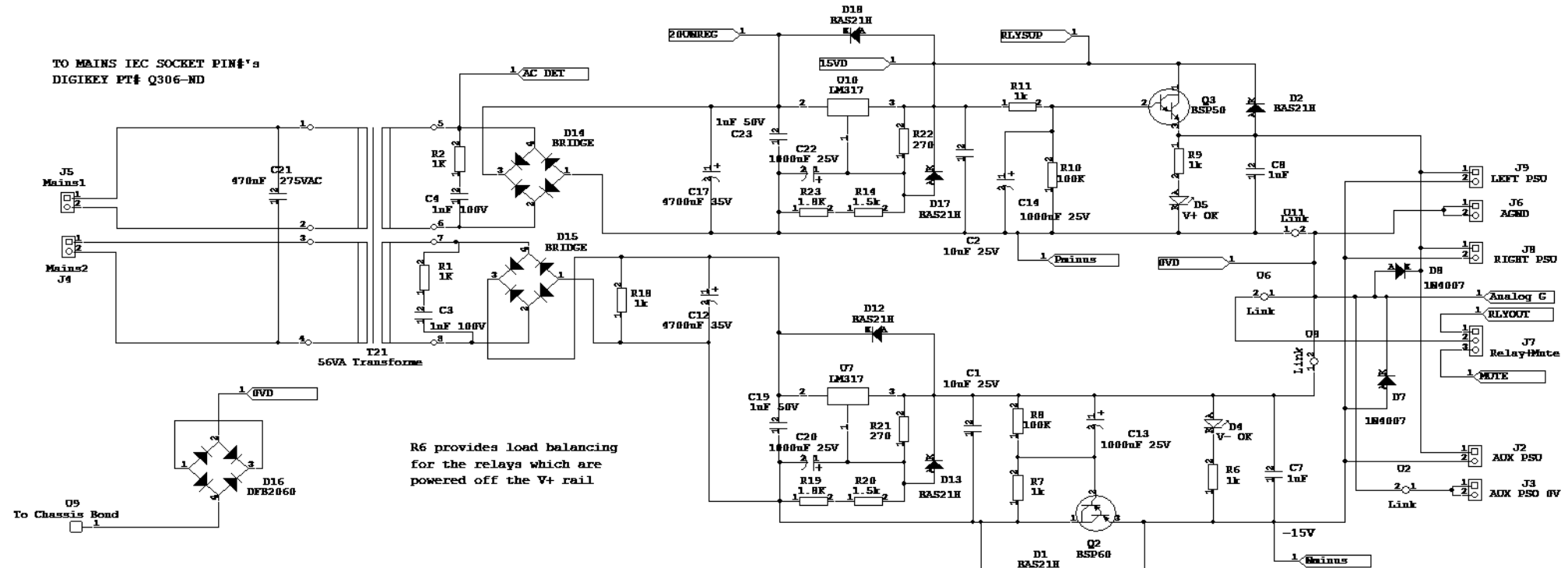
**Low noise, low distortion class A composite opamp** as used in the ‘[Symphony](#)’ preamp. IC opamp output is bootstrapped by ~600uA into class A by R2 (NI version) and R9 (IN version). AP measurements on a [similar proto](#) in 2010 showed distortion at ~2ppm at 2V into 600 ohms (used LM4562) and under 10ppm into 600 Ohms at 10V out – i.e. very flat with load and frequency. Distortion components mainly 2<sup>nd</sup> and 3<sup>rd</sup>s. Power rail current harmonics are low order, unlike class B op amp circuits. Low feedback resistor values maximize noise performance. Heatsink is only used on 50mA version (small stick on type). U1 is an AD797 for the low noise input NI opamp, and on IN LME49710



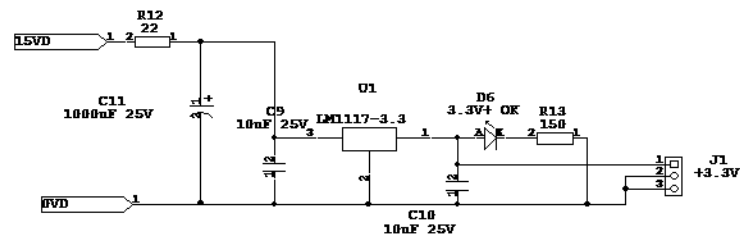
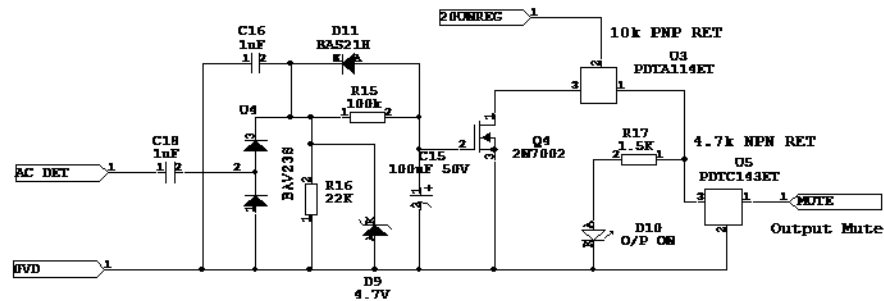
**Power Rail Harmonics.** LHS shows the class A composite opamp and RHS a class AB op amp. The power rails are heavily damped (22 Ohm and 100uF) to keep HF components off the rails – this requires a separate, ground return with attention to the return inductance.

A ripple eaters are used on the output of an LM317 split rail supply to remove wideband regulator noise - see overleaf for schematic.

TO MAINS IEC SOCKET PIN#1's  
DIGIKEY PT# Q306-MD



R6 provides load balancing  
for the relays which are  
powered off the V+ rail



+3V3 PSU for future MCU Controller/Display

