

1. Opto Preamplifier Simulation

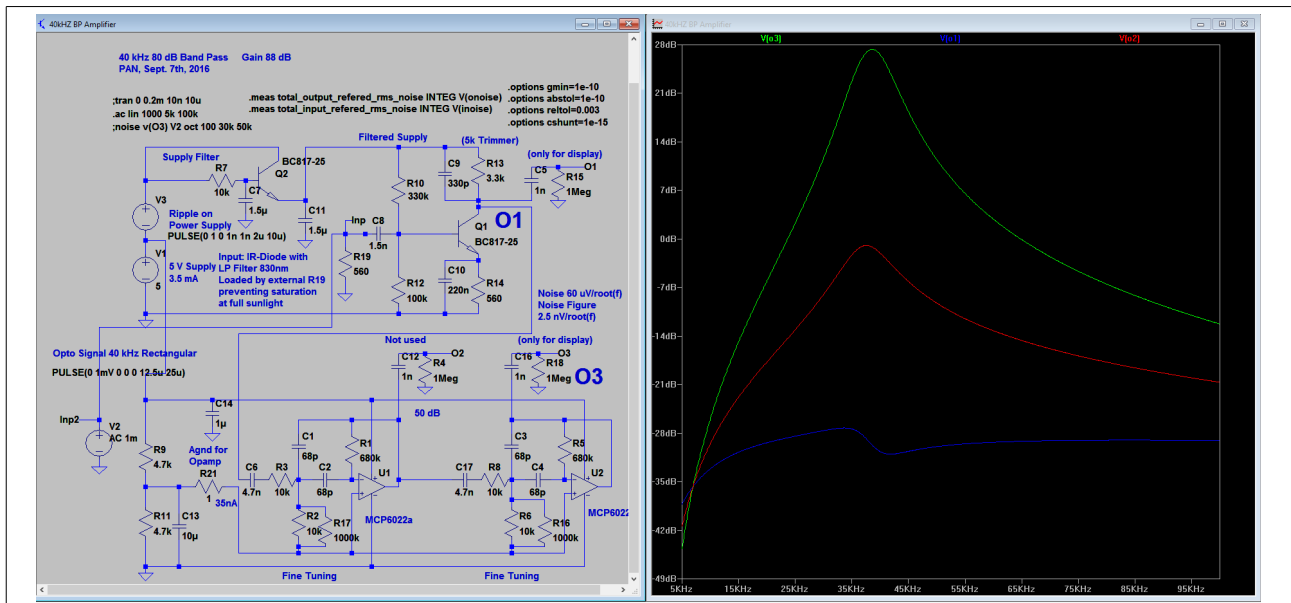


Fig. 1: Simulation of an 80 dB Gain 40 kHz Preamp, BW 7 kHz

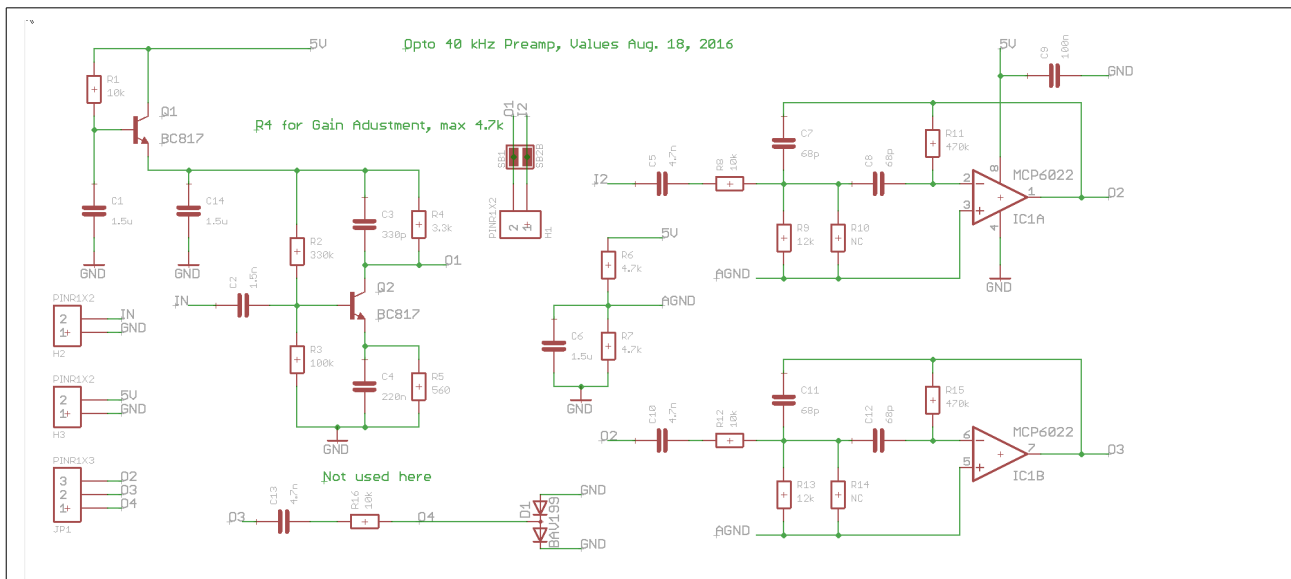


Fig. 2: Circuit and value proposal for a 40 kHz opto preamplifier MIRU/PAN bpa04

2. Experimental result Opto Preamplifier

Amplifier Left

Max Gain (R4 = 5KOhm Trimmer): 17766 or 85 dB, -3 dB: 36.4 to 44.7 kHz, BW: 8.3 kHz, Root BW: 91, Noise with 50 Ohm Source: 2.1 mVeff, Noise Figure: 1.3 nV/Root(f)

Amplifier Right

Max Gain (R4 = 5KOhm Trimmer): 11233 or 81 dB, -3dB: 32.5 to 44.7 kHz, BW 12 kHz, Root BW: 110, Noise with 50 Ohm Source: 2.1 mVeff, Noise Figure: 1.7nV/Root(f)

3. US Preamp Simulation

Notes:

- Due to reverberation in practice the gain should not exceed 60 dB, only one BP is ok!
- The center frequency of the BP should be outside of the PLL-Lock region, here 35 kHz preventing false lock-in on remaining noise!



Fig. 3: Simulation of a 58 dB Gain 35 kHz Preamp, BW 21 kHz

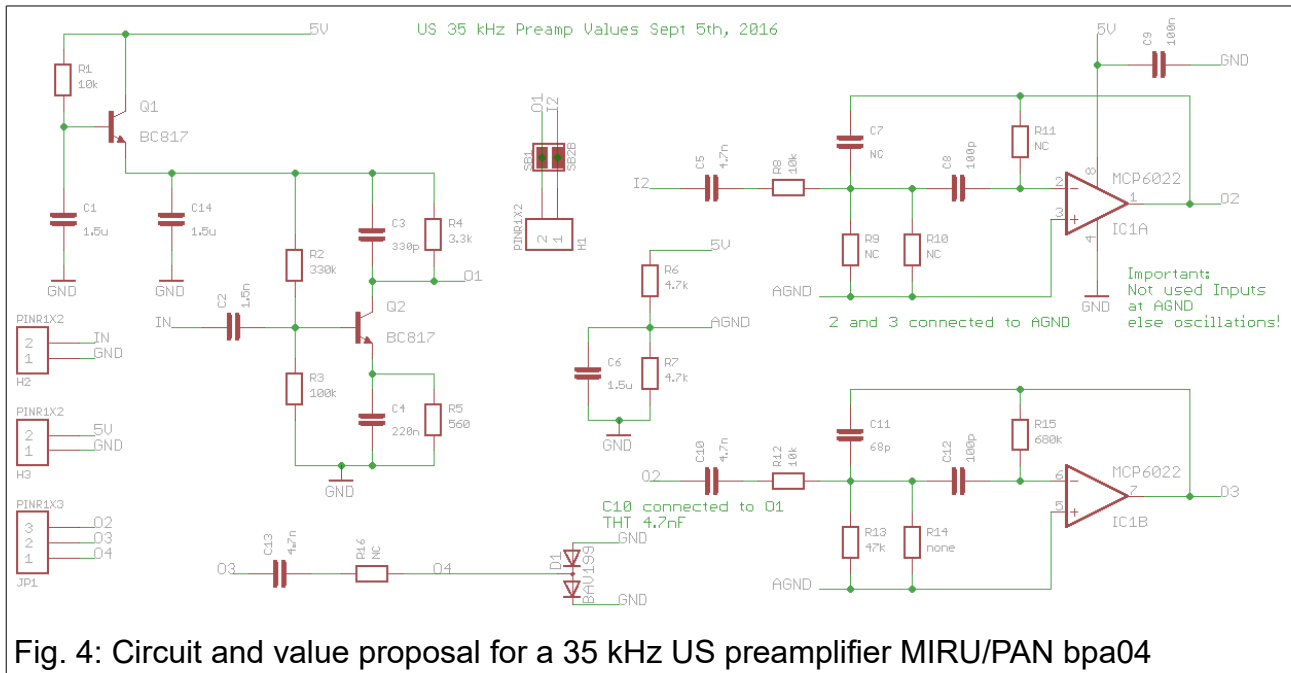


Fig. 4: Circuit and value proposal for a 35 kHz US preamplifier MIRU/PAN bpa04

4. Experimental result US Preamplifier

Max Gain (R4 = 5KOhm Trimmer): 550 or 55 dB, -3 dB: 25 to 49 kHz, BW: 24 kHz, Root BW: 155, Noise with 50 Ohm Source: 0.28 mVeff, Noise Figure: 3.2 nV/Root(f)

5. Drawing of the shielded Preamp Case

Preamplifier Case with 6-Pin Plug to Baby Head PAN, Sept. 9 th. 2016, rev. Jan 27th, 2017

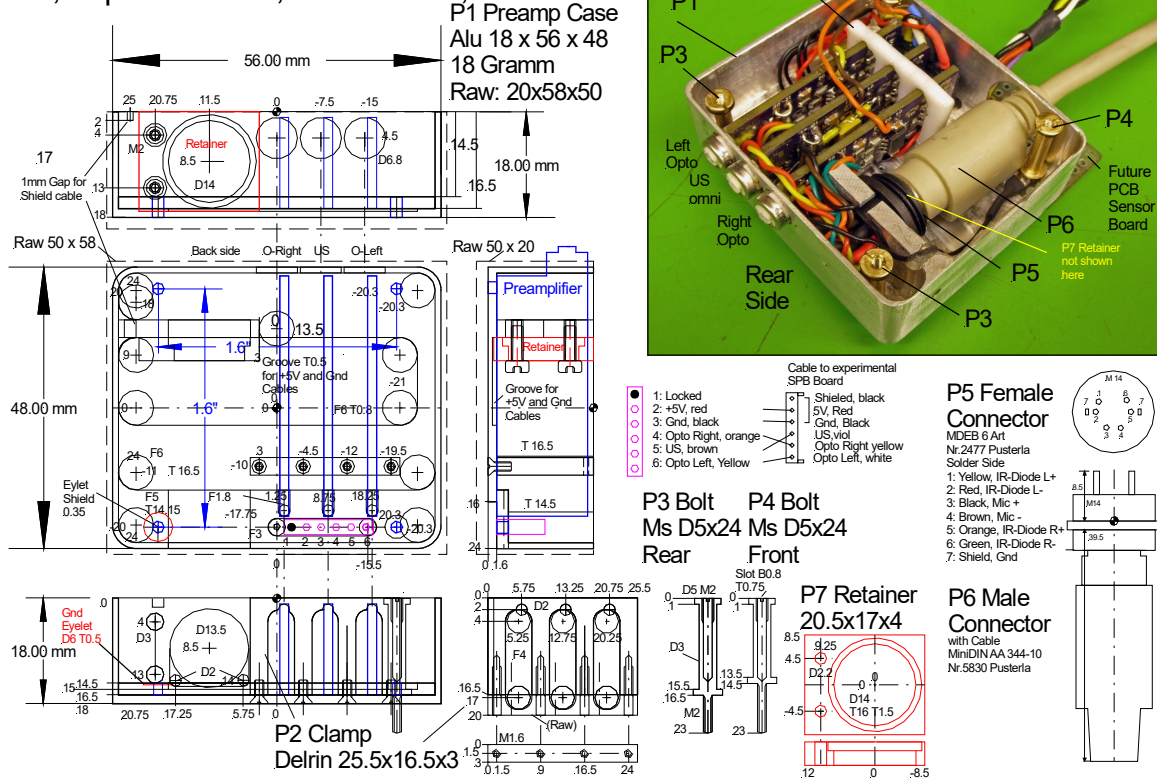


Fig. 5: Shielded Box with Preamps for Left Eye, Omni Mic and Right Eye

Preamplifier 1.63 x 0.61 x 0.066"

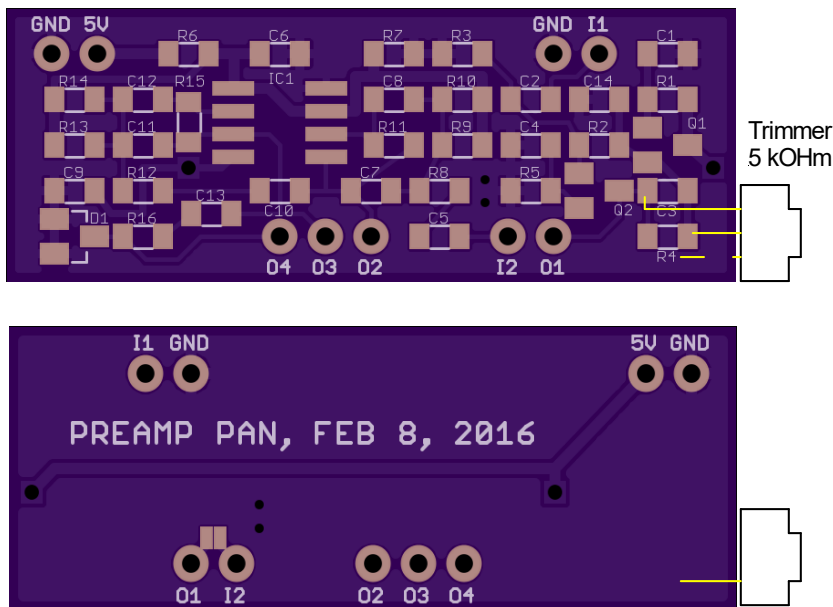


Fig. 6.
Preamplifier