BF-22 Sallen-Key filter: (For V1.2)

Q1, Q2, Q3, Q10, Q11, Q12 are 2SC1623 in SMD format, they come pre-soldered.

Resistors:

Qty.	Value	Code	Name on PCB
4	47 Ohm	Yellow, Purple, Black, Gold	R1, R10, R48, R53
4	220 Ohm	Red, Red, Brown, Gold	R4, R40, R61, R65
2	470 Ohm	Yellow, Purple, Brown, Gold	R30, R62
2	680 Ohm	Blue, Grey, Brown, Gold	R20, R60
2	820 Ohm	Grey, Red, Brown, Gold	R21, R49
4	1k	Brown, Black, Red, Gold	R9, R19, R32, R33 (R32 and R33 on the panel PCB)
2	2K	Red, Black, Red, Gold	R45, R76
2	3k	Orange, Black, Red, Gold	R50, R71
2	4.7k	Yellow, Purple, Red, Gold	R13, R35
2	5.6k	Green, blue, Red, Gold	R54, R59
2	7.32k	Purple, Orange, Red, Brown, Brown	R37, R74
24	10k	Brown, Black, Black, Red, Brown	R2, R3, R5, R6, R14, R17, R18, R23, R43, R44, R46, R52, R55, R68, R70, R75, R79, R84, R85, R88, R90, R92, R93, R94 (R2 and R5 on the panel PCB)
4	15k	Brown, Green, Orange, Gold	R36, R38, R39, R58 (R38 and R39 on the panel PCB)
2	30k	Orange, Black, Orange, Gold	R26, R31
2	33k	Orange, Orange, Orange, Gold	R51, R67
2	43k	Yellow, Orange, Orange, Gold	R63, R73
2	47k	Yellow, Purple, Orange, Gold	R24, R64
2	56k	Green, Blue, Orange, Gold	R7, R11
20	100k	Brown, Black, Black, Orange, Brown	R12, R16, R25, R28, R34, R41, R42, R47, R69, R72, R77, R78, R80, R81, R82, R83, R86, R87, R89, R91
2	270k	Red, Purple, Yellow, Gold	R15, R27
4	470k	Yellow, Purple, Yellow, Gold	R8, R56, R57, R66

Trimmers:

Qty.	Value	Code	Name on PCB
2	100k	104	CUTOFF_INIT_1, CUTOFF_INIT_2

You should try to put these as much vertical is possible and faced out (twisting the legs), in order to have a better access to adjust the initial cutoff.

Capacitors:

Qty.	Value	Code	Name on PCB
4	47p	47	C3, C7, C17, C21
2	560p	561	C24, C31
6	1nF	102	C2, C23, C25, C29, C38, C39 (the blue ones on the C38, C39 positions)
2	3.3nF	3n3	C4, C28
14	100n	104	C1, C9, C12, C14, C16, C20, C26, C27, C30, C32, C33, C34, C37, C40
4	10uF	10uF	C35, C36, C6, C18
2	33uF	33uF Black-gold	C10, C11
2	220uF	220uF	C19, C22

Diodes (the black line is the cathode and must be oriented as in the PCB silkscreen):

6 1N4148 D1, D2, D3, D4, D5, D6

Transistors: (watch orientation)

2 2N3819 Q5, Q7
6 2N3906 T1, T2, T3, T4, Q4, Q6

Solder the sockets and put the ICs on them in the correct orientation

1 LM13700N IC4
3 TL072P IC1, IC2, IC3
2 TL074P IC5, IC6

Electromechanics:

3 SPDT Toggle Switch LINK, LO-HI_SELECT_1, LO-HI_SELECT_2
1 10 Pin Connector EPOWER
2 PINHD-2X15 PCB_INTERCONN_COMPONENTS, PCB_INTERCONN_POTS (female, solder on the upper PCB downside .
8 Banana / Mini_jack AUDIO_IN_1, AUDIO_IN_2, AUDIO_OUT_1, AUDIO_OUT_2, CV_IN_CUTOFF_ATT_1, CV_IN_CUTOFF_ATT_2, RES_CV_IN_1, RES_CV_IN_2, CV_IN_CUTOFF_1, CV_IN_CUTOFF_2
2 Ferrite beads: FERRITE+, FERRITE- Pass a resistor leg trough the ferrite and solder like a normal resistor.

LEDs:

LED1, LED2 – (on the front PCB) The long leg is the positive and the square hole in the PCB is the negative. For correct positioning , solder then after put the PCB on the front panel.

The potentiometers have a metal leg at the top of them, this part will break the potentiometers when is screwed so we need to take it off or bend, you can bend or cut it with normal cutting pliers.

Place the Pots (CUTOFF_1, CUTOFF_2, CUTOFF_ATT_1, CUTOFF_ATT_2, RES_INIT_1, RES_INIT_2, VOL_IN_1, VOL_IN_2) but as with the LEDs don't solder them yet until they are screwed to the panel, (this is the method to find the right height).

In order to work properly the filters should be calibrated, to do this we have the adjust potentiometers CUTOFF_INIT_1, CUTOFF_INIT_2.
The procedure is the same for both:
- Connect the system to the power supply.
- Turn the resonance pot to max and the CutOff to the middle.
- Connect a frequency counter or oscilloscope to the output of the filter.
- Move the CUTOFF_INIT_1 o CUTOFF_INIT_2 (depending on which filter are you adjusting) until you can measure 500Hz at output (if you don't have access to a frequency counter or oscilloscope, you can use a normal tuner, the note will be a B4+20 cents)