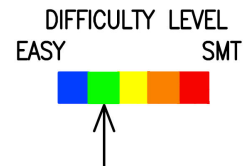


QRPGuys Simple Lowpass CW SCAF (Switched Capacitance Audio Filter)



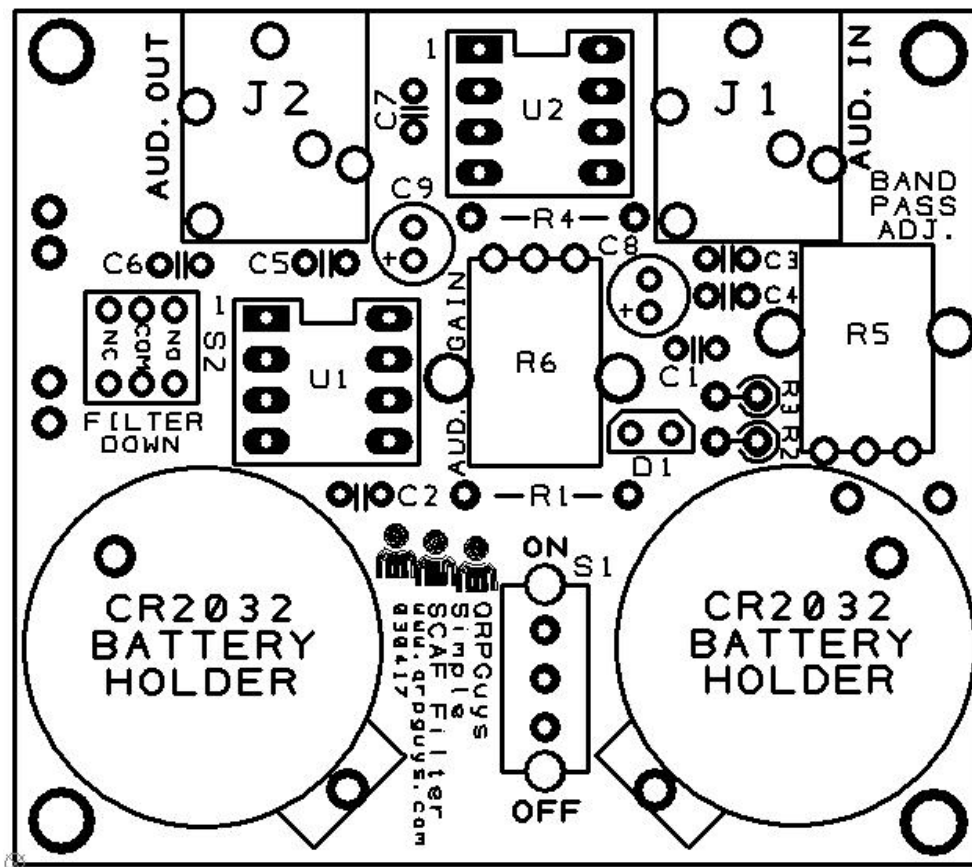
First, familiarize yourself with the parts and check for all the components. If a part is missing, please contact us and we will send one. *Please read all the instructions before starting the assembly.*

Parts List

- 1 – Simple SCAF pcb
- 1 – U1, MAX7427 Low pass SCAF IC
- 1 – U2, LM386 IC
- 1 – D1, 1SV149 varactor diode
- 1 – R1, 1K resistor, (brown-black-red-gold)
- 1 – R2, 10K resistor, (brown-black-orange-gold)
- 1 – R3, 47K (yellow-violet-orange-gold)
- 1 – R4, 10 ohm resistor (brown-black-black-gold)
- 1 – R5, 50K vertical pot
- 1 – R6, 10K vertical pot
- 7 – C1,2,3,4,5,6,7, .1uF, mono capacitor, marked 104
- 1 – C8, 1uF electrolytic
- 1 – C9, 100uF electrolytic
- 2 – J1,2, 3.5mm audio jack
- 2 – CR2032 battery holder
- 1 – S1, SPDT slide switch
- 1 – S2, DPDT pushbutton switch
- 4 – 3/8" dia. rubber foot
- 2 – 8 pin dip socket

CR2032 batteries not included

Refer to the graphic below and the PCB silk screening for the placement of the components.

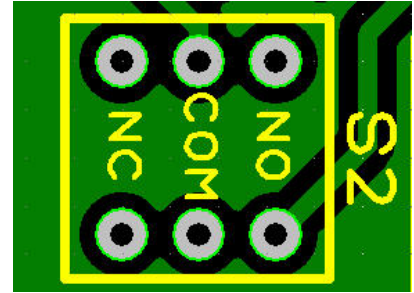
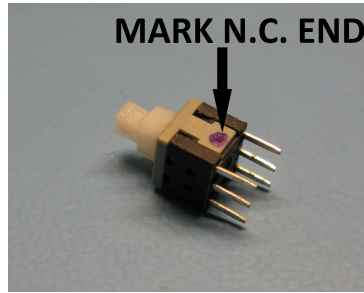
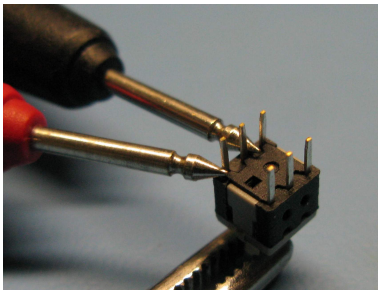


We have designed the board to be used standalone, on battery power, or mounted inside your transceiver running from power obtained from your transceiver. We suggest building it as an standalone device first, and it is easily transformed if you decide to mount it internally.

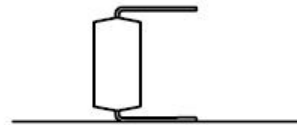
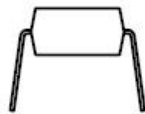
You will start with the smallest components first and progress to the larger ones.

- [] Install C1,2,3,4,5,6,7, .1uF, mono capacitor, marked 104
- [] Install R1, 1K resistor, (brown-red-black-gold)
- [] Install R2, 10K resistor, (brown-black-orange-gold), install vertically
- [] Install R3, 47K resistor, (yellow-violet-orange-gold), install vertically
- [] Install R4, 10 ohm resistor, (brown-black-black-gold)
- [] Install D1, 1SV149 varactor diode, *polarized device - observe outline*
- [] Install the 8 pin dip socket for U1, U2
- [] Install S1, SPDT slide switch

- [] Install S2, latching DPDT pcb pushbutton switch, *N.C. contacts must be positioned as indicated on the board.* With the pushbutton at the out position, determine which end of the switch is normally closed with your ohm meter and mark that end. Install the switch with the N.C. end matching the text on the board. Put the switch cap on the switch.



- [] Install CR2032 battery holders
- [] Install J1,2, 3.5mm audio jack
- [] Install C8, 1uF electrolytic capacitor, *observe polarity the long lead is positive*
- [] Install C9, 100uF electrolytic capacitor, *observe polarity the long lead is positive*
- [] Install R5, 50K potentiometer
- [] Install R6, 10K potentiometer
- [] Install U1,2, *note orientation of pin 1*



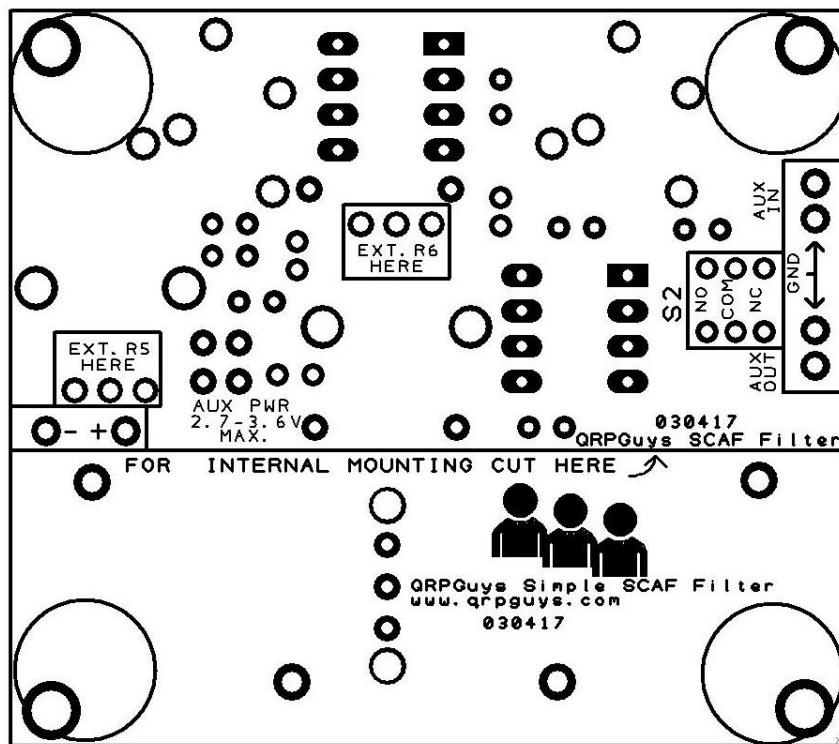
When inserting IC's the pins are flared so that they can be retained by auto insertion tools. Gently rock them on a flat surface so the pins are parallel and they will insert into the sockets more easily.

- [] Install 3/8" dia. rubber feet

This completes the assembly.

Internal mounting considerations:

Refer to the graphic below. The board can be configured for mounting inside your transceiver. By removing the battery holders, rubber feet, and cutting the board on the line shown in the graphic below, the overall size can be reduced to 2.125" x 1.25" and still retain two of the #4 mounting holes. The auxiliary audio and power connections are clearly marked on the backside of the pcb. If the Aux. Pwr. pads are used it bypasses the SPDT switch on the board. You would need to remove the pcb mounted 50K potentiometer, and connect a panel mounted 50K potentiometer to the pads marked on the back of the board. If you want the switched bypass you would also need to remove the board mounted DPDT switch and wire a remote one up to the marked pads on the back of the pcb. If you do not cut the board for your internal installation, remove the batteries. *You must limit the power voltage to between 2.70-3.60V.*

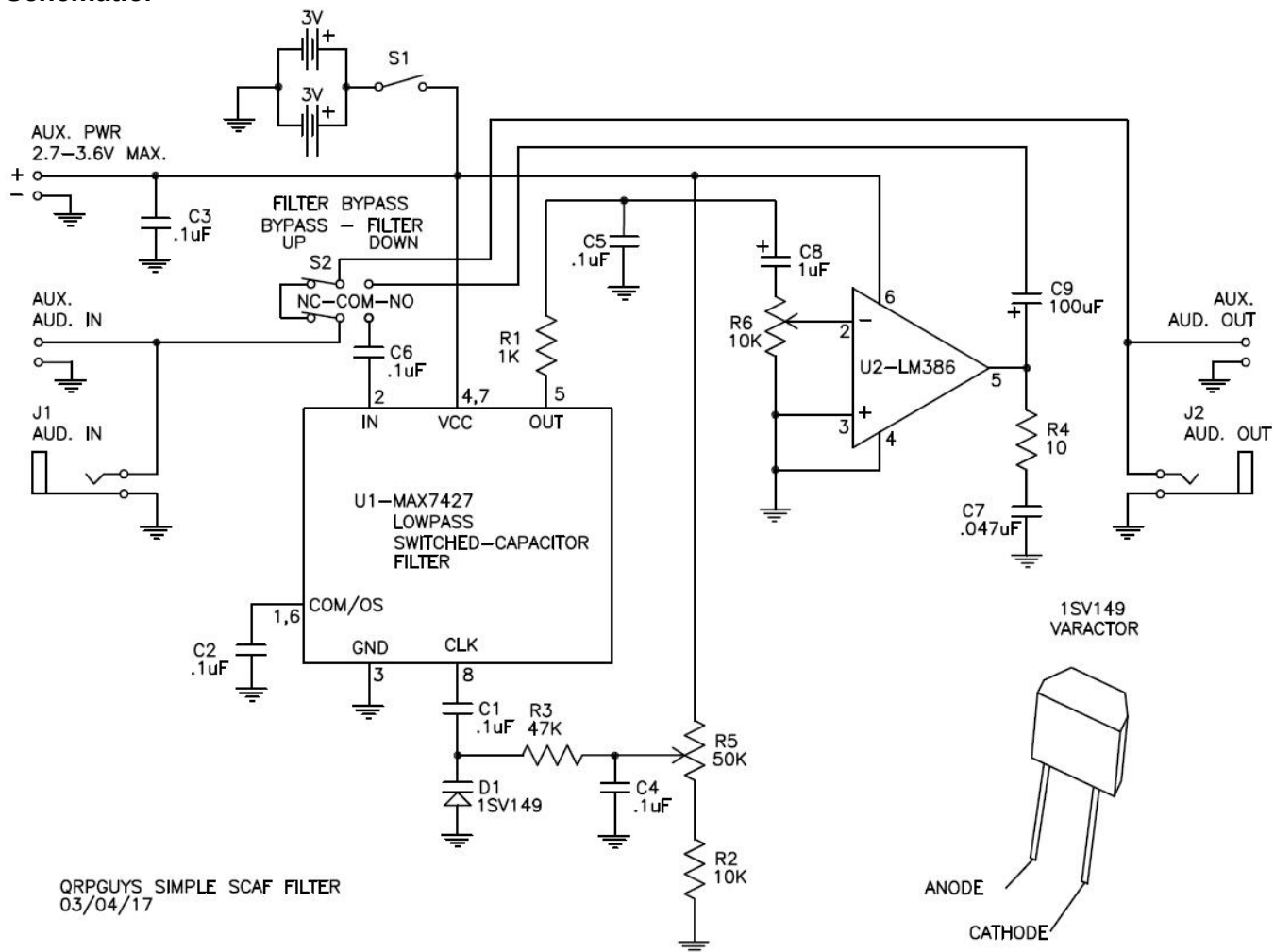


Usage:

S2 is a latching switch, and the SCAF filter is activated with the switch in the down position, and the filter is bypassed with the switch in the up position, allowing the audio to pass through directly.

SCAF filters can introduce noise and should *not* be placed early in the audio chain. If you are installing it internally, it works best at the end of the audio chain where it will introduce virtually no noise. The pass cutoff frequency of this SCAF filter is adjustable from ~200Hz to ~800Hz by adjusting R5 changing the voltage across the 1SV149 varactor diode. There is an simple LM386 amplifier following the MAX7427 to raise the audio up to the level before the filter. Adjust R6 to get the audio level equivalent to what it is with the filter out of the circuit. Then adjust R5 for the cutoff frequency you want. For those wishing to experiment with the MAX7427 IC further, the specification sheet is available in the Misc. Files section.

Schematic:



Notes:
