All in one OPA impedance Converter and Bias Generator

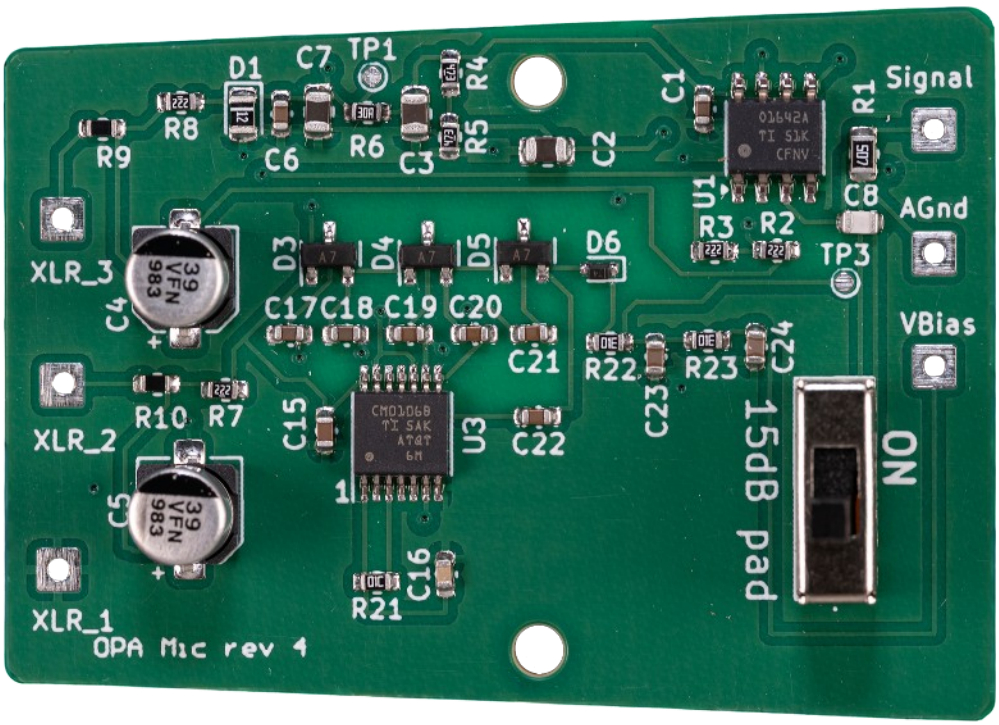
This update to the single channel OPA board brings two updates. First is the inclusion of the hex inverter circuit simplifying your microphone builds. Second is the addition of a -15dB Pad switch on the PCB. The board also has improved ground planes. The circuit maintains its amazingly low THD and noise, adding about 1dB of equivalent self noise to an LDC capsule while providing well over 100dB of dynamic range.

The board design brings out both the bias voltage and analog ground allowing you to use any true condenser capsule or any Electret capsule without a FET. See the connection diagrams for details. A microphone build for either one can be completed by soldering just five wires.

The Pad switch places a 330pF capacitor across the capsule. Most LDC's are in the 47pF-90pF range while the TSB2555B is about 40pF. Assuming 67pF we get:

$$(\text{dB}) = 20\log_{10}\left(\frac{67}{67+330}\right) = \text{-}15.4\text{dB}$$

You will get more or less padding based on the actual capsule capacitance. The OPA1642 can swing very close to its supply rails. That means the circuit can cleanly handle larger signals than most mic preamps can handle. Padding the capsule allows the mic to handle very large SPL's making it great for drum and other percussion instruments.



Connection Diagrams

Connecting the new single channel OPA board is similar to the original. If the capsule needs Bias Voltage connect the capsule case to the ***VBias*** terminal. For FET less capsules, connect the case to ***AGnd*** (Analog Ground). XLR Pins are labeled XLR_1, XLR_2 and XLR_3.