

current from which BJT designs suffer. Resistance to EMI and a soft overload characteristic make the JFET choice even more attractive.

The MM cartridge source impedance rises at higher frequencies due to the resonance formed by the cartridge inductance (on the order of 300-600 mH) and the load capacitance. This resonance usually lies around 18-22kHz and can have substantial Q. At the resonance frequency, the impedance can rise to almost the nominal load resistance of 47k. This raises the possibility of cartridge interaction with the nonlinear input capacitance of the amplifier. The low input capacitance of the LSK489 JFET pair reduces cartridge interaction and high-frequency intermodulation distortion. Moving magnet cartridges are usually designed to work with a specific loading capacitance on the order of 200pF, so an input stage with capacitance on the order of 20pF, like that of an LSK389, may create a significant disturbance, especially given that the JFET input capacitance can be nonlinear.

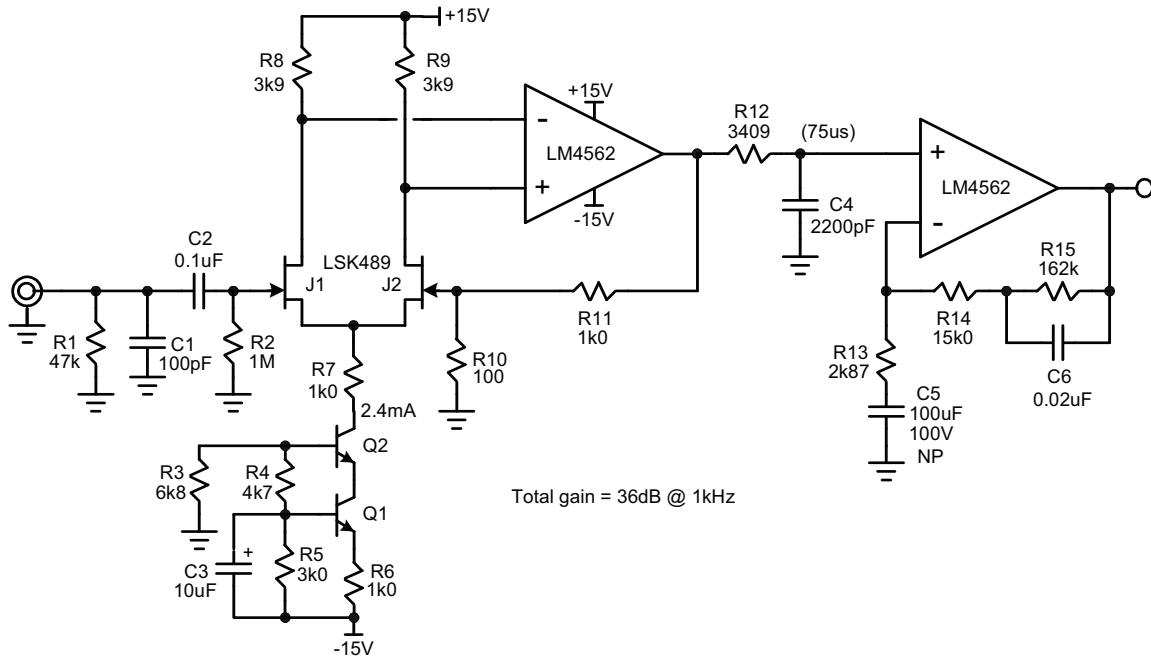


Figure 7: Phono Preamp

Figure 7 illustrates a phono preamp design that incorporates the LSK489 to achieve low noise and high input impedance. The circuit consists of a hybrid JFET-bipolar op amp that uses the LSK489 as its low-noise input stage. The low-distortion, low-noise LM4562 completes the hybrid operational amplifier, which is configured for a flat gain of 21dB. The 75us high-frequency corner of the RIAA equalization characteristic is implemented by R12 and C4. The remainder of the RIAA equalization implements time constants at 3180 and 318μs. It is implemented with the second half of the LM4562 op amp and the surrounding feedback network. Total gain of the preamp is 36dB at 1kHz. The LSK489 JFET input stage provides exceptional immunity to EMI.