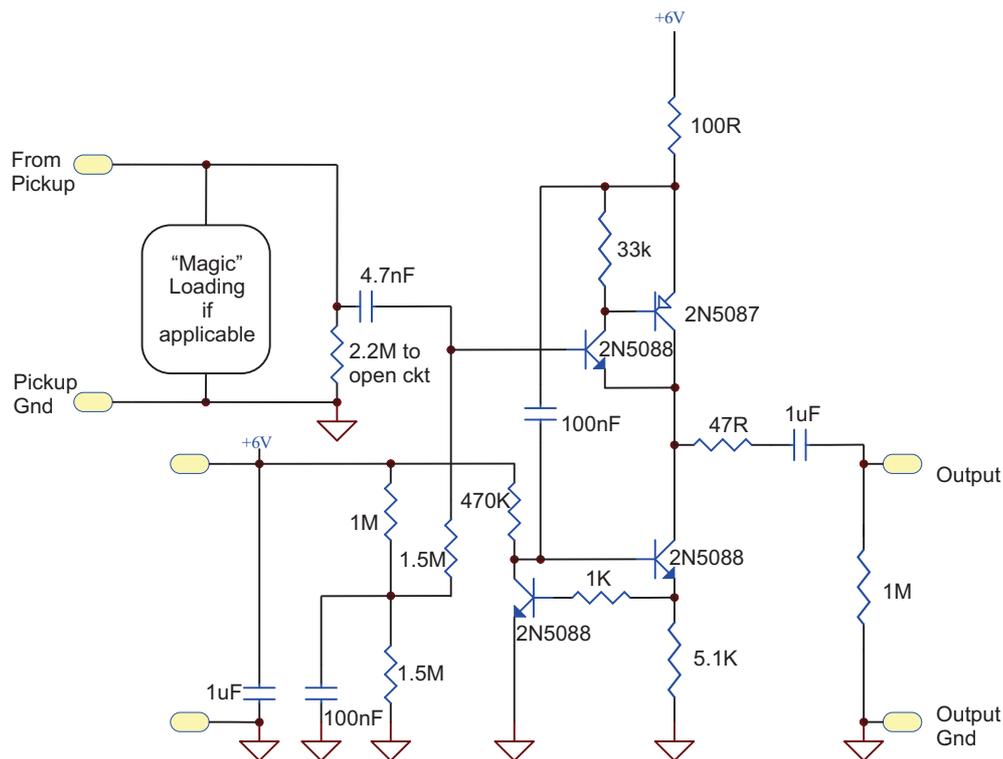


# An Onboard Buffer for Guitars



## An onboard buffer for guitars

The circuit is an adaptation of a customized emitter follower designed to be placed inside a guitar to drive guitar controls and cables with no treble losses from loading. It is specialized for high input impedance and low current drain. "Gain" is almost exactly unity.

The 6V power was chosen to be two 3V lithium coin cells. This should provide a few hundred hours of useful life from a set of batteries. Coin cells were used because these are much smaller than a 9V PP3 style battery. The circuit will work with 9V, but is optimized at 6V.

### Magic loading

Some pickups require a certain loading to get a particularly good tone. Most guitarists have a favorite setting of tone and volume controls for the guitar's tone. This buffer is essentially non-loading to a pickup, so it will not provide the "magic loading". It lets you do this in a fixed fashion by including Rs and Cs in the indicated box to get your pickups to be properly loaded to your ears. Once you have your pickups loaded the way you like them, the buffer keeps that tonal balance from changing due to loading. The 2.2M resistor is used only if you get switching clicks.

The output is low impedance, and will drive long cables easily. If your onboard tone and volume controls add cable-drive issues back in, one solution is to use one of these buffers for the pickup coils, and another right at the guitar's output jack.

~~As a final note, the circuit is somewhat quirky. The values of the input cap, output cap, any cable loading, and the bootstrap/compensation cap interact. I had a bug in my simulation.~~

There is no significant drop in gain up to a few megahertz.