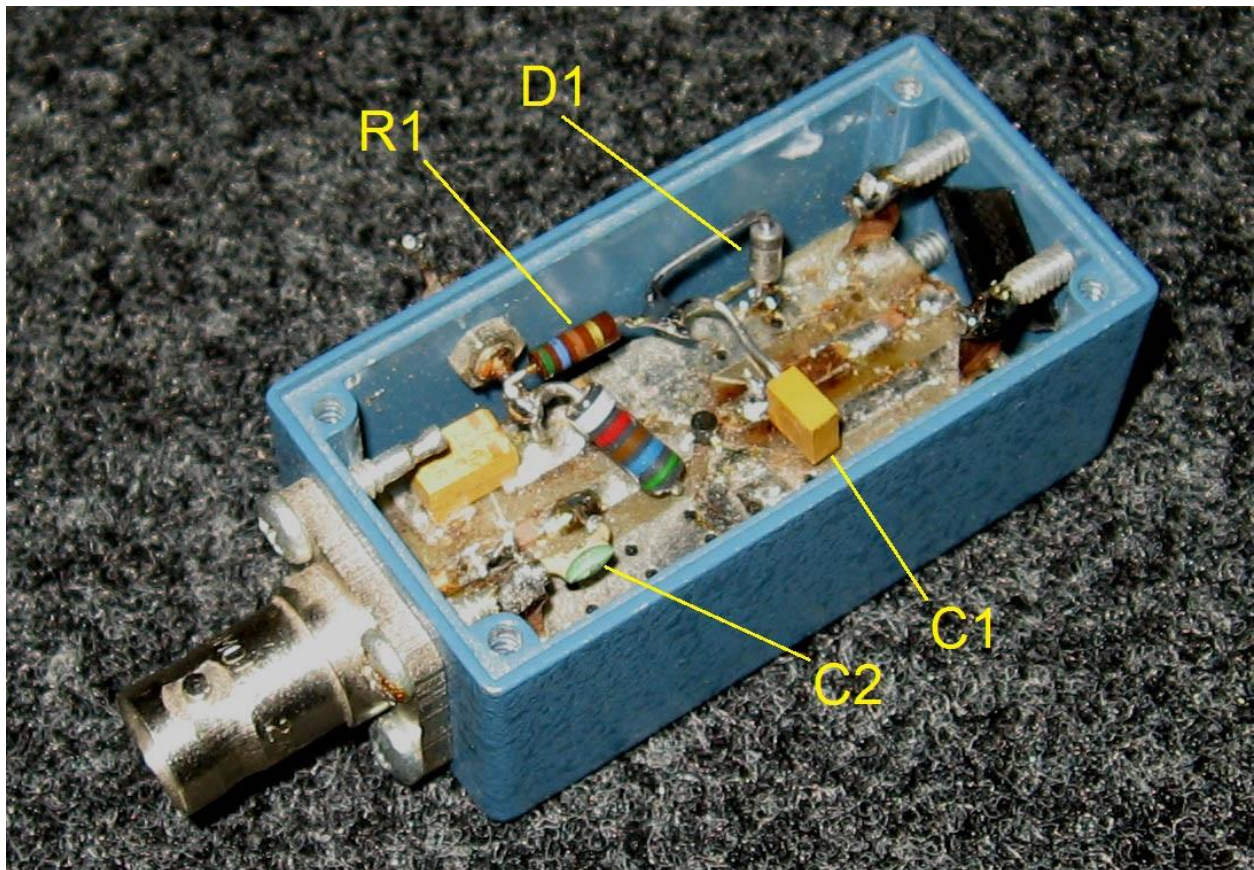


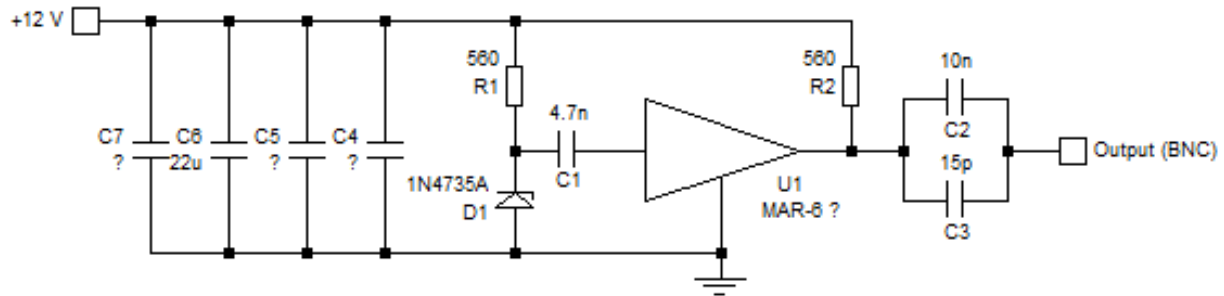
A Noise Source for HF

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I wanted a high-output wideband noise source for re-aligning the filters in my Elecraft K2 transceiver. Elecraft makes a suitable one (their NGen model), but I didn't really want to wait and pay for shipping. I found a wideband amplifier in my junk collection that someone had made up on a Down East Microwave (DEMI) MMIC amplifier board, part number MMICPCB for just the board or MMICK for a kit with all the parts that go on the board. It was built into a small diecast box with BNC connectors. It was apparent that this could be easily modified to make a noise source very similar to the Elecraft one and that the DEMI board layout was just as good for an amplified noise source as for an amplifier. I removed the input connector and added a resistor, a zener diode and two capacitors. These new parts are shown in the following photo and on the schematic below of what I ended up with. Nothing was removed from the original MMIC amplifier except the input connector but, as a result of removing that, the original input blocking capacitor for the amplifier now leads nowhere, so I haven't shown it on the schematic. The circuit shown worked fine for the "CAL FIL" procedure on the K2.





C1: 4.7 nF (could be 10 nF)

C2: 10 nF

C3: original 15 pF output blocking capacitor (not needed but easier not to remove)

C4: chip capacitor on board – unknown value

C5: chip capacitor on board – unknown value

C6: 22 µF electrolytic capacitor

C7: feedthrough capacitor of unknown value

D1: 1N4735A zener diode

R1, R2: 560 ohms

U1: probably MAR-6 MMIC, going by the voltage and current. A MAR-1 should be just as good (Elecraft uses it) but might need a slightly smaller resistance at R2.

Probably the four bypass capacitors in parallel could be replaced with a single 10 nF capacitor in this application. A neater layout alternative if building from scratch on the DEMI board would be to place the zener diode between the input connector pad and ground and put C1 in the amplifier input blocking capacitor position on the board.