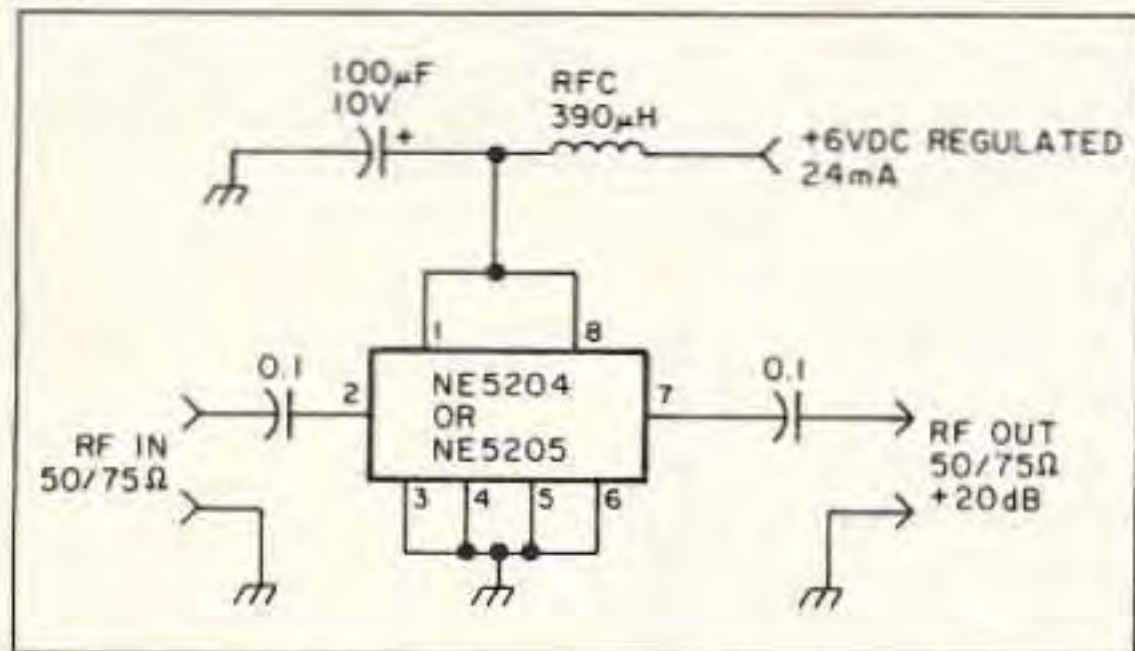


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An AF-to-UHF Broadband Preamp

Need a simple preamp to pep up a tired old receiver? Or to amplify a weak signal so you can more easily measure it on your frequency counter or oscilloscope? Or to increase the output of your signal generator? The Signetics NE5204 or NE5205 solves this problem with a fixed gain of 20 dB and requires only four external components.

The NE5204 is flat ± 0.5 dB from DC to 200 MHz, and down -3 dB at over 350 MHz. The NE5205 is flat ± 0.5 dB from DC to 450 MHz, and down -3 dB at over 600 MHz. Inputs and outputs are perfectly matched to 50 or 75 ohms impedance. The noise figure is 4.8 dB at 75 ohms and 6 dB at 50 ohms. Each 8-pin IC draws 24 milliamperes at +6 VDC. Because the noise figure is higher than is usual in VHF/UHF circuits, these ICs are recommended for use from low audio frequencies to over 10 meters, or with test

equipment where the noise figure is of less importance.

The circuit, shown in the figure, is simplicity itself. The +6 VDC supply voltage should be regulated. Either a 78L06 or 7806 3-terminal regulator is recommended. Nominal current drain is 24 milliamperes, 30 mA maximum. Values indicated are suitable from audio to above 10 meters, with overlaps at

each end. Larger or smaller input/output capacitors, and the RFC, may be used, depending on the frequency range over which the preamp will be used. Be sure to connect all pins, as shown in the schematic.

Although these ICs are specified from DC to UHF, both input and output must be isolated from DC. Thus, they are useful only from low AC frequencies up to their high frequency limits. Although the NE5204 is cheaper than the NE5205, each chip costs several dollars, less than \$5. Because of their simplicity in use, and the lack of a lot of external components to achieve the same 20 dB gain and extremely wide frequency bandpass, use of either of these ICs will be both easier and cheaper than any other approach to achieving similar results. And the physical size of the entire preamplifier is small enough to easily incorporate inside a receiver, frequency counter, etc.

*J. Frank Brumbaugh KB4ZGC
Bradenton FL*