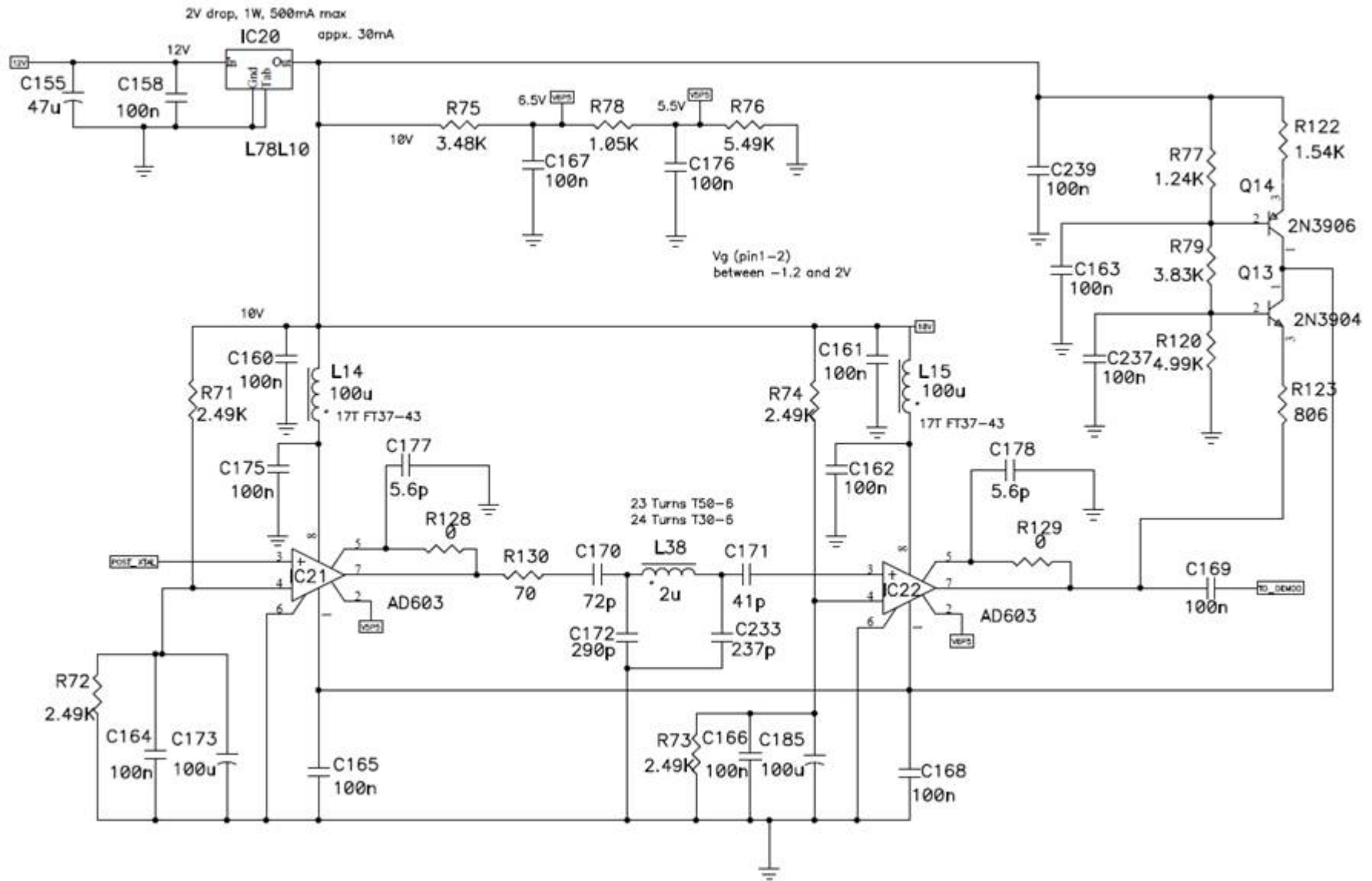


## ***9MHz IF Amplifier with the AD603***

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The AD603 can be used as an IF amplifier which can be cascaded for higher gain. I am using this circuit exactly as the datasheet's low noise AGC amplifier, except that I have added a bandpass filter between the two gain stages. On my breadboard of this circuit, I had a strange oscillation at a non-IF frequency. I never figured out what caused it, so I added the filter to reduce the gain out of band.



### AD603

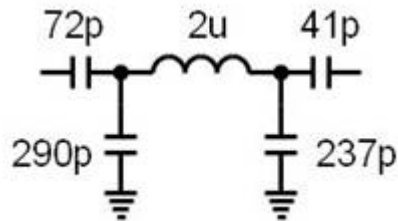
The AD603 gain is expressed as:  $Gain (dB) = 40 VG + 20$ , where  $VG$  is the differential voltage between pins 1 and 2. A resistor between  $V_{out}$  and  $FDBK$  (0 ohms) programs the fixed gain via pin strapping. Pin strapping will lower the gain to -11dB / +31dB. However, a higher value resistor can be added to increase the gain to a maximum of +9dB / +51dB.

### AGC

The time constant of the AGC circuit will be switchable for operating AM and SSB.

### **Bandpass Filter**

I've seen this filter used on similar designs but I don't understand how to design them. Does anyone have more information? (email me!) This seems to be a tubular filter, which may be an approximation of another type of filter. This architecture has advantages like simplicity, narrow bandwidth, AC coupling on both ends, and it uses only one inductor.



### **Input Impedance**

I will use an LC network to impedance match the input of this circuit to the AD603's 100 ohms // 2 pF. I'll configure the network as a LPF, since the preceding IF filters typically don't reject high frequency signals as well as they do low frequency ones.

### **Output Impedance**

The output can drive impedances as low as 100 ohms. The first gain stage can easily drive the second stage's input through the filter. The second gain stage's output will be driving the input to the demodulation circuit (high impedance).