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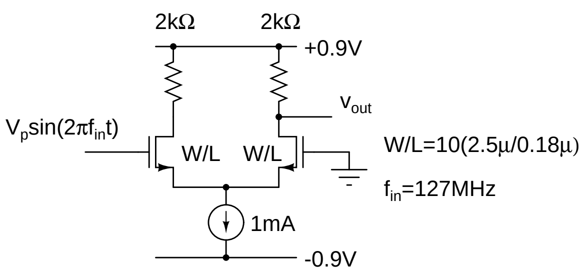

Figure 1:

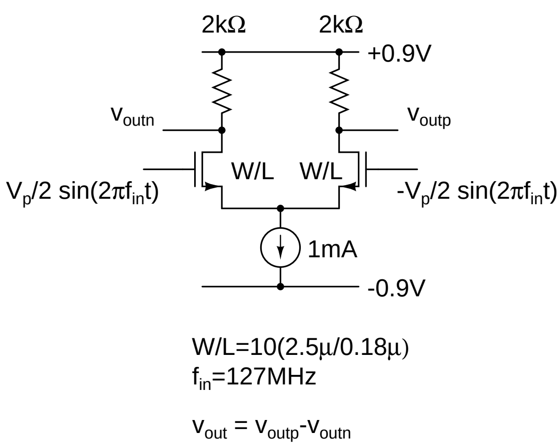

Figure 2:

1. (a) Simulate the circuit with a 127 MHz sinusoid with the peak value V_p swept from 3 mV to 300 mV. Plot the strength of the fundamental, 2nd harmonic and 3rd harmonic as a function of the input peak V_p. Determine the gain and the 1 dB compression point. (Take the DFT of the output with 1024 points to determine the strengths of the harmonics).

   (b) Simulate the differential version of the circuit (Fig. 2) with a 127 MHz sinusoid with peak value V_p swept from 3 mV to 300 mV. Plot the strength of the fundamental, 2nd harmonic and 3rd harmonic as a function of the input peak V_p. Determine the gain and the 1 dB compression point.

   (c) Repeat the above analyses using "pss/pdist" instead of transient analysis. Do the results tally with each other?

   (d) Simulate the circuits in Fig. 1 and Fig. 2 with the input being the sum of two sinusoids at 900 MHz and 900.2 MHz, each of peak value $V_p/2$. Plot the third order intermodulation distortion (using "pss/pdist") as a function of V_p. How do the two circuits compare with each other?

First carry out the simulations for a particular value of V_p and ensure that the simulation runs correctly. Then carry out a parametric sweep of this analysis.