MOS-Based Differential Circuits Report

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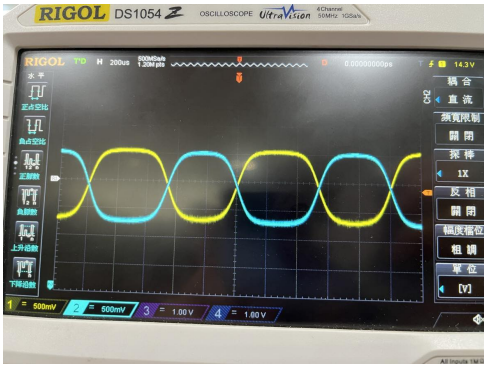
1 DC Analysis

$$I_1 = 0.129 \text{ mA}, I_2 = 0.156 \text{ mA}, I = 0.280 \text{ mA}$$

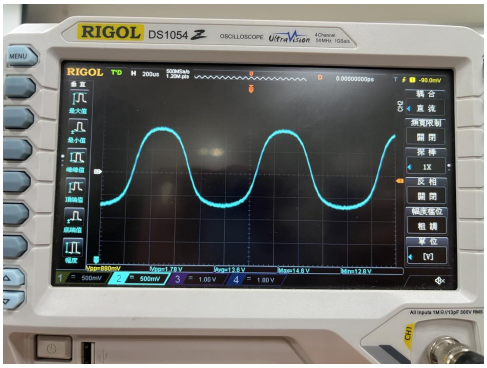
$I_1 \neq I_2$ due to mismatch in circuit components and transistor parameters.
$I_1 + I_2 = I$ because of *Kirchhoff's Current Law*.

2 AC Analysis

For $f = 1$ kHz, $V_i(V_{pp}) = 0.9$ V, $V_{od}(V_{pp}) = 1.8$ V, $\underline{A_d = \mathbf{2} \text{ V/V}}$.



Waveforms of V_{o1} (CH1) and V_{o2} (CH2)



Waveform of V_{od}

f (kHz)	V_i (V)	V_{od} (V)	f (kHz)	V_i (V)	V_{od} (V)
1	0.9	1.8	100	0.88	1.72
5	0.88	1.8	150	0.88	1.62
10	0.88	1.78	200	0.88	1.52
20	0.88	1.78	250	0.88	1.42
30	0.88	1.78	300	0.88	1.3
50	0.88	1.76	330	0.88	1.24
80	0.88	1.74	350	0.86	1.2

Table 1: AC analysis raw experimental data

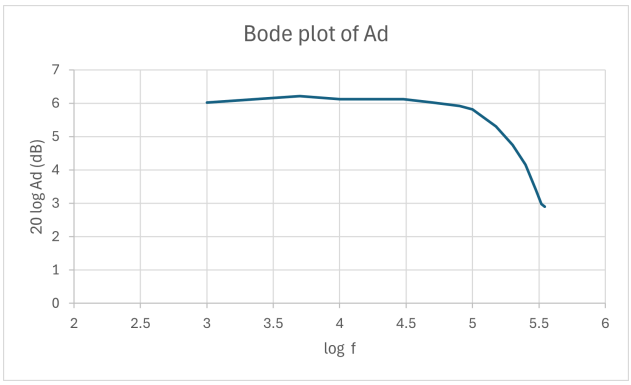


Figure 2: Bode Plot of A_d