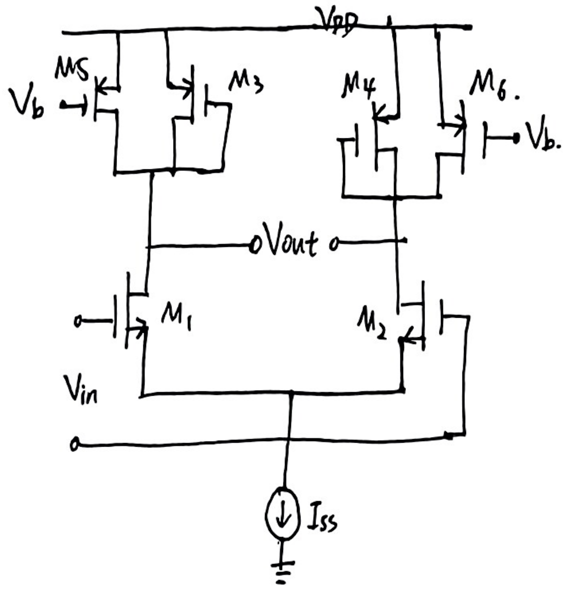


C_{GD}、C_{DB}、C_{GS}、C_{SB}、C_{GB}.

M1: C_{GD}、~~$C_{DB}=0$~~ $C_{SB}=0$、C_{GS}与C_{GB}一致, C_{DB}.

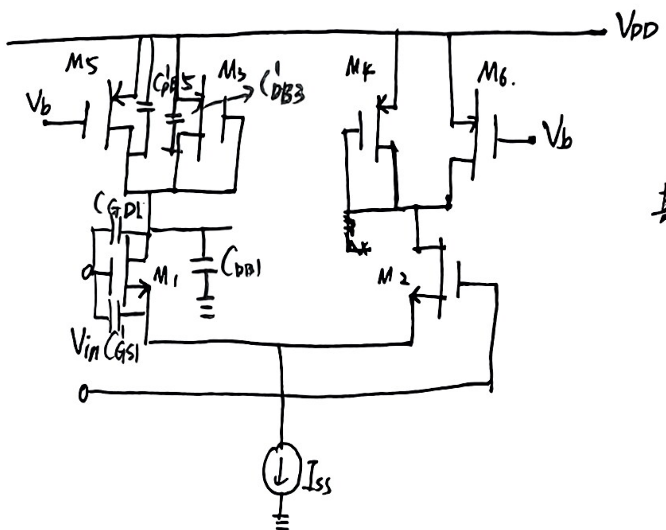
M2: C_{GD}、$C_{SB}=0$, C_{GS}与C_{GB}一致. C_{DB}

M3: $C_{GD}=0$, $C_{SB}=0$, C_{DB}与C_{GB}与C_{GS}一致　从G/D到S/B.

M4: $C_{GD}=0$, $C_{SB}=0$、C_{DB}与C_{GB}与C_{GS}一致.

M5: $C_{SB}=0$, $C_{GS}=0$、$C_{GB}=0$. C_{DB}与C_{GD}一致

故补充电容后电路如下图所示:



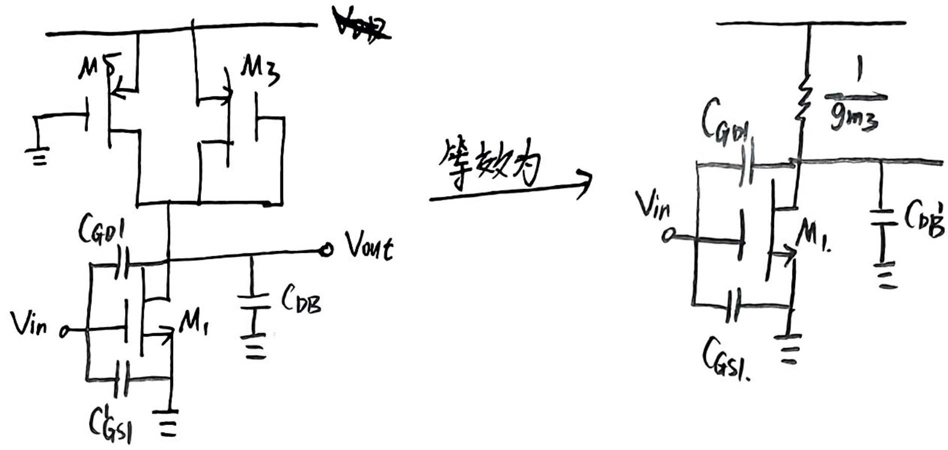
其中 $C'_{DB5} = C_{DB5} + C_{GD5}$

$C'_{DB3} = C_{DB3} + C_{GB3} + C_{GS3}$

$C'_{GS1} = C_{GS1} + C_{GB1}$

故 C'_{DB5}与C'_{DB3}（与C_{DB1}）可合并为 C_{DB}

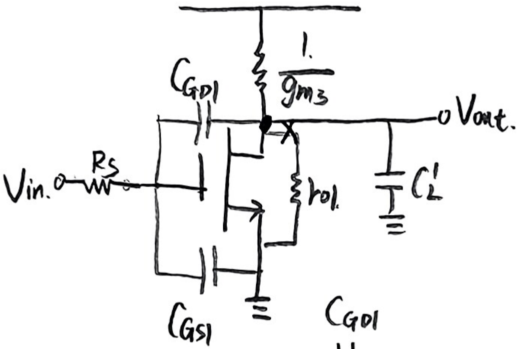
进而利用半边电路法有:

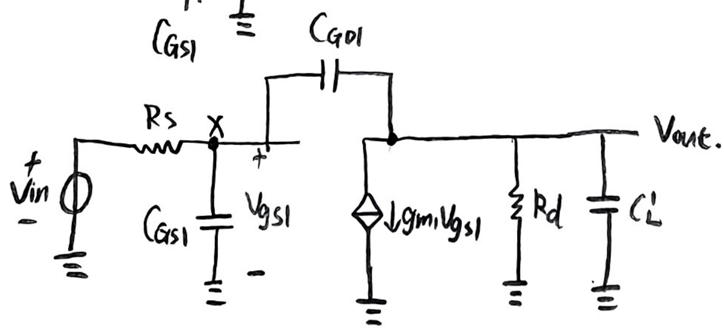


考虑 R_s 和 C_L 得:

其中 $C_L' = C_L + C_{DB}'$

记 $R_d = \frac{1}{g_{m3}} \parallel r_{o1}$





KCL: ① $\frac{V_{in}-V_x}{R_s} = \frac{V_x - V_{out}}{\frac{1}{C_{GD1}s}} + \frac{V_x - 0}{\frac{1}{C_{GS1}s}}$

② $\frac{V_x - V_{out}}{\frac{1}{C_{GD1}s}} = g_{m1}V_x + \frac{V_{out}}{R_d} + \frac{V_{out}}{\frac{1}{C_L's}}$

联立得:

$$\frac{V_{out}}{V_{in}} = \frac{(C_{GD1}s - g_{m1})R_d}{As^2 + Bs + C}$$

$$\begin{cases} A = R_s R_d [C_{GD1} \cdot C_{GS1} + C_{GD1} \cdot C_L' + C_{GS1} \cdot C_L'] \\ B = (C_{GD1} + C_{GS1})R_s + (C_{GD1} + C_L')R_d \\ \quad + g_{m1} R_s R_d C_{GD1} \\ C = 1 \end{cases}$$