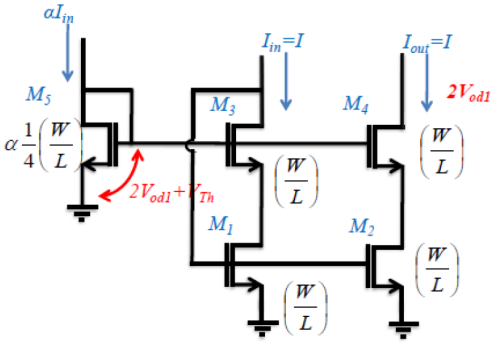
Design the current mirror shown in figure to get

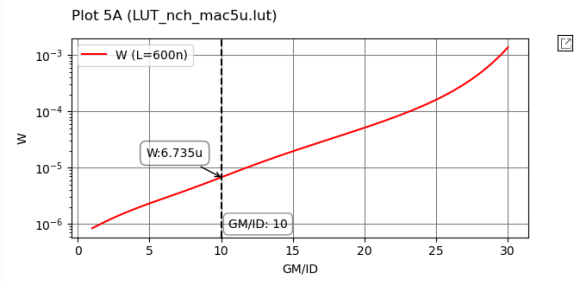
Spec	
Rout	≥ 200 kΩ
VDC @ M4 Drain	400 mV
Mirroring ration	1 : 2.5
Input Current	25 uA

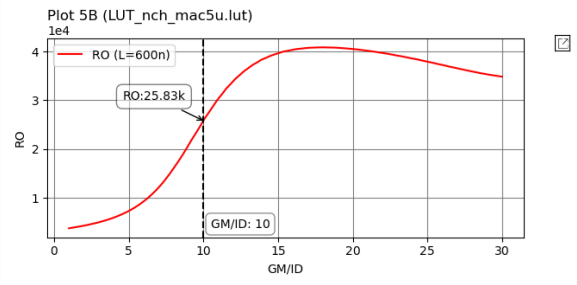


- Steps

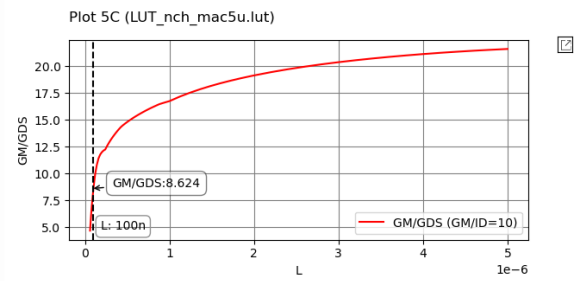
1 | $V_{DC} = V^*_{3,4} + V^*_{1,2} = V^*_{3,4} + V_{GS1,2} = 400\ mV$

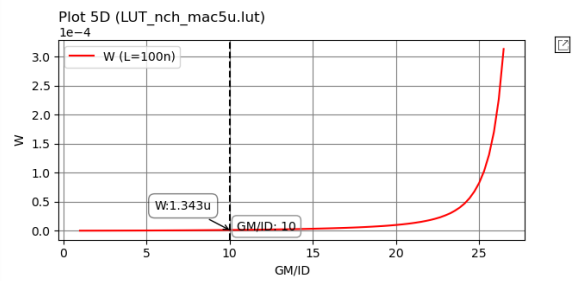
2 | Assume $V^*_{1,2} = V^*_{3,4} = 200$ mV and large L for the large Rout : $L_{1,2} = 600\ nm \rightarrow \frac{g_m}{I_D} = 10$



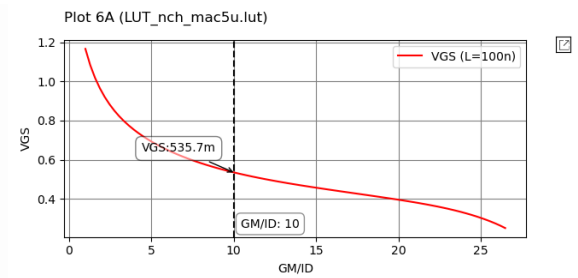


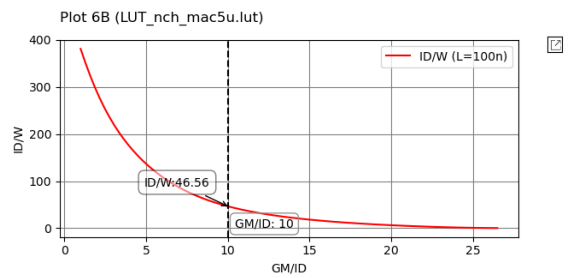
3 | $\because R_{out} = r_{o3,4} \times g_{m3,4} r_{o1,2} \rightarrow g_{m3,4} r_{o3,4} \geq 7.8 \rightarrow L3,4 = 100\ nm$



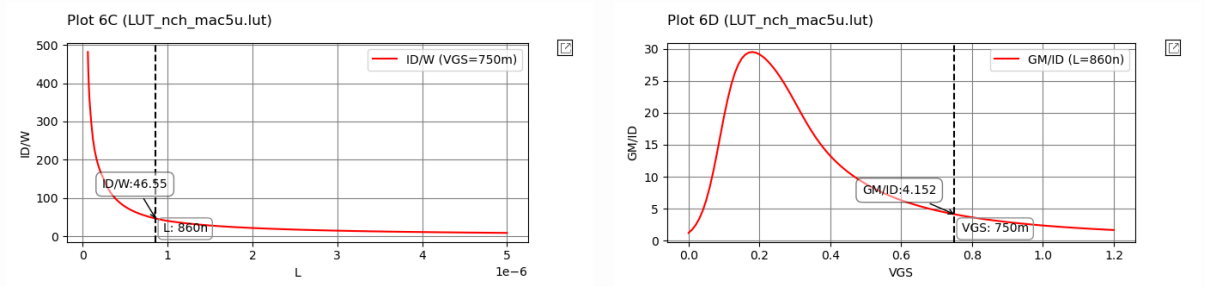


4 | $\because V_{GS5} = V_{GS3,4} + V^*_{1,2} = 735.7m \rightarrow V_{GS5} = 750mV$ a littel deeper into saturation and JD = 46.6

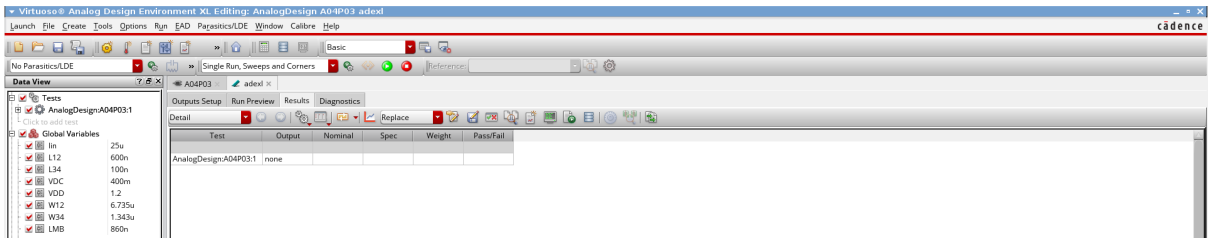




5 | Sweeping L_{MB} that gives the same JD @ same $W_{3,4}$ → L_{MB} = 860 nm

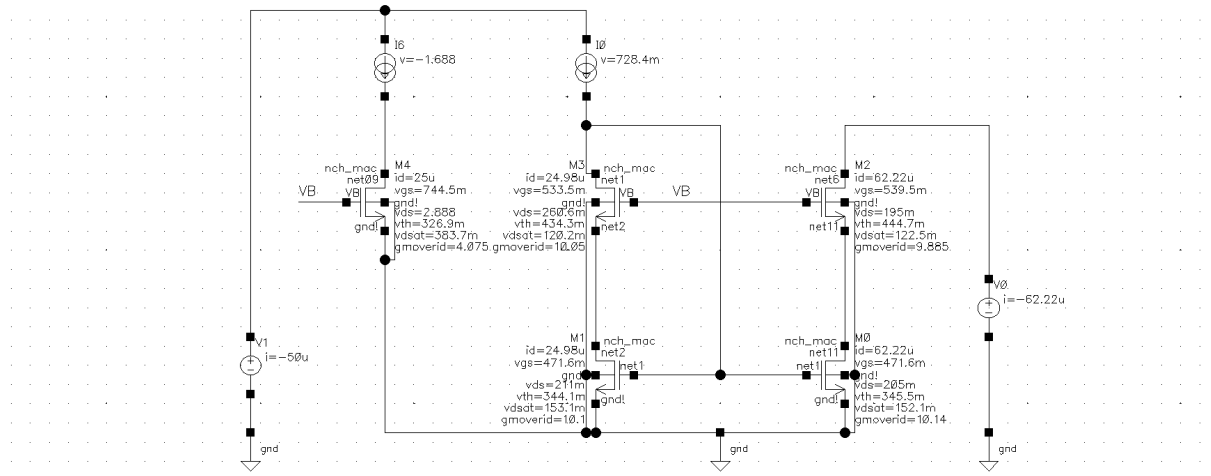


- Setup



- Results

1. DC Operating Points



2. Rout