COMMON SOURCE AMPLIFIER

$V_{out} = -g_m R_L V_{in}$

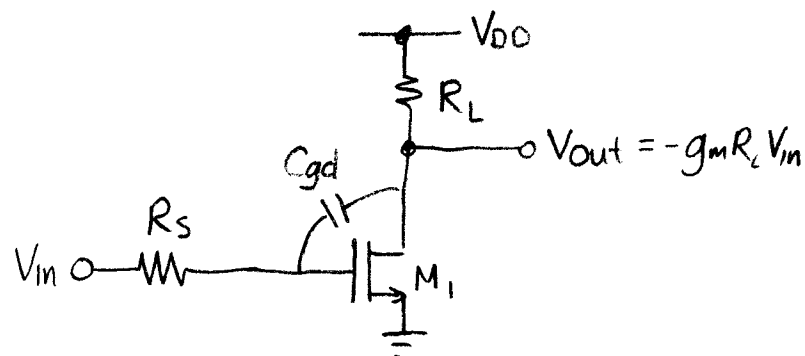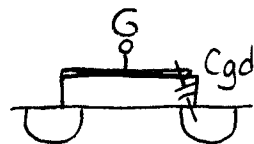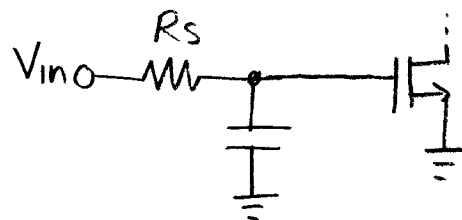C_{gd}: GATE - DRAIN
PARASITIC CAP

ACROSS INVERTING GAIN:
MULTIPLIED BY MILLER EFFECT

$$C_M = (1 + g_m R_L) C_{gd}$$
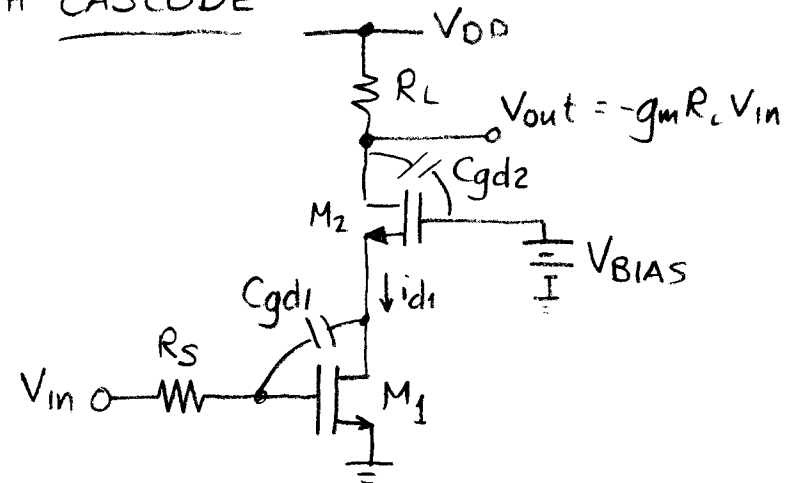
$$f_{3dB} \leq \frac{1}{2\pi R_S C_M}$$

LOWERS
f_{3dB} !

WITH CASCODE

$V_{out} = -g_m R_L V_{in}$

M2 (CASCODE MOSFET) "PASSES"
i_{d1} TO V_{out} ; SAME GAIN

BUT : NEITHER C_{gd} SEES LARGE
INVERTING GAIN!
C_{gd1} SEES GAIN OF -1 ; NO GAIN FOR C_{gd2}

NOW TWO POLES $\frac{1}{2\pi R_S (2 C_{gd1})}$, $\frac{1}{2\pi R_L C_{gd2}}$

f_{3dB} MAY BE HIGHER, OR SIMILAR:

R_L MAY INCREASE FROM CASCODE

f_T WILL BE MUCH HIGHER

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