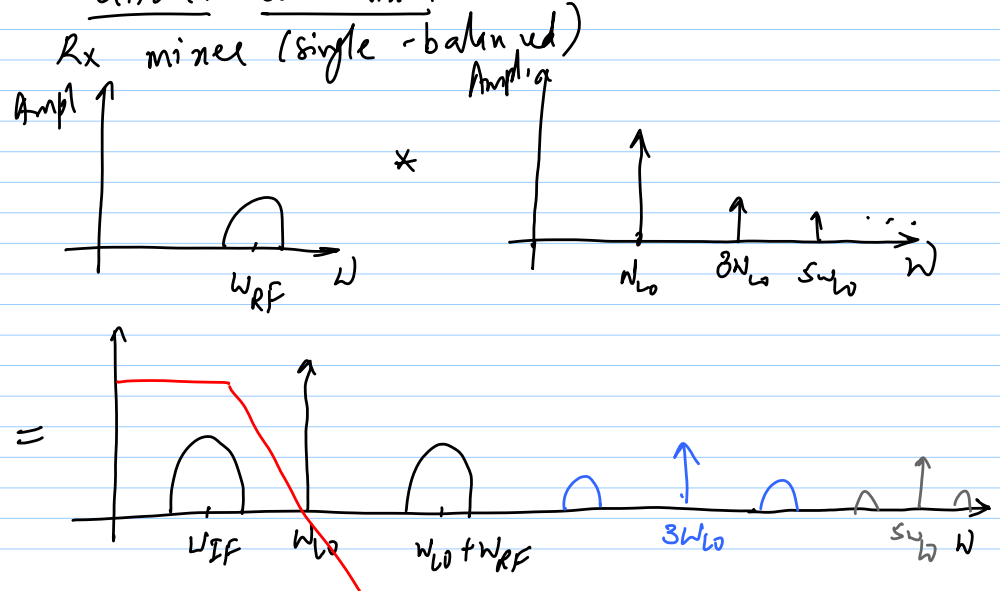


20-9-13

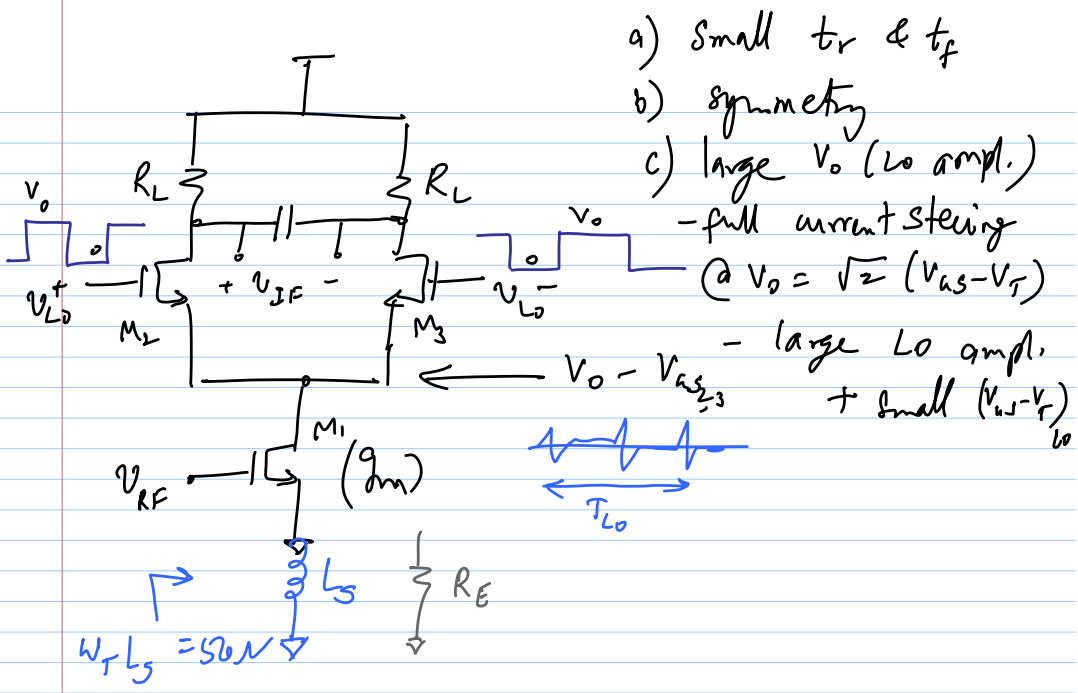
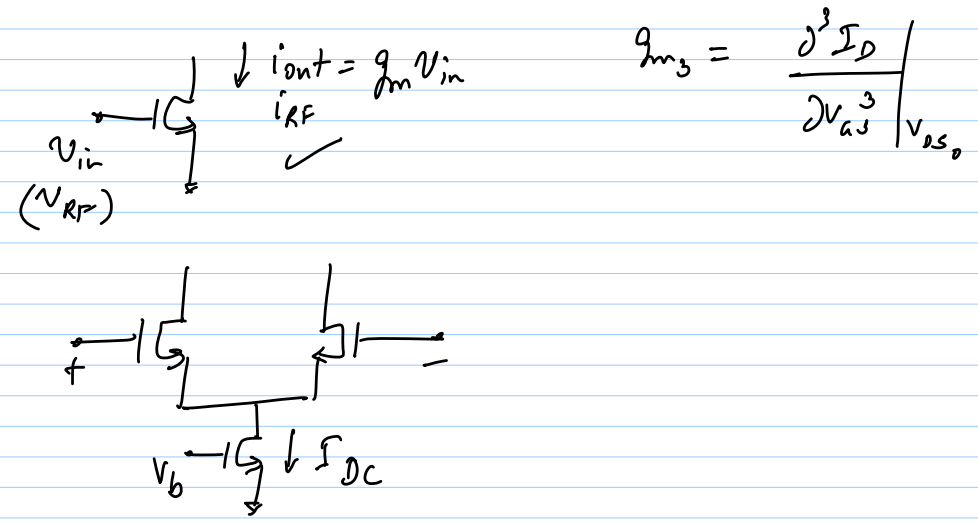
Lec 21

Gilbert-cell mixer

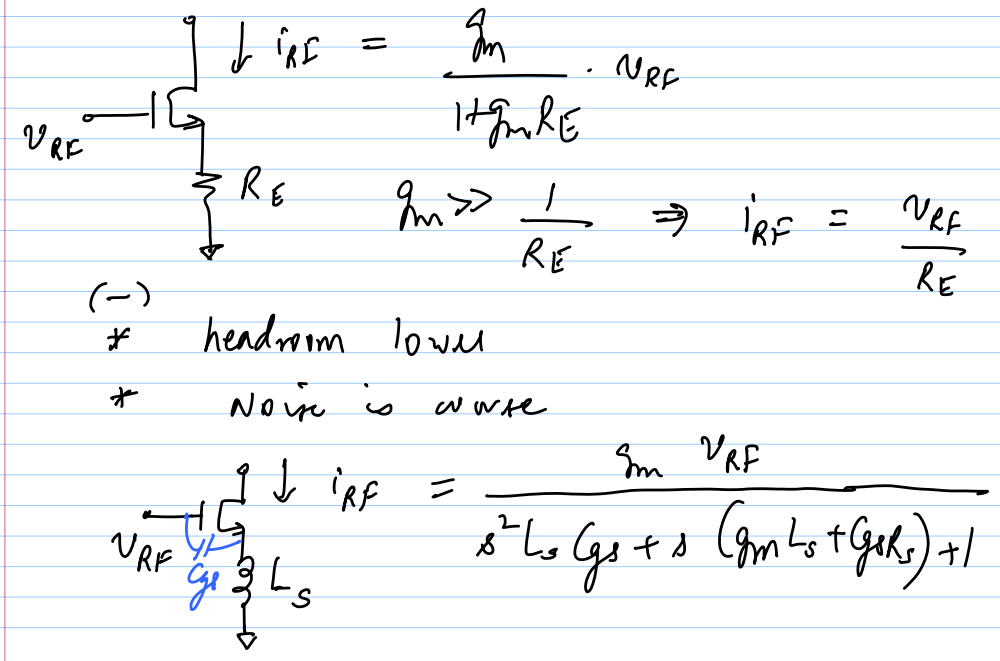


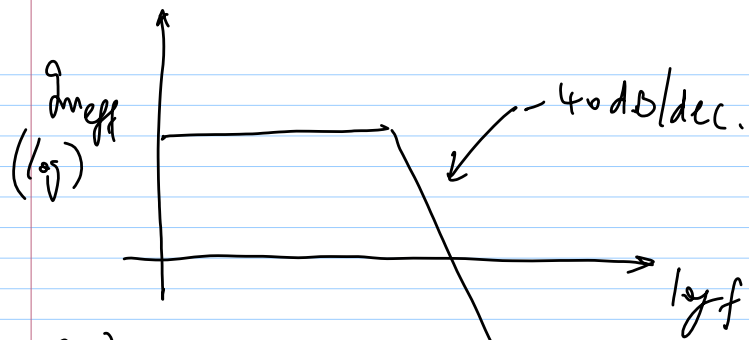
RF transconductors

1) Common-source transistor



- a) Small t_r & t_f
- b) symmetry
- c) large v_o (LO ampl.)
 - full current steering
 - (@ $v_o = \sqrt{2} (v_{gs} - v_T)$)
 - large LO ampl.
 - + small $(v_{gs} - v_T)$





- (+)
- * good attenuation @ high freq.
 - * no headroom loss
 - * no noise added
- (-)
- * area is higher
 - * narrow band
- * $W_T L_S$ real part degrades Q of LNA o/p

