$$a = 1 + \frac{\gamma}{4\sqrt{PHI + V_s}}$$

$$V_T = VTO + \gamma\left(\sqrt{V_s + PHI} - \sqrt{PHI}\right)$$

$$V_{Dsat} = \frac{V_{gs} - V_T}{a}$$

$$V_C = L_{eff} UCRIT$$

$$V_{dsat} = V_{Dsat} + V_C + \sqrt{V_{Dsat}^{\ 2} + V_C^{\ 2}}$$

$$V_{ds} = V_{ds} > V_{dsat} \,?\, V_{dsat} : V_{ds}$$

$$i_D = a\left(V_{Dsat} V_{ds} - \frac{V_{ds}^{\ 2}}{2}\right)$$

$$V_{dsb} = V_{ds} > V_{Dsat} \,?\, V_{Dsat} : V_{ds}$$

$$U_{eff} = \frac{UO}{1 + \frac{V_{dsb}}{V_C}}$$

$$V_{ds} > V_{ds} > V_{Dsat} \,?\, V_{ds} : V_{Dsat}$$

$$z = \sqrt{\frac{2\varepsilon_{si}}{qN_{sub}}}$$

$$L_p = z\sqrt{(V_{ds} - V_{Dsat})KAPPA}$$

$$L = L_{eff} - L_p$$

$$I_D = U_{eff} COX \cdot 10^2 \frac{W}{L} i_D$$