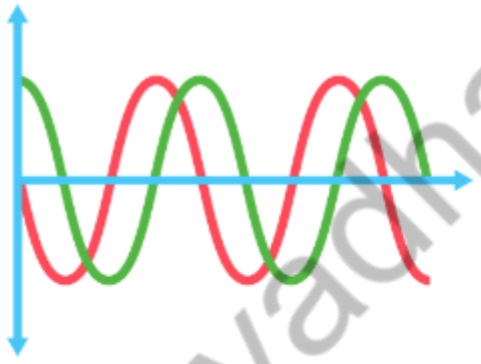
# Course : RF Microelectronics



## Lecture 1: Tuned Amplifier

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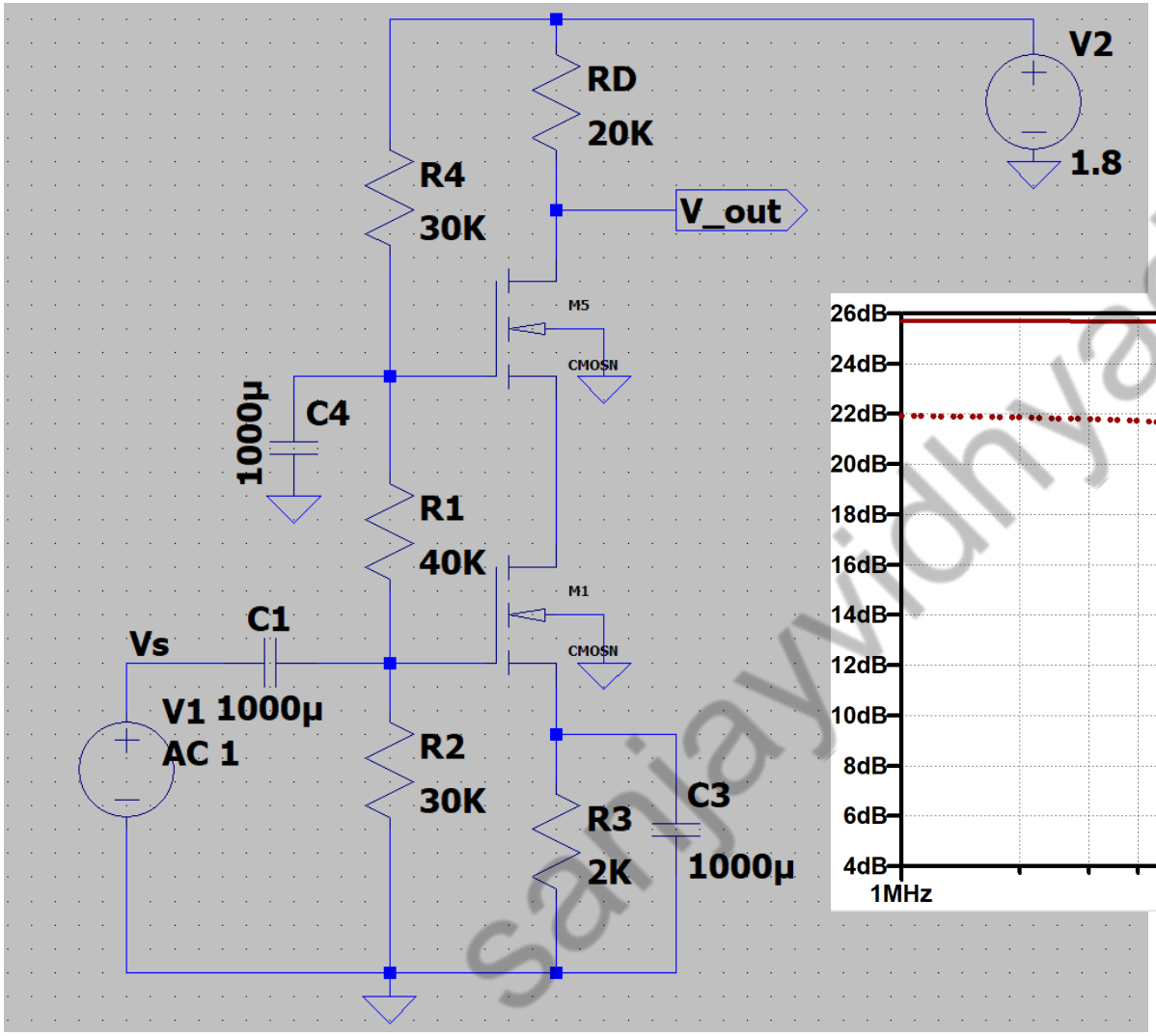
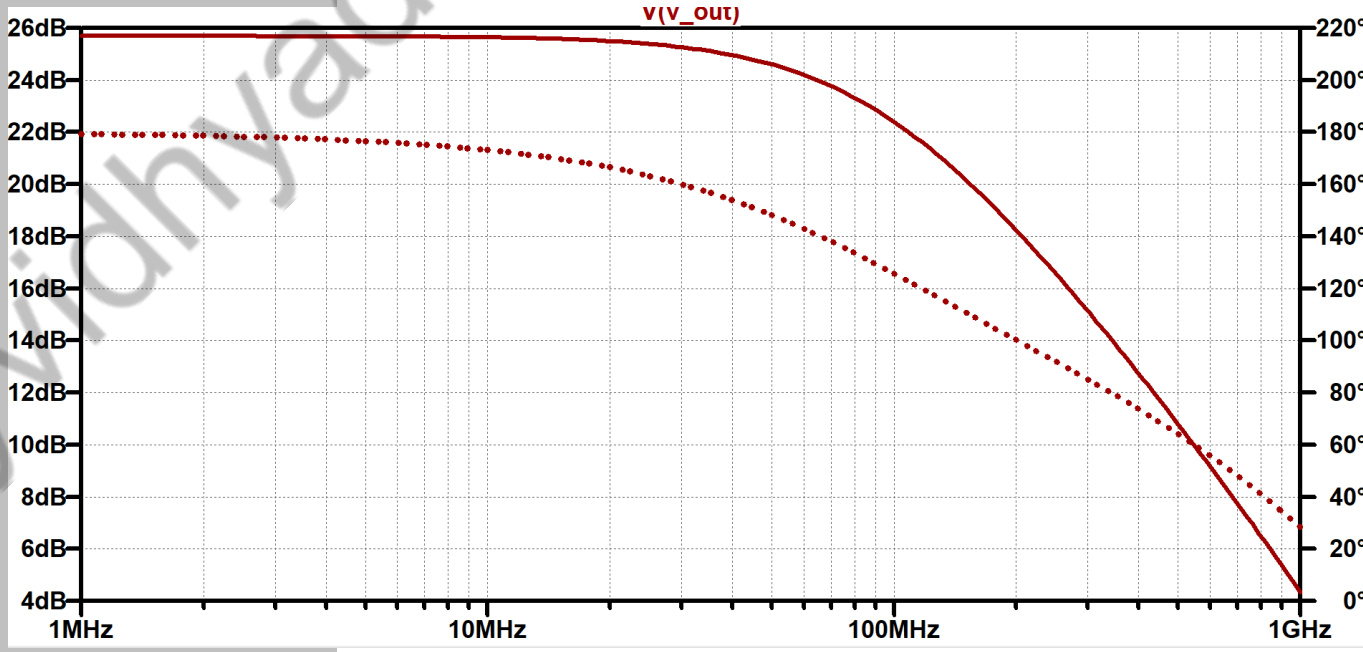
website: sanjayvidhyadharan.in

# 1. Cascode Circuit

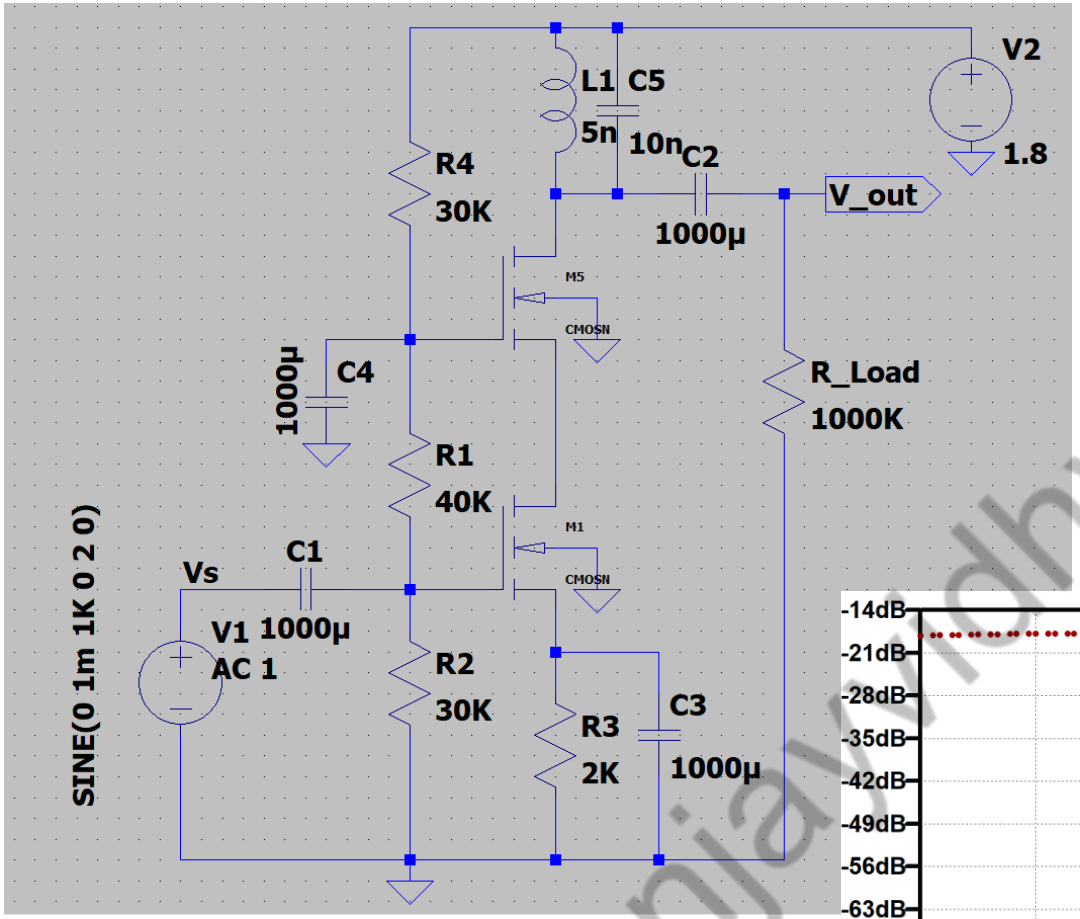


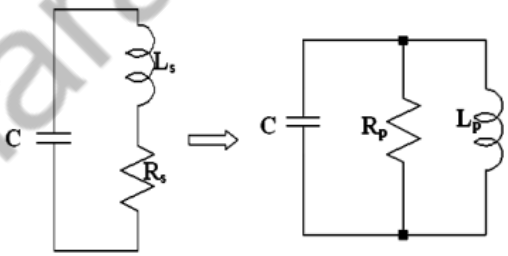


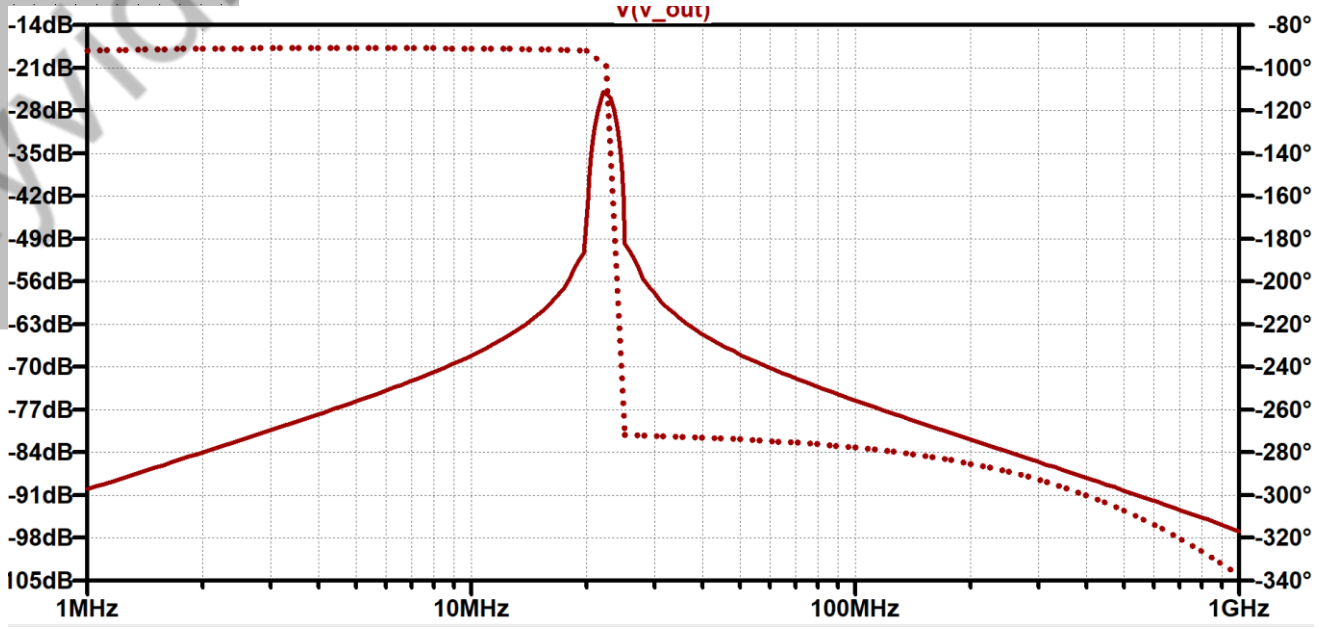



# 1. LC Tuned Circuit

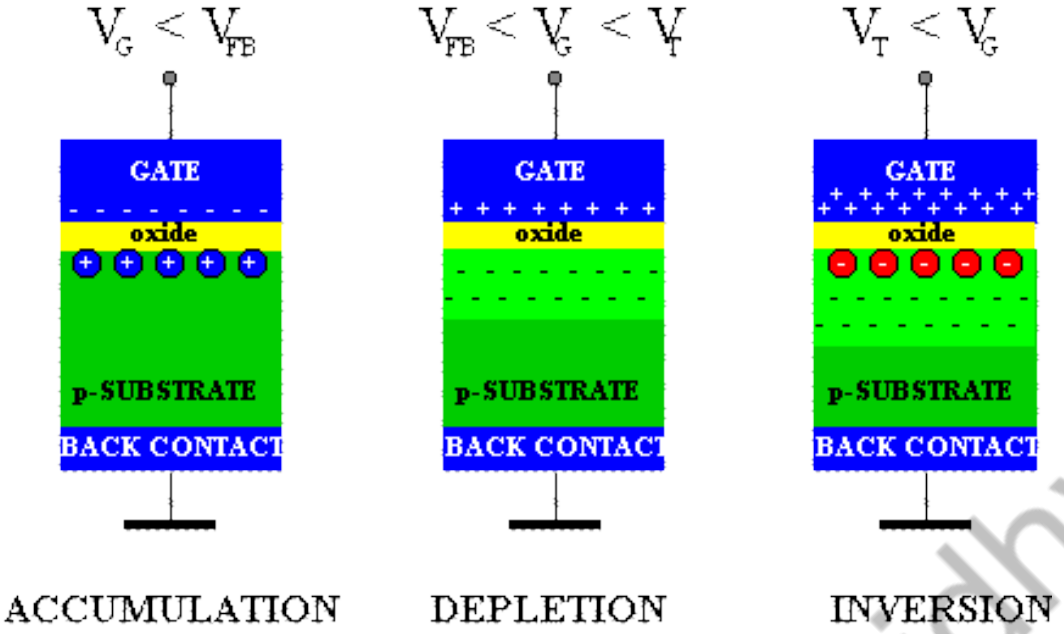


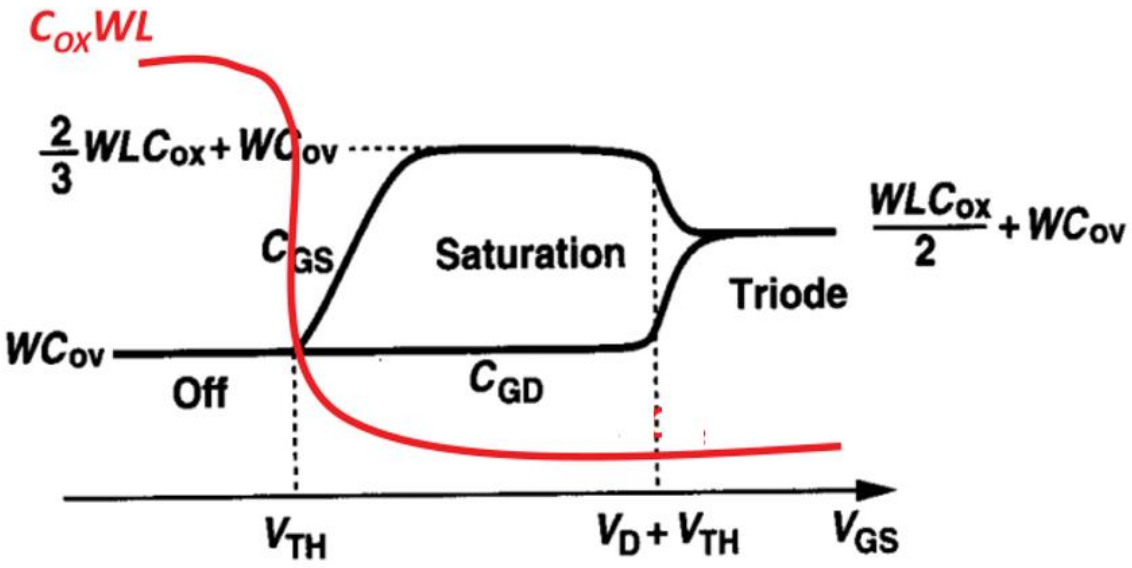


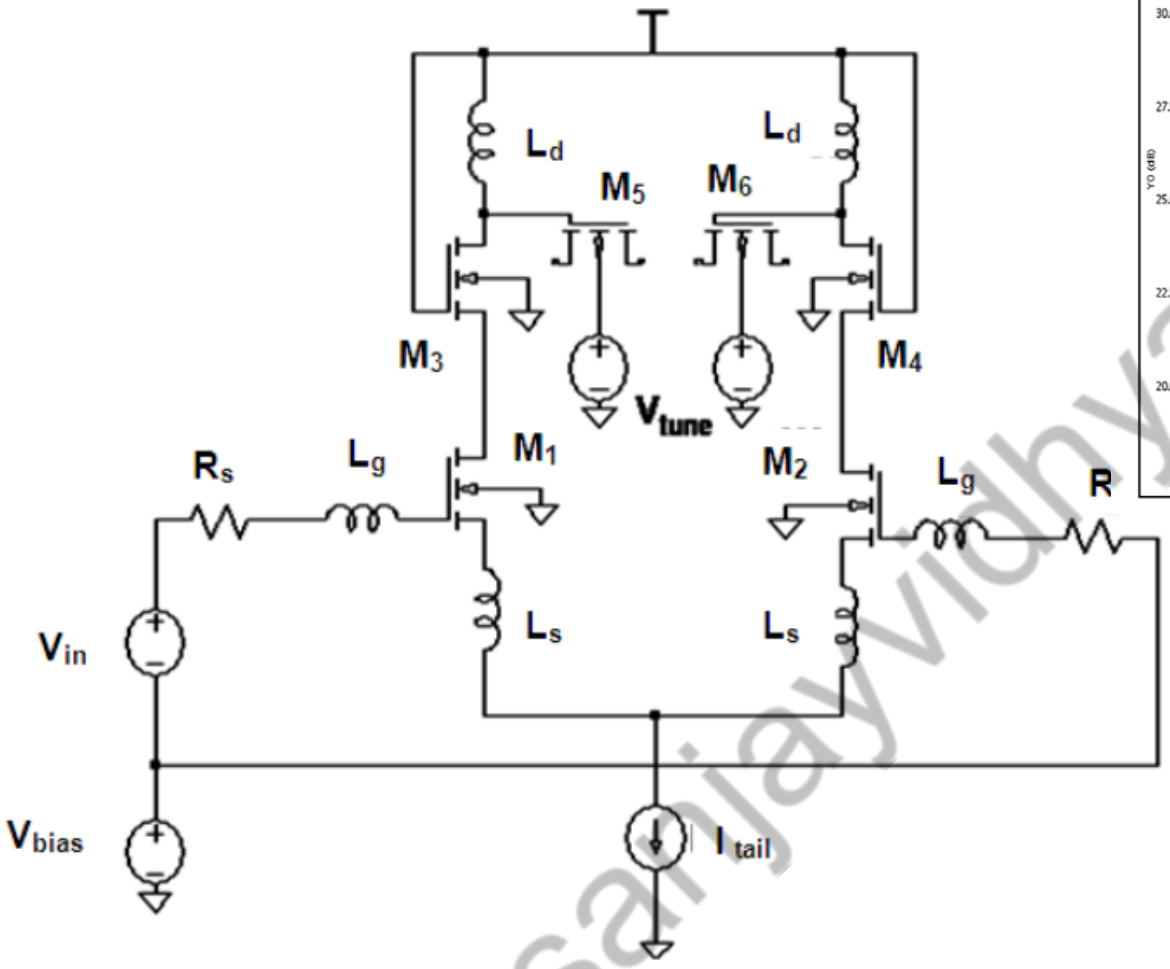
## MOSFET Gate Capacitances

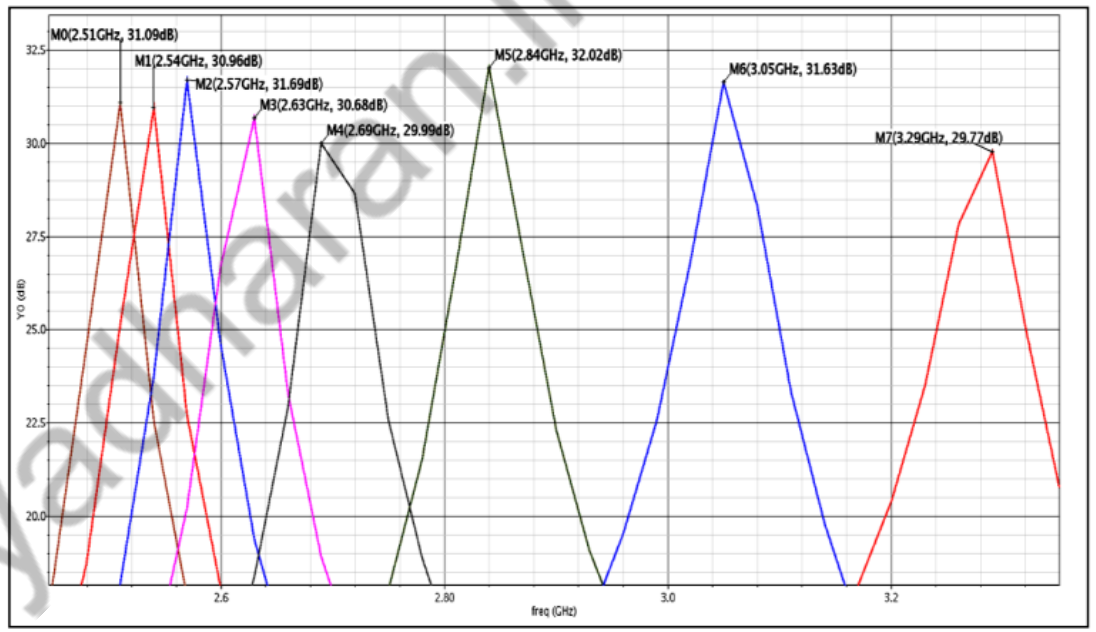


# 3. LC Tuneable Amplifier





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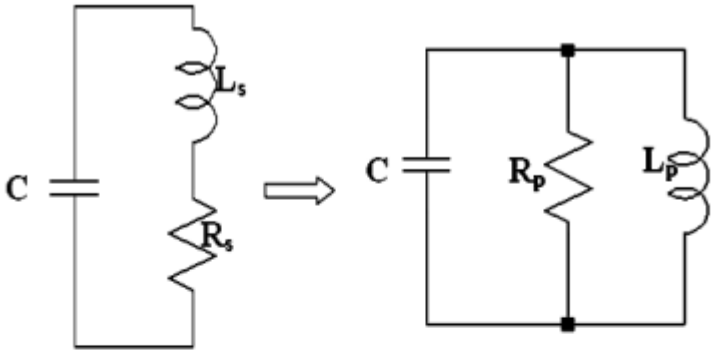
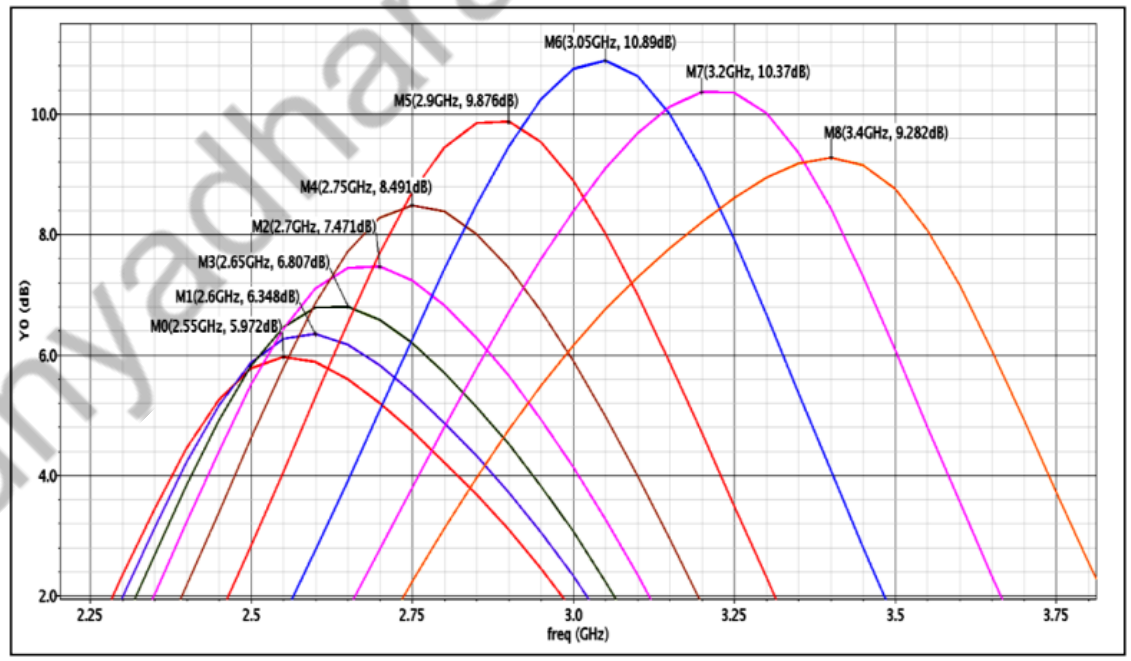



**Figure 4.6: Equivalent tank circuit.**

$$R_p = R_s\left(Q^2+1\right) \approx \frac{L^2\omega^2}{R_s}$$

$$L_p = L_s\frac{\left(Q^2+1\right)}{Q^2}$$

$$Z_{in} = \frac{L^2\omega^2}{R_s} + L\omega s + \frac{1}{C\omega s}$$



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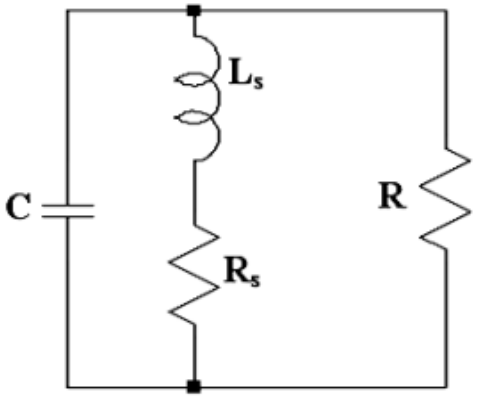
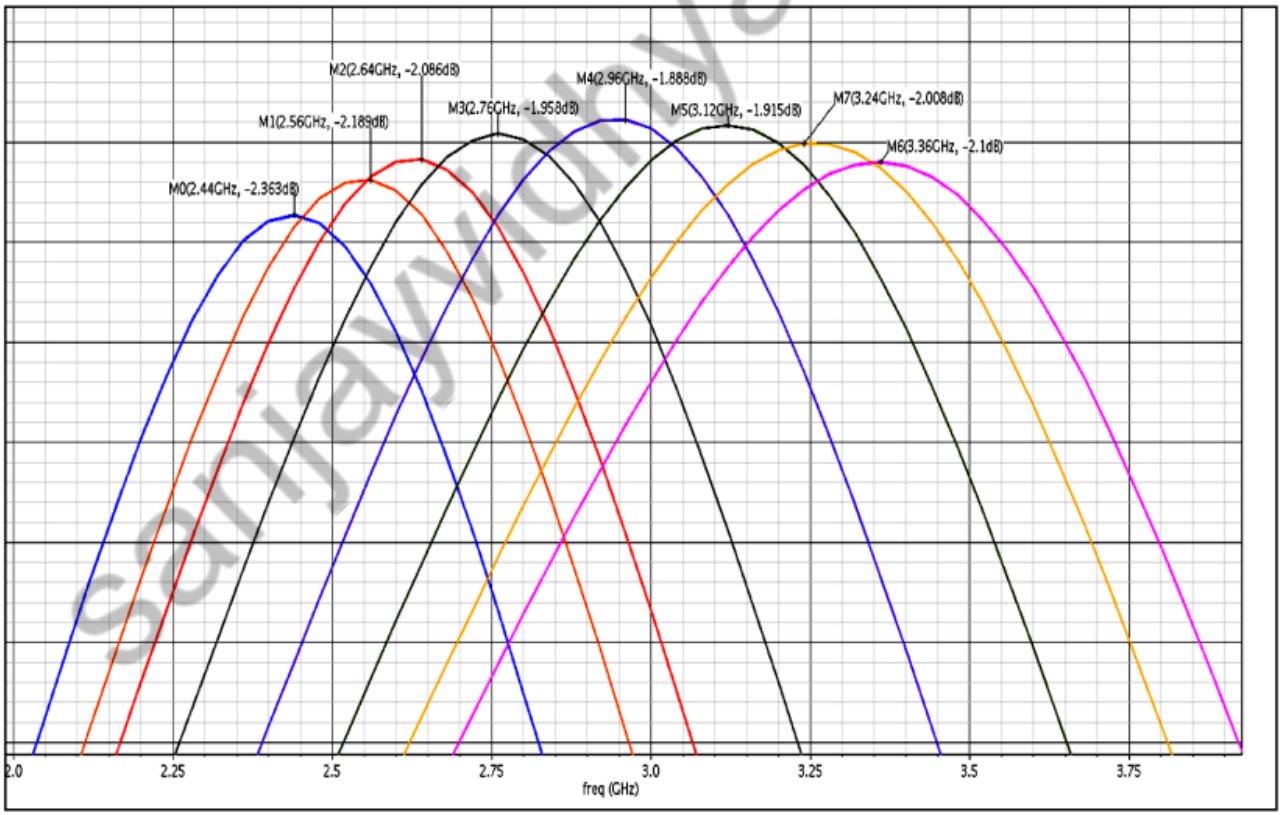



$$R \ll R_s Q^2$$

$$Z_{in} = R // \frac{L^2\omega^2}{R_s} + L\omega s + \frac{1}{C\omega s}$$

$$= R + L\omega s + \frac{1}{C\omega s}$$



# Thankyou