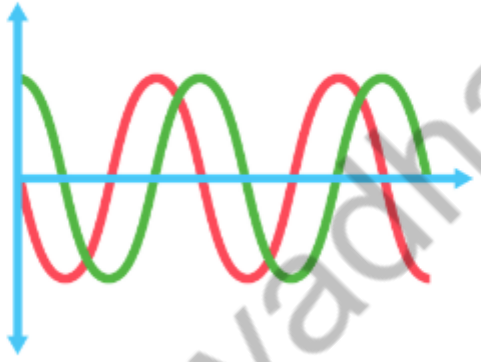
Course: Advanced Analog IC Design



Lecture 5: Linear Regulator Design and Simulation

Prof. Sanjay Vidhyadharan

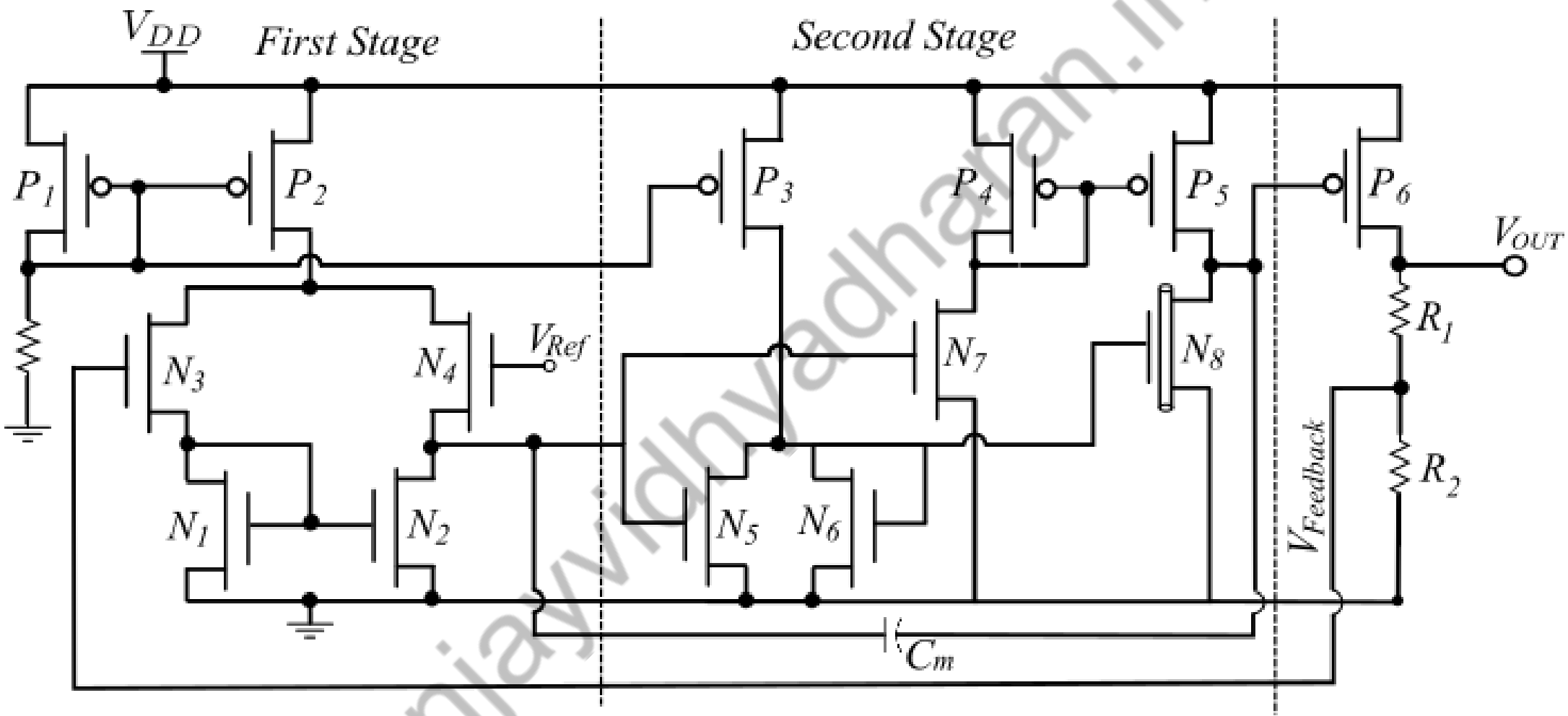
website: sanjayvidhyadharan.in

Output DC Voltage independent of:-

1. Power Supply Voltage
2. Load Current
3. Temperature

Should be stable

Linear Regulator



$$\frac{V_{out} * R_2}{R_1 + R_2} = V_{Ref} \qquad V_{out} = \frac{V_{Ref}\,(R_1 + R_2)}{R_2}$$

Simulation done for $V_{out} = 0.7\,V$ and $V_{REf} = 0.25\,V$

Figure of Merits:-

1. Line Regulation (%) = (ΔVout / ΔVin) * 100

2. Load Regulation (%)
$$= [(V_{no\_load} - V_{full\_load}) / V_{full\_load}] * 100$$

3. Temperature Variation = ΔVout / ΔTemp

4. Efficiency (%) = (Power Load / Power Source) * 100

Thank You