

3.5 Frequency Response of Common Source Amplifier:

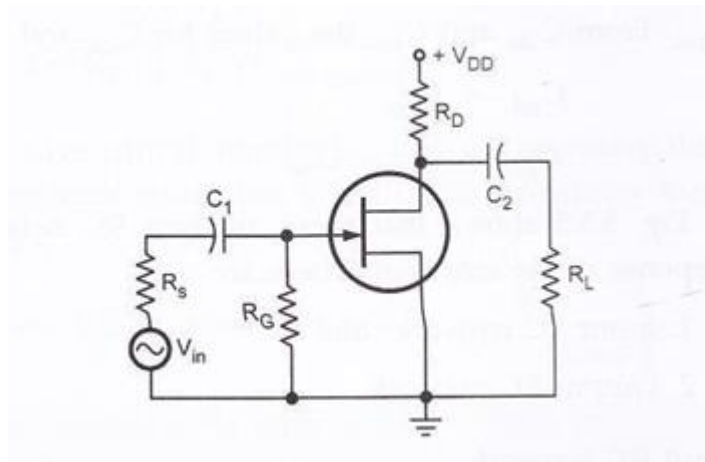


Figure: 3.5.1 RC coupled common source amplifier

[Source: "Electronic devices and circuits" by "Balbir Kumar, Shail.B.Jain, and Page: 138]

Let us consider a typical common source amplifier as shown in the above figure.

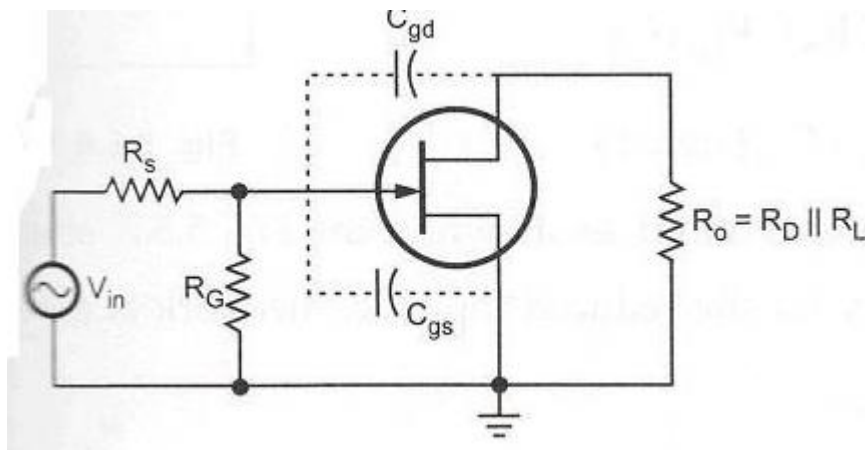


Figure: 3.5.2 High frequency equivalent circuit

[Source: "Electronic devices and circuits" by "Balbir Kumar, Shail.B.Jain, and Page: 138]

From above figure, it shows the high frequency equivalent circuit for the given amplifier circuit. It shows that at high frequencies coupling and bypass capacitors act as short circuits and do not affect the amplifier high frequency response. The equivalent circuit shows internal capacitances which affect the high frequency response.

Using Miller theorem, this high frequency equivalent circuit can be further simplified as follows:

The internal capacitance C_{gd} can be splitted into C_{in} (miller) and C_{out} (miller) as shown in the following figure.

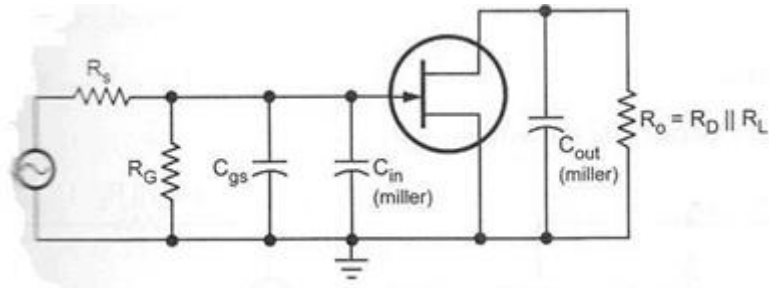


Figure: 3.5.3 Simplified High frequency equivalent circuit

[Source: "Electronic devices and circuits" by "Balbir Kumar, Shail.B.Jain, and Page: 138]

