

Lecture 09 -- Emitter Degeneration, Emitter Followers, Multistage Amplifiers

Draw a two port model for an amplifier which uses our amplifier parameters, compare it to a general 2-port Z parameter model

Draw the small signal model of a multi-stage amplifier by using 2-port amplifier models. Include a source resistance and a load resistance.

What is the total gain of a multi-stage amplifier?

Why is a voltage gain, a_v , expressed in decibels as $20 \cdot \log(a_v)$ while a power gain, A_p , is expressed in decibels as $10 \cdot \log(A_p)$

How many decibels correspond to voltage gains of 10, 100, $\frac{1}{2}$ and $\frac{1}{4}$?

Draw a modified common emitter amplifier which uses a capacitor to bypass the tradeoff between gain and offset voltage in the mid-band.

Draw a common emitter amplifier with an active load.

Draw an emitter degenerated common emitter amplifier.

What are R_{in} and A_v for an emitter degenerated common emitter amplifier?

What R_{out} for an emitter degenerated common emitter amplifier if r_o is ignored?