

Common Emitter Amplifier

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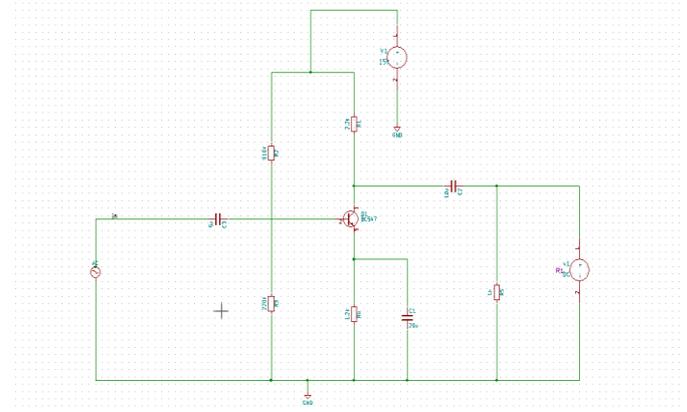
Abstract:

Common-emitter amplifiers give the amplifier an inverted output and can have a very high gain that may vary widely from one transistor to the next. The gain is a strong function of both temperature and bias current, and so the actual gain is somewhat unpredictable.

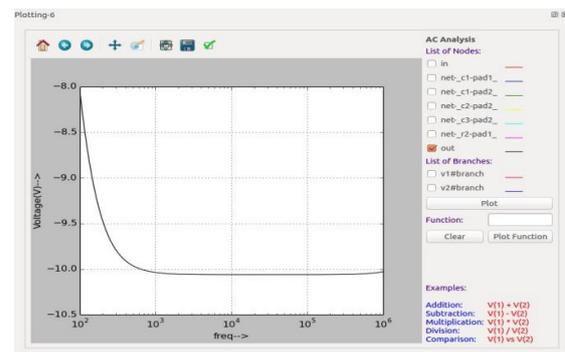
Participant Circuit Details:

The single stage common emitter amplifier circuit shown above uses what is commonly called "Voltage Divider Biasing". This type of biasing arrangement uses two resistors as a potential divider network across the supply with their center point supplying the required Base bias voltage to the transistor. Voltage divider biasing is commonly used in the design of bipolar transistor amplifier circuits. This method of biasing the transistor greatly reduces the effects of varying Beta, (β) by holding the Base bias at a constant steady voltage level allowing for best stability. The quiescent Base voltage (V_b) is determined by the potential divider network formed by the two resistors, R_1 , R_2 and the power supply voltage V_{cc} as shown with the current flowing through both resistors.

Participant Circuit Design:



Actual Waveforms and Area:



Reference Paper:

- <https://hal.archives-ouvertes.fr/hal-01712254/document>
- <https://www.sciencedirect.com/topics/computer-science/emitter-amplifier>