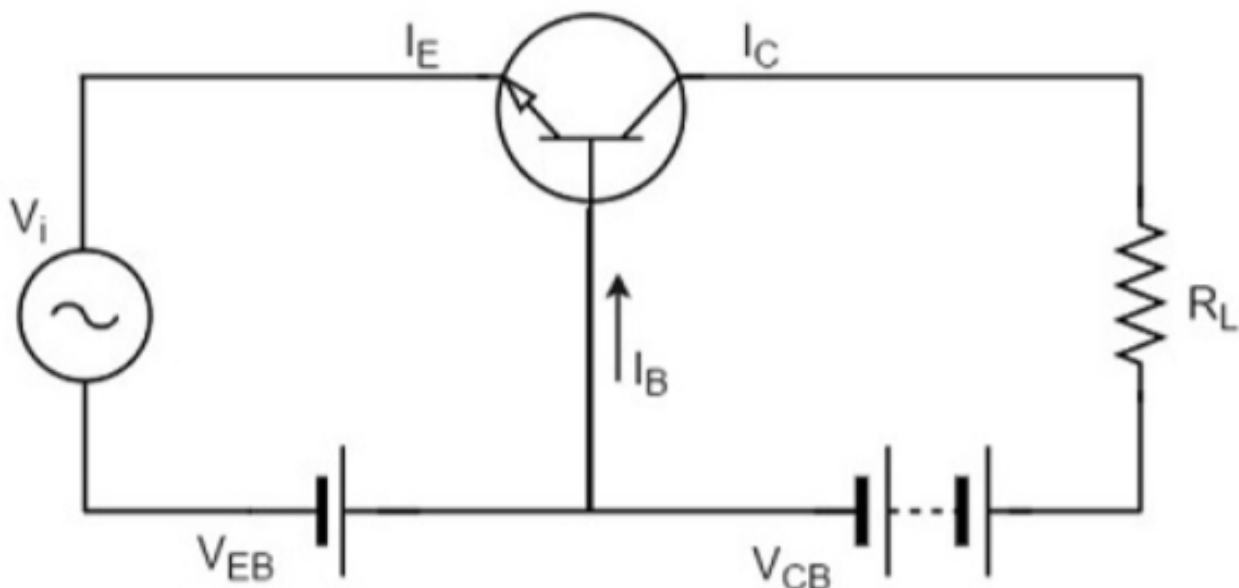


# Transistor Amplifier

A transistor acts as an amplifier by raising the strength of a weak signal. The DC bias voltage applied to the emitter base junction, makes it remain in forward biased condition. This forward bias is maintained regardless of the polarity of the signal. The below figure shows how a transistor looks like when connected as an amplifier.



The low resistance in input circuit, lets any

small change in input signal to result in an appreciable change in the output. The emitter current caused by the input signal contributes the collector current, which when flows through the load resistor  $R_L$ , results in a large voltage drop across it. Thus a small input voltage results in a large output voltage, which shows that the transistor works as an amplifier.

### Example

Let there be a change of 0.1v in the input voltage being applied, which further produces a change of 1mA in the emitter current. This emitter current will obviously produce a change in collector current, which would also be 1mA.

A load resistance of 5k $\Omega$  placed in the collector would produce a voltage of

$$5 \text{ k}\Omega \times 1 \text{ mA} = 5\text{V}$$

Hence it is observed that a change of 0.1v in the input gives a change of 5v in the output, which means the voltage level of the signal is amplified.