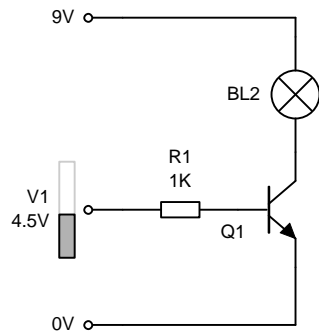


# TRANSISTOR DRIVERS & AMPLIFIERS

Below are two ways of connecting an NPN transistor to act as a Driver or an Amplifier. Each has its own merits and the one you choose depends on what you want it to do. In both cases they amplify current using  $I_c = I_b \times h_{fe}$

## NPN TRANSISTOR DRIVER



- Load wired between +V and the collector.
- The transistor **sinks** current into its collector.
- When the input voltage rises above 0.7v, the transistor **saturates** and turns the bulb on fully.

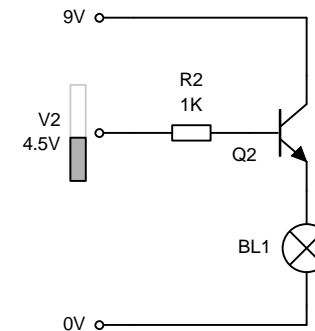
### Advantages:

- Low voltage to activate, > 0.7v
- Current amplifier
- No voltage loss

### Disadvantages

- Output device fully on or off - not variable

## NPN TRANSISTOR AMPLIFIER



- Load wired between the emitter and 0v.
- The transistor **sources** current from its emitter.
- The voltage at the emitter is 0.7v less than the input voltage thus the brightness can be altered.

### Advantages:

- Output voltage can be varied with input,
- Current amplifier

### Disadvantages

- 0.7v loss in output
- Inefficient at low input voltage levels.