Transistor Basics - NPN vs. PNP

semiconductor, documentation, terminology, discrete-semiconductor-pr…

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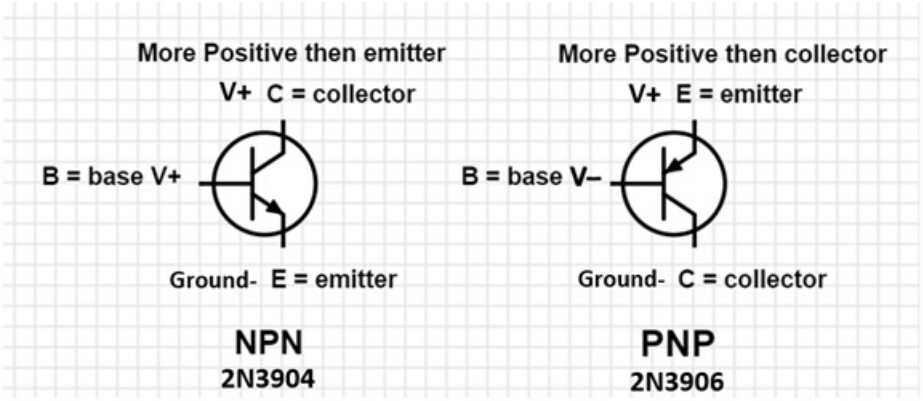
Transistor basics

A transistor, also known as a BJT (Bipolar Junction Transistor), is a current driven semiconductor device which can be used to control the flow of electric current in which a small amount of current in the Base lead controls a larger current between the Collector and Emitter (in the case of an NPN type). They can be used to amplify a weak signal, as an oscillator or as a switch.



Reviewing the above schematic symbols, you should note that to turn on a NPN type transistor you will need to use positive current on the base lead.
To turn on PNP transistors you will need to use negative current or at ground level on the base lead.
Typically, NPN should have the load on Collector side which is controlled by positive current flowing to the base which then switches the Emitter to ground allowing current to flow from Collector to Emitter is called sourcing the load.

For PNP type transistors, the Emitter is on the positive side of the supply voltage and the load is on the Collector side but sinking it to ground via negative current going to the base (listed as V-, Negative Voltage or at Ground). For more information on the operation of transistors, see our **Transistor Basics article**

Also, a neat experiment creating a Night Light or low light level indicator using a PNP transistor is located at:
https://www.eewiki.net/display/Motley/PNP+Transistor+Night+Light+Circuit+Experiment

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