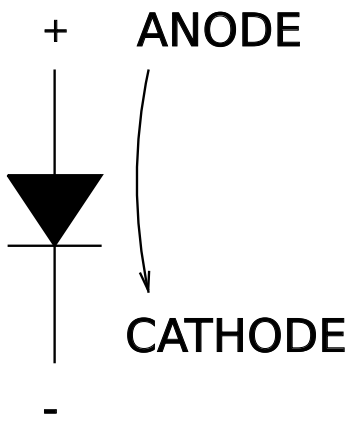
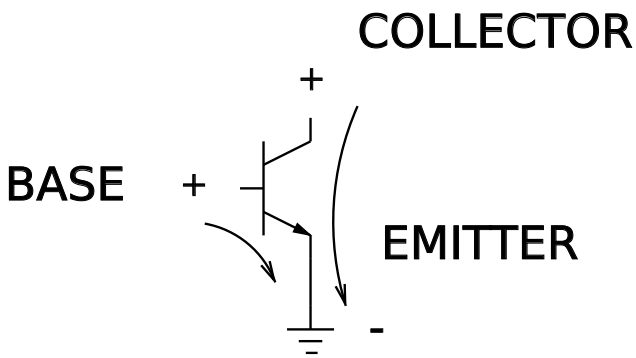
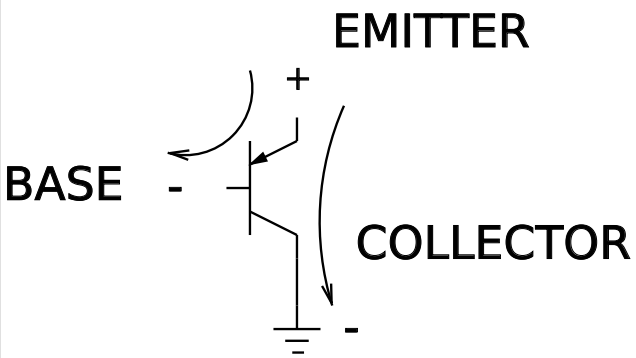
DIODE



NPN



PNP



When the voltage from anode to cathode is less than the device's "forward voltage" (about 0.7v for silicon, 0.3v for germanium) the diode allows some current through, but above that voltage the resistance of the device drops to just enough to maintain the same voltage drop across the device (0.7v or 0.3v). In the reverse direction, nearly no current flows until the inverse voltage exceeds the device's breakdown voltage, whereupon it drops to nearly 0 resistance again, often damaging the device.

The connection between Base and Emitter is like a diode - note the direction of the arrow. A minimum base->emitted voltage is needed to get current flowing; about 0.7v for silicon, 0.3v for germanium.

The collector current is approximately equal to a constant times the base current, as long as the collector-emitter voltage is more than a volt or two.

The constant, beta, varies between transistors and with temperature, but is usually in the 20-100 range.

Copyright 2005-2006 Warhead.org.uk Ltd
This work is licensed under a Creative Commons
Attribute-ShareAlike 2.5 Licence
See: http://creativecommons.org/licenses/by-sa/2.5/
...for details of your rights.