

A DC power supply providing a ground output, a +12v output, and a -12v output.

Based on the design here:
<https://youtu.be/pQKN30Mzi2g>

Diodes should be rectifier diodes capable of withstanding high currents (~1A).

Capacitors C1 to C6 store charge for producing the bulk of the DC power. C7 to C10 are intended to serve brief spikes in current draw. C7 to C10 should be ceramic or tantalum capacitors which are more suitable for high frequency application. The polarity annotations on C7-C10 are only relevant if tantalum capacitors are used (ceramic capacitors are not polarized).

D3 protects the L7812 from situations where current would flow from its output pin to its input pin. The most likely scenario is a short prior to U1 in which C9 would discharge through U1. It will instead (mostly) discharge through D3. It should be brief enough that we don't have to worry about D3 heating up.

C7-C10 should be placed as physically closely as possible to their respective regulators to allow them to respond quickly to spikes in current draw.

Blue LEDs require much less current to glow as brightly as the red one, so a larger current-limiting resistor is used.

Unlike the L7812, no protection diode is necessary for the L7912 as it has one built in.

This circuit is intended to be powered by a 12v AC supply (such as a 12v AC wall wart) with a pair of wires whose relative voltage is a sine wave with a RMS value of 12v (ie. peaks of around +/-17v). The wires will be treated as identical, and one wire will be arbitrarily chosen as the AC input in this schematic, and the other will be treated as the ground reference for this (DC) power supply and all connected devices.

