# Checklist for Schematics

Andrew Greenberg - <http://github.com/andrewgreenberg>

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* Visual Design
  + Power supplies use supply symbols, not wires
  + Positive supplies point up, and negative supplies/ground point down
  + Optional: Groups of nets above about ≥ 4 nets collected into buses
  + Component symbols are symbols, not the physical package's order and arrangement
  + All nets descriptively named
  + Net “stubs” (nets visually connected to only one pin) use an “off-sheet” type of label
  + Blocks in your schematic clearly labeled
  + There's a frame around the schematic
  + It's clear where your power is coming from
  + It's clear what your power input requirements are
  + Data flow (inputs, outputs) are clear and labeled
* Part values
  + Special case capacitors marked with power and tolerance
  + Capacitors have the appropriate voltage
  + Power dissipation checked in all of your resistors
  + Special case resistors marked with power and tolerance
  + Check that your specialized parts are in stock at a distributor
* Electrical Rule checks
  + All of your components have values (including “NP” for "No Place")
  + All inputs have the correct voltage levels
  + All outputs have the correct load impedance
  + MOSFETs oriented correctly, including the body diode
  + **No unapproved errors OR warnings in the ERC**
  + Double check your approved errors, looking for anomalies and possible errors.
* Best Practices
  + **Your schematic is peer reviewed by at least one person not involved in the design.**
  + Small, low ESR (e.g., ceramic) bypass capacitors on ALL IC supplies
  + Large bypass (e.g., electrolytic) capacitors on your board at the power connector and regulator IC.
  + Design for Test
    - Place test points on critical signals
    - Add debugging hardware (e.g., test switches, LEDs, scope probe points, etc)
  + Design for Fail
    - Group components in separable modular blocks, use zero ohm resistors as jumpers
  + Design for Manufacturing
    - Place programming connectors and DOUBLE CHECK their pinouts
    - Double check your part numbers and the actual package names and dimensions.

Please [comment](https://docs.google.com/document/d/1tzhaX46BbXsmi481ztf1Z_laDdik5dUJDNGWxPAsZL4/edit?usp=sharing) on this checklist!