# Checklist for PCB Layouts

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**Pre-layout Checklist**

* Create board from schematic.
* Set your grid to something reasonable (e.g., 0.1 mm grid, or 0.01 inch grid).
* Start with your best guess for an outline of your board.

**Lay out strategies**

* Place all components that must be in a certain spot (e.g., connectors and mounting holes)
* Move components that are in a “schematic block” together, then optimally rotate and place components to reduce crossed airwires, then route.
* Optimally rotate and place grouped components to minimize airwires, then route.
* Flood ground planes, stitching them together early and often.
* Route very high speed lines (e.g., RF, clocks, USB 2.0), minimizing length
* Route power lines, minimizing impedance.
* Route busses.
* Route everything else.

**Layout checklist**

* Is there enough physical space around components for assembly?
* Are your test points in easily accessible places?
* Are there any hidden traces that you can't probe?

**Best Practices**

* Are all of the small bypass caps right next to the power and ground leads of the ICs?
* Are the power lines as wide as reasonably possible?
* Did you use either larger drills for power lines, or multiple small vias for power lines?
* Are there ground planes on both sides? (Make sure your polygons have an isolate of > design rule; e.g., with a design rule of 6 mils, make the isolate 10 mils).
* Are your ground planes stitched together with vias?
* Is your board as small as possible?
* Run your DRC early and often

**Post-layout checklist**

* Modify reference designators to be as small as possible, and move them around to be readable/useful. Avoid placing text on pads and vias.
* Verify that at least the organization name, the name of the board, and version number are on the silkscreen.

**Final checkout**

* Print out 1:1 PCB and lay components on printout to double check packages.
* **Run DRC; there should be no errors.**
* Make sure all components in stock, or that components you specified are in stock before firing off board.