PCB Design Checklist

PCB Design Checklist for less errors

Preplanning

- Start with a Simple requirements documents , a simple excel sheet will do (google sheets with tiny url)
- It should cover basic functional requirements (these can later on be assessed with Verification and Testing)
- Unless needed avoid expensive and unkown parts .
- Confirm input supply , total power requiremenst , Layout for I/O and dimensions.

Schmeatic Design

- All new parts to be double checked for pinout
- Create schematic in a frame with different sections broken out , if too big break in pages.
- Component rating to be 1.5 the required ratings
- Check active compoents for min and max voltages
- Make sure engough capacitance is there on output of LDO / Buck
- Do not forget decoupling caps

PCB Design

- Make sure to have Date and Name for the project
- Placement of components is 80% job done so most important
- Place in a fixed grid , maing maching placement easy
- Minimum 3 fiducials
- Use JLC 4 layer as default setup
- Are there any Current Resisor (Make Sure size is correct) and sections are isolated
- Power traces please calculate accordingly
- Unless going into a Enclosures , make sure to have mounting holes
- Touchpad for all voltages (small pads will do)
- Use SMT unless no other options
- Does anything themal management
  - heatsink if Themal dissapation is high (space for heatsink)
  - Bottom vias hemal pad is there / large via
  - If a pad has to transfer heat avoid themral erliedf around
- High speed / Differential lines need impedance matching
  - avoid vias on these lines
  - provide solid plances under them

- Cannot fulfill current in trace then remove solder mask for solder to increase current.
- Avoid right turns and try to group similar signals

Design tools

- Trace calculator
- JLC Stackup
- Impedance calculator

Verification and Testing

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Prototypes

- Go step by step ,
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