

SCHEMATIC DIAGRAM RULES

Schematics must show all the details of your circuit. If any information is missing the design can not be produced.

Rules for drawing circuit diagrams

0. Rule 0 is the most important. Circuit diagrams must be created before you attempt to build your design, and you must have an up-to-date copy with you during assembly, debugging, and testing. A 10% grade reduction penalty will be assessed for each violation of this rule.
1. Use a CAD program such as TinyCAD. PREFERABLY MICROSOFT VISIO
2. Neatness is important. We must be able to read the details.
3. Represent each component with a simple symbol (e.g., a rectangle for an IC) that includes the pins and pin numbers.
4. Label each connection (wire) with a unique name MINIMUM 4 character.
5. Use a dot at the intersection of connecting wires.
6. Do NOT draw a loop or bridge when unconnected wires cross.
7. Label each component with a unique name (e.g. U37, C14, R23). The first letter of the name should indicate the type of component (e.g., R for resistor, C for capacitor, L for inductor, and so on). The ICs are often specified by U, but this is not a hard rule.
8. Place above each component (or group of components) a functional description (e.g., above a group of decoder ICs would be Address Decoders, above a group of 7-segment LEDs would be Output Display).
9. Label each component with its part number (e.g., 74LS38, MC68HC11). For resistors and capacitors, simply specify their value and the units.
10. Put pin LABELS on the inside of each chip block but put pin NUMBERS on the outside of the chip blocks.
11. Include your name and the date.

COMPONENTS DIAGRAM RULES

The component placement diagram shows where every component is located on your circuit board.

Rules for drawing component placement diagrams

0. The placement drawing must be completed before debugging begins.
1. Draw resistors, capacitors, ICs, as rectangular symbols.
2. Other components are represented by their actual shape.
3. Place the symbols on the page in correspondence with their positions on the circuit board.
4. Label each symbol with the name used to identify it on the circuit diagram.