

ELEC3025 Sample Design Rules

Simplified Design Rules for a 0.2um CMOS process

Design Rule	Distance (microns)
N-well	
1.1 Minimum n-well width	1.2
1.3 Minimum n-well spacing	0.6
Active Area	
2.1 Minimum active area width	0.3
2.3 Minimum well edge to active area	0.6
2.5 Minimum active area spacing	0.4
Polysilicon	
3.1 Minimum polysilicon width	0.2
3.2 Minimum polysilicon spacing	0.4
3.3 Minimum polysilicon extension beyond gate	0.25
3.4 Minimum source/drain length	0.4
3.5 Minimum polysilicon spacing to active area	0.1
P implant	
4.2a Minimum p implant enclosure of active area	0.2
N implant	
4.2b Minimum n implant enclosure of active area	0.2
Metal 1	
7.1 Minimum metal 1 width	0.3
7.2 Minimum metal 1 spacing	0.3
Contact Window	
5.1 Minimum/maximum contact dimension	0.2
5.3 Minimum contact spacing	0.4
4.3a Minimum p implant enclosure of contact	0.15
4.3b Minimum n implant enclosure of contact	0.15
5.2 Minimum polysilicon enclosure of contact	0.15
6.2 Minimum active area enclosure of contact	0.15
7.3 Minimum metal 1 enclosure of contact	0.1
5.4 Minimum polysilicon contact spacing to active area	0.2
6.4 Minimum active area contact spacing to polysilicon gate	0.2

The diagrams illustrate the following design rules:

- N-well:** Shows two N-wells separated by a distance of 1.3 microns. The minimum width of each well is 1.1 microns.
- Active Area:** Shows an L-shaped active area with a total width of 3.5 microns and a total height of 3.4 microns. The minimum active area width is 0.3 microns, and the minimum well edge to active area is 0.6 microns.
- Polysilicon:** Shows a polysilicon gate with a total width of 3.1 microns and a total height of 3.3 microns. The minimum polysilicon width is 0.2 microns, and the minimum polysilicon spacing is 0.4 microns.
- P implant:** Shows two P implants with a total width of 4.2a microns and a total height of 3.2 microns.
- N implant:** Shows two N implants with a total width of 4.2b microns and a total height of 3.4 microns.
- Metal 1:** Shows two metal 1 contacts with a total width of 7.2 microns and a total height of 5.3 microns.
- Contact Window:** Shows a complex layout involving multiple implants (P and N), polysilicon, and active areas. It includes dimensions for contact enclosures (e.g., 6.2, 5.2, 4.3a, 4.3b, 7.3) and spacings (e.g., 5.1, 4.3b, 5.4).

* This is not a complete set of design rules but is sufficient for most simple cell designs *