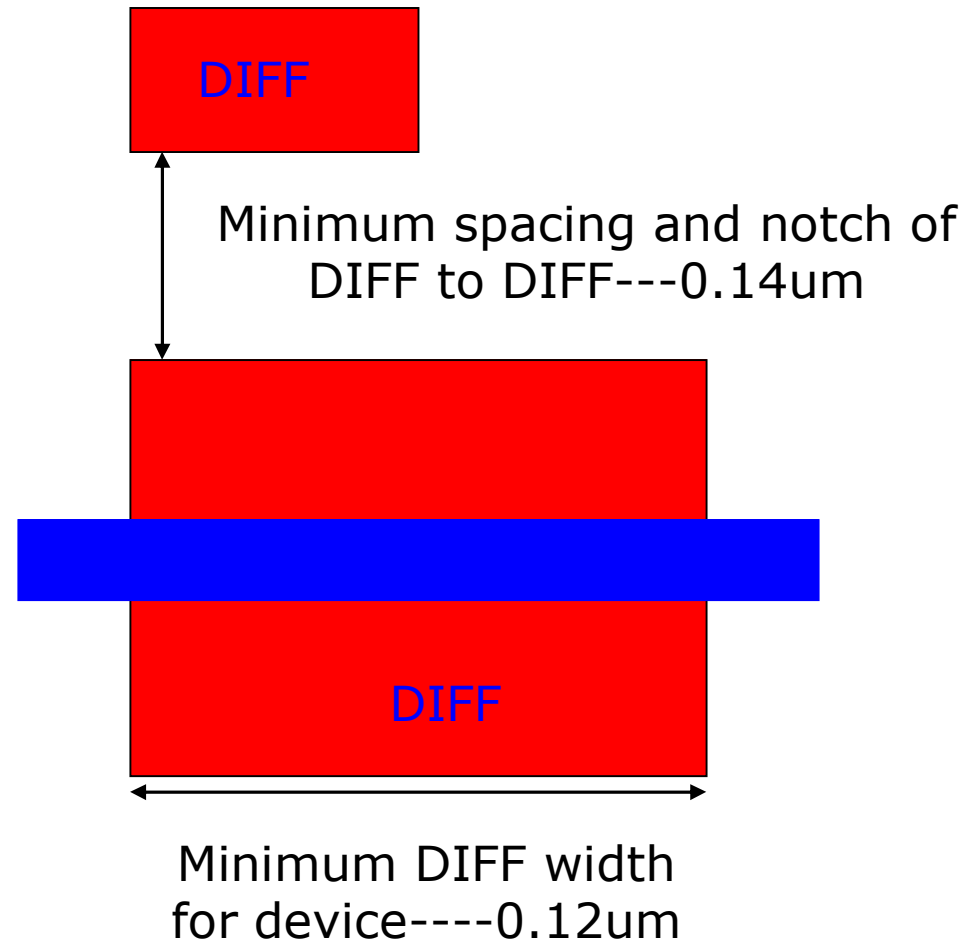


Layout Rules

UMC 90um 1P9M Process

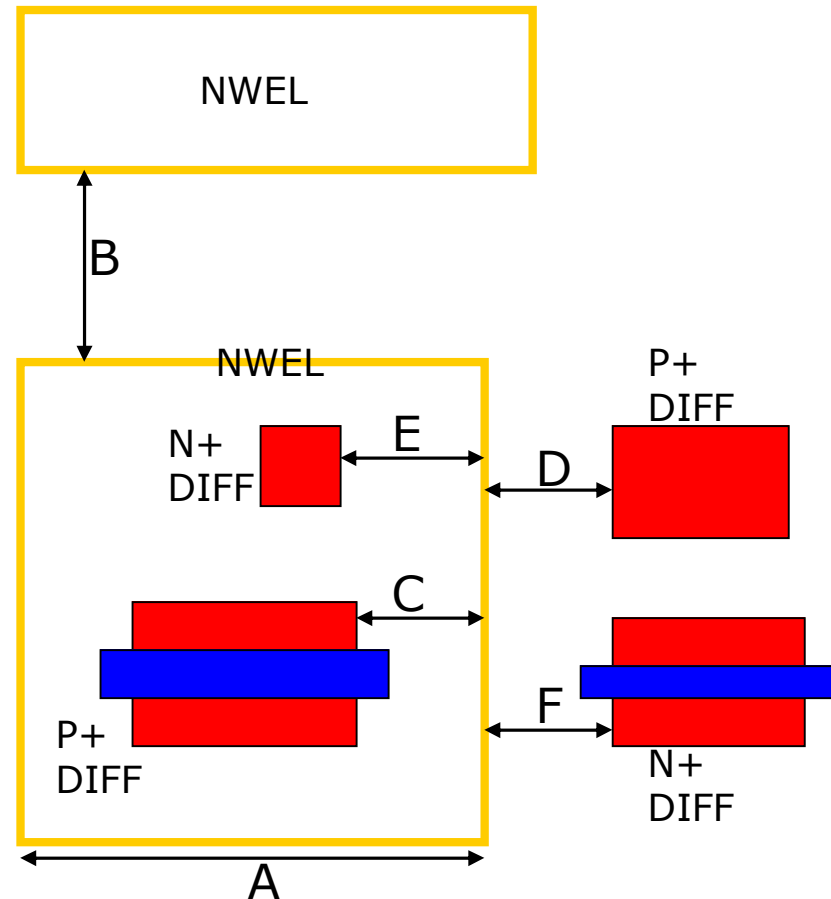
**QT-02/09,
v2011**

Diffusion Layer (DIFF)



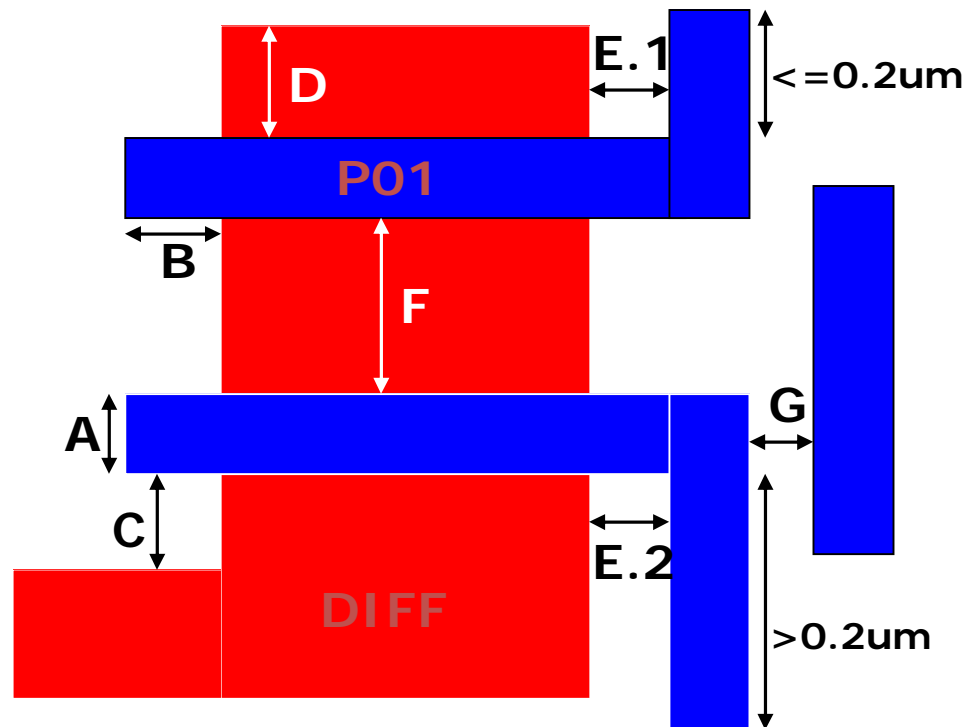
Nwell Layer (NWEL)

- A: minimum Nwell width
----0.52um
- B: spacing and notch of Nwell to Nwell of equal potential
----0 or $\geq 0.52\mu\text{m}$
- C: minimum NWEL enclosure of P+ DIFF ----0.21um
- D: minimum NWEL to P+ DIFF ----0.16um
- E: minimum NWEL enclosure of N+ DIFF ----0.16um
- F: minimum NWEL to N+ DIFF ----0.21um



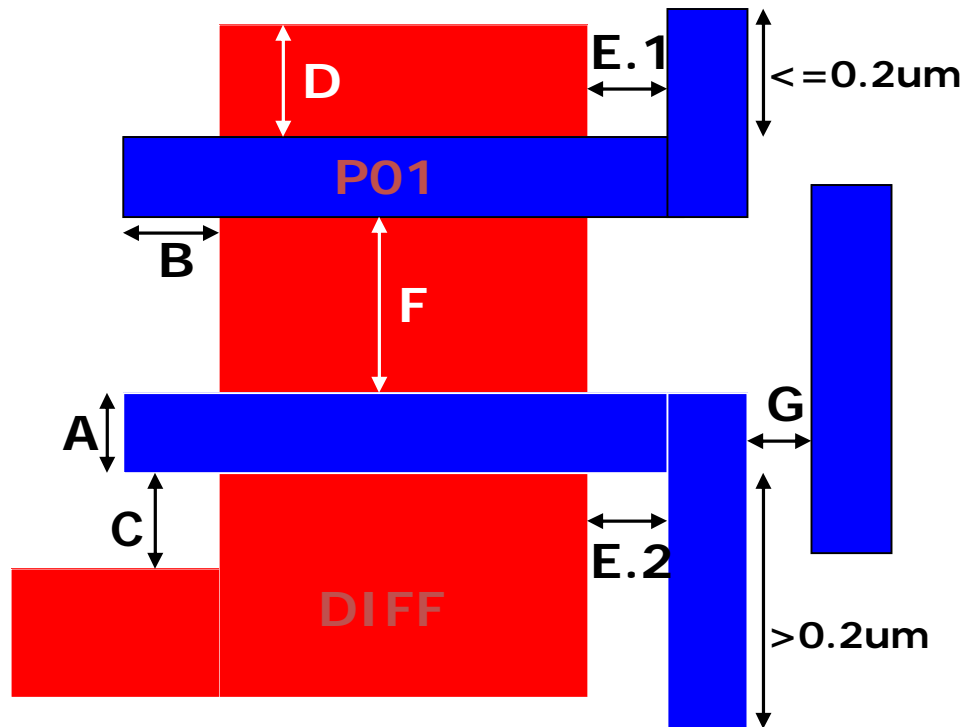
NOTE: NWEL patterns must be orthogonal

Poly Layer (P01) — 1



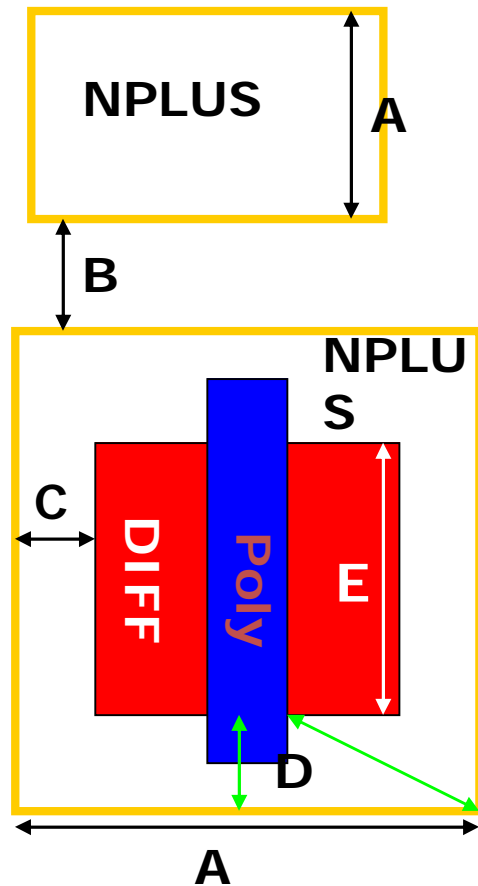
- A: minimum P01 width (gate length) for PMOS and NMOS---
--- $0.08\mu\text{m}$;
- B: minimum P01 overhang of DIFF (Poly1 end cap)----
 1. if Poly1 end cap area $\geq 0.032\mu\text{m}^2$ --- $0.14\mu\text{m}$
 2. if Poly1 end cap area $< 0.032\mu\text{m}^2$ --- $0.18\mu\text{m}$
- C: minimum end cap P01 to related DIFF spacing
---- $0.06\mu\text{m}$
- D: minimum DIFF overhang of P01 gate
---- $0.15\mu\text{m}$

Poly Layer (P01) —2



- E: minimum spacing of P01 corner on field to DIFF
 - 1.P01 common run length with adjacent, parallel
DIFF= $<0.2\mu\text{m}$ ---- $0.06\mu\text{m}$
 - 2.P01 common run length with adjacent, parallel DIFF $>0.2\mu\text{m}$ ---- $0.08\mu\text{m}$
- F: minimum spacing of parallel P01 gates
---- $0.16\mu\text{m}$
- G: minimum spacing and notch of P01 on field
---- $0.16\mu\text{m}$

N⁺ Implant Layer (NPLUS)



- A: minimum NPLUS width
----0.20um
- B: minimum NPLUS spacing and notch
----0.20um
- C: minimum NPLUS overhang of N+ DIFF for NMOS
----0.11um
- D: minimum NPLUS overhang of NMOS gate
----0.18um
- E: minimum overlap of NPLUS to DIFF to form N⁺ region
----0.16um

P⁺ Implant Layer (PPLUS)

A: minimum PPLUS width

----0.20um

- B: minimum PPLUS spacing and notch

----0.20um

- C: minimum PPLUS overhang of P+ DIFF over Nwell

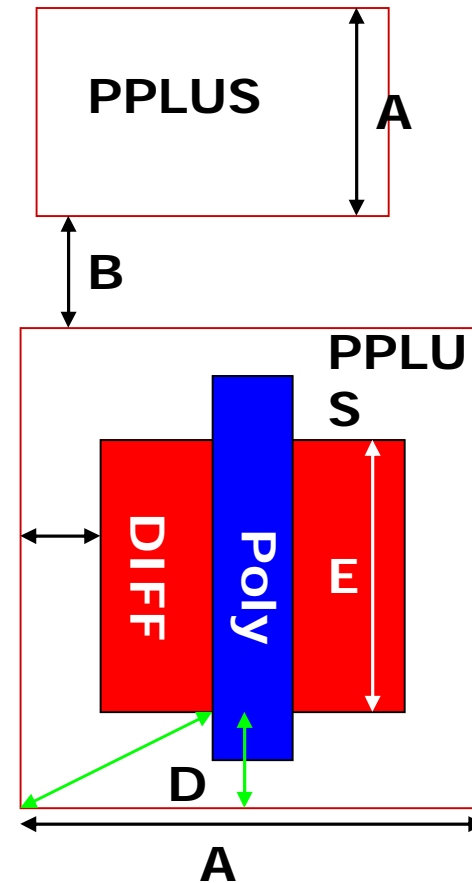
----0.11um

- D: minimum PPLUS overhang of PMOS gate

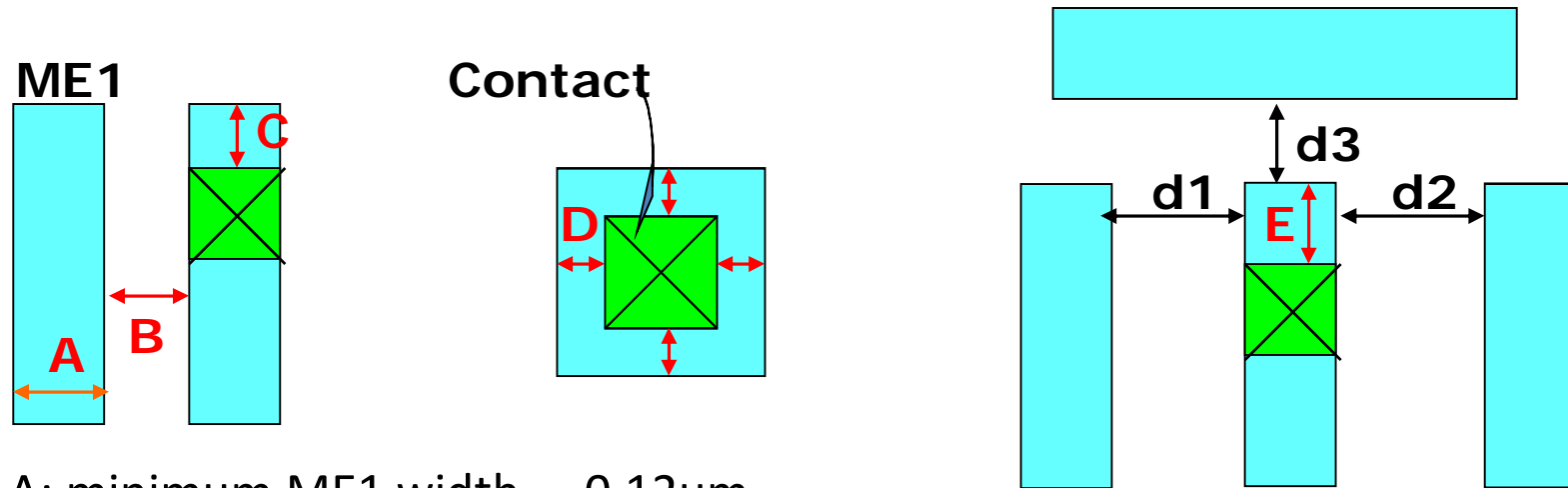
----0.18um

- E: minimum overlap of PPLUS to DIFF to form P⁺ region

----0.16



Metal 1 Layer (ME1)



- A: minimum ME1 width----0.12um
- B: minimum ME1 spacing and notch----0.12 um, but 0.18um for ME1 with width>0.70um; 0.34um for ME1 with width>2.8um
- C: minimum ME1 line end enclosure of Contact----0.04um
- D: minimum ME1 line end enclosure of Contact for 4 sides ----0.02um
- E: minimum ME1 line end enclosure of Contact----0.08um
(if ME1 width $\leq 0.14\mu\text{m}$ and the spacing of ME1 line end to 3 adjacent ME1 patterns $\leq 0.14\mu\text{m}$ -i.e. $d1, d2$ and $d3 \leq 0.14\mu\text{m}$)

Contact Layer (CONT)

