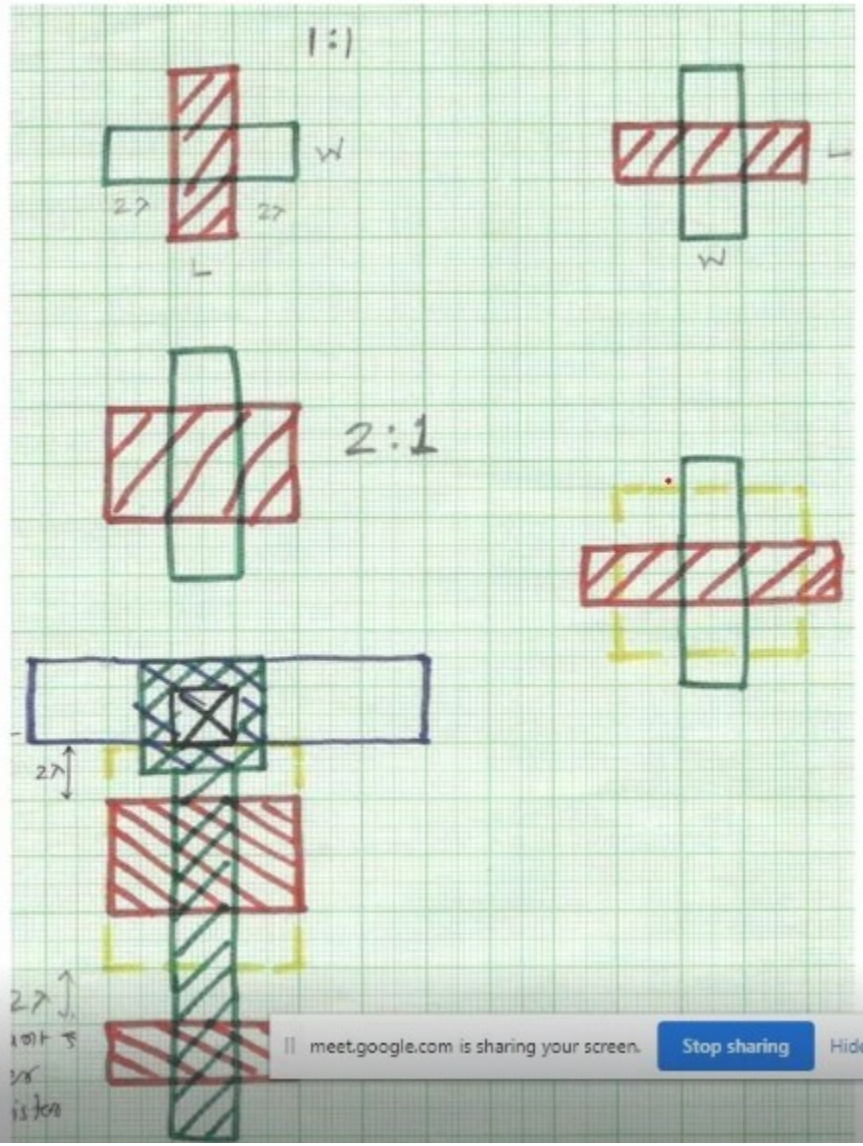
1:1
W
2"
2"
L
2:1
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2"
meet.google.com is sharing your screen.
Stop sharing
Hide

L : W

W : L

W

L

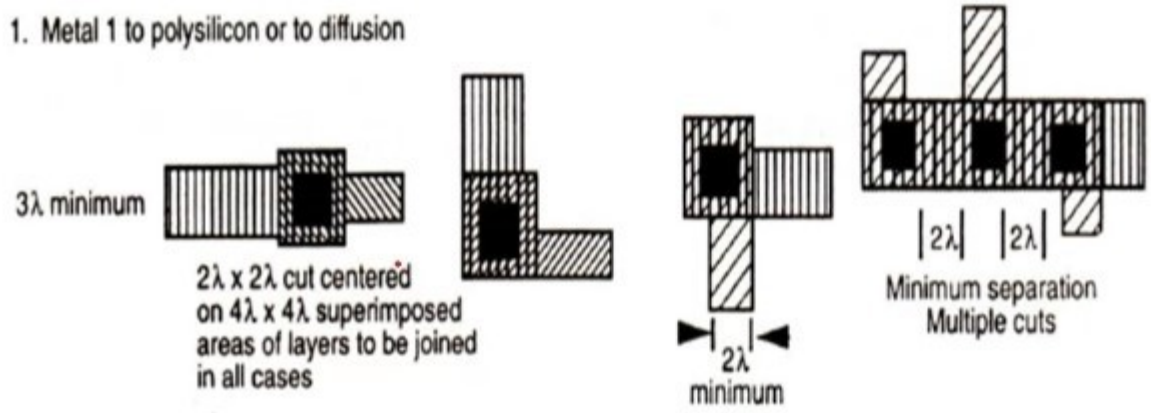
Interlayer Contacts

Interconnection between poly and diffusion is done by contacts.

1. Metal contact
2. Butting contact
3. Buried contact

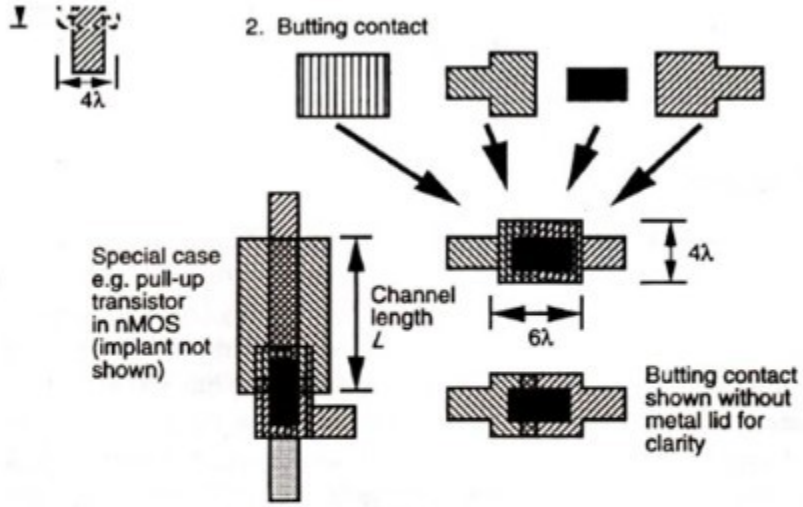
Metal 1 to polysilicon or to diffusion

- Contact cut of 2λ * 2λ in oxide layer above poly and diffusion
- Metal used for interconnection
- Individual contact size becomes 4λ * 4λ



When deposition of the metal layer takes place the metal is deposited through the contact cut areas onto the underlying area so that contact is made between the layers.

Butting Contact



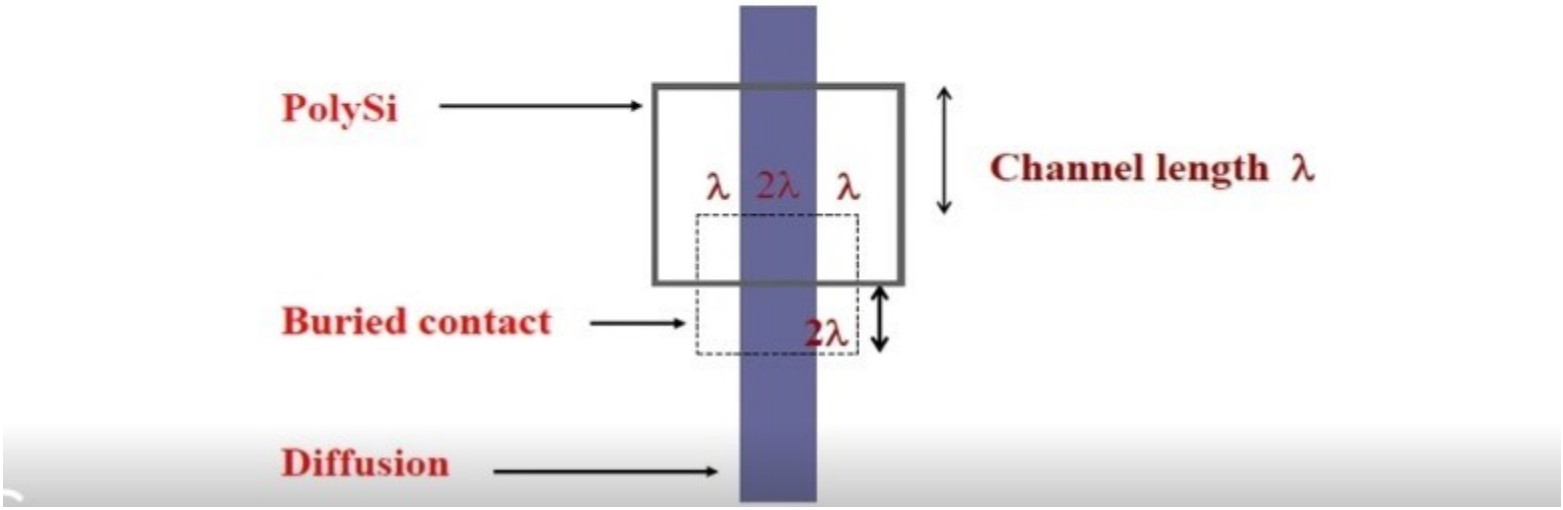
The gate and diffusion of NMOS device can be connected by a **butting contact.**

- **Two contact cuts are adjacent to each other**
- **Therefore effective contact area is less**
- Here metal makes contact to both the diffusion forming the drain of the transistor and to the polySi forming this device's gate.

Buried Contact

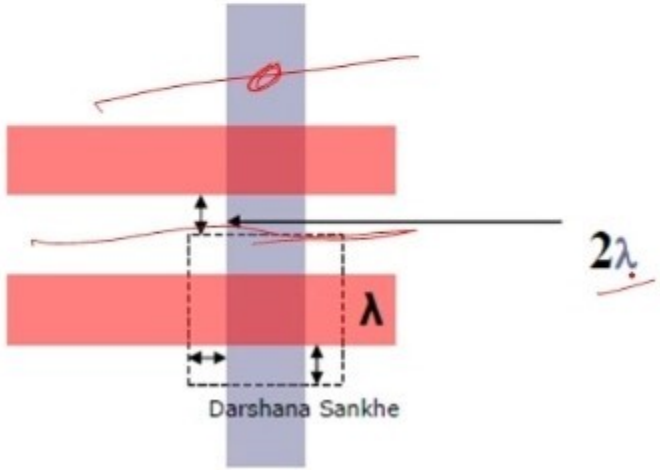
The buried contact window defines the area where oxide is to be removed so that polySi connects directly to diffusion.

- Contact Area must be a min. of 2 λ *2λ to ensure adequate contact area.
- Advantages: No metal cap required.
- Disadvantage: An extra mask is required.

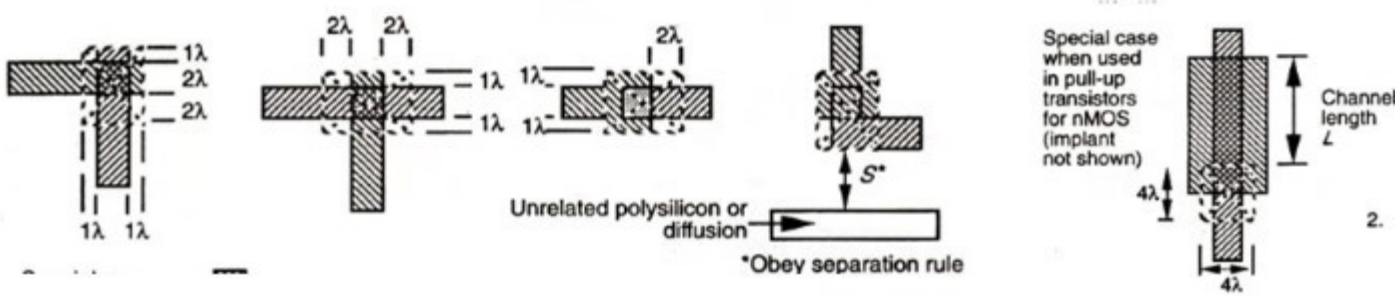


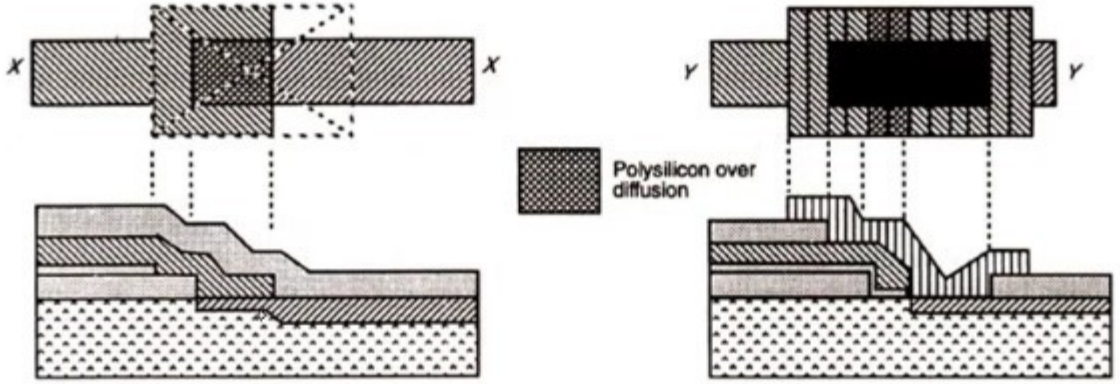
- The buried contact window surrounds this contact by λ in all directions to avoid any part of this area forming a transistor.

- Separated from its related transistor gate by 2λ to prevent gate area from being reduced.



Buried Contact



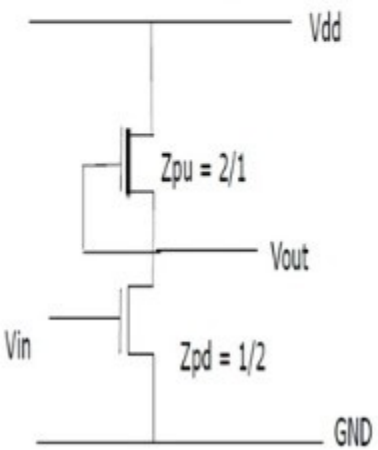


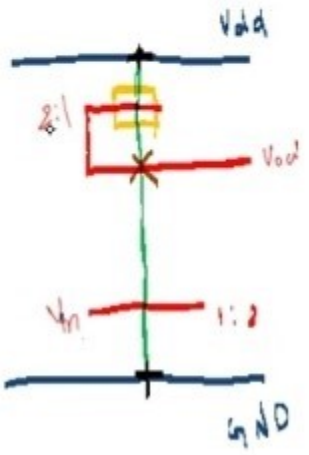
(a) Buried contact . . . section through *XX*

(b) Butting contact . . . section through *YY*

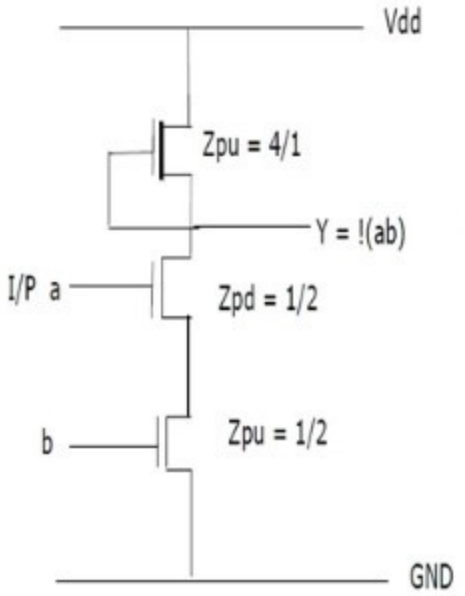
Examples of layout

NMOS Depletion load Inverter





NMOS NAND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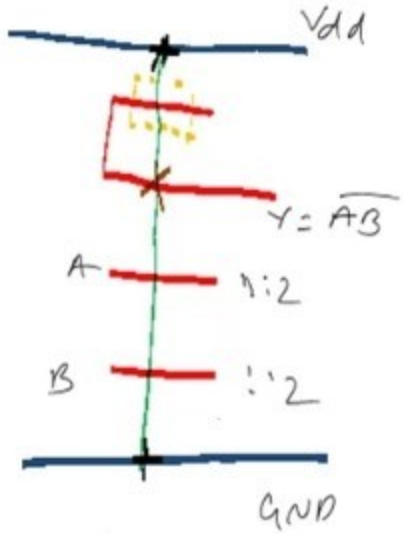
Zpu = 4/1
Y = !(ab)
I/P a
Zpd = 1/2
b
Zpu = 1/2
GND


Vdd
Y = $\overline{AB}$
A
1:2
B
1:2
GND