

Integração de Processos

A) Processo nMOS e pMOS

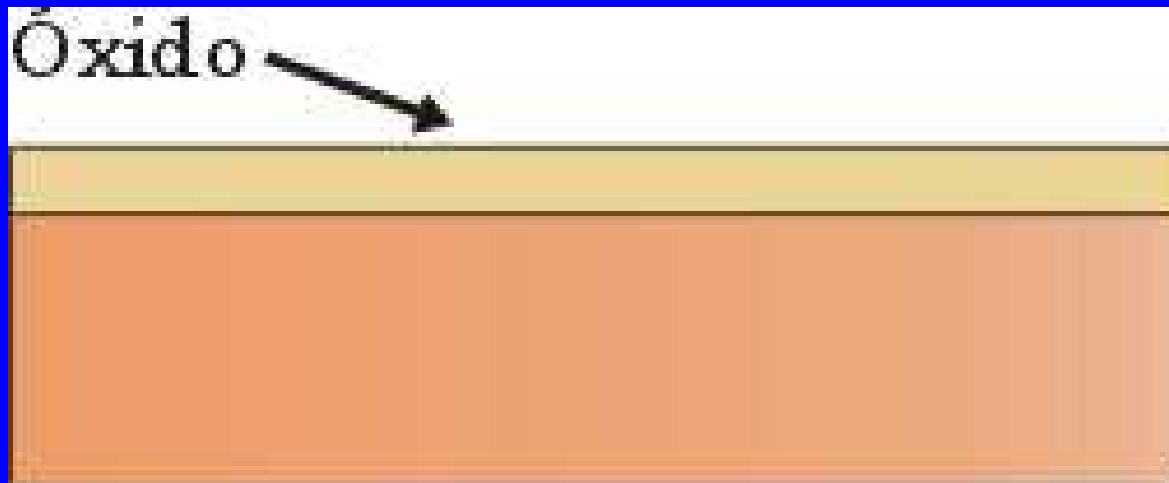
CCS/UNICAMP

Lâminas:

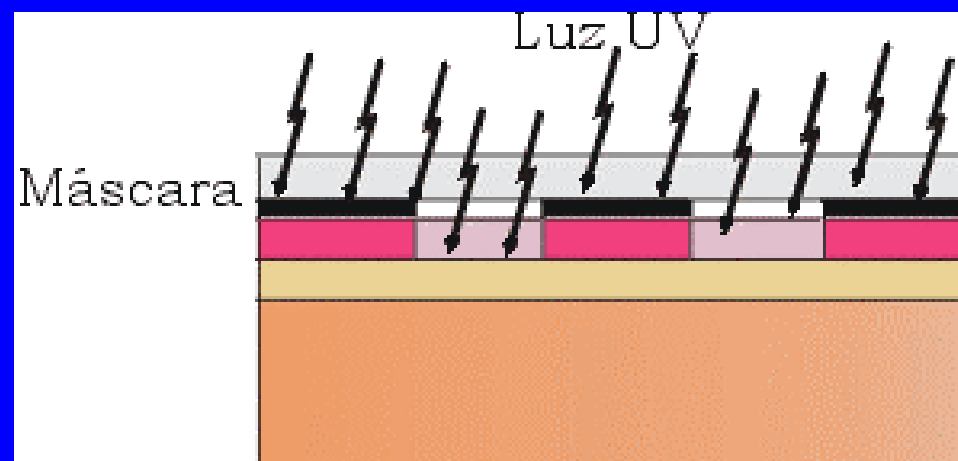
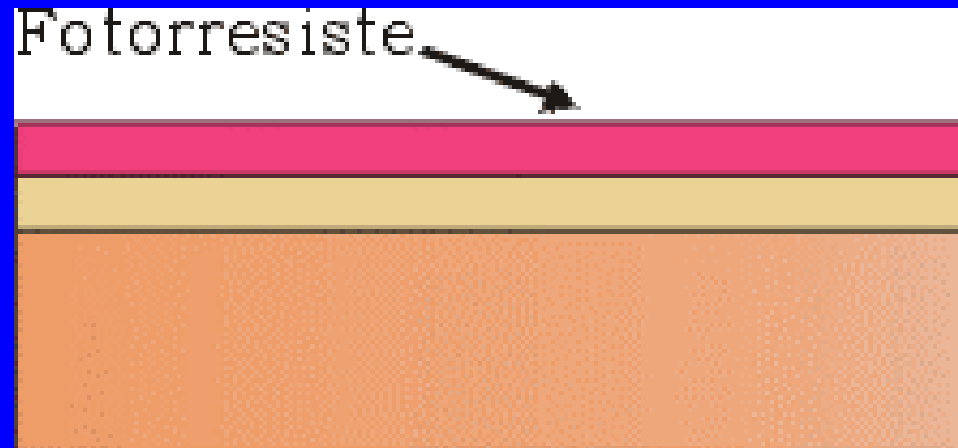
- Orientação (100)
- tipo:
 - p para nMOS
 - n para pMOS
- resistividade:
 - 4 a 9 Ω .cm para lâmina n
 - 11 a 22 Ω .cm para lâmina p
- Limpeza RCA completa.

Oxidação Inicial

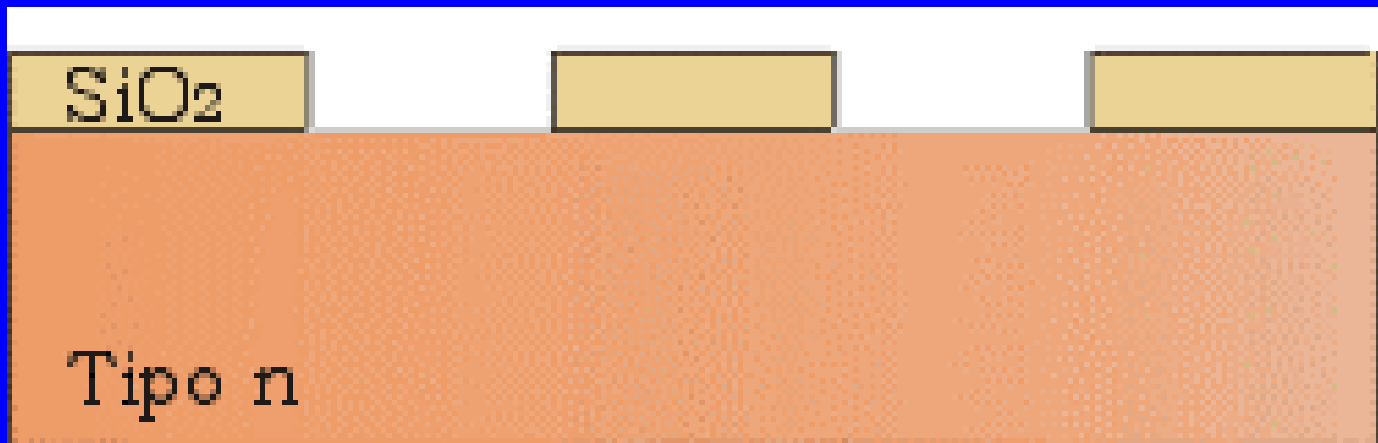
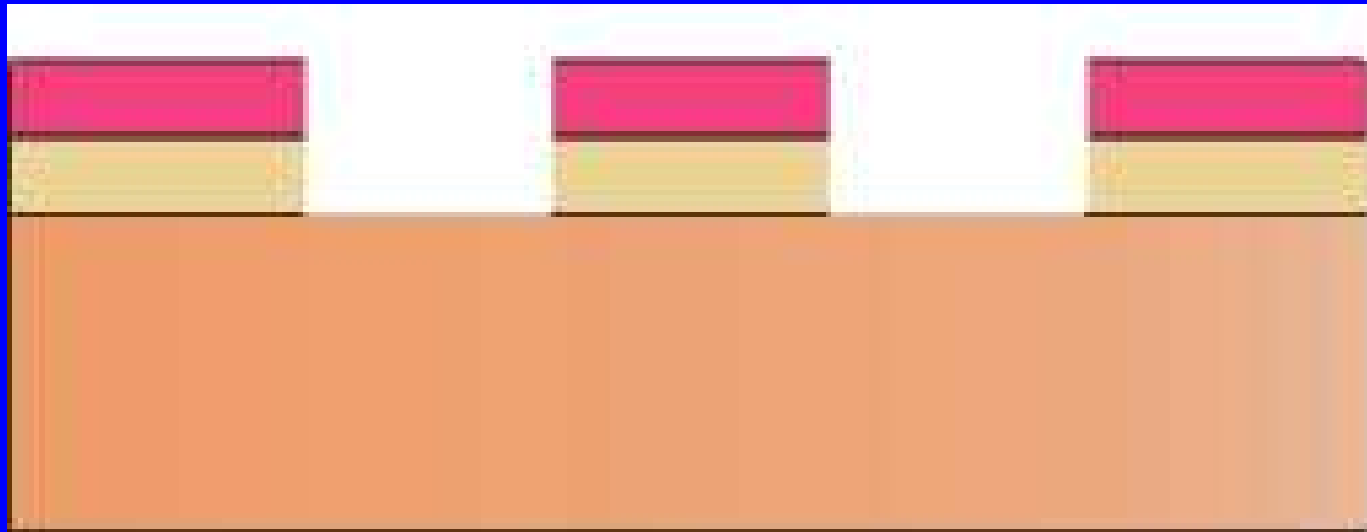
- 1000 °C
- H₂O + O₂
- 3h
- $X_{ox} = 0.7 \mu\text{m}$



Fotogravação de Fonte/Dreno

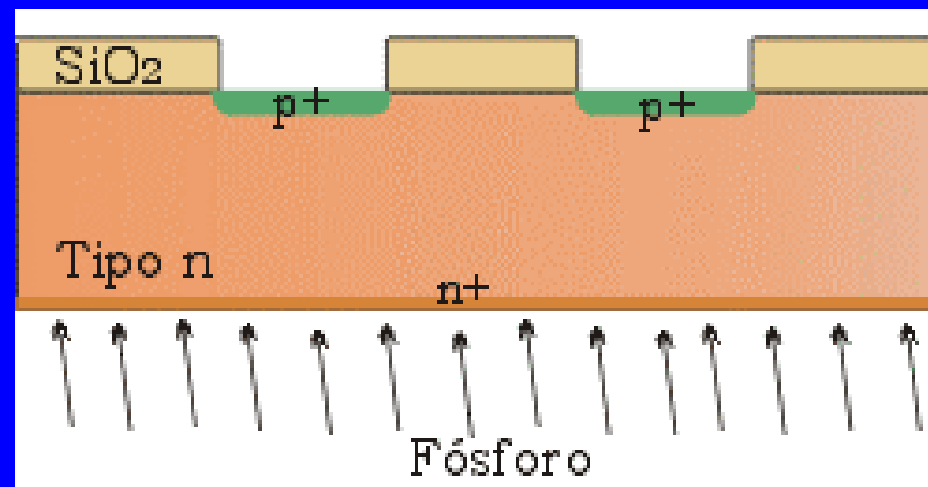
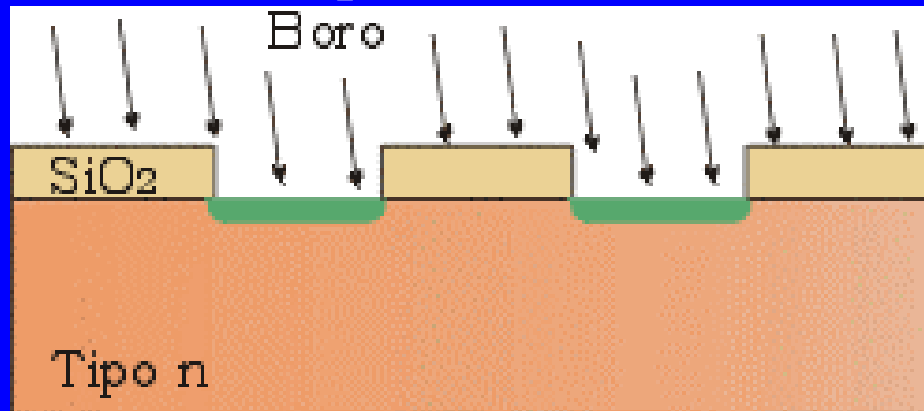


Etching Úmido do Óxido - Sol. HF e Remoção do Fotorresiste:



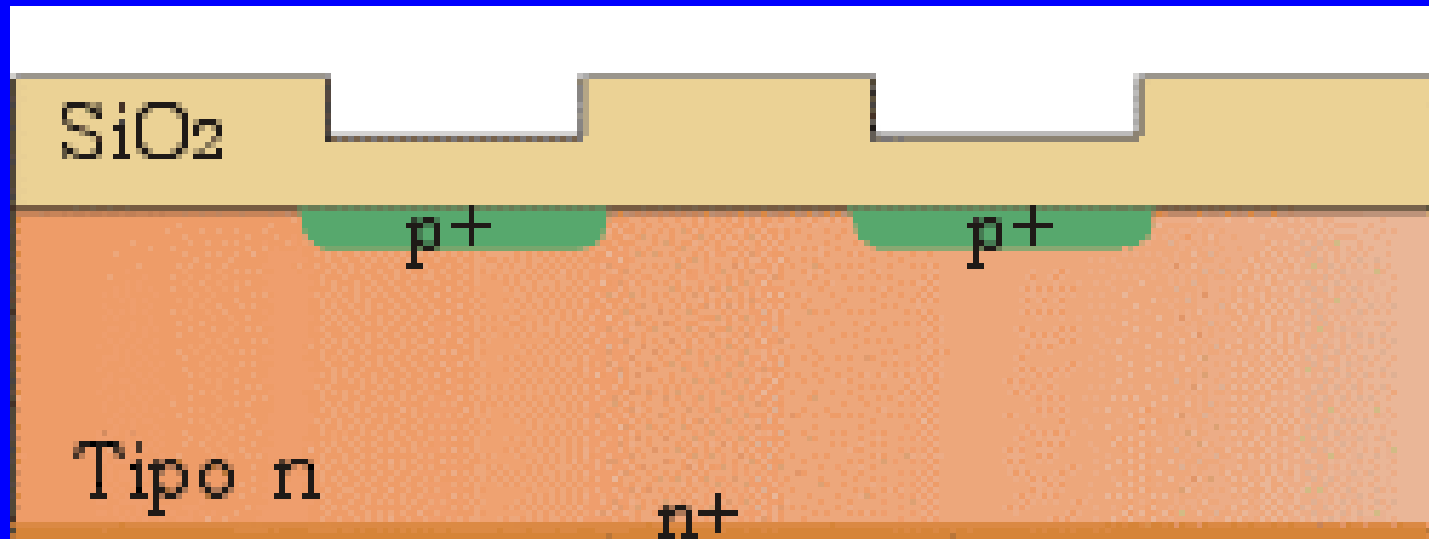
Implantação de Íons p/ Fonte/Dreno

- pMOS:
 - Boro para F/D
 - Fósforo para contato
- nMOS:
 - Fósforo para F/D

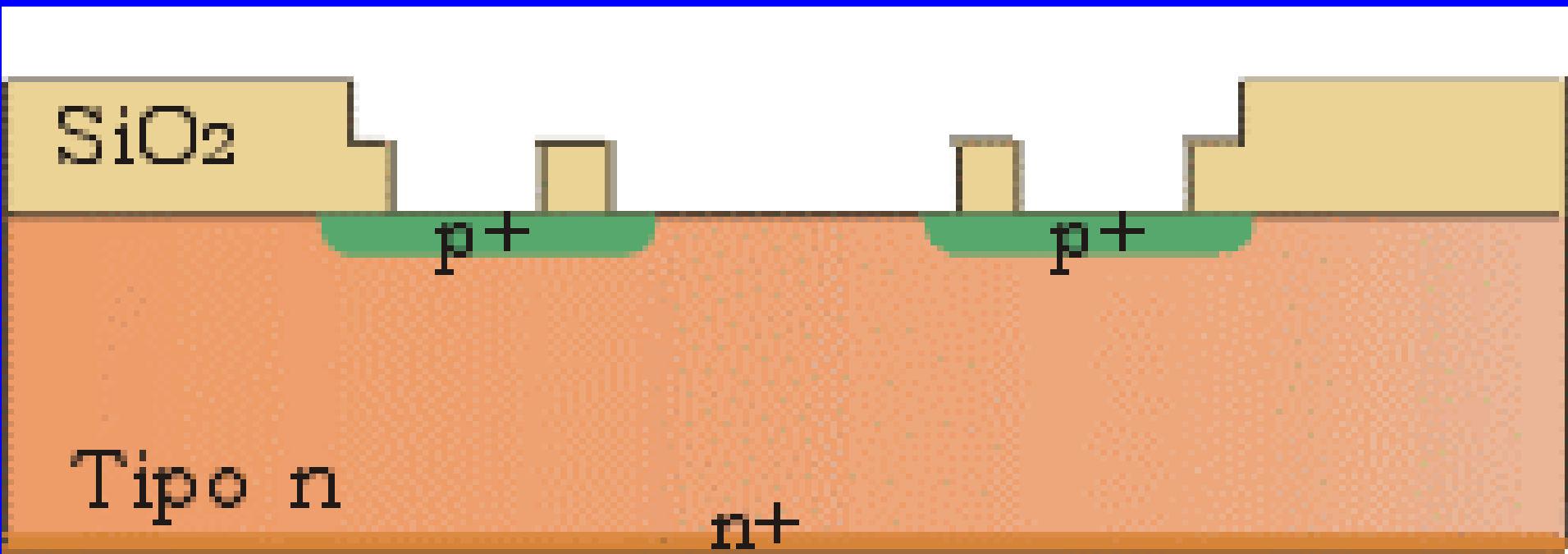


Recozimento e Oxidação

- 1000 °C
- N₂ - 20 min.
- O₂ + H₂O - 100 min.
- $X_{ox} = 0.94 \mu\text{m}$ e $0.54 \mu\text{m}$

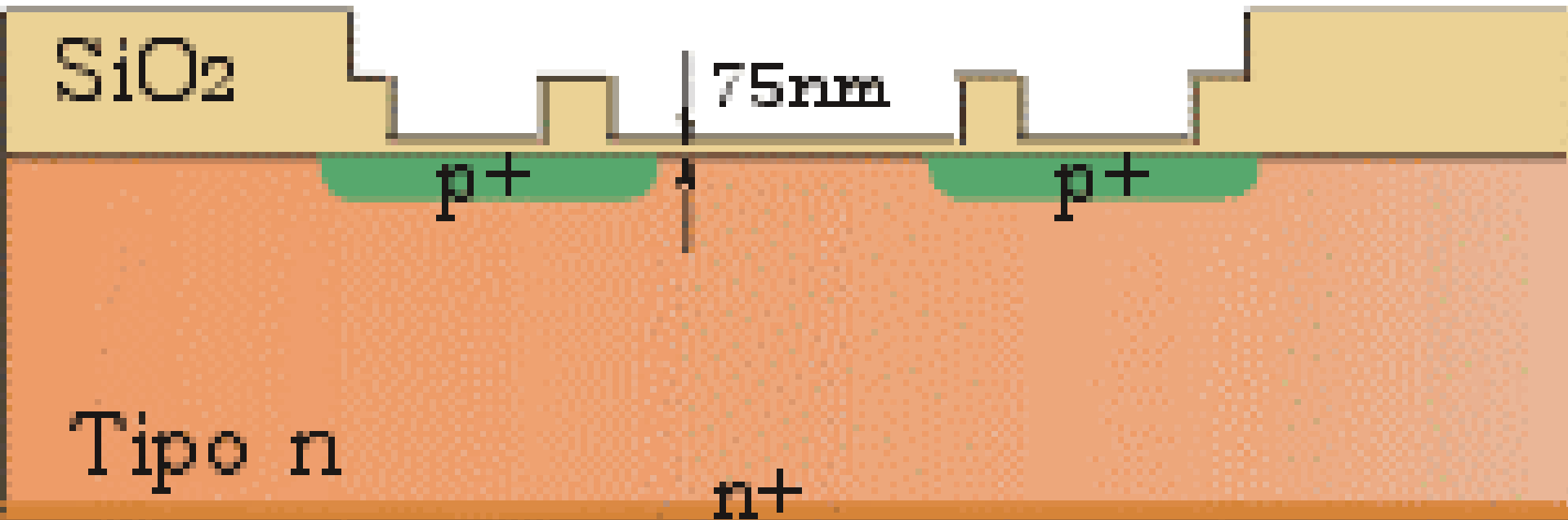


Fotogravação e Etching de Áreas de Canal e de Contatos Ôhmicos:

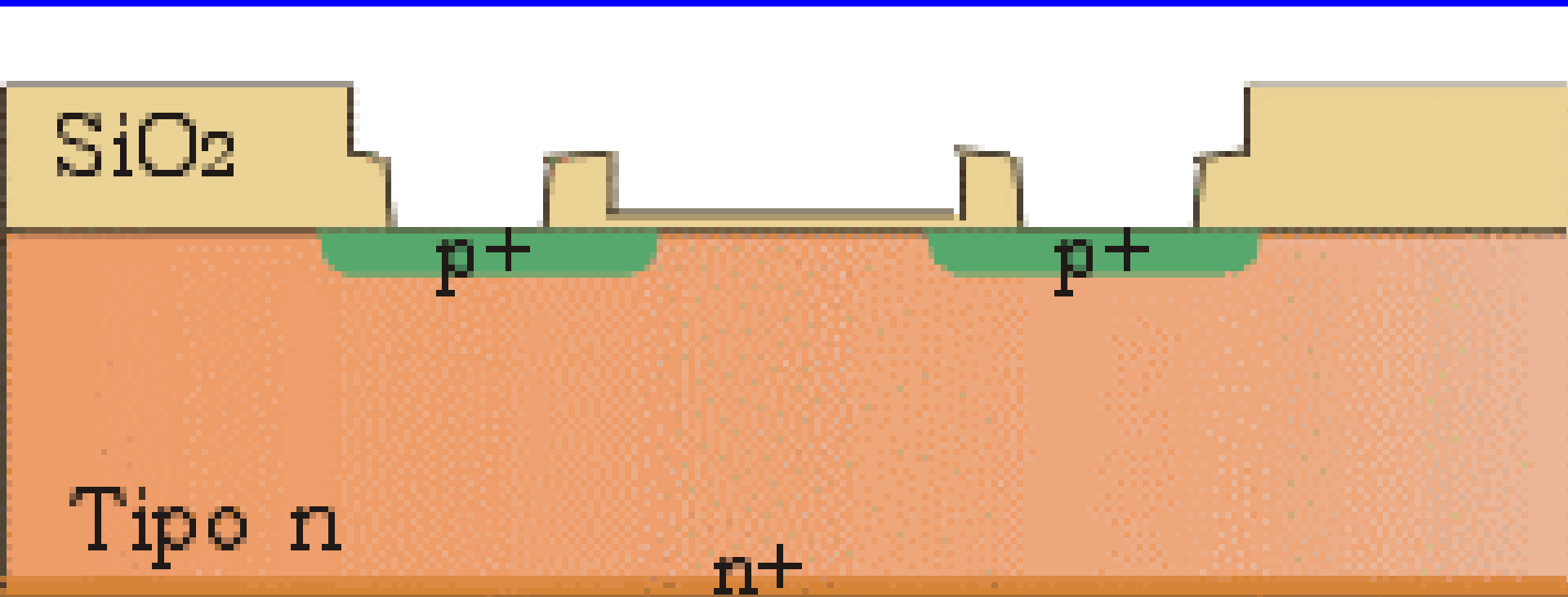


Oxidação de Porta

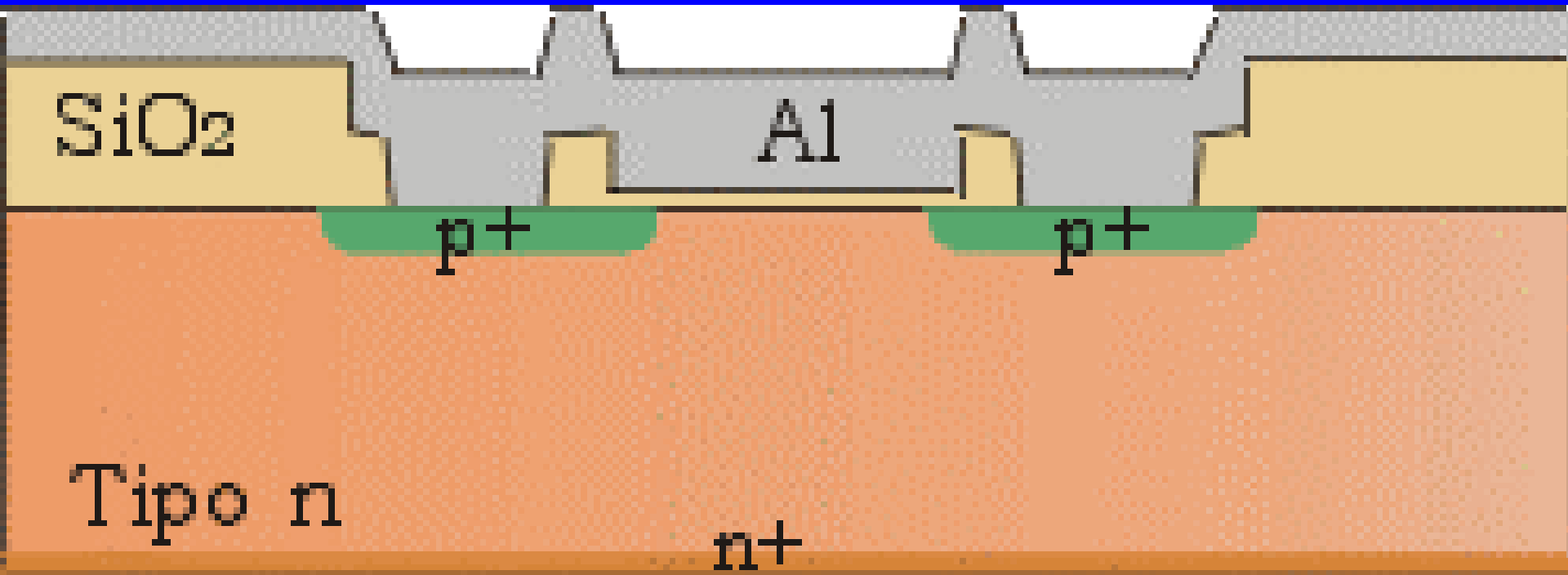
- 1000 °C,
- O₂ + 1% TCE - 30 min
- N₂ - 30 min
- $X_{ox} = 50$ nm



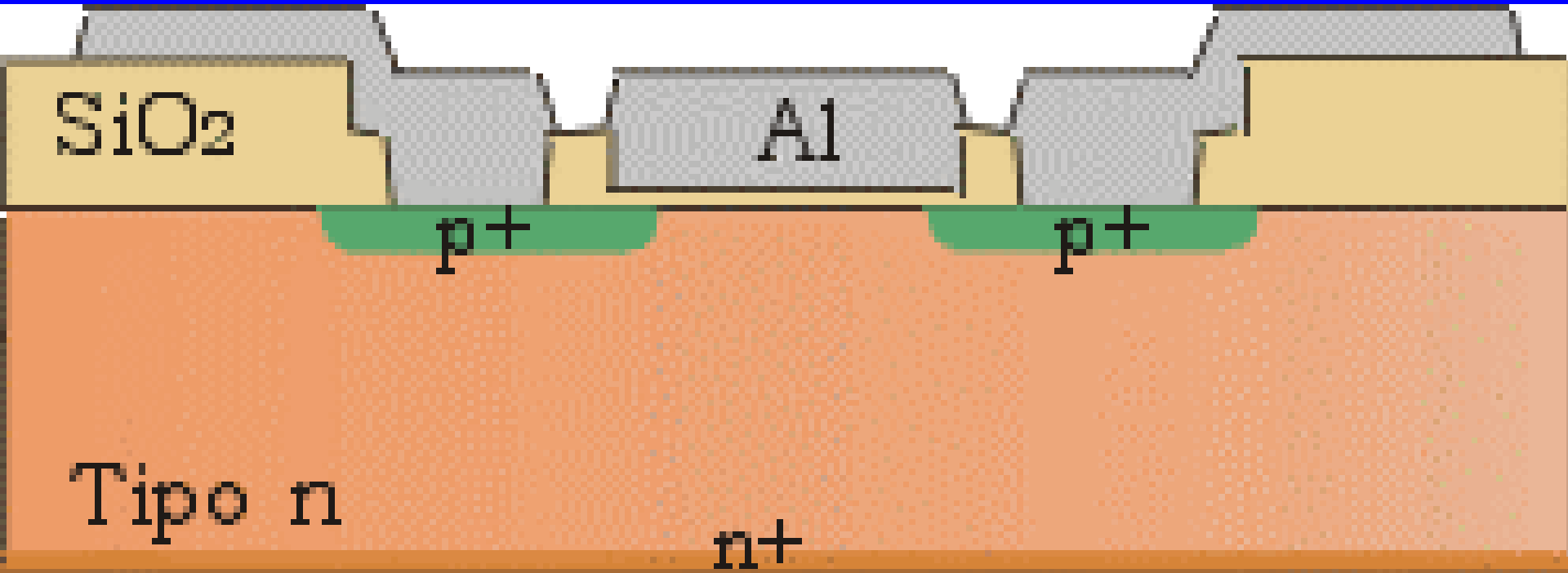
Fotogravação e Etching de Contatos:



Evaporação de Al



Fotogravação e Etching de Al: Porta, Contatos e Interconexões



Etapas Finais

- Metalizar as costas da Lâmina
- Sinterização dos Contatos
 - 450 °C
 - N₂ + H₂
 - 30 min.
- Medidas Elétricas e Boa Sorte!!!!
- Relatório