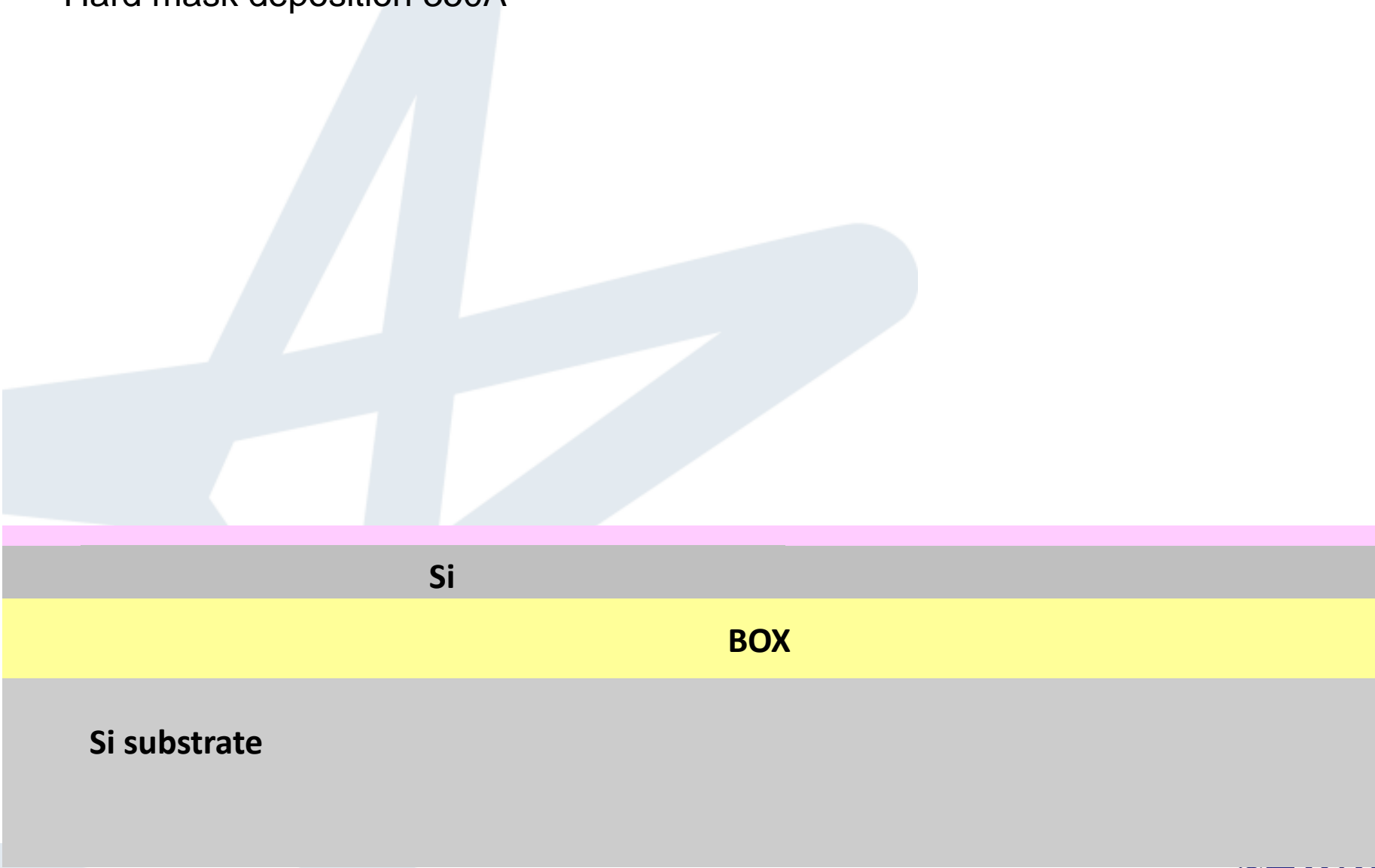




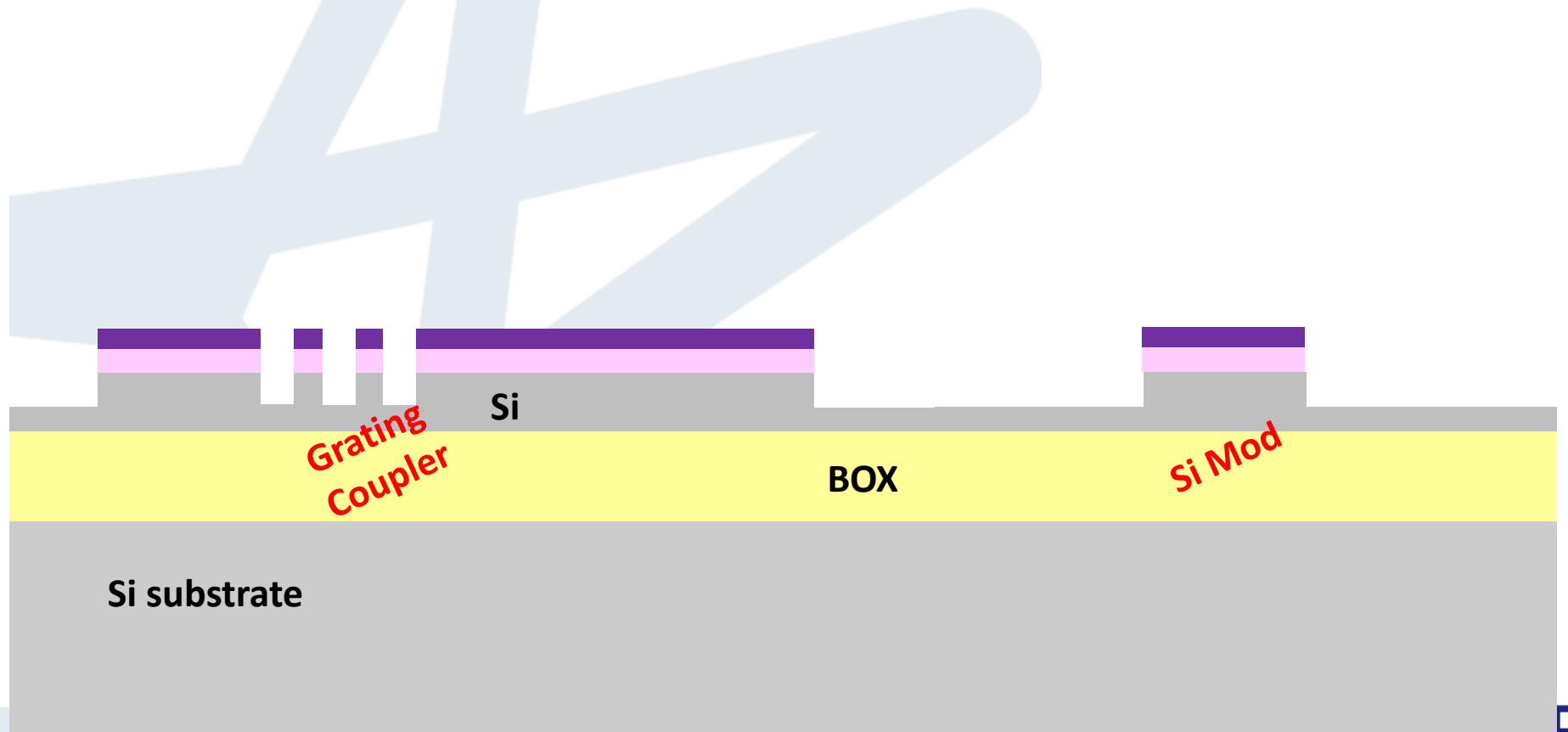
IME Baseline Silicon Photonics Platform

Andy Lim
23 Oct 2012

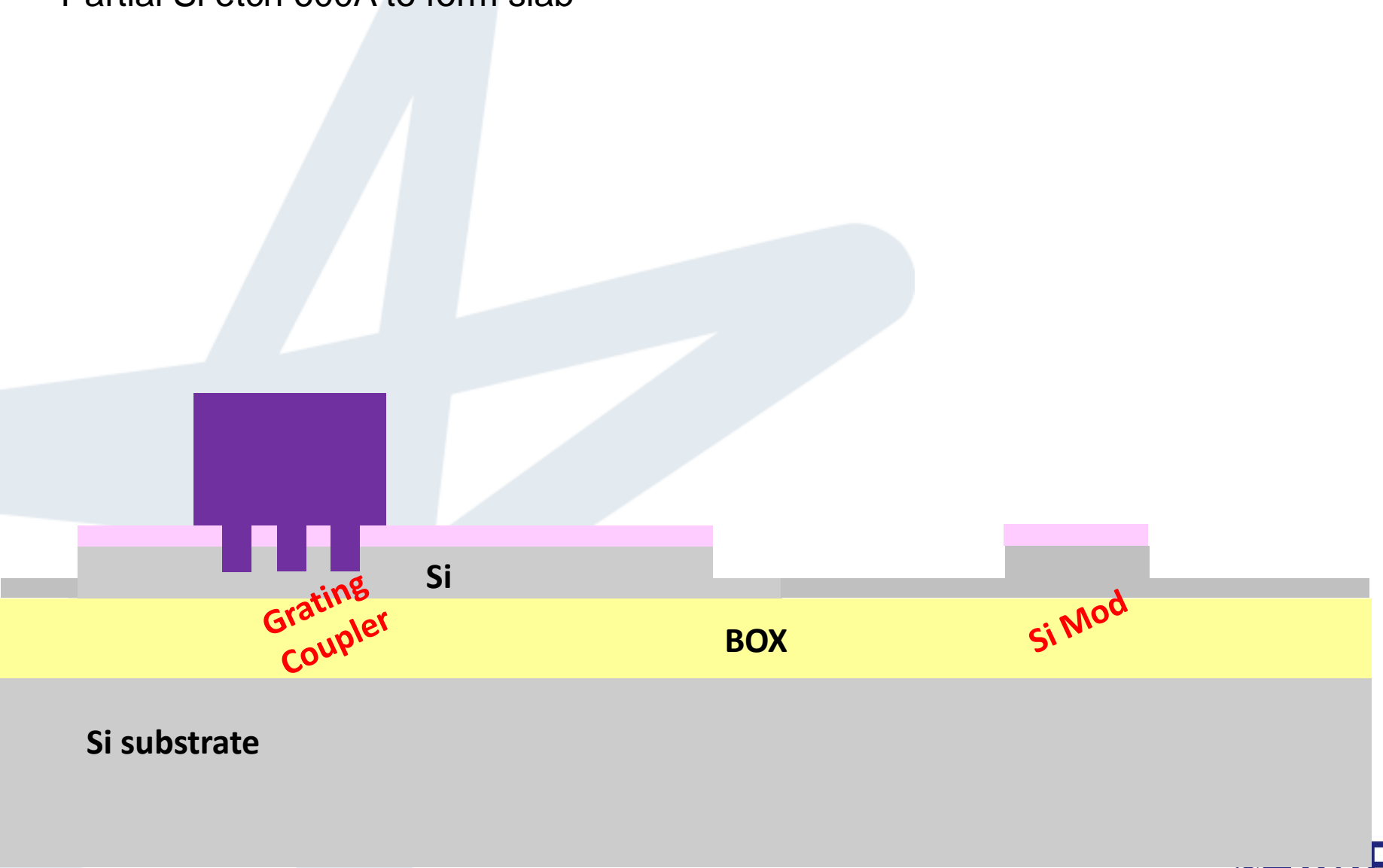
- Hard mask deposition 350A



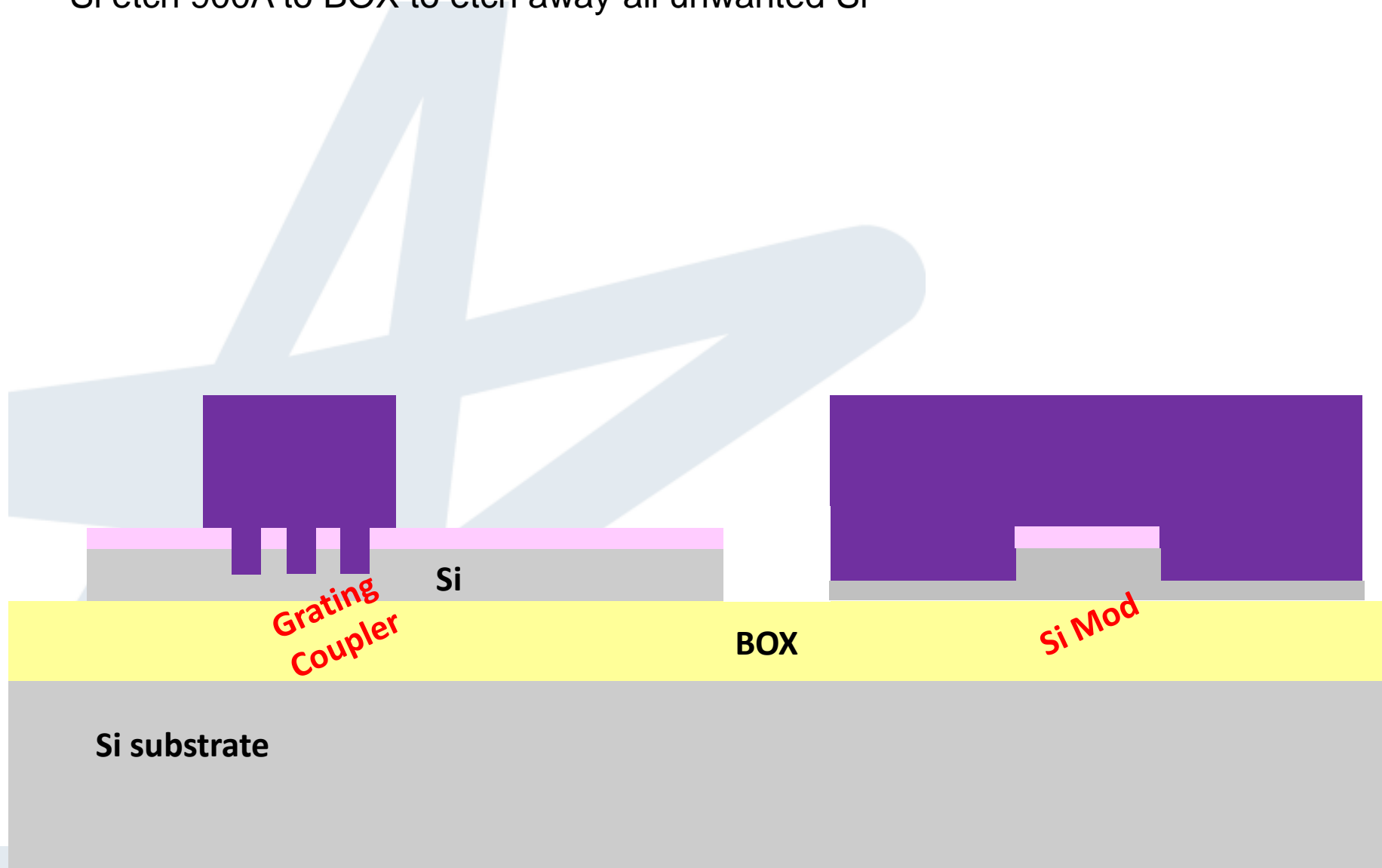
- Hard mask etch 350A
- Partial Si etch 700A to form grating



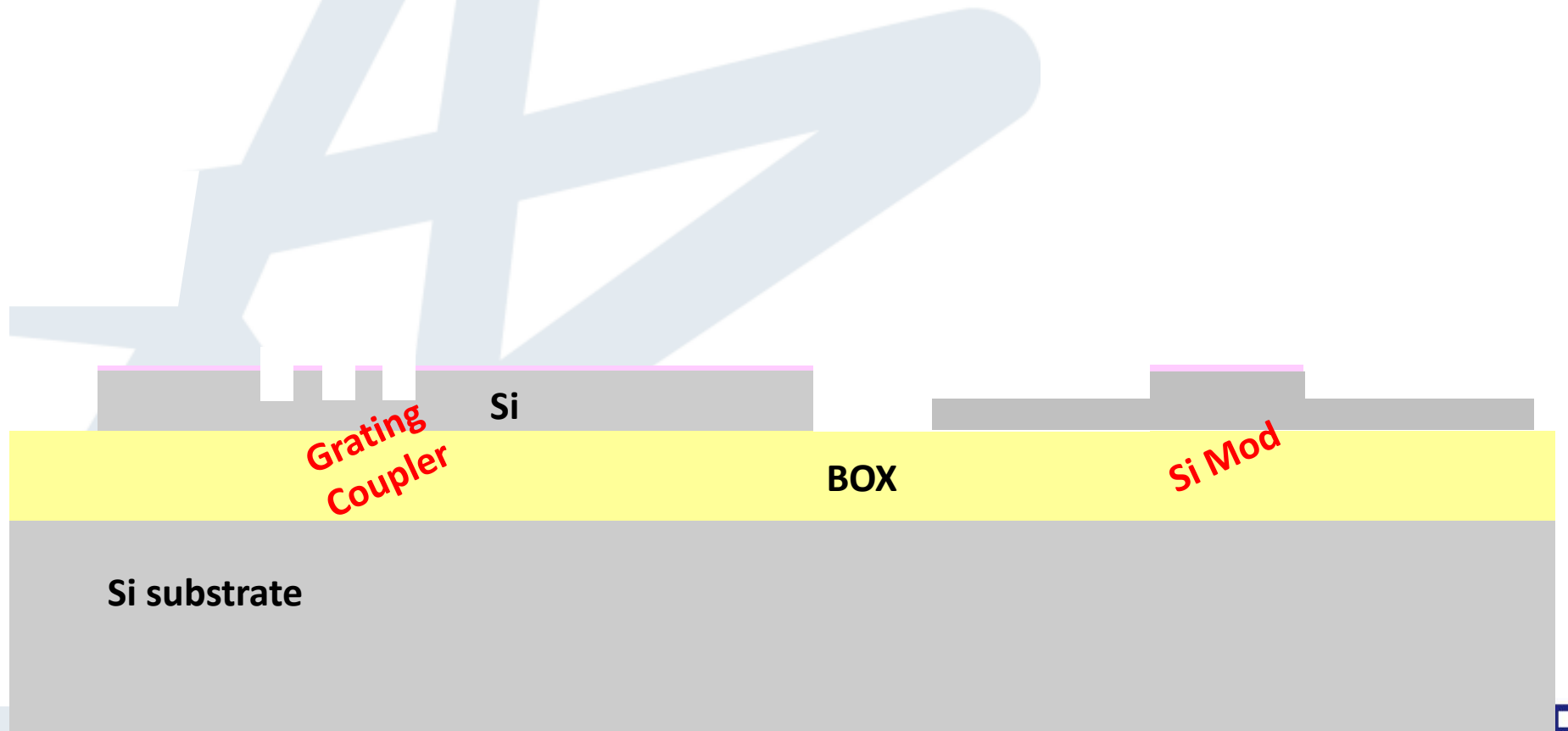
- Partial Si etch 600A to form slab



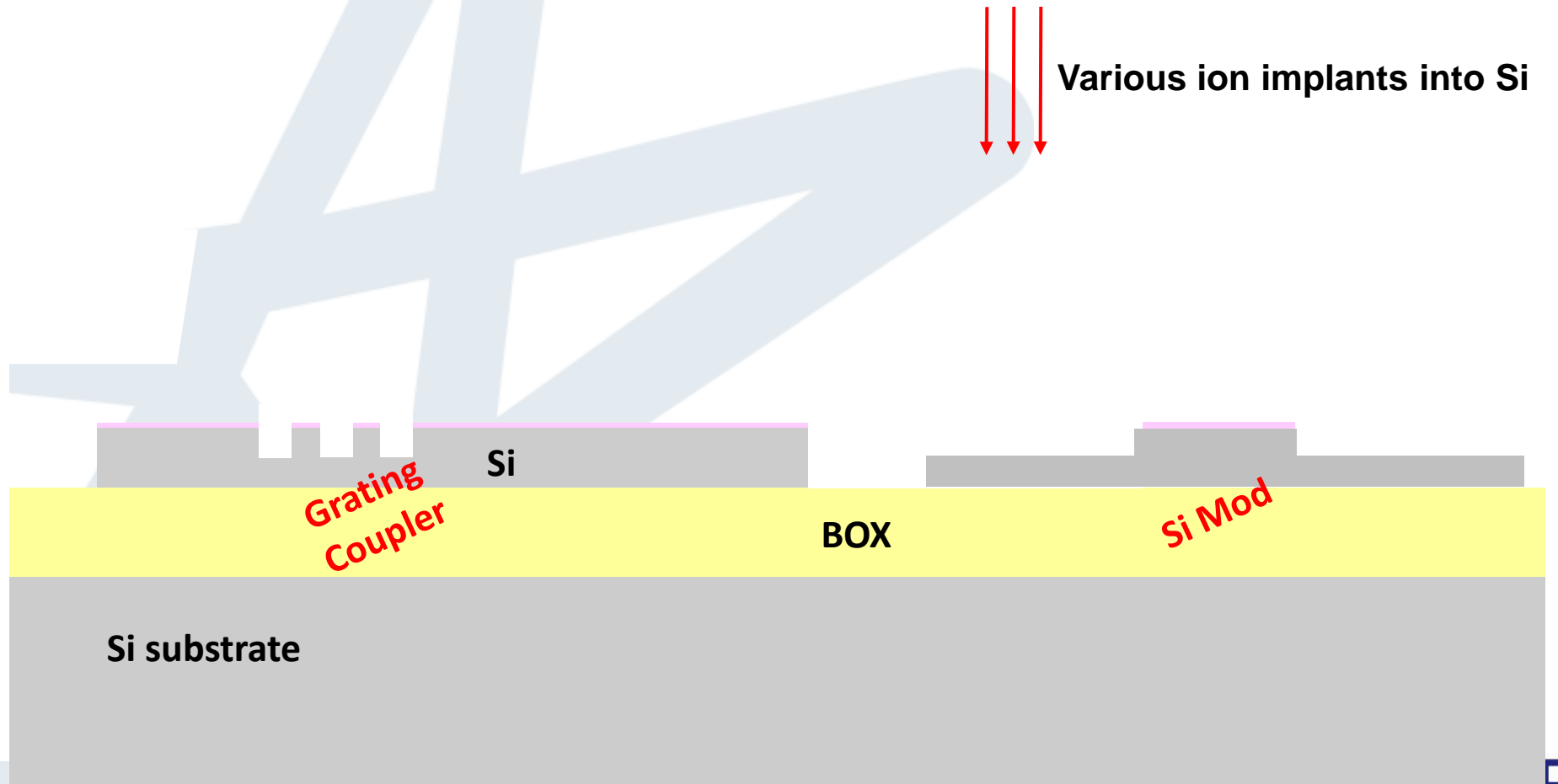
- Si etch 900A to BOX to etch away all unwanted Si



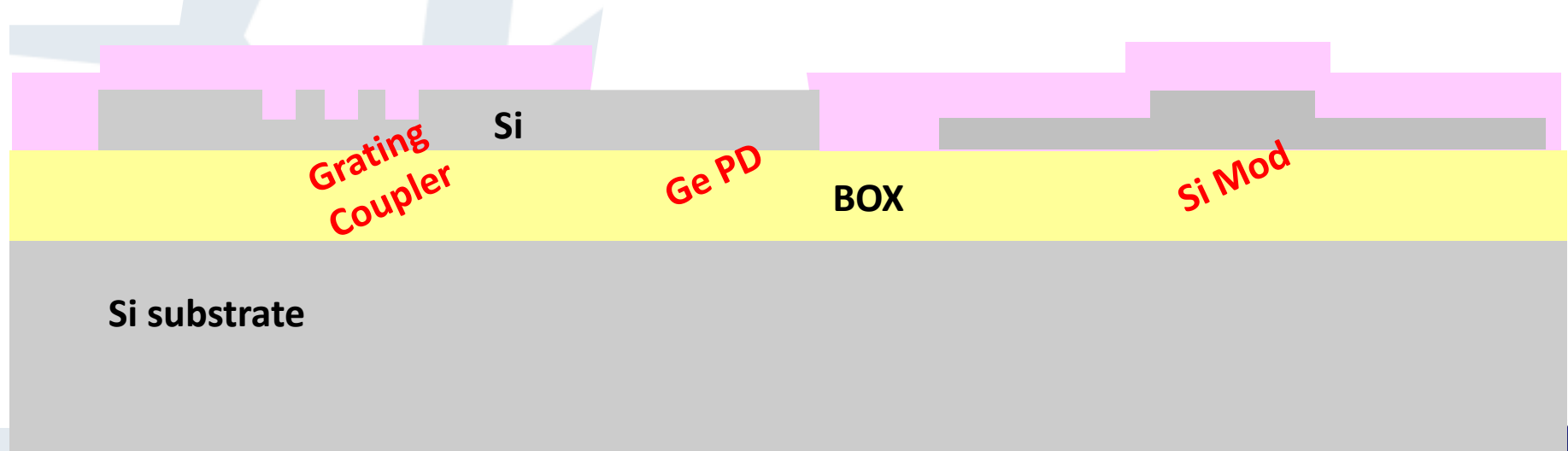
- HM oxide strip
- Deposition of 100A pad oxide



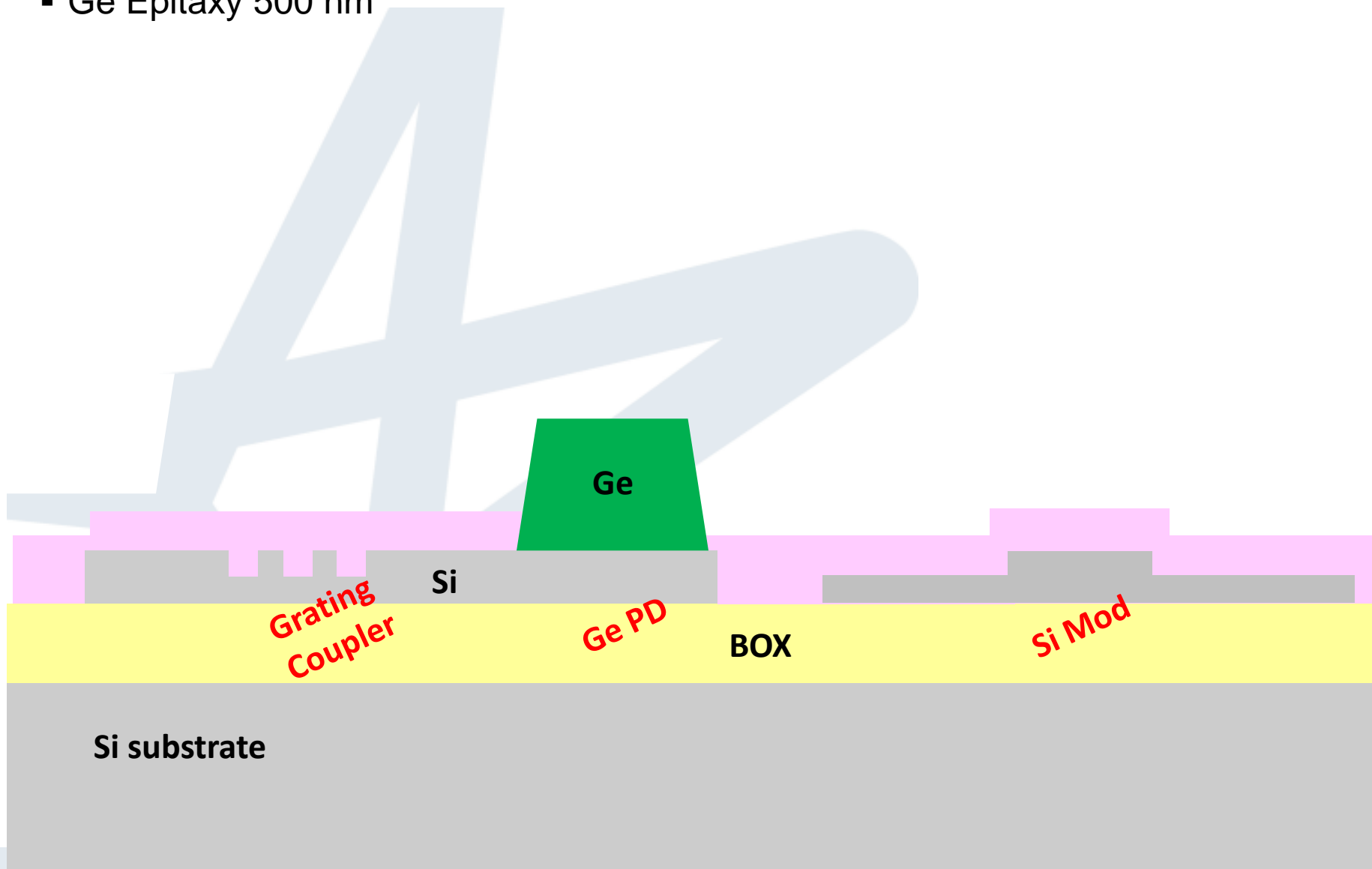
- Hard mask strip
- PD and MOD implants
- RTA 1030C 5s for implant activation
- Strip 100A pad oxide



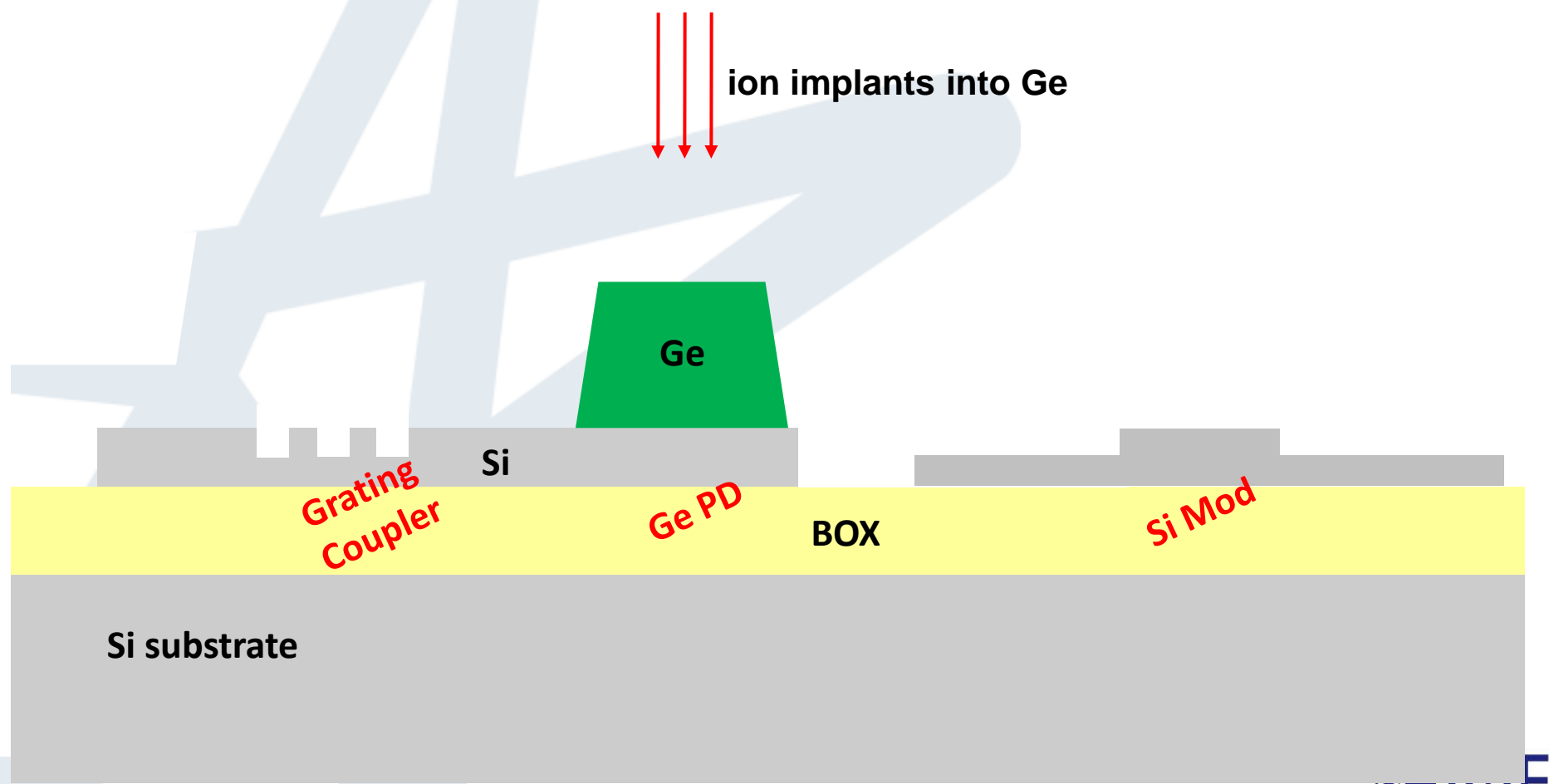
- Deposit 1kÅ oxide
- Epi oxide window etch (dry + wet etch)



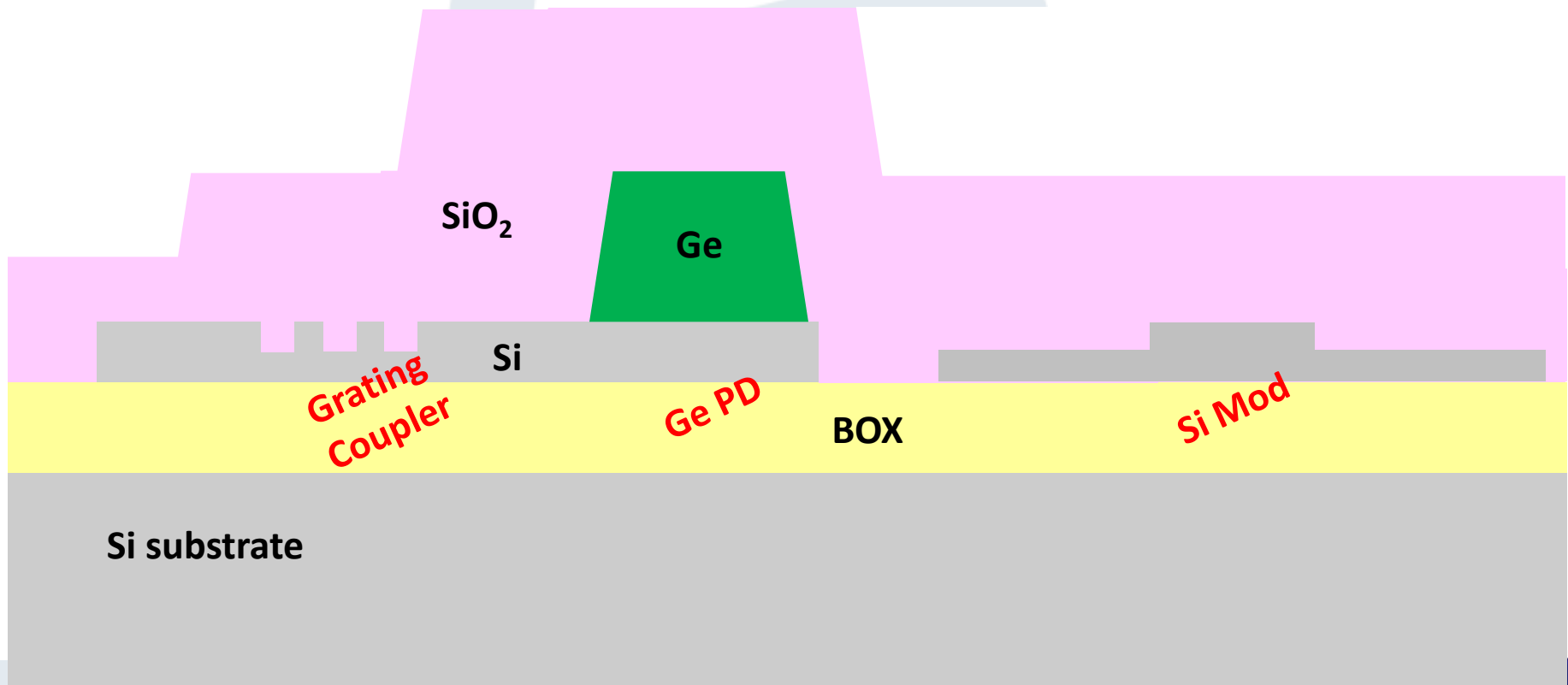
- Ge Epitaxy 500 nm



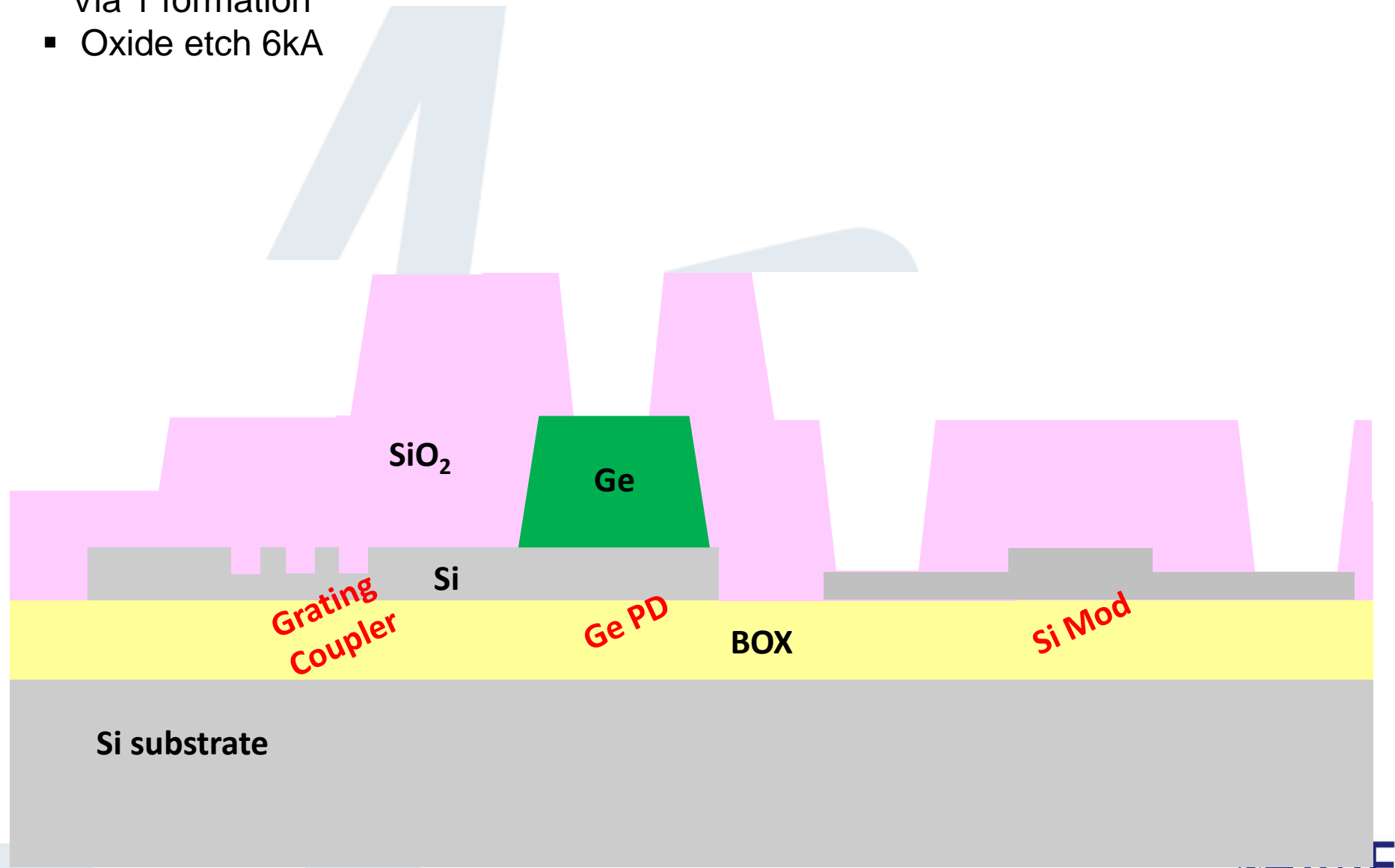
- Epi oxide window strip
- Ge top implant
- Anneal 500C 5min for implant activation



- Oxide deposition 6kA for ILD1

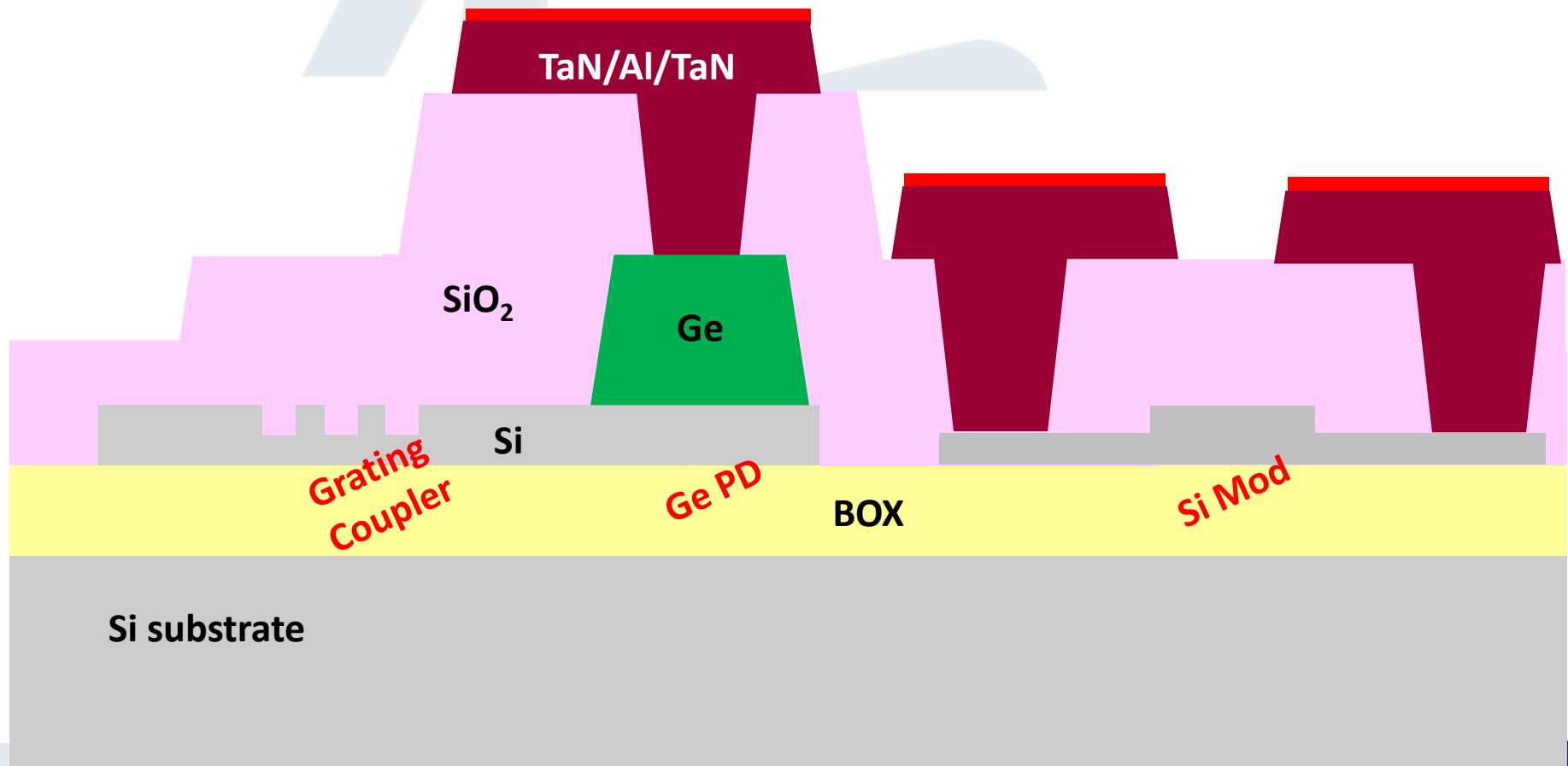


- Via 1 formation
- Oxide etch 6kA

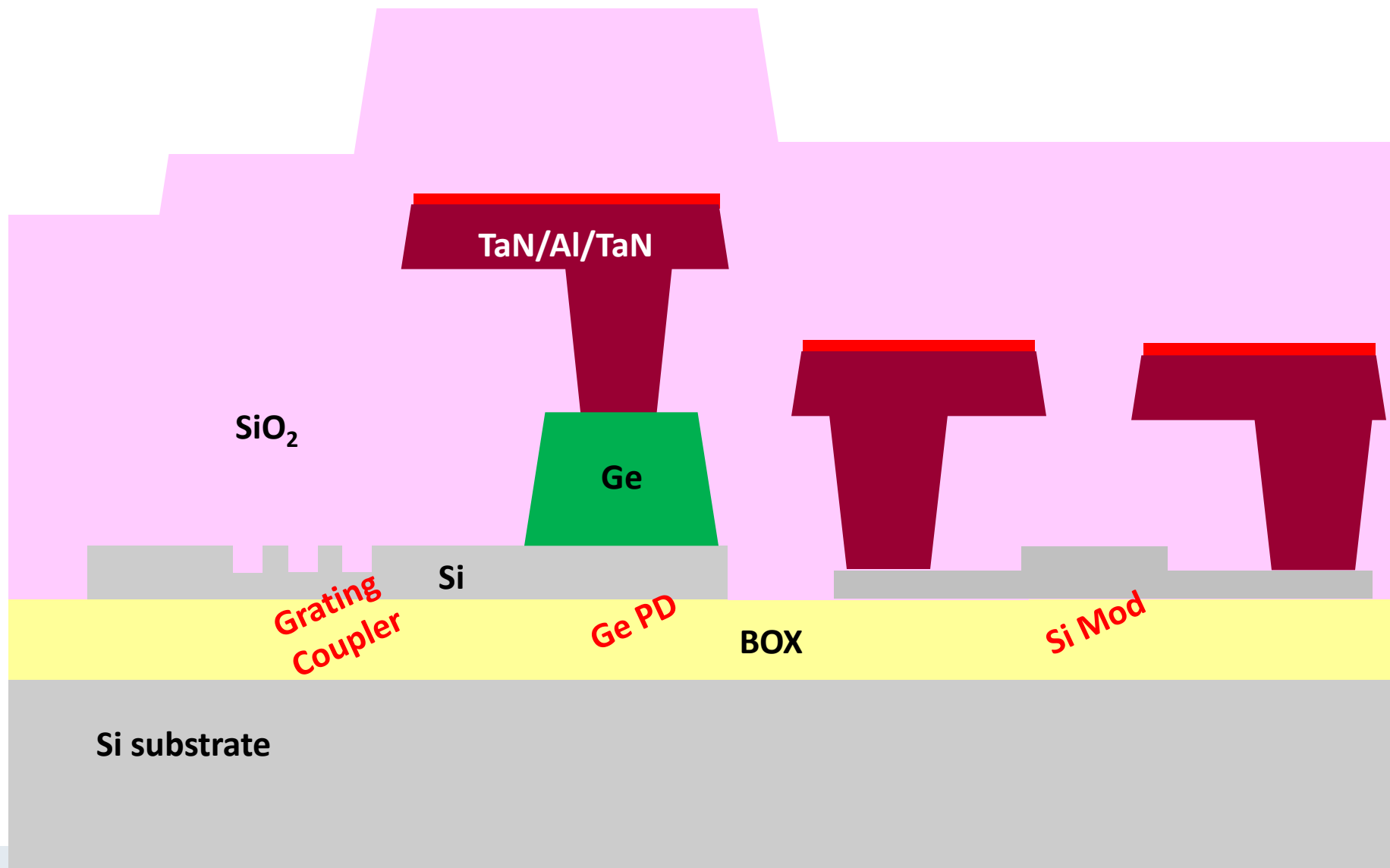


Metal 1 formation

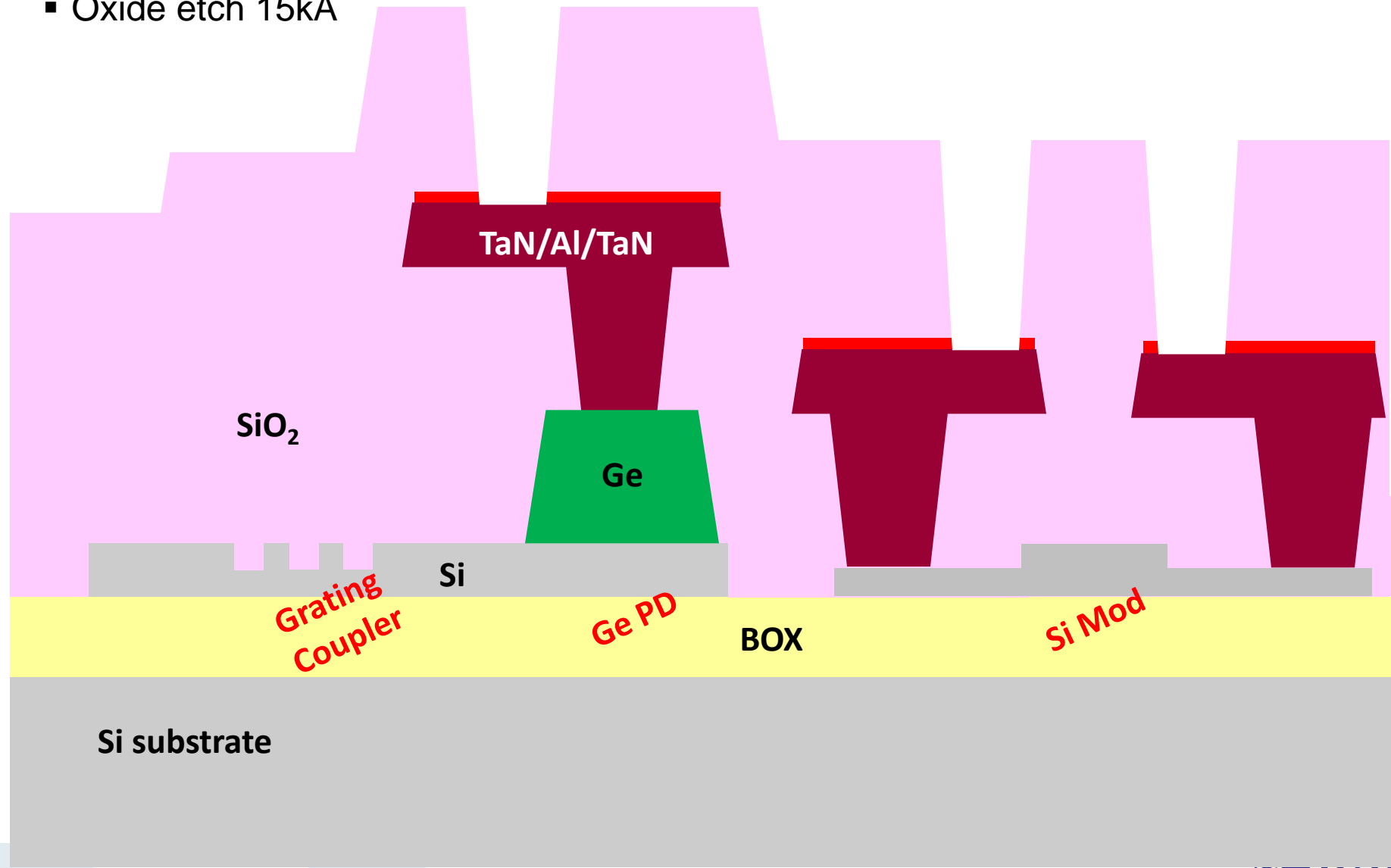
- TaN/Al/TaN, 500Å/7.5kÅ /250Å (bottom) deposition and etch



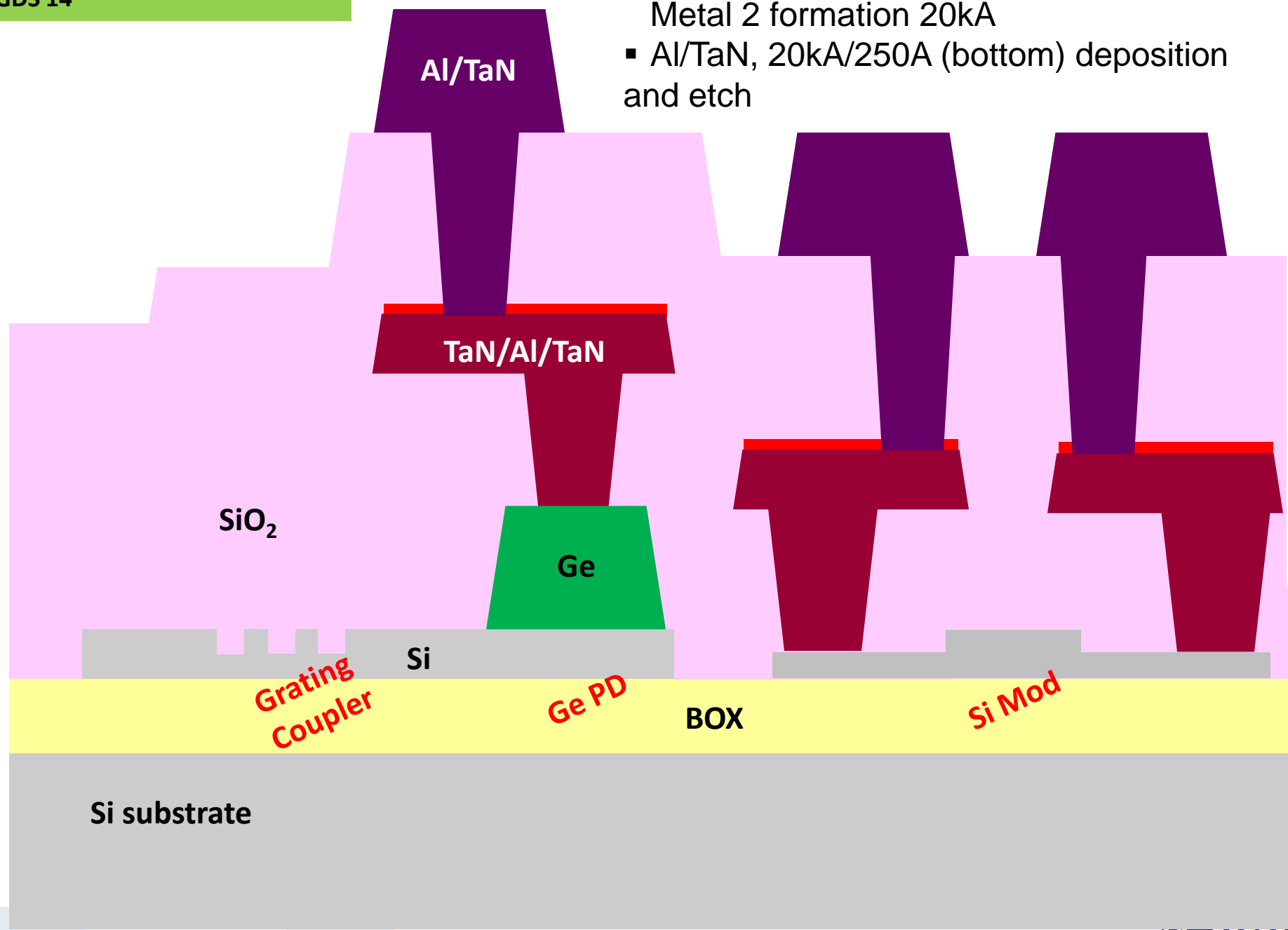
- Oxide deposition 15kA

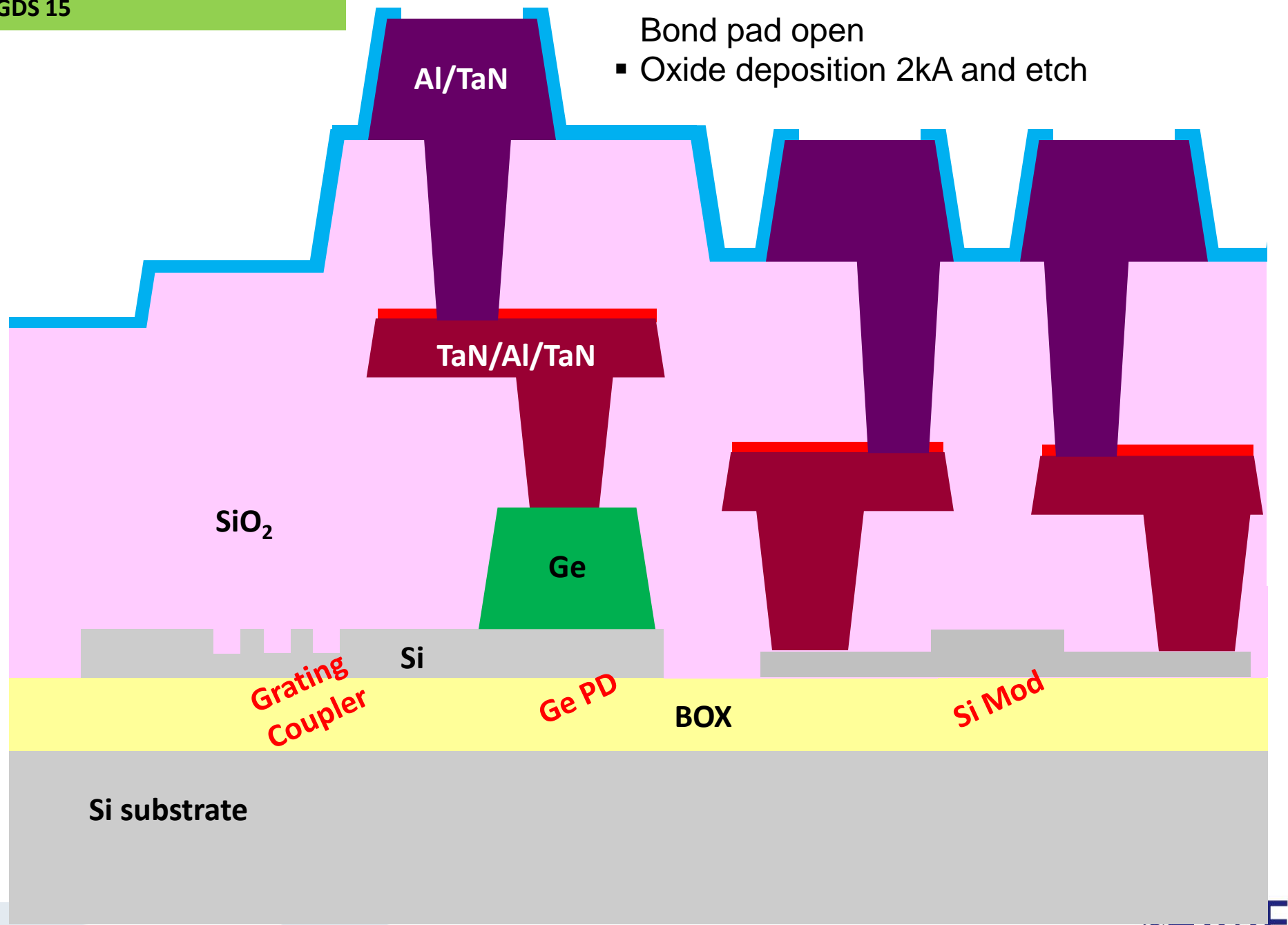


- Via 2 formation
- Oxide etch 15kA



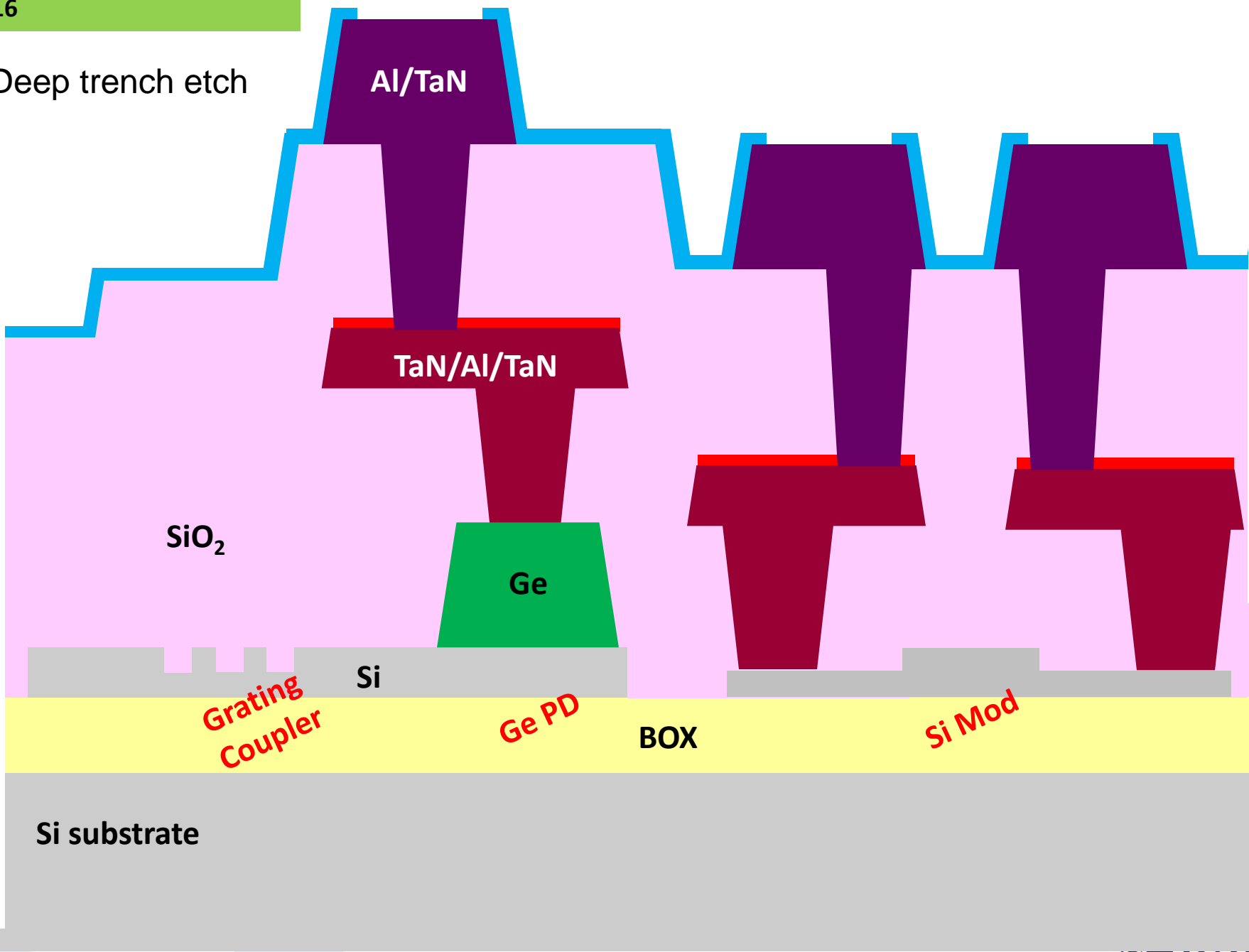
Metal 2 formation 20kA
▪ Al/TaN, 20kA/250A (bottom) deposition and etch

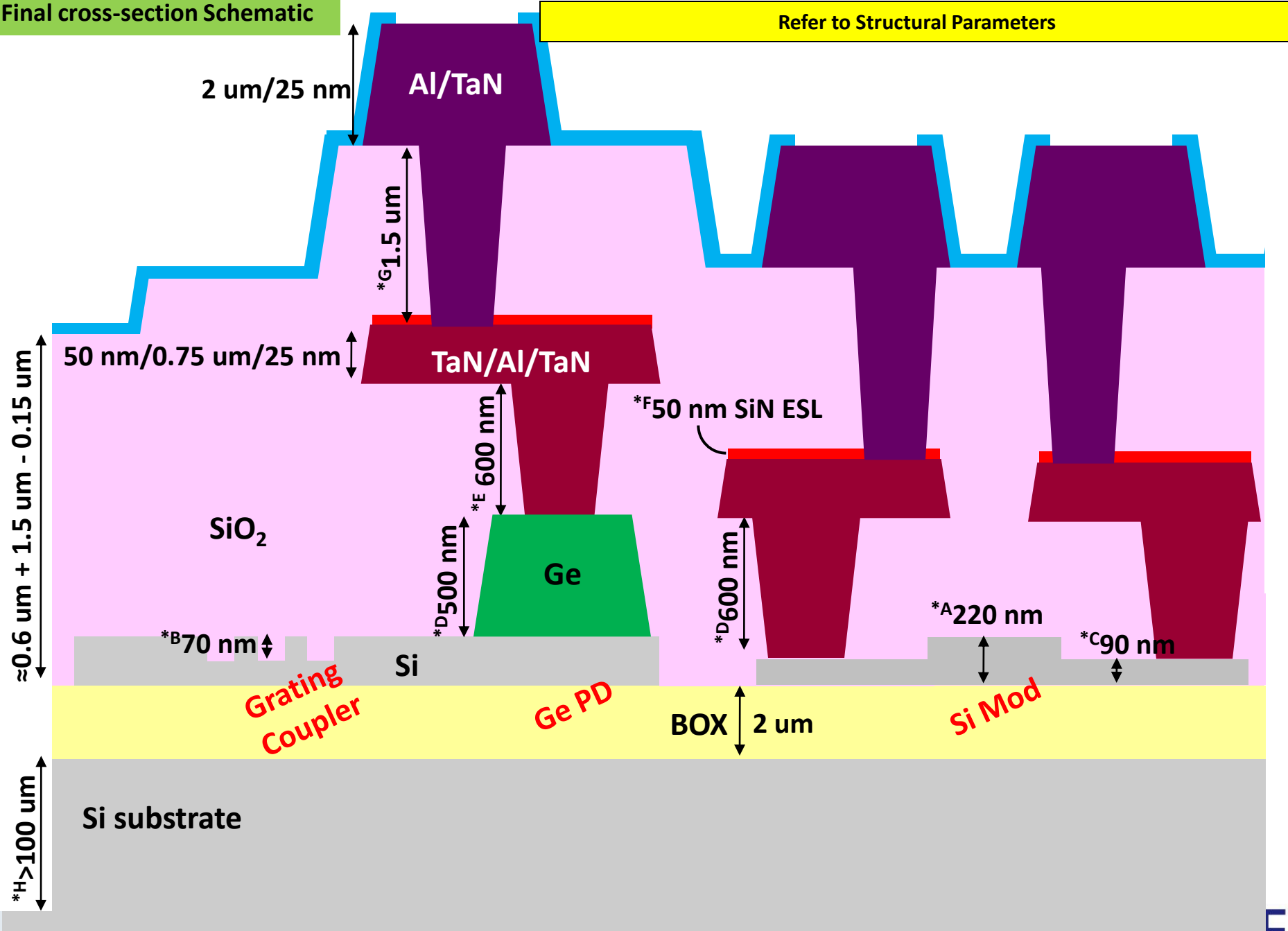




Bond pad open
▪ Oxide deposition 2kA and etch

- Deep trench etch





| Structural Parameters | | |
|------------------------------|--|--------------|
| Identifier | Description | Value |
| *A | SOI Thickness (nm) | 220 |
| *B | Si Partial Etch Depth (nm) | 70 |
| *C | Slab Thickness (nm) | 90 |
| *D | Epi Ge Thickness (nm) | 500 |
| *E | ILD-0 Thickness (μm) | 0.6 |
| *F | SiN ESL for Via 2 (nm) | 50 |
| *G | ILD-1 Thickness (μm) | 1.5 |
| *H | Deep Si Trench Depth (μm) | >100 |