

PIII Standard Recipe for Phosphorus and Boron Ion Implant:

- Process Pressure = 1.0e-01 mbar
- Power = 1000W
- Substrate Bias = -2kV
- Implantation Duration = 30sec
- Frequency = 5kHz
- $V_{pp} = 4V$
- Pulse Width = 20 μ s
- Duty Cycle = 10%
- Gas Flow = 20sccm

SIMS of P-implant in Si and Ge (as-implanted): 15-20nm implantation depth (for both Si and Ge).

SIMS of B-implant in Si and Ge (as-implanted): 15-20nm implantation depth for Si and 60nm for Ge.

Atomic Concentration measured from SIMS profiles is $1 \text{ E } 19\text{cm}^{-3}$ (approx.) for both B and P implant.

For activating the dopants: Anneal Si @950°C for 10sec and Ge @600°C for 30s in N₂ ambient.

Measure Resistivity and Sheet Resistance before and after implant.