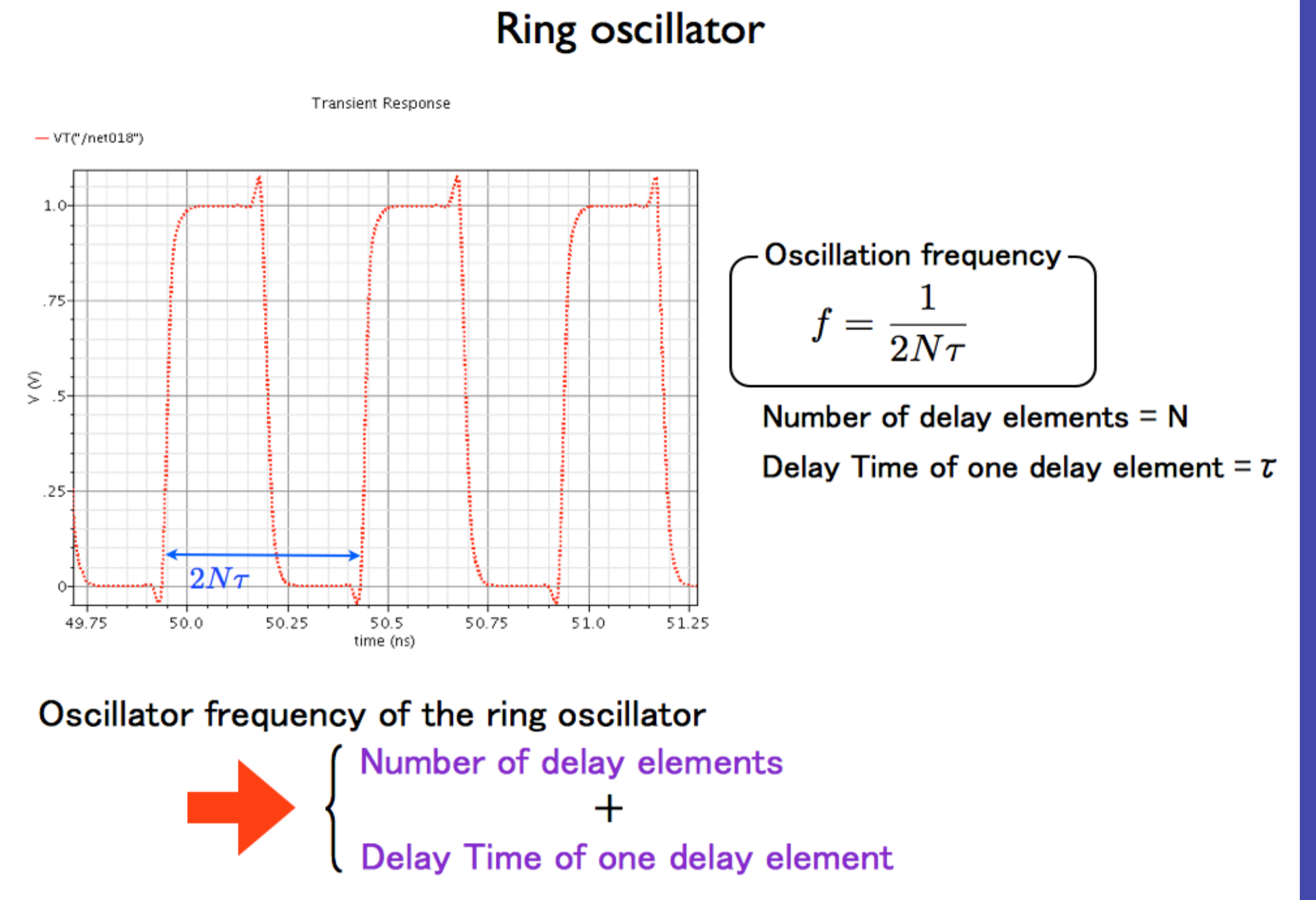
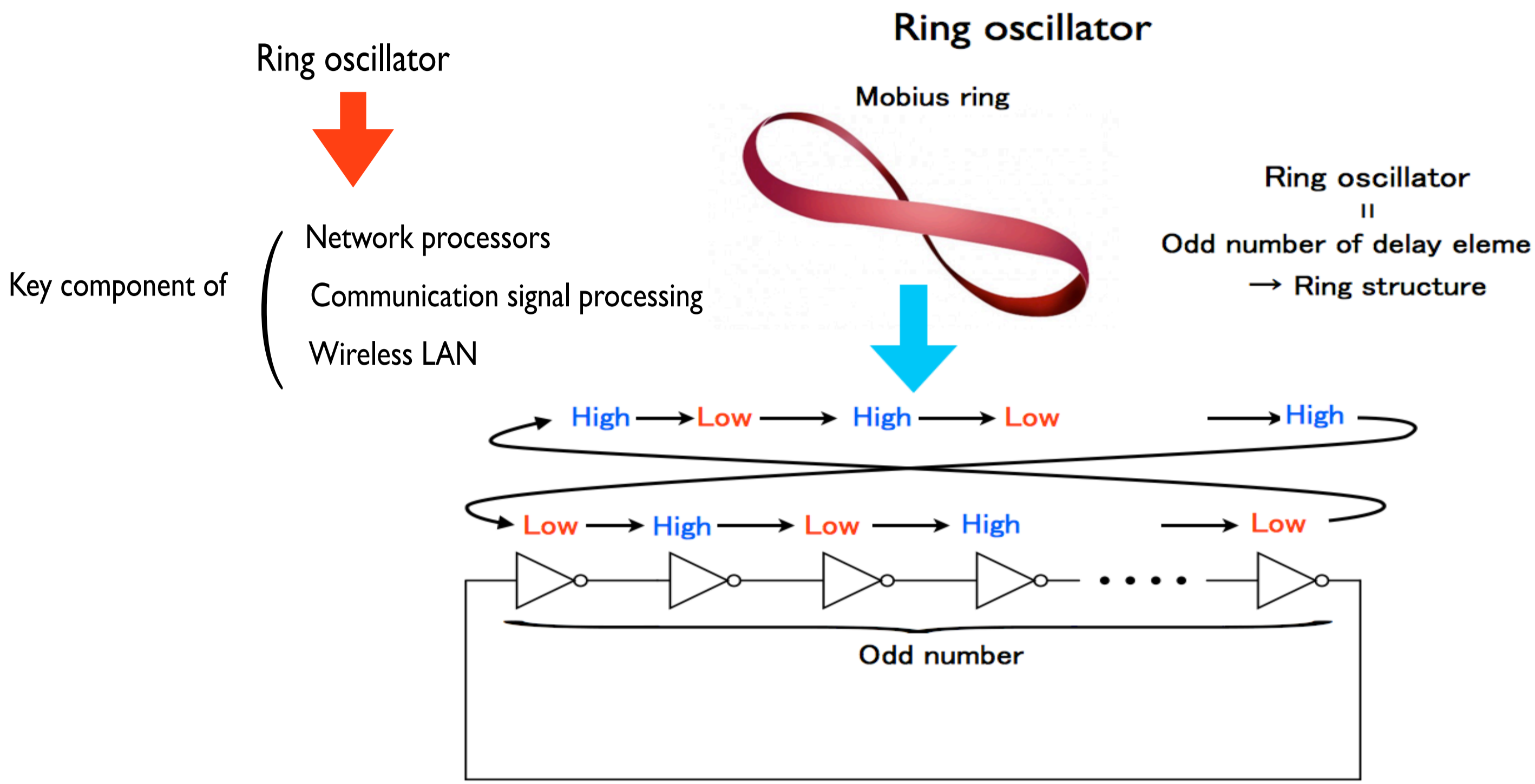


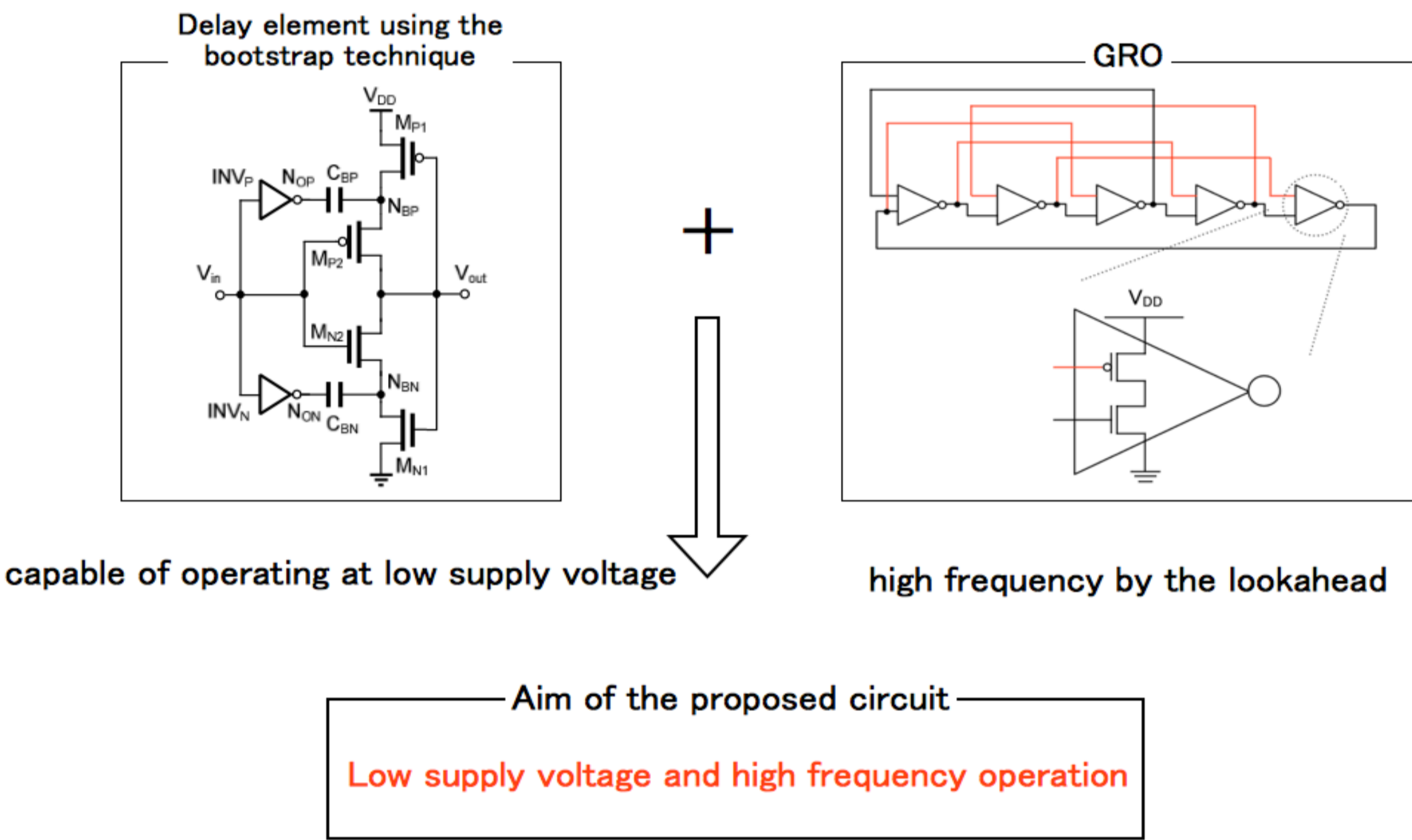
P60 Low-Voltage High-Frequency Gate Ring Oscillator Using Bootstrap Technique

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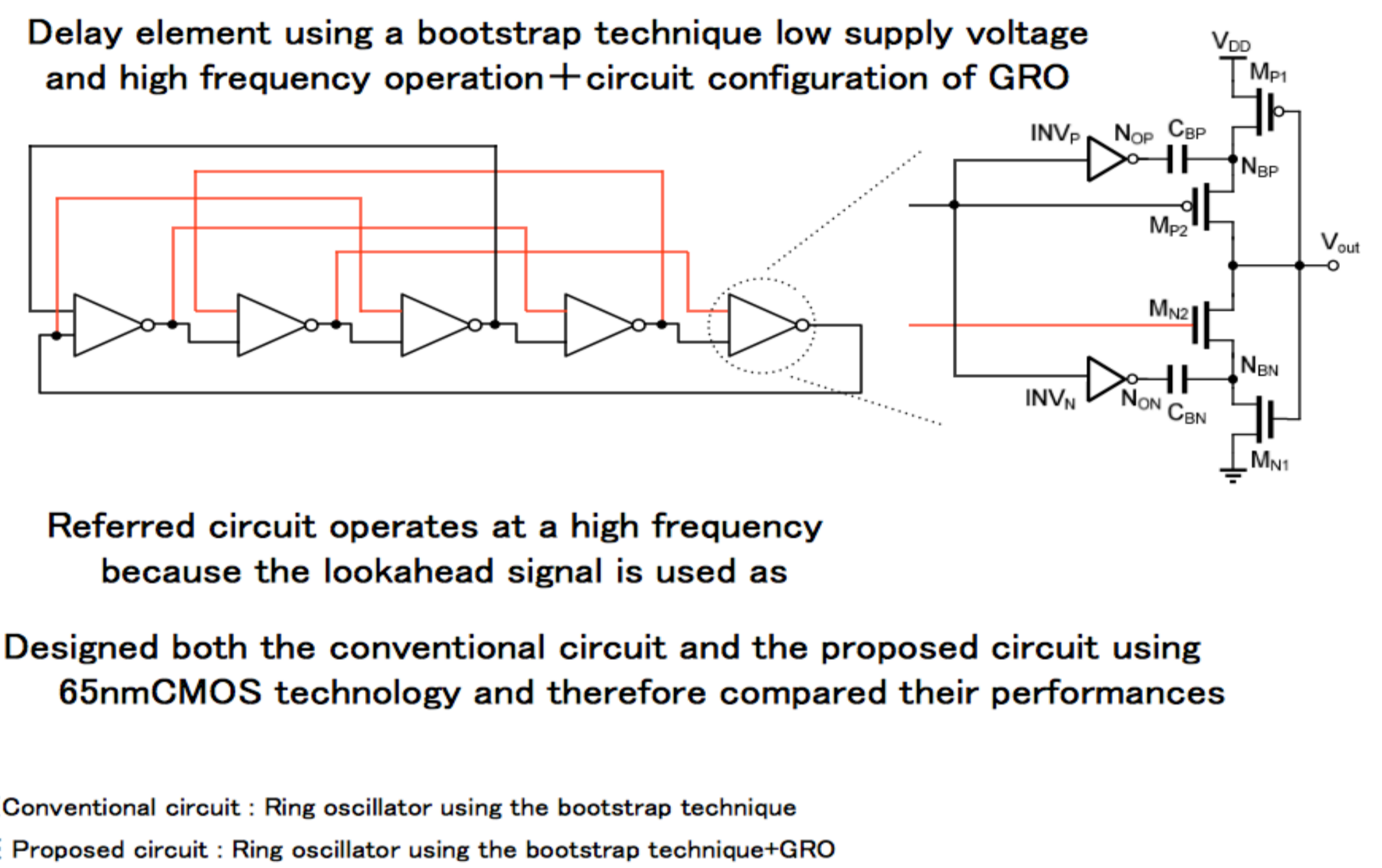
Ring oscillator



Application of GRO in ring oscillator using the bootstrap technique



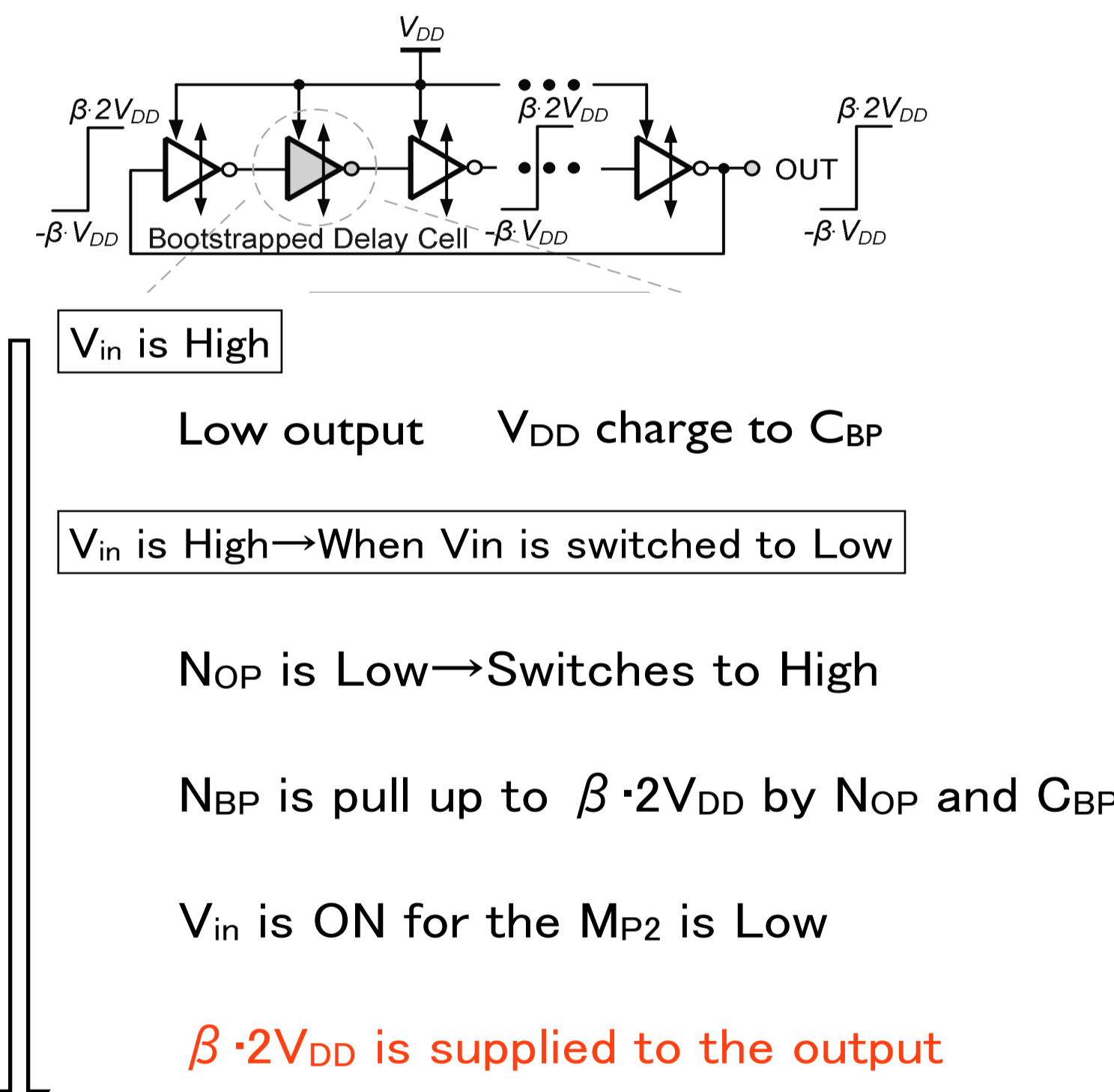
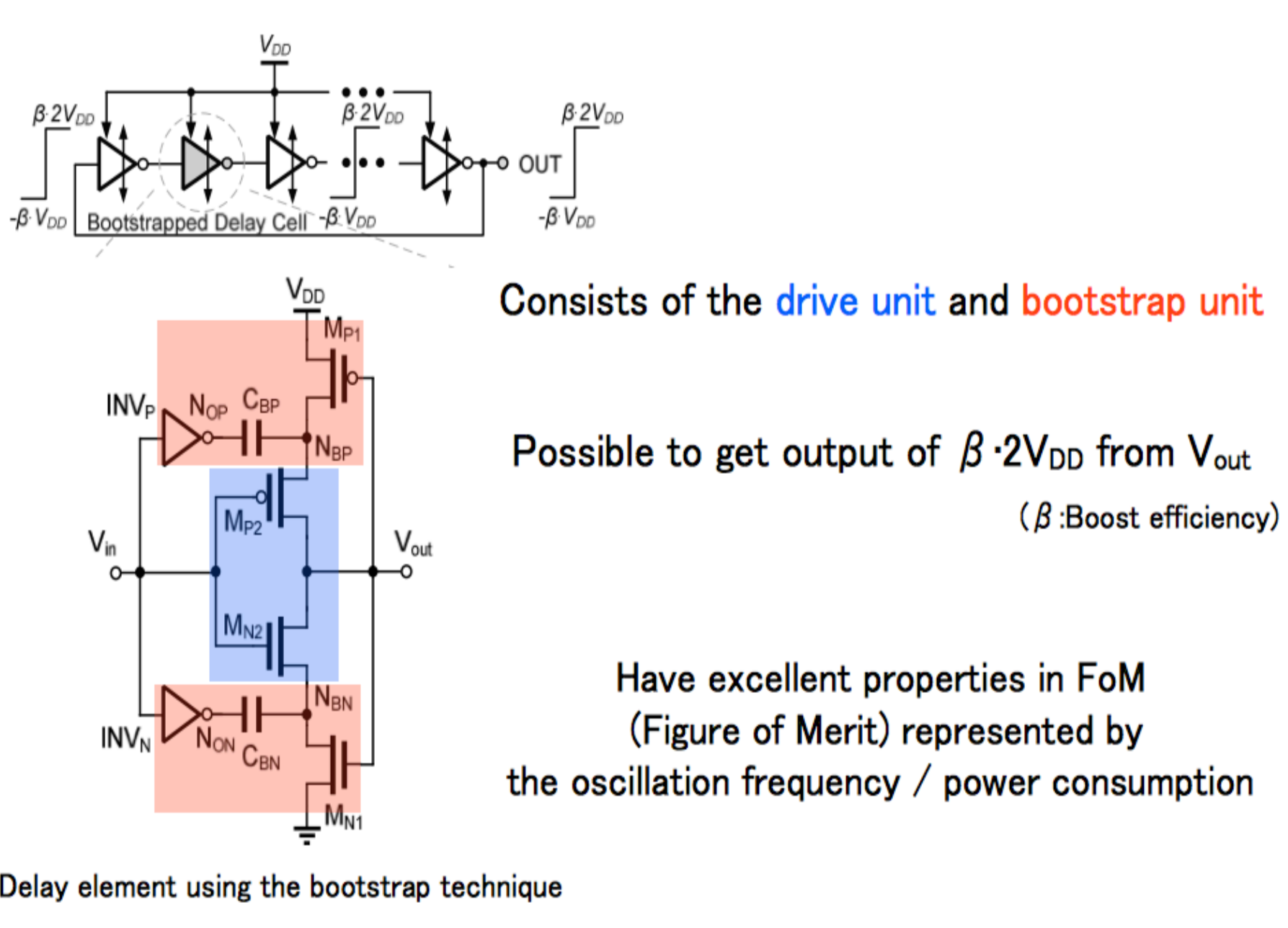
Proposed circuit configuration



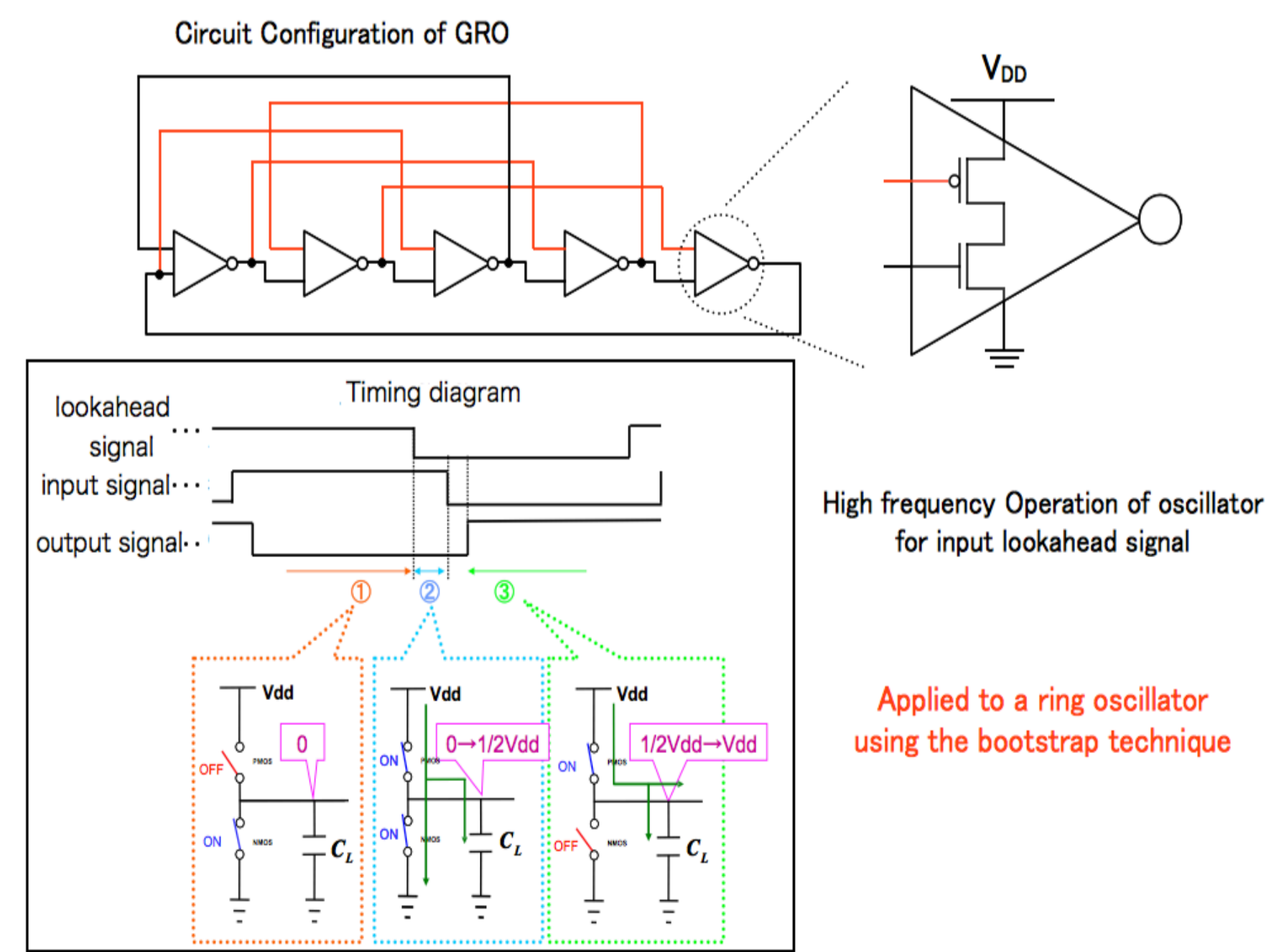
Proposed Circuit

Application Technique & Simulation Results

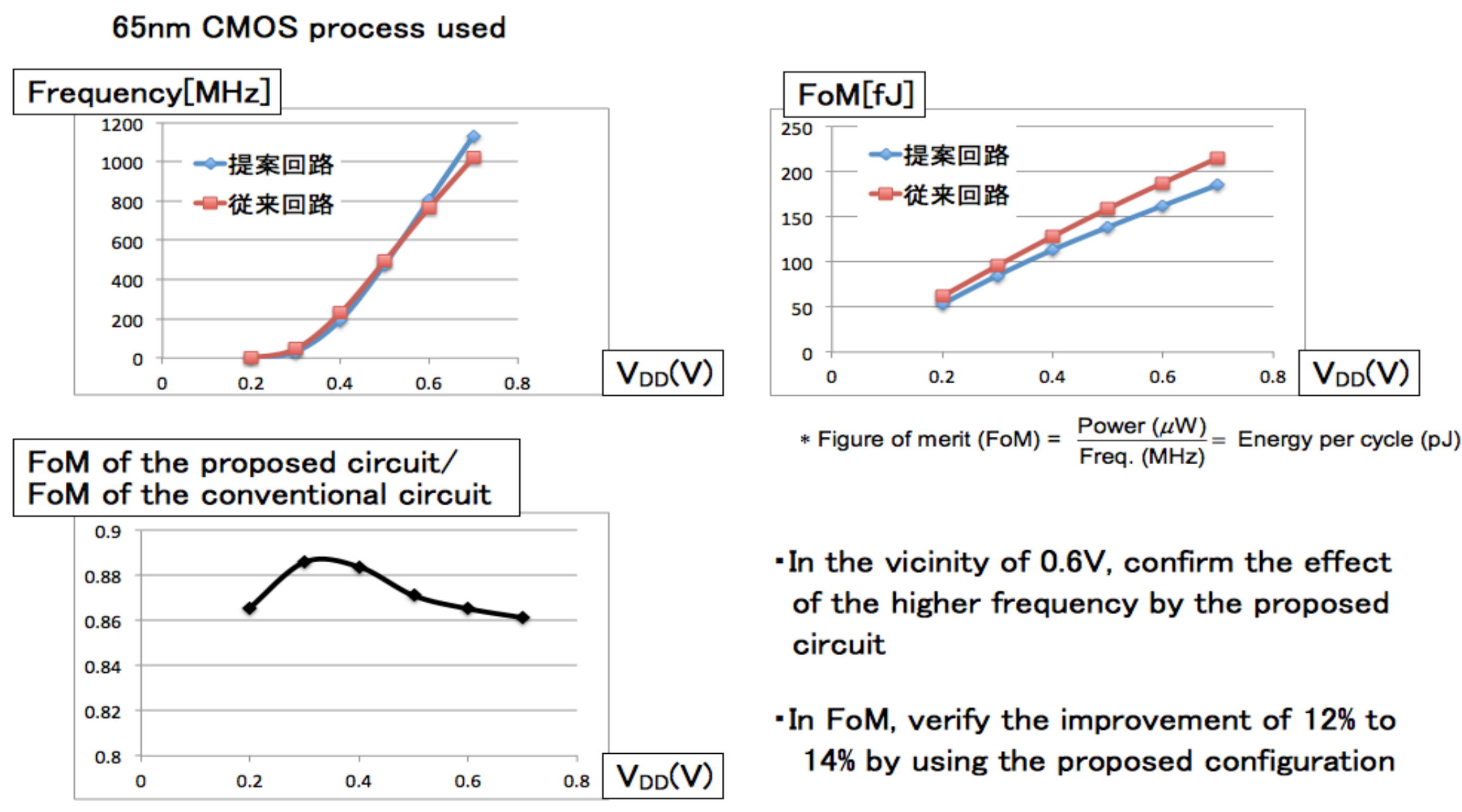
Ring oscillator using the bootstrap technique



GRO (Gated Ring Oscillator)



Simulation results



Summary

Conclusion

- GRO applied to the oscillator using the bootstrap technique
- Applying GRO to perform high-frequency operation in the lookahead to ring oscillator using a bootstrap technique for low supply voltage operation
- Check the operation in high frequency in the vicinity of 0.6 V
- Ensure improvement of 12% to 14% FoM represented by the power consumption/oscillation frequency

* Figure of merit (FoM) = $\frac{\text{Power } (\mu W)}{\text{Freq. (MHz)}} = \text{Energy per cycle (pJ)}$