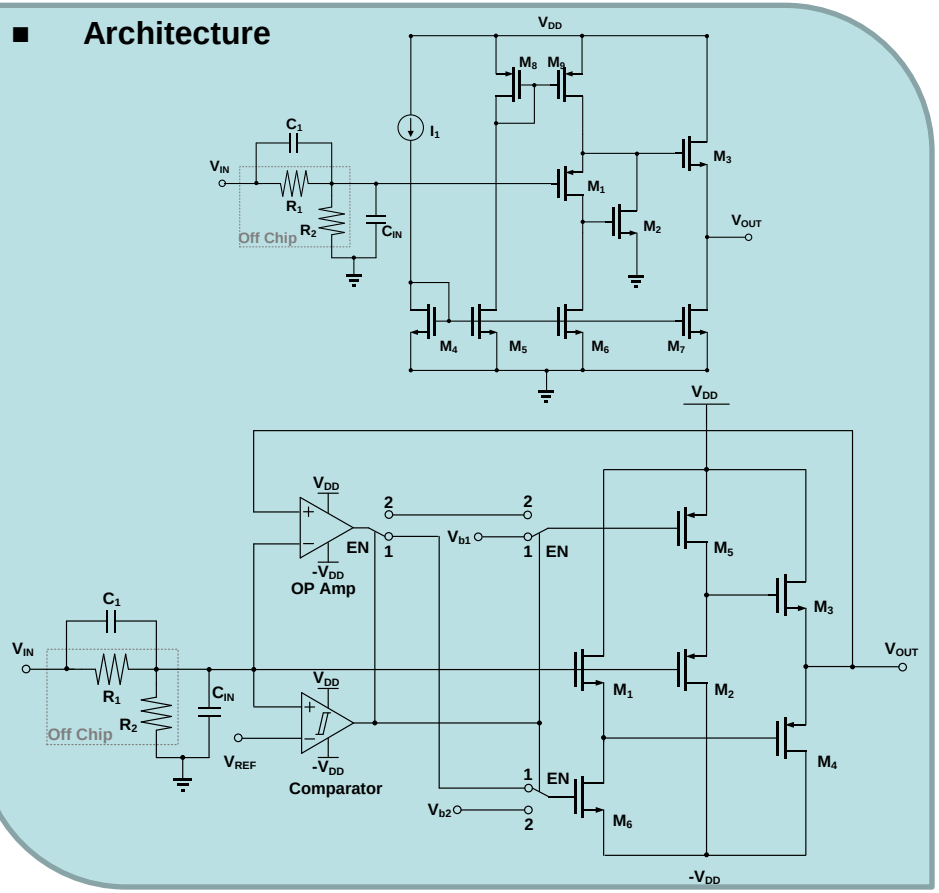
# A Buffer Amplifier for Active Probes of Oscilloscope

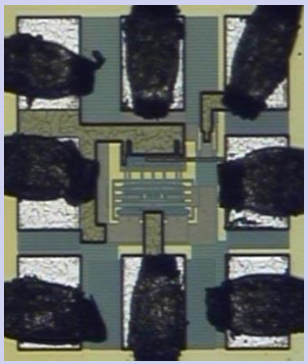
## Active Probe

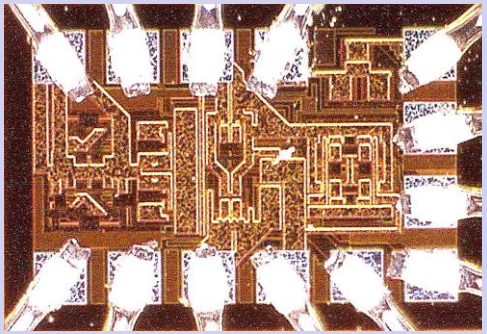
- High input impedance
  - ✓ High impedance in high frequency
  - ✓ Lower loading effect
- Wideband
  - ✓ Wideband application
  - ✓ High frequency measurement

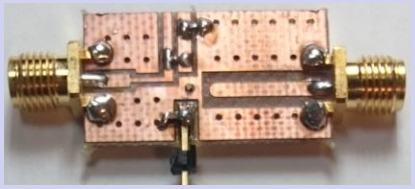
## Architecture




## Chip & PCB







## Conclusion & Measurement

- The RC mismatch in the attenuator make the frequency response uneven
- The measured 3-dB bandwidth can achieve 2.7 GHz and the input voltage range from -1 V to 5 V in the first work
- In the second work, the measurement results show that the active probe system bandwidth achieve 1.8 GHz, and the input voltage from 0.5 v to 5 V

| | | | | | |
|---|---|---|---|---|---|
| First Work | 0.18 μm CMOS | 10:1 | -1 V - 6 V | 2.7 GHz | 1 MΩ // 1.1 pF |
| Second Work | 0.18 μm CMOS | 10:1 | 0.5 V - 5 V | 1.8 GHz | 1 MΩ // 1.3 pF |