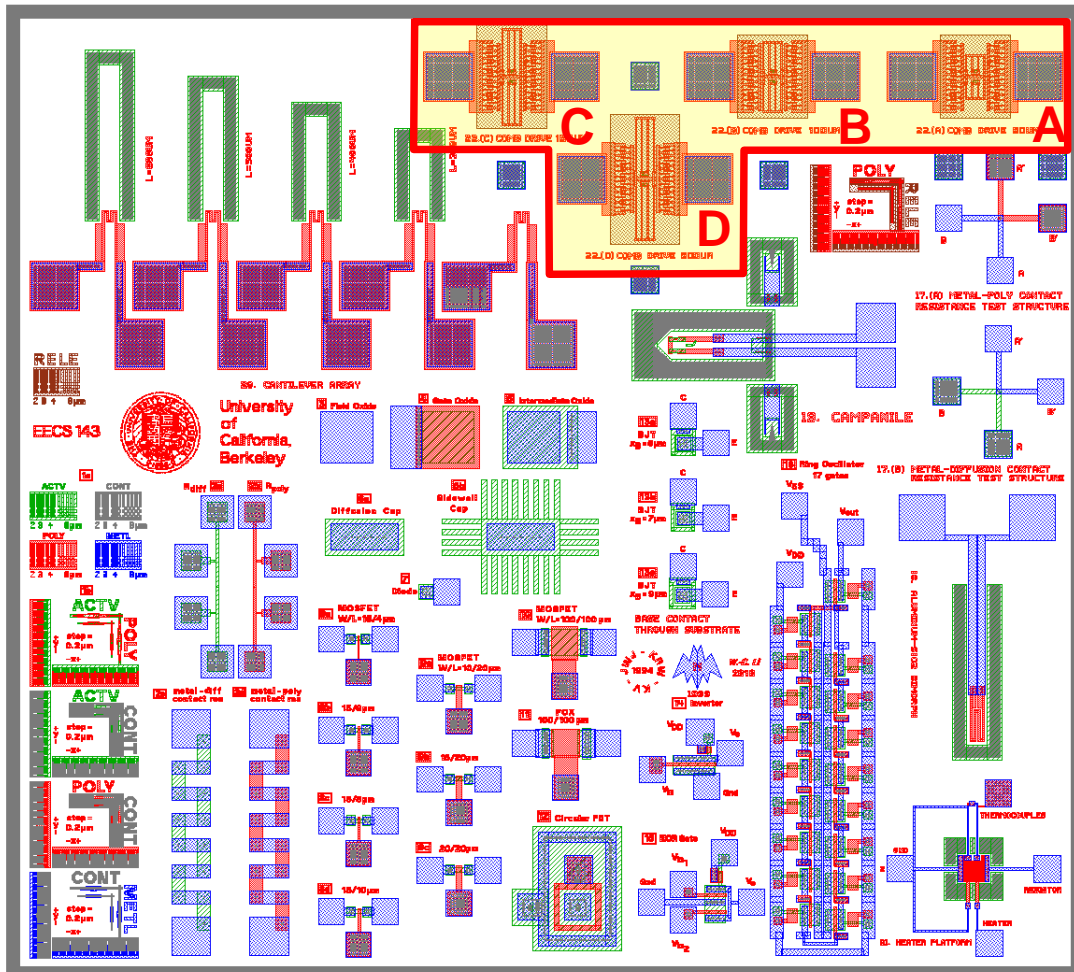


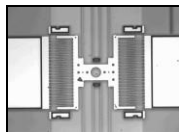
MEMS Comb-Drive Actuators

The new mask layout includes four comb-drive actuators as marked below.



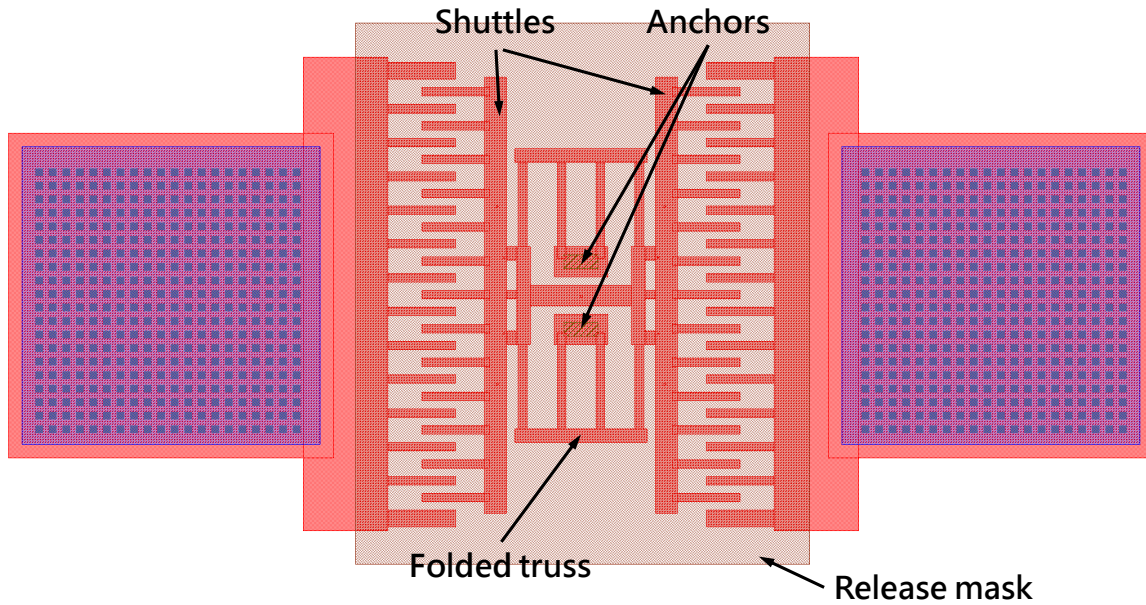
See the following links for the details about comb-drive actuators:

1. C. T.-C. Nguyen and R. T. Howe, "[An integrated CMOS micromechanical resonator high-Q oscillator](#)," *IEEE J. Solid-State Circuits*, vol. 34, no. 4, pp. 440-455, April 1999.

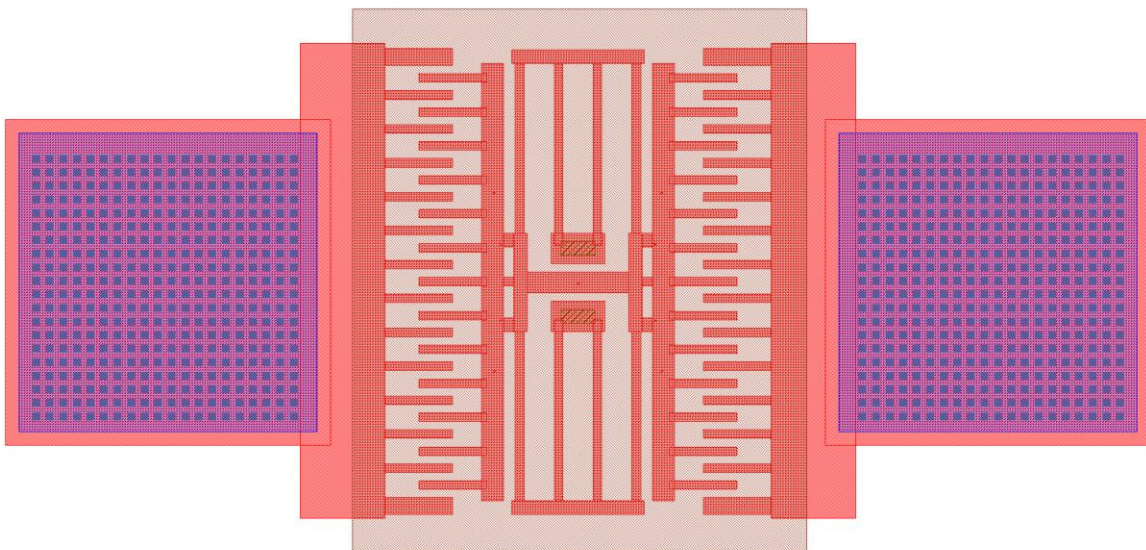


2. [A GIF file of a vibrating comb drive](#). [Source: Polytec GmbH]

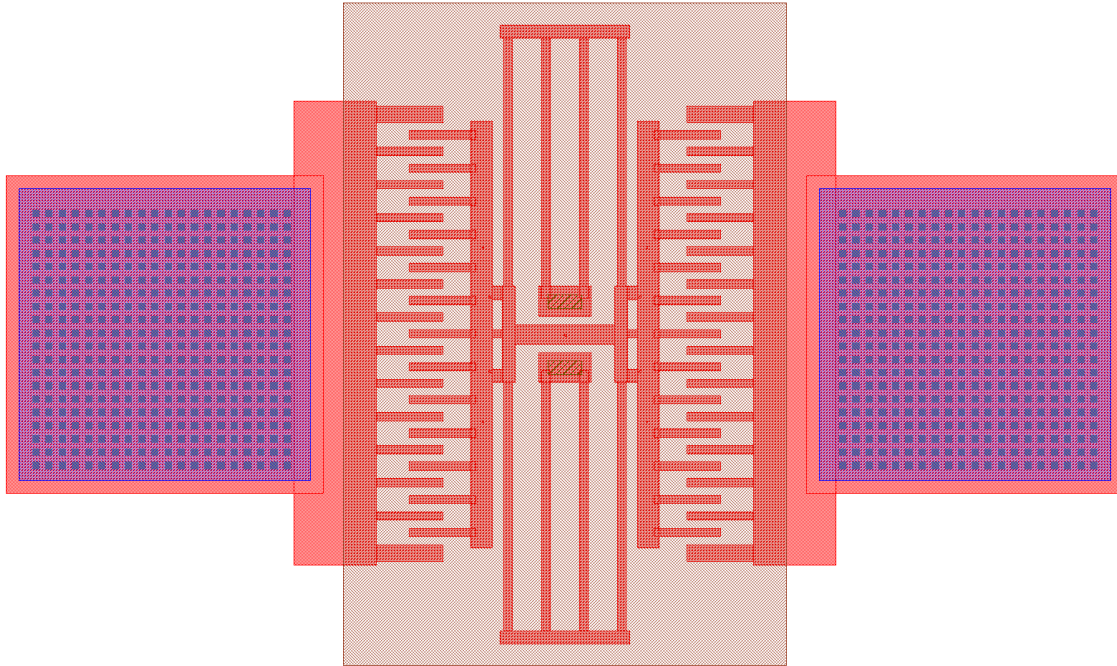
- Comb width and spacing = $5\ \mu\text{m}$
- Shuttle width = $13\ \mu\text{m}$, folded truss = $12\ \mu\text{m}$, anchor size = $8*20\ \mu\text{m}^2$
- Beam length = (A) $50\ \mu\text{m}$, (B) $100\ \mu\text{m}$, (C) $150\ \mu\text{m}$ and (D) $200\ \mu\text{m}$



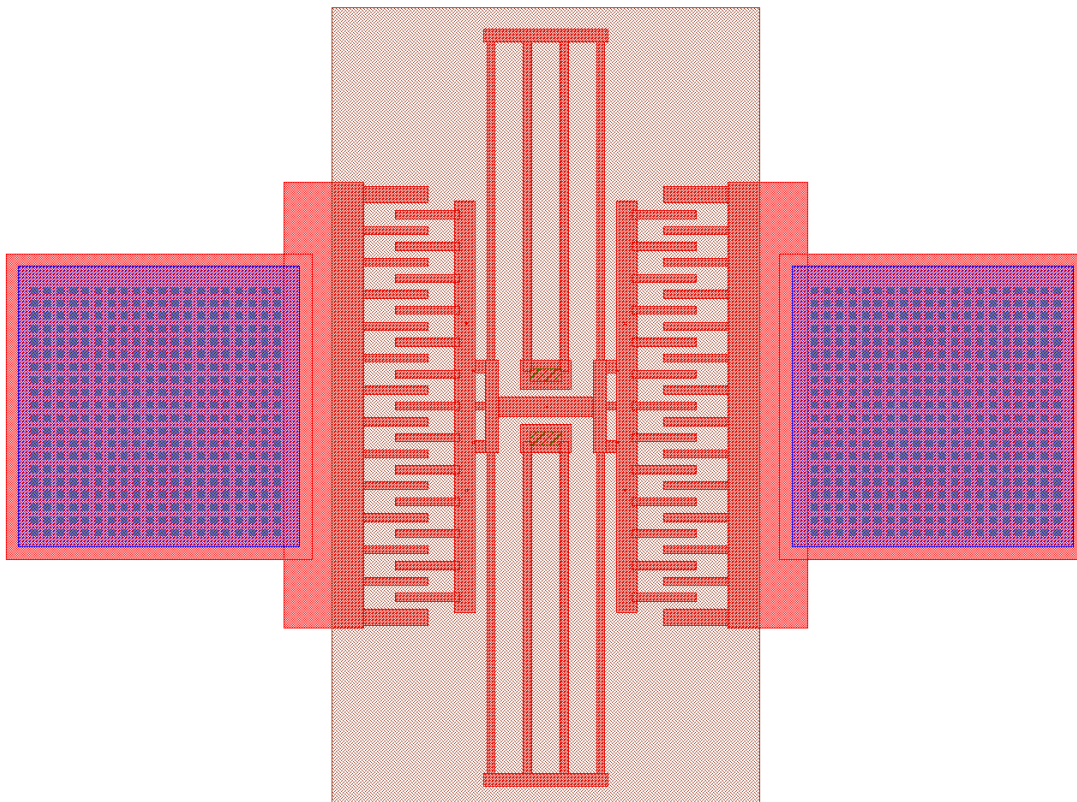
22.(A) COMB DRIVE 50UM



22.(B) COMB DRIVE 100UM



22.(C) COMB DRIVE 150UM



22.(D) COMB DRIVE 200UM