

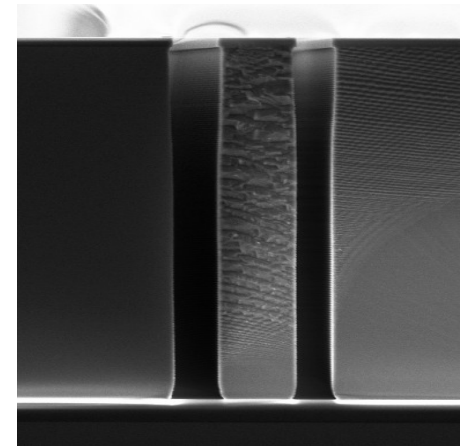
Design rules in EK2360

Si etching properties are better controllable for small open areas

- typical etched area $< 10\%$
- unused areas $> 50\ \mu\text{m}$ should be filled with Si dummy structure

Feature size given by max. aspect ratio of the process;
max. AR=15:1

- recommended min. beam width: $4\ \mu\text{m}$
- recommended min. gap width: $3\ \mu\text{m}$



SiO₂ free-etching



Under-etching

Depending on surrounding areas (access for etchant, diffusion, total etched volume)

Lateral under etching max. 10 μ m => recommended width for all free-standing designs must be <15 μ m in at least one direction

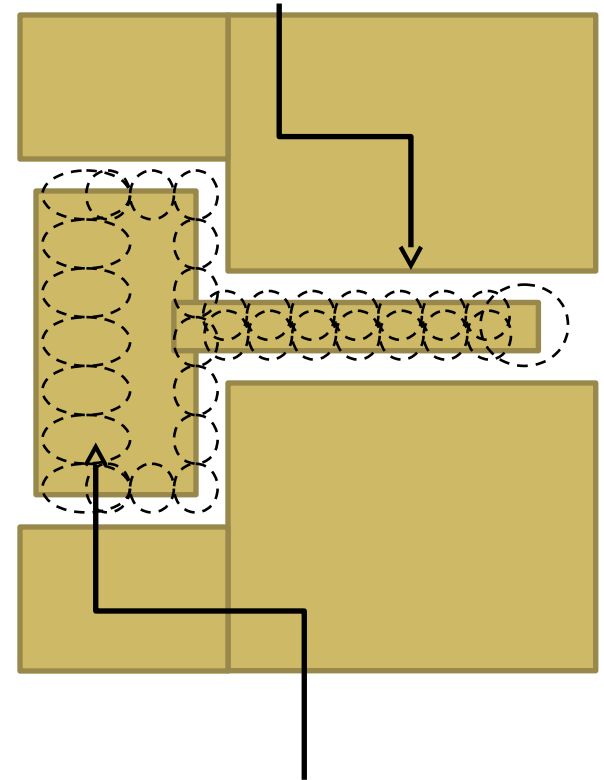
Anchors (not free-etched): recommended minimum width of 60 μ m in all directions



Avoiding stiction during free-etching

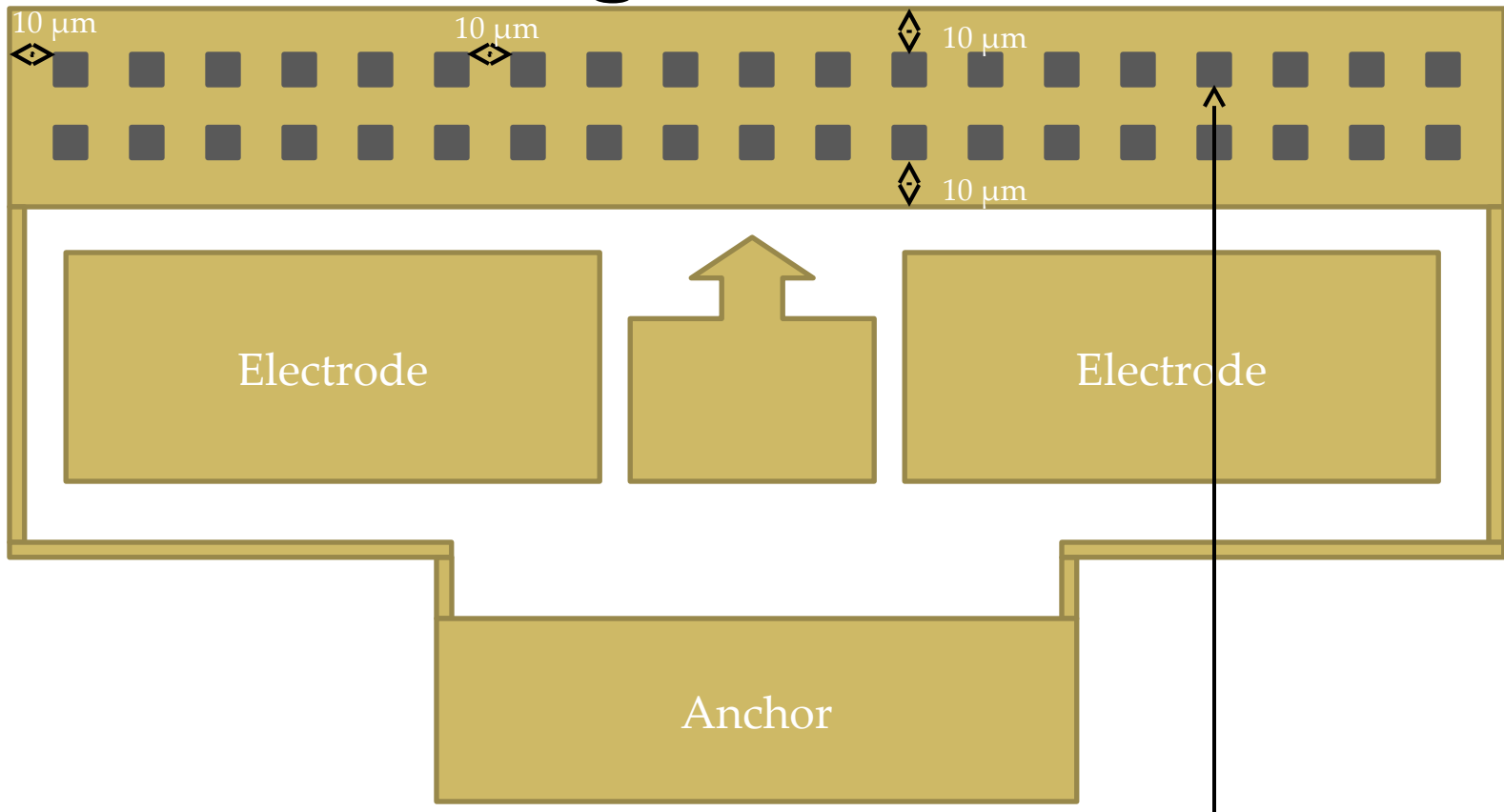
Recommended vertical stiffness of any structure: >20N/m

Cantilever is free etched



More under etch in easily accessible areas

Etch holes for free etching large structures



For under etching larger areas than 10 μm make etch holes with size of 5 \times 5 μm with a gap of 10 μm between them

Electromechanical design rules

Stopper design:

Min distance between electrode and stopper: $1\mu\text{m}$

Stopper tip width: $5\mu\text{m}$

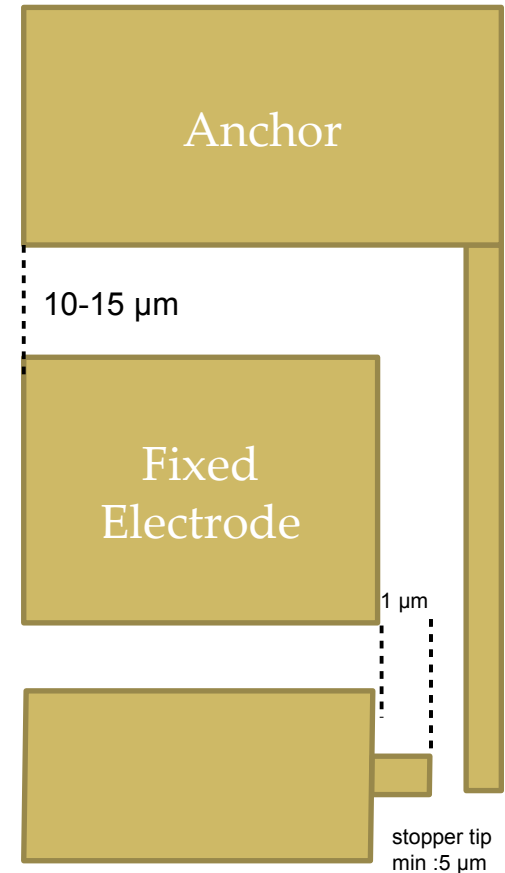
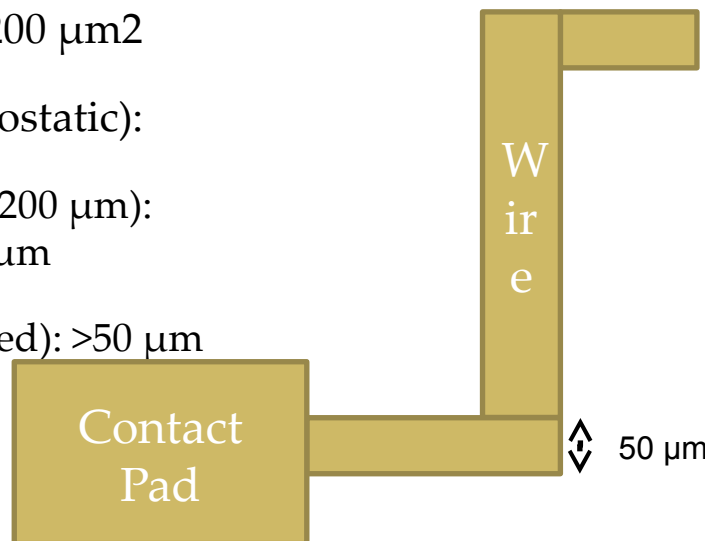
Isolation distance between electrodes: 10-15 μm recommended

Contact pad side: min. $200 \times 200\mu\text{m}^2$

Electrical connections (electrostatic):

short wires (free-etched, $< 200\mu\text{m}$):
recommended width $> 20\mu\text{m}$

longer wires (not free-etched): $> 50\mu\text{m}$



Rules for mask design

