MUMPS
- poly
- SOI MUMPS - today
- piezomumps
- just like IC world
- you pick the process, don't get to change any process params, just layout
- 1 cm² design, $6500 \rightarrow 15$ chips
- cheap up front

<SOI MUMPS - on website>
(pictures - on website)
comb-drive resonator
- works in poly MUMPS, SOI MUMPS
- many others
- good for process characterization
- spring, mass, damping, electrostatics
- dynamics
- resonance, quality factor
- nonlinear excitation

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HW3

Standard processes "foundries"
- production costs
- what do you see when you draw nothing?
- comb drive resonator
- beam bonding

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compare to production
- buy mask set $10K \rightarrow$ 10 m ?
- (MEMS?) (modern CMOS)
- production wafer
- 8" $\sim$ $1K-2K$ (varies a lot)
- yield - 90%? 10%?
- $11 \times 10^4 \text{ mm}^2 \rightarrow 5 \frac{K}{\text{cm}}$ ?
- expensive up front, cheap if you hit volume
- need to amortize mask cost
- testing + packaging - triple die cost?