- MEMS stands for micro electromechanical system. MEMS elements ranges in size from 1-100 μm.
- MEMS functional components are controlled under various methods of actuation (e.g. electrostatic, piezoelectric, electromagnetic, electrothermal)
- RF MEMS is one of emerging area of MEMS devices.

RF MEMS Components:

- Variable capacitors
- Inductors
- Switches
- Phase shifters
- Filters
- High Q Resonators
- Antennas
- Micromachined transmission lines

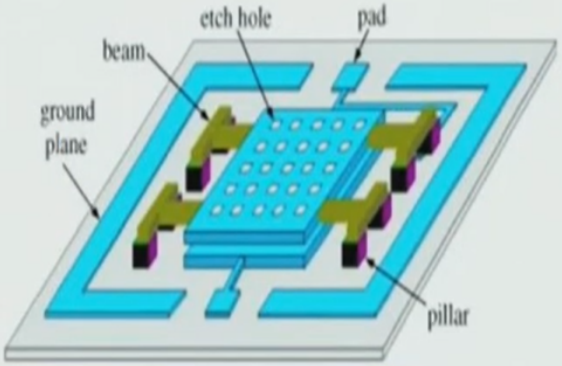
- RF MEMS provides components with reduced size and weight, very low loss, low power consumption, wide bandwidth, higher linearity, lower phase noise, better phase stability and high isolation.

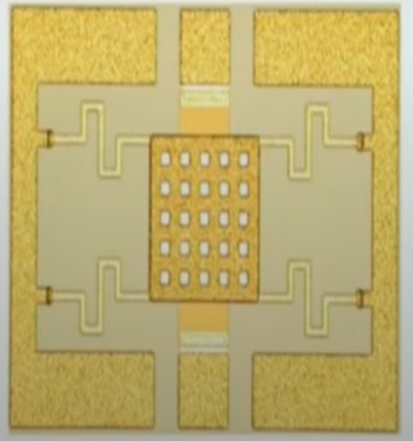
RF MEMS Capacitors

- Most important characteristics of lumped capacitors are the tuning range and the quality factor (Q factor), which both should be as large as possible. RF MEMS capacitor is the solution.
- Tunable **RF MEMS capacitors** using
  - **Electrostatic** actuator
  - **Electro-thermal** actuator
  - **Piezoelectric** actuator

Application Areas

- VCO- "Voltage controlled oscillator"
- Tunable filters
- Tunable networks
- Impedance matching
- Phase shifters





Micromachined inductors offers better performance than present CMOS inductors

Planar inductors

Solenoids inductors

Applications

–Low noise oscillators

–Integrated LC-filters

–Amplifiers

–On-chip "matching" networks

–Impedance transformers

–Phase shifters