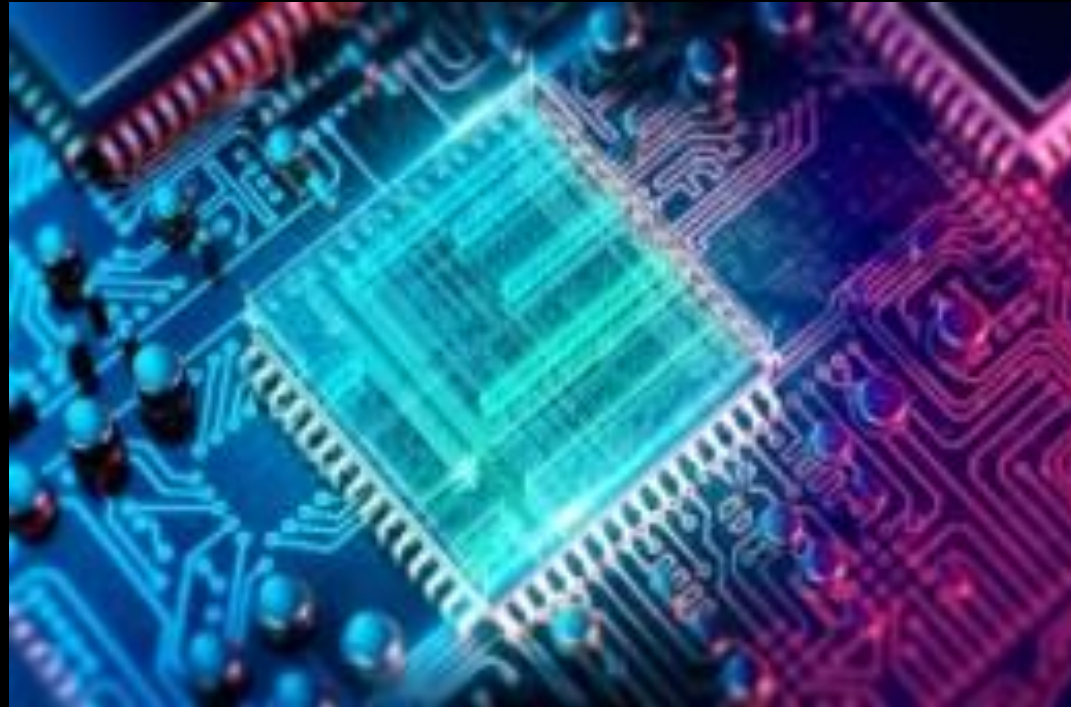


# Devices and Circuit Technology

THz communications materials & circuits



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## Vision

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**Densified network and edge computing mandate need for ultra high speed connectivity without capacity bottlenecks**

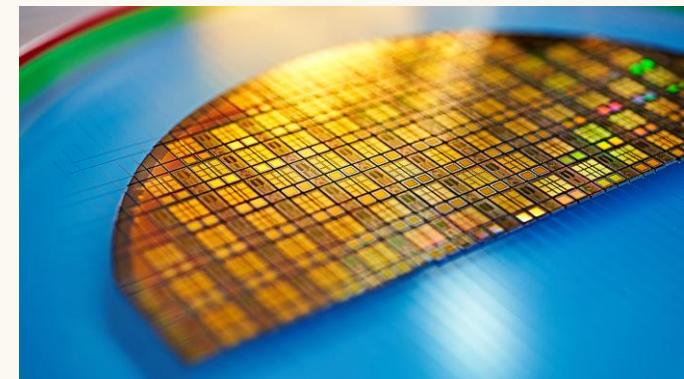
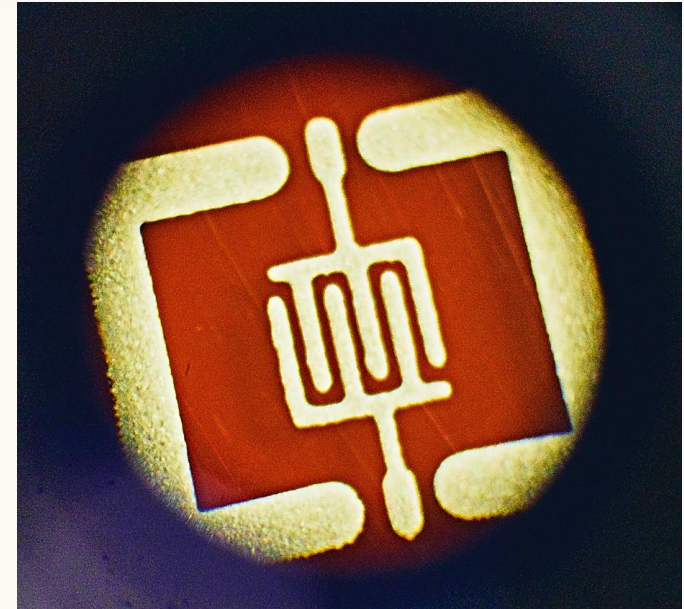
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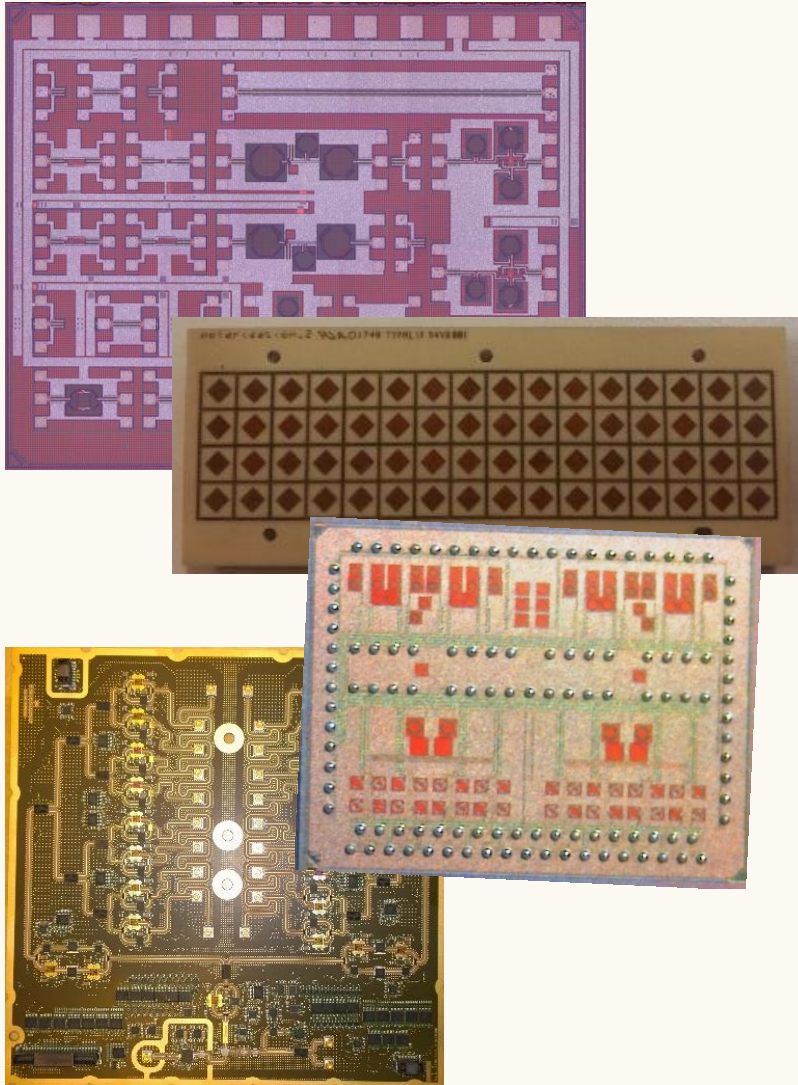
### Consequences:

**Bandwidth of tens or even beyond hundred of GHz**

**RF frequencies  
0.1...1 THz**

- Affordable HW technologies are key to conquer the new frequency region
- Transistor speed will become an issue towards THz
- Generating power and avoid material and interconnect losses is an extreme challenge
- Precision in manufacturing
- Antenna elements scale down and phased arrays beyond 5G era are a must even in short range





- Focus in HW is on key enabling technologies for 6G from materials to transceivers and sensing at THz range (0.1THz onwards)
- Approach from systems to HW and back
  - Silicon based transceiver design from blocks to systems
  - Integration, scalability and performance of arrays including challenge of wideband modulation
  - New technologies and materials beyond IC core
- Build on the top of 5G experience, investing in THz knowhow and lab



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# 6G Flagship

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