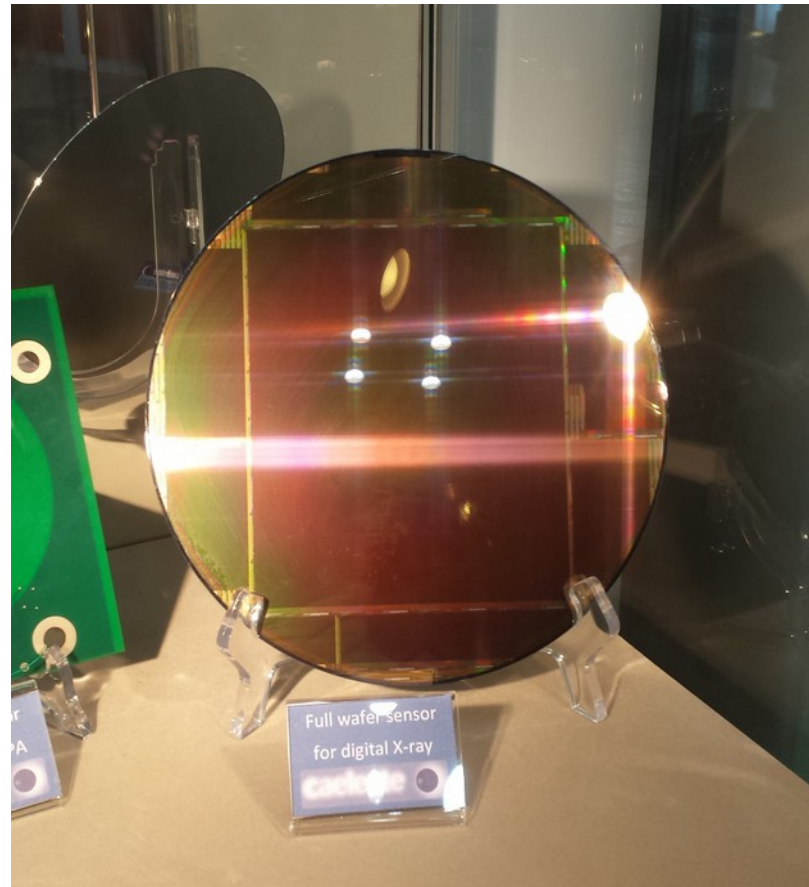


# Semiconductor fabrication

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# Semiconductor fabrication

- Fick's solution for constant gas concentration

$$C(x,t) = C_s \operatorname{erfc}\left(\frac{x}{2\sqrt{Dt}}\right)$$

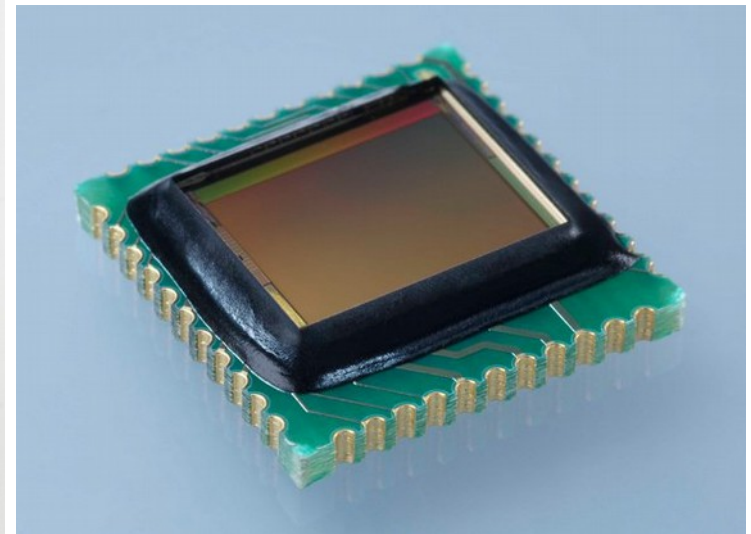
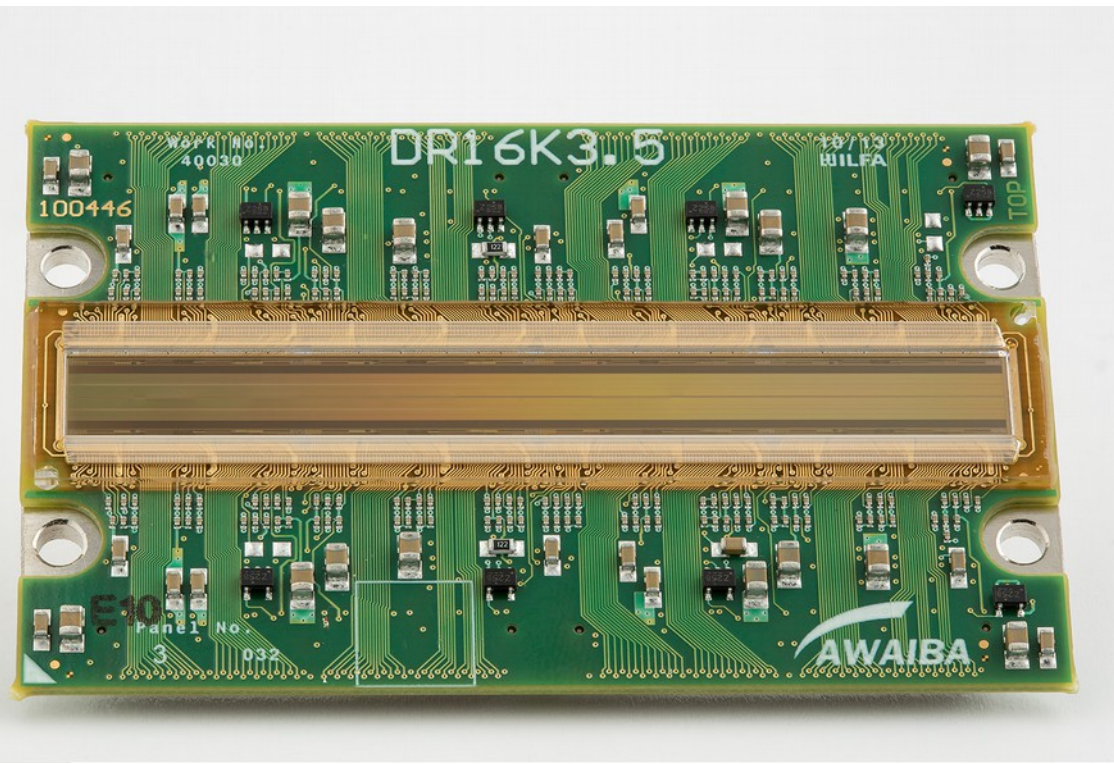
$$Q(t) = \int_{x=0}^{x=\infty} C_s \operatorname{erfc}\left(\frac{x}{2\sqrt{Dt}}\right) dx = \frac{2\sqrt{Dt}}{\sqrt{\pi}} C_s$$

- Fick's solution for a fixed number of doping ions

$$C(x,t) = \frac{Q}{\sqrt{\pi Dt}} \exp\left(-\frac{x^2}{4Dt}\right)$$

$$C(0,t) = \frac{Q}{\sqrt{\pi Dt}}$$

# Packages



# Process Capability

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- PpK = Process Performance Index
  - How good is the device in production compared to the guaranteed Min/Max in the datasheet
  - Measurement of the yield = how many devices are rejected
  - A good PpK means a good margin
- CpK = Process Capability Index
  - An evaluation on the short term of what PpK would be
  - PpK = CpK – loss of capability due to shift of the process over time