# **The physical limitations of Moore's law**

Moore's law - transistor density would double every two years.

It is not a physical law, it's just a projection of a historical trend.

Today, the Moore's law no longer works, because increasing the number of transistors increases the power and temperature.

***Dynamic Power is: P = α \* CFV2***

* α is percent of time switching
* C is capacitance (related to size)
* F is the clock frequency
* V is voltage swing (from low to high)

**Physical limitations:**

1. Power rise
2. Physical limitations of size reduction
3. Temperature rise
4. Dennard scaling can`t continue too, because the voltage cannot be reduced indefinitely due to leakage power. Power Wall