

1. Definition of Moore's law

Moore's law is the observation that the number of transistors in a dense integrated circuit doubles about every two years.

2. Why it stopped being true

Being a physical object, transistors are also affected by physical limitations. Even though increasing the density of transistors will generate more power, as the clock rate and percentage of switch will increase, it will also generate more heat. This can be considered a problem because the cost for cooling can intimidate companies. On the other hand, we can compensate or reduce the power consumption by using a technique called Dynamic Voltage Scaling (DVS). However, this technique also has limitations because it cannot prevent the leakage power loss. Other factors such as threshold voltage and noise also drastically limits the application of DVS. Based on the reasons mentioned, the doubling of transistors has reached its limits, which falsify the definition of Moore's law.