Moores Law is a concept proposed by Gordon Moore, co-founder of Intel, in 1965. It states that the number of transistors on integrated circuits doubles approximately every 18 to 24 months while keeping costs constant. This observation has driven the rapid development of the semiconductor industry and fueled the exponential growth of computer performance.

However, Moore's Law is no longer applicable due to several physical limitations, including:

1.Transistor Size Limit

As transistor sizes continue to shrink, approaching atomic levels, they encounter issues such as quantum effects and leakage, impacting transistor stability and performance.

2.Power Consumption and Heat Dissipation

Increasing transistor density leads to higher power consumption. Managing the heat generated by densely packed circuits becomes challenging and restricts further performance improvements.

3.Speed of Light Restriction

The speed of light serves as a limit for signal transmission. As processor speeds increase, signal latency and cost of signal transmission become significant limitations in design.

4.Cost and Complexity

With manufacturing processes becoming more complex, the design and production costs for new chip generations significantly rise, diminishing the cost-effectiveness predicted by Moore's Law.